

Biochemical DATABASE MPD report
Deliverable D6



I.R.D. Maison des Sciences de l'eau – Montpellier

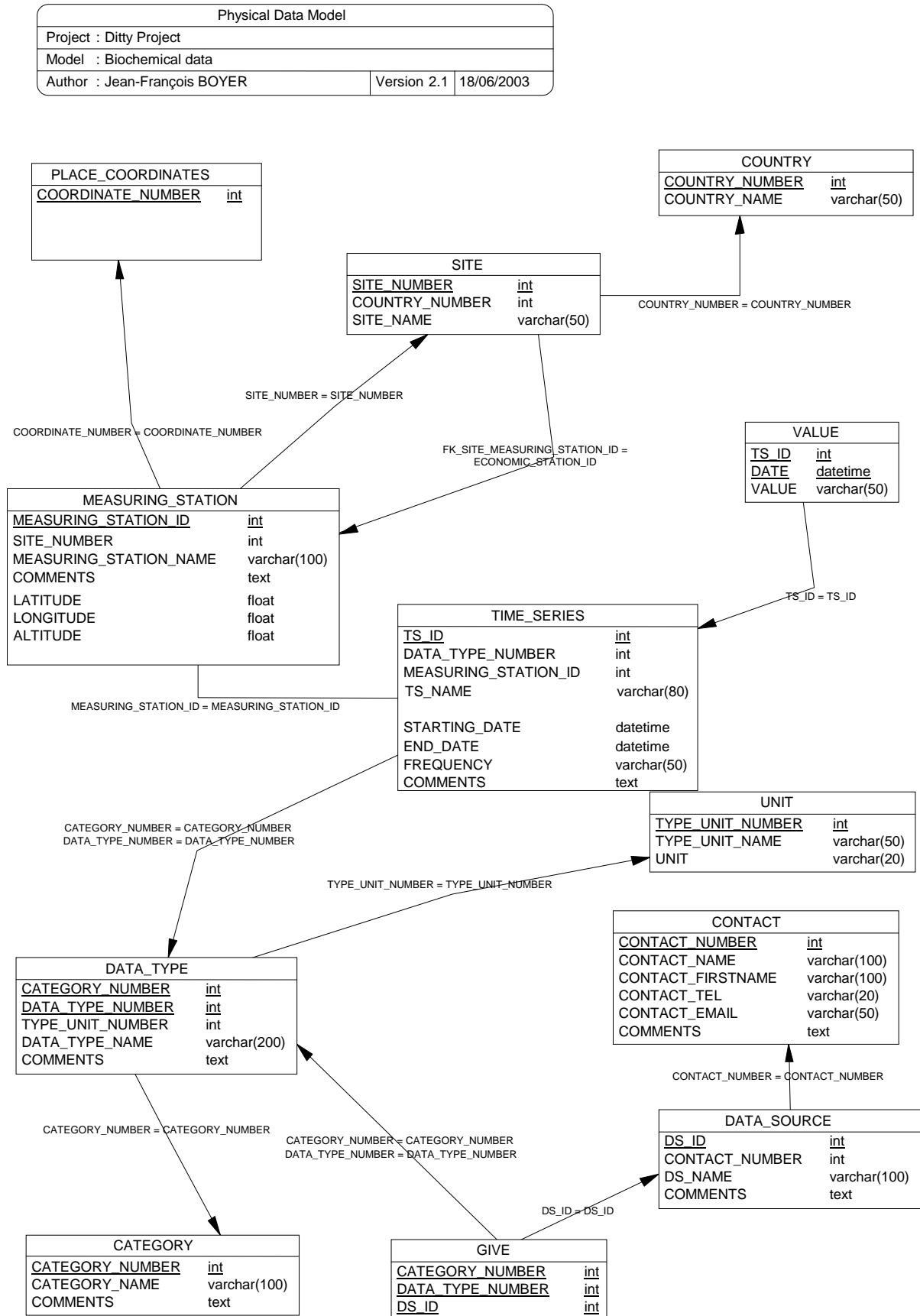
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Global model



Model Information

Project Name:	Ditty Project		
Project Code:	DITTY_PROJECT		
Database:	Sybase SQL Server 4.x		
Name:	Biochemical data		
Code:	BIOCHEMICAL_DATA		
Label:			
Author:	Berger Emmanuel - Esposito Laurent		
Version:	2.1		
Created On:	16/06/2003 17:29	Modified On:	18/06/2003 11:05

Columns

Column List

Column Code	Type
CATEGORY_NAME	varchar(100)
CATEGORY_NUMBER	int
CATEGORY_NUMBER	int
CATEGORY_NUMBER	int
CATEGORY_NUMBER	int
COMMENTS	text
COMMENTS	text
COMMENTS	text
COMMENTS	text
COMMENTS	text
CONTACT_EMAIL	varchar(50)
CONTACT_FIRSTNAME	varchar(100)
CONTACT_NAME	varchar(100)
CONTACT_NUMBER	int
CONTACT_NUMBER	int
CONTACT_TEL	varchar(20)
COORDINATE_NUMBER	int
COORDINATE_NUMBER	int
COORDINATEX	float
COORDINATEY	float
COORDINATEZ	float
COUNTRY_NAME	varchar(50)
COUNTRY_NUMBER	int
COUNTRY_NUMBER	int
DATA_TYPE_NAME	varchar(200)
DATA_TYPE_NUMBER	int
DATA_TYPE_NUMBER	int
DATA_TYPE_NUMBER	int
DATE	datetime
DS_ID	int
DS_ID	int
DS_NAME	varchar(100)
END_DATE	datetime
FREQUENCY	varchar(50)
MEASURING_STATION_ID	int
MEASURING_STATION_ID	int
MEASURING_STATION_NAME	varchar(100)
SITE_NAME	varchar(50)
SITE_NUMBER	int
SITE_NUMBER	int
TS_ID	int
TS_ID	int
TYPE_UNIT_NAME	varchar(50)
TYPE_UNIT_NUMBER	int
TYPE_UNIT_NUMBER	int
UNIT	varchar(20)
VALUE	varchar(50)

Column CATEGORY_NAME

Table Code:	CATEGORY
Name:	Category Name
Code:	CATEGORY_NAME
Label:	
Domain:	
Type:	varchar(100)
Length:	100
Precision:	0

Column CATEGORY_NUMBER

Table Code:	DATA_TYPE
Name:	Category Number
Code:	CATEGORY_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column CATEGORY_NUMBER

Table Code:	TIME_SERIES
Name:	Category Number
Code:	CATEGORY_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column CATEGORY_NUMBER

Table Code:	CATEGORY
Name:	Category Number
Code:	CATEGORY_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Description

"Category_number" is primary key with "Data type number" in this table. We have had to create a key composed by two attributes because we would have had a data type type for the same category but in fact corresponding at two different categories. Without the category there is no more "Data type"

Column CATEGORY_NUMBER

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Table Code:	GIVE
Name:	Category Number
Code:	CATEGORY_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column COMMENTS

Table Code:	CATEGORY
Name:	Comments
Code:	COMMENTS
Label:	
Domain:	
Type:	text
Length:	255
Precision:	0

Column COMMENTS

Table Code:	DATA_SOURCE
Name:	Comments
Code:	COMMENTS
Label:	
Domain:	
Type:	text
Length:	255
Precision:	0

Column COMMENTS

Table Code:	TIME_SERIES
Name:	Comments
Code:	COMMENTS
Label:	
Domain:	
Type:	text
Length:	255
Precision:	0

Column COMMENTS

Table Code:	DATA_TYPE
Name:	Comments
Code:	COMMENTS
Label:	
Domain:	
Type:	text
Length:	255
Precision:	0

Column COMMENTS

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Table Code:	CONTACT
Name:	Comments
Code:	COMMENTS
Label:	
Domain:	
Type:	text
Length:	255
Precision:	0

Column COMMENTS

Table Code:	MEASURING_STATION
Name:	Comments
Code:	COMMENTS
Label:	
Domain:	
Type:	text
Length:	255
Precision:	0

Column CONTACT_EMAIL

Table Code:	CONTACT
Name:	Contact email
Code:	CONTACT_EMAIL
Label:	
Domain:	
Type:	varchar(50)
Length:	50
Precision:	0

Column CONTACT_FIRSTNAME

Table Code:	CONTACT
Name:	Contact FirstName
Code:	CONTACT_FIRSTNAME
Label:	
Domain:	
Type:	varchar(100)
Length:	100
Precision:	0

Column CONTACT_NAME

Table Code:	CONTACT
Name:	Contact Name

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Code:	CONTACT_NAME
Label:	
Domain:	
Type:	varchar(100)
Length:	100
Precision:	0

Column CONTACT_NUMBER

Table Code:	CONTACT
Name:	Contact Number
Code:	CONTACT_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column CONTACT_NUMBER

Table Code:	DATA_SOURCE
Name:	Contact Number
Code:	CONTACT_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column CONTACT_TEL

Table Code:	CONTACT
Name:	Contact Tel
Code:	CONTACT_TEL
Label:	
Domain:	
Type:	varchar(20)
Length:	20
Precision:	0

Column COORDINATE_NUMBER

Table Code:	PLACE_COORDINATES
Name:	Coordinate Number
Code:	COORDINATE_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column COORDINATE_NUMBER

Table Code:	MEASURING_STATION
Name:	Coordinate Number
Code:	COORDINATE_NUMBER

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Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Column COORDINATEX

Table Code:	PLACE_COORDINATES		
Name:	CoordinateX		
Code:	COORDINATEX		
Label:			
Domain:			
Type:	float		
Length:	0	Precision:	0

Check

Constraint:					
Low Value:	-90				
High Value:	90				
Default Value:					
Unit:	deg dec				
Format:					
Uppercase:	No	Lowercase:	No	Can't modify:	No
List of Values:					

COORDINATEX between -90 and 90

Description

Latitude in decimal degrees

Column COORDINATEY

Table Code:	PLACE_COORDINATES		
Name:	CoordinateY		
Code:	COORDINATEY		
Label:			
Domain:			
Type:	float		
Length:	0	Precision:	0

Check

Constraint:			
Low Value:	-179.999999		
High Value:	180		

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Default Value:					
Unit:	deg dec				
Format:					
Uppercase:	No	Lowercase:	No	Can't modify:	No
List of Values:					

COORDINATEY between -179.999999 and 180

Description

longitude in decimal degrees

Column COORDINATEZ

Table Code:	PLACE_COORDINATES				
Name:	CoordinateZ				
Code:	COORDINATEZ				
Label:					
Domain:					
Type:	float				
Length:	0	Precision:	0		

Check

Constraint:					
Low Value:	-500				
High Value:	9000				
Default Value:					
Unit:	meters				
Format:					
Uppercase:	No	Lowercase:	No	Can't modify:	No
List of Values:					

COORDINATEZ between -500 and 9000

Description

Altitude in meters

Column COUNTRY_NAME

Table Code:	COUNTRY				
Name:	Country Name				
Code:	COUNTRY_NAME				
Label:					
Domain:					
Type:	varchar(50)				
Length:	50	Precision:	0		

Column COUNTRY_NUMBER

Table Code:	SITE				
Name:	Country Number				

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Code:	COUNTRY_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column COUNTRY_NUMBER

Table Code:	COUNTRY
Name:	Country Number
Code:	COUNTRY_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column DATA_TYPE_NAME

Table Code:	DATA_TYPE
Name:	Data Type Name
Code:	DATA_TYPE_NAME
Label:	
Domain:	
Type:	varchar(200)
Length:	200
Precision:	0

Column DATA_TYPE_NUMBER

Table Code:	TIME_SERIES
Name:	Data Type Number
Code:	DATA_TYPE_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column DATA_TYPE_NUMBER

Table Code:	GIVE
Name:	Data Type Number
Code:	DATA_TYPE_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column DATA_TYPE_NUMBER

Table Code:	DATA_TYPE
Name:	Data Type Number

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Code:	DATA_TYPE_NUMBER		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	0

Column DATE

Table Code:	VALUE		
Name:	Date		
Code:	DATE		
Label:			
Domain:			
Type:	datetime		
Length:	0	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	0

Description

If the rate of sampling of the time series is monthly, then we have to put a date in the date tuple which corresponding at the average of all the value of the month. The date is inputted in this way :

- For a monthly rate sampling the date will be the first day of the month : ex : for january 2003 the date inputted will be : 01/01/03 at 0.00 AM, 02/01/03 at 0.00AM...

- For a daily rate sampling the date inputted will be the day where the data and the hour at 0. for example : 01/01/03 at 0.00AM , 01/02/03 at 0.00AM , 01/03/03 at 0.00AM

In fact we have to put the lower time step at its first values.

- For a decadal rate of sampling :

01/01/03 at 0.00AM for the average of the first ten days

01/10/03 at 0.00AM for the average of the next ten days

01/20/03 at 0.00AM for the average of the last days of the month.

Exception : if we have a frequency : "2 times per days" we have the solution to input the date of the day and input for the value the average of the two value, or we could input the exact hour, minute, seconds for each measure.

Column DS_ID

Table Code:	GIVE		
Name:	DS Id		
Code:	DS_ID		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Column DS_ID

Table Code:	DATA_SOURCE		
Name:	DS Id		

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Code:	DS_ID		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Column DS_NAME

Table Code:	DATA_SOURCE		
Name:	DS Name		
Code:	DS_NAME		
Label:			
Domain:			
Type:	varchar(100)		
Length:	100	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	100

Description

Example : « public administration », « ditty partner », « university »...

Column END_DATE

Table Code:	TIME_SERIES		
Name:	End Date		
Code:	END_DATE		
Label:			
Domain:			
Type:	datetime		
Length:	0	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	0

Column FREQUENCY

Table Code:	TIME_SERIES		
Name:	Frequency		
Code:	FREQUENCY		
Label:			
Domain:			
Type:	varchar(50)		
Length:	50	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	50

Description

The frequency of sampling could be for example monthly, semi-annual (semestrial), daily, decadal.... For example 12 values or data will be feed in the "value" table if the frequency on "time series" table is monthly.

Column MEASURING_STATION_ID

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Table Code:	MEASURING_STATION		
Name:	Measuring station ID		
Code:	MEASURING_STATION_ID		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	0

Column MEASURING_STATION_ID

Table Code:	TIME_SERIES		
Name:	Measuring station ID		
Code:	MEASURING_STATION_ID		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Column MEASURING_STATION_NAME

Table Code:	MEASURING_STATION		
Name:	Measuring Station Name		
Code:	MEASURING_STATION_NAME		
Label:			
Domain:			
Type:	varchar(100)		
Length:	100	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	100

Column SITE_NAME

Table Code:	SITE		
Name:	Site Name		
Code:	SITE_NAME		
Label:			
Domain:			
Type:	varchar(50)		
Length:	50	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	50

Description

All the different sites are : « Etang de thau », « Gulf of Gera », « Mar Menor », « Ria Formosa », « Sacca di Goro »

Column SITE_NUMBER

Table Code:	MEASURING_STATION		
Name:	Site Number		
Code:	SITE_NUMBER		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Column SITE_NUMBER

Table Code:	SITE		
Name:	Site Number		
Code:	SITE_NUMBER		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Column TS_ID

Table Code:	TIME_SERIES		
Name:	TS ID		
Code:	TS_ID		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0
Null Values:	0%	Distinct Values:	100%
		Average Length:	0

Column TS_ID

Table Code:	VALUE		
Name:	TS ID		
Code:	TS_ID		
Label:			
Domain:			
Type:	int		
Length:	0	Precision:	0

Description

TS_ID is primary key with Date in this table. If a time serie that has a monthly rate sampling between the 01/01/03 and the 01/01/04, then we will have twelve tuples in the « Value » table ranging in order of date.

We have had to create a key composed by two attributes because we would have had two values for the same date but corresponding at two different measuring station.

Column TYPE_UNIT_NAME

Table Code:	UNIT
Name:	Type Unit name
Code:	TYPE_UNIT_NAME
Label:	
Domain:	
Type:	varchar(50)
Length:	50
Precision:	0

Description

example : duration, distance...

Column TYPE_UNIT_NUMBER

Table Code:	DATA_TYPE
Name:	Type Unit number
Code:	TYPE_UNIT_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column TYPE_UNIT_NUMBER

Table Code:	UNIT
Name:	Type Unit number
Code:	TYPE_UNIT_NUMBER
Label:	
Domain:	
Type:	int
Length:	0
Precision:	0

Column UNIT

Table Code:	UNIT
Name:	Unit
Code:	UNIT
Label:	
Domain:	
Type:	varchar(20)
Length:	20
Precision:	0

Description

example : m, km, s, mn, h

Column VALUE

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Table Code:	VALUE		
Name:	Value		
Code:	VALUE		
Label:			
Domain:			
Type:	varchar(50)		
Length:	50	Precision:	0

Tables

Table List

Name	Code	Number
Category	CATEGORY	
Contact	CONTACT	
Country	COUNTRY	
Data source (ownership)	DATA_SOURCE	
Data type	DATA_TYPE	
Give	GIVE	
Measuring Station	MEASURING_STATION	
Place coordinates	PLACE_COORDINATES	
Site	SITE	
Time Series	TIME_SERIES	
Unit	UNIT	
Value	VALUE	

Table Category

Name:	Category
Code:	CATEGORY
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity CATEGORY

Description

Contains all the data categories. For example, a category could be "Adjacent sea data oceanographic data"

Column List

Name	Code	Type	P	M
Category Number	CATEGORY_NUMBER	int	Yes	Yes
Category Name	CATEGORY_NAME	varchar(100)	No	No
Comments	COMMENTS	text	No	No

Fill List

Name	Type	Null	Distinc t	Length	M	U	F
Category Number	int	0%	100%	0	Yes	Yes	No
Category Name	varchar(100)	0%	100%	100	No	No	No
Comments	text	0%	100%	0	No	No	No

Column CATEGORY_NUMBER

Description

"Category_number" is primary key with "Data type number" in this table.

We have had to create a key composed by two attributes because we would have had a data type for the same category but in fact corresponding at two different categories.

Without the category there is no more "Data type"

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Index List

Index Code	P	F	A	U	C	Column Code	Sort
CATEGORY_PK	Yes	No	No	Yes	No	CATEGORY_NUMBER	ASC

Reference by List

Referenced by	Primary Key	Foreign Key
DATA_TYPE	CATEGORY_NUMBER CATEGORY	CATEGORY_NUMBER DATA_TYPE

Table Contact

Name:	Contact
Code:	CONTACT
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity CONTACT

Description

Contains all the persons who belongs to a data source.

Column List

Name	Code	Type	P	M
Contact Number	CONTACT_NUMBER	int	Yes	Yes
Contact Name	CONTACT_NAME	varchar(100)	No	No
Contact FirstName	CONTACT_FIRSTNAME	varchar(100)	No	No
Contact Tel	CONTACT_TEL	varchar(20)	No	No
Contact email	CONTACT_EMAIL	varchar(50)	No	No
Comments	COMMENTS	text	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Contact Number	int	0%	100%	0	Yes	Yes	No
Contact Name	varchar(100)	0%	100%	100	No	No	No
Contact FirstName	varchar(100)	0%	100%	100	No	No	No
Contact Tel	varchar(20)	0%	100%	20	No	No	No
Contact email	varchar(50)	0%	100%	50	No	No	No
Comments	text	0%	100%	0	No	No	No

Index List

Index Code	P	F	A	U	C	Column Code	Sort
CONTACT_PK	Yes	No	No	Yes	No	CONTACT_NUMBER	ASC

Reference by List

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Referenced by	Primary Key	Foreign Key
DATA_SOURCE	CONTACT_NUMBER CONTACT	CONTACT_NUMBER DATA_SOURCE

Table Country

Name:	Country
Code:	COUNTRY
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity COUNTRY

Description

Contains all the country of each sites

Column List

Name	Code	Type	P	M
Country Number	COUNTRY_NUMBER	int	Yes	Yes
Country Name	COUNTRY_NAME	varchar(50)	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Country Number	int	0%	100%	0	Yes	Yes	No
Country Name	varchar(50)	0%	100%	50	No	No	No

Index List

Index Code	P	F	A	U	C	Column Code	Sort
COUNTRY_PK	Yes	No	No	Yes	No	COUNTRY_NUMBER	ASC

Reference by List

Referenced by	Primary Key	Foreign Key
SITE	COUNTRY_NUMBER COUNTRY	COUNTRY_NUMBER SITE

Table Data source (ownership)

Name:	Data source (ownership)
Code:	DATA_SOURCE
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity DATA_SOURCE

Description

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Contains all the organism who are the ownership of all the data type. Example : « public administration », « ditty partner », « university »...

Column List

Name	Code	Type	P	M
DS Id	DS_ID	int	Yes	Yes
Contact Number	CONTACT_NUMBER	int	No	Yes
DS Name	DS_NAME	varchar(100)	No	No
Comments	COMMENTS	text	No	No

Fill List

Name	Type	Null	Distinc t	Length	M	U	F
DS Id	int	0%	100%	0	Yes	Yes	No
Contact Number	int	0%	100%	0	Yes	No	Yes
DS Name	varchar(100)	0%	100%	100	No	No	No
Comments	text	0%	100%	0	No	No	No

Column DS_NAME

Description

Example : « public administration », « ditty partner », « university »...

Index List

Index Code	P	F	A	U	C	Column Code	Sort
DATA_SOURCE_PK	Yes	No	No	Yes	No	DS_ID	ASC
IS_GIVEN_BY_FK	No	Yes	No	No	No	CONTACT_NUMBER	ASC

Reference to List

Primary Key	Reference to	Foreign Key
CONTACT_NUMBER CONTACT	CONTACT	CONTACT_NUMBER DATA_SOURCE

Reference by List

Referenced by	Primary Key	Foreign Key
GIVE	DS_ID DATA_SOURCE	DS_ID GIVE

Table Data type

Name:	Data type
Code:	DATA_TYPE
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity DATA_TYPE

Description

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Contains all the data types of each Category

Column List

Name	Code	Type	P	M
Category Number	CATEGORY_NUMBER	int	Yes	Yes
Data Type Number	DATA_TYPE_NUMBER	int	Yes	Yes
Type Unit number	TYPE_UNIT_NUMBER	int	No	Yes
Data Type Name	DATA_TYPE_NAME	varchar(200)	No	No
Comments	COMMENTS	text	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Category Number	int	0%	100%	0	Yes	No	Yes
Data Type Number	int	0%	100%	0	Yes	No	No
Type Unit number	int	0%	100%	0	Yes	No	Yes
Data Type Name	varchar(200)	0%	100%	200	No	No	No
Comments	text	0%	100%	0	No	No	No

Index List

Index Code	P	F	A	U	C	Column Code	Sort
DATA_TYPE_PK	Yes	No	No	Yes	No	CATEGORY_NUMBER	ASC
						DATA_TYPE_NUMBER	ASC
BELONGS_TO2_FK	No	Yes	No	No	No	CATEGORY_NUMBER	ASC
HAVE_FK	No	Yes	No	No	No	TYPE_UNIT_NUMBER	ASC

Reference to List

Primary Key	Reference to	Foreign Key
CATEGORY_NUMBER	CATEGORY	CATEGORY_NUMBER
CATEGORY		DATA_TYPE
TYPE_UNIT_NUMBER	UNIT	TYPE_UNIT_NUMBER
UNIT		DATA_TYPE

Reference by List

Referenced by	Primary Key	Foreign Key
TIME_SERIES	CATEGORY_NUMBER	CATEGORY_NUMBER
	DATA_TYPE_NUMBER	DATA_TYPE_NUMBER
	DATA_TYPE	TIME_SERIES
GIVE	CATEGORY_NUMBER	CATEGORY_NUMBER
	DATA_TYPE_NUMBER	DATA_TYPE_NUMBER
	DATA_TYPE	GIVE

Table Give

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Name:	Give
Code:	GIVE
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Association GIVE

Description

Establish the relation between the tables "Data type" and "Data source".

Column List

Name	Code	Type	P	M
Category Number	CATEGORY_NUMBER	int	Yes	Yes
Data Type Number	DATA_TYPE_NUMBER	int	Yes	Yes
DS Id	DS_ID	int	Yes	Yes

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Category Number	int	0%	100%	0	Yes	No	Yes
Data Type Number	int	0%	100%	0	Yes	No	Yes
DS Id	int	0%	100%	0	Yes	No	Yes

Index List

Index Code	P	F	A	U	C	Column Code	Sort
GIVE_PK	Yes	No	No	Yes	No	CATEGORY_NUMBER DATA_TYPE_NUMBER DS_ID	ASC ASC ASC
LIEN_25_FK	No	Yes	No	No	No	CATEGORY_NUMBER DATA_TYPE_NUMBER	ASC ASC
LIEN_26_FK	No	Yes	No	No	No	DS_ID	ASC

Reference to List

Primary Key	Reference to	Foreign Key
CATEGORY_NUMBER DATA_TYPE_NUMBER DATA_TYPE	DATA_TYPE	CATEGORY_NUMBER DATA_TYPE_NUMBER GIVE
DS_ID DATA_SOURCE	DATA_SOURCE	DS_ID GIVE

Table Measuring Station

Name:	Measuring Station
Code:	MEASURING_STATION

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Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity MEASURING_STATION

Description

Contains all the measuring station which provides data from a site

Column List

Name	Code	Type	P	M
Measuring station ID	MEASURING_STATION_ID	int	Yes	Yes
Coordinate Number	COORDINATE_NUMBER	int	No	Yes
Site Number	SITE_NUMBER	int	No	Yes
Measuring Station Name	MEASURING_STATION_NAME	varchar(100)	No	No
Comments	COMMENTS	text	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Measuring station ID	int	0%	100%	0	Yes	Yes	No
Coordinate Number	int	0%	100%	0	Yes	No	Yes
Site Number	int	0%	100%	0	Yes	No	Yes
Measuring Station Name	varchar(100)	0%	100%	100	No	No	No
Comments	text	0%	100%	0	No	No	No

Index List

Index Code	P	F	A	U	C	Column Code	Sort
MEASURING_STATION_PK	Yes	No	No	Yes	No	MEASURING_STATION_ID	ASC
IS_LOCATED_FK	No	Yes	No	No	No	COORDINATE_NUMBER	ASC
MEASURE_FK	No	Yes	No	No	No	SITE_NUMBER	ASC

Reference to List

Primary Key	Reference to	Foreign Key
COORDINATE_NUMBER	PLACE_COORDINATES	COORDINATE_NUMBER
PLACE_COORDINATES		MEASURING_STATION
SITE_NUMBER	SITE	SITE_NUMBER
SITE		MEASURING_STATION

Reference by List

Referenced by	Primary Key	Foreign Key
TIME_SERIES	MEASURING_STATION_ID	MEASURING_STATION_ID
	MEASURING_STATION	TIME_SERIES

Table Place coordinates

Name:	Place coordinates
Code:	PLACE_COORDINATES

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Label: Owner: Number: PK constraint: Source: Entity ENT_137
--

Description

Contains all the co-ordinates of each measuring station with 3 co-ordinates : X,W,Z

Column List

Name	Code	Type	P	M
Coordinate Number	COORDINATE_NUMBER	int	Yes	Yes
CoordinateX	COORDINATEX	float	No	No
CoordinateY	COORDINATEY	float	No	No
CoordinateZ	COORDINATEZ	float	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Coordinate Number	int	0%	100%	0	Yes	Yes	No
CoordinateX	float	0%	100%	0	No	No	No
CoordinateY	float	0%	100%	0	No	No	No
CoordinateZ	float	0%	100%	0	No	No	No

Column COORDINATEX

COORDINATEX between -90 and 90

Check

Domain: Low Value: -90 High Value: 90 Default Value: Unit: deg dec Format: Uppercase: No Lowercase: No Can't modify: No List of Values:
--

Description

Latitude in decimal degrees

Column COORDINATEY

COORDINATEY between -179.999999 and 180

Check

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Domain:				
Low Value:	-179.999999			
High Value:	180			
Default Value:				
Unit:	deg dec			
Format:				
Uppercase:	No	Lowercase:	No	Can't modify: No
List of Values:				

Description

longitude in decimal degrees

Column COORDINATEZ

COORDINATEZ between -500 and 9000

Check

Domain:				
Low Value:	-500			
High Value:	9000			
Default Value:				
Unit:	meters			
Format:				
Uppercase:	No	Lowercase:	No	Can't modify: No
List of Values:				

Description

Altitude in meters

Index List

Index Code	P	F	A	U	C	Column Code	Sort
ENT_137_PK	Yes	No	No	Yes	No	COORDINATE_NUMBER	ASC

Reference by List

Referenced by	Primary Key	Foreign Key
MEASURING_STATION	COORDINATE_NUMBER PLACE_COORDINATES	COORDINATE_NUMBER MEASURING_STATION

Table Site

Name:	Site
Code:	SITE
Label:	
Owner:	
Number:	
PK constraint:	

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Source:	Entity SITE
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Description

Contains all the studied sites

Column List

Name	Code	Type	P	M
Site Number	SITE_NUMBER	int	Yes	Yes
Country Number	COUNTRY_NUMBER	int	No	Yes
Site Name	SITE_NAME	varchar(50)	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Site Number	int	0%	100%	0	Yes	Yes	No
Country Number	int	0%	100%	0	Yes	No	Yes
Site Name	varchar(50)	0%	100%	50	No	No	No

Column SITE_NAME

Description

All the different sites are : « Etang de thau », « Gulf of Gera », « Mar Menor », « Ria Formosa », « Sacca di Goro »

Index List

Index Code	P	F	A	U	C	Column Code	Sort
SITE_PK	Yes	No	No	Yes	No	SITE_NUMBER	ASC
BELONGS_TO_FK	No	Yes	No	No	No	COUNTRY_NUMBER	ASC
						ER	

Reference to List

Primary Key	Reference to	Foreign Key
COUNTRY_NUMBER	COUNTRY	COUNTRY_NUMBER
COUNTRY		SITE

Reference by List

Referenced by	Primary Key	Foreign Key
MEASURING_STATION	SITE_NUMBER	SITE_NUMBER
	SITE	MEASURING_STATION

Table Time Series

Name:	Time Series
Code:	TIME_SERIES
Label:	
Owner:	
Number:	
PK constraint:	

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Source:	Entity TIME_SERIES
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Description

Contains all the times series which were crated for a measuring station, a data type, and a starting date which have a frequency of sampling and, or a different end date

Column List

Name	Code	Type	P	M
TS ID	TS_ID	int	Yes	Yes
Category Number	CATEGORY_NUMBER	int	No	Yes
Data Type Number	DATA_TYPE_NUMBER	int	No	Yes
Measuring station ID	MEASURING_STATION_ID	int	No	Yes
End Date	END_DATE	datetime	No	No
Frequency	FREQUENCY	varchar(50)	No	No
Comments	COMMENTS	text	No	Yes

Fill List

Name	Type	Null	Distinc t	Length	M	U	F
TS ID	int	0%	100%	0	Yes	Yes	No
Category Number	int	0%	100%	0	Yes	No	Yes
Data Type Number	int	0%	100%	0	Yes	No	Yes
Measuring station ID	int	0%	100%	0	Yes	No	Yes
End Date	datetime	0%	100%	0	No	No	No
Frequency	varchar(50)	0%	100%	50	No	No	No
Comments	text	0%	100%	0	Yes	No	No

Column FREQUENCY

Description

The frequency of sampling could be for example monthly, semi-annual (semestrial), daily, decadal.... For example 12 values or data will be feed in the "value" table if the frequency on "time series" table is monthly.

Index List

Index Code	P	F	A	U	C	Column Code	Sort
TIME_SERIES_PK	Yes	No	No	Yes	No	TS_ID	ASC
CORRESPOND2_FK	No	Yes	No	No	No	CATEGORY_NUMBER	ASC
						DATA_TYPE_NUMBER	ASC
CORRESPOND1_FK	No	Yes	No	No	No	MEASURING_STATION_ID	ASC

Reference to List

Primary Key	Reference to	Foreign Key
MEASURING_STATION_ID	MEASURING_STATION	MEASURING_STATION_ID
MEASURING_STATION		TIME_SERIES

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Primary Key	Reference to	Foreign Key
CATEGORY_NUMBER DATA_TYPE_NUMBER DATA_TYPE	DATA_TYPE	CATEGORY_NUMBER DATA_TYPE_NUMBER TIME_SERIES

Reference by List

Referenced by	Primary Key	Foreign Key
VALUE	TS_ID TIME_SERIES	TS_ID VALUE

Table Unit

Name:	Unit
Code:	UNIT
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity UNIT

Description

Contains all the different units for all the couple "category - Data type"

Column List

Name	Code	Type	P	M
Type Unit number	TYPE_UNIT_NUMBER	int	Yes	Yes
Type Unit name	TYPE_UNIT_NAME	varchar(50)	No	No
Unit	UNIT	varchar(20)	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
Type Unit number	int	0%	100%	0	Yes	Yes	No
Type Unit name	varchar(50)	0%	100%	50	No	No	No
Unit	varchar(20)	0%	100%	20	No	No	No

Column TYPE_UNIT_NAME

Description

Example : duration, distance...

Column UNIT

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Description

Example : m, km, s, mn, h

Index List

Index Code	P	F	A	U	C	Column Code	Sort
UNIT_PK	Yes	No	No	Yes	No	TYPE_UNIT_NUMBER	ASC

Reference by List

Referenced by	Primary Key	Foreign Key
DATA_TYPE	TYPE_UNIT_NUMBER UNIT	TYPE_UNIT_NUMBER DATA_TYPE

Table Value

Name:	Value
Code:	VALUE
Label:	
Owner:	
Number:	
PK constraint:	
Source:	Entity VALUE

Description

Contains all the values for each time series.

Column List

Name	Code	Type	P	M
TS ID	TS_ID	int	Yes	Yes
Date	DATE	datetime	Yes	Yes
Value	VALUE	varchar(50)	No	No

Fill List

Name	Type	Null	Distinct	Length	M	U	F
TS ID	int	0%	100%	0	Yes	No	Yes
Date	datetime	0%	100%	0	Yes	No	No
Value	varchar(50)	0%	100%	50	No	No	No

Column TS_ID

Description

TS_ID is primary key with Date in this table. If a time serie that has a monthly rate sampling between the 01/01/03 and the 01/01/04, then we will have twelve lines in the « Value » table ranging in order of date.

We have had to create a key composed by two attributes because we would have had two values for the same date but corresponding at two different measuring station.

Column DATE

Description

If the rate of sampling of the time series is monthly, then we have to put a date in the date lines which corresponding at the average of all the value of the month. The date is inputted in this way :

- For a monthly rate sampling the date will be the first day of the month : ex : for January 2003 the date inputted will be : 01/01/03 at 0.00 AM, 02/01/03 at 0.00AM...

- For a daily rate sampling the date inputted will be the day where the data and the hour at 0. for example : 01/01/03 at 0.00AM , 01/02/03 at 0.00AM , 01/03/03 at 0.00AM

In fact we have to put the lower time step at its first values.

- For a decadal rate of sampling :

01/01/03 at 0.00AM for the average of the first ten days

01/10/03 at 0.00AM for the average of the next ten days

01/20/03 at 0.00AM for the average of the last days of the month.

Exception : if we have a frequency : "2 times per days" we have the solution to input the date of the day and input for the value the average of the two value, or we could input the exact hour, minute, seconds for each measure.

Index List

Index Code	P	F	A	U	C	Column Code	Sort
VALUE_PK	Yes	No	No	Yes	No	TS_ID	ASC
IS_COMPOSED_BY_FK	No	Yes	No	No	No	DATE TS_ID	ASC ASC

Reference to List

Primary Key	Reference to	Foreign Key
TS_ID TIME_SERIES	TIME_SERIES	TS_ID VALUE

References

Reference Belongs to

Name:	Belongs to		
Code:	BELONGS_TO2		
Label:			
Parent:	CATEGORY		
Child:	DATA_TYPE		
Cardinality:	0, n		
Join:	CATEGORY	DATA_TYPE	
	CATEGORY_NUMBER	=	CATEGORY_NUMBER
	CATEGORY	=	DATA_TYPE
Modification rule for parent Table:	Restrict		
Deletion rule for parent Table:	Restrict		
Parent mandatory for the child Table:	Yes		
Change parent allowed for the child Table:	Yes		

Description

A data type belongs to a category

Reference belongs to2

Name:	belongs to2		
Code:	BELONGS_TO		
Label:			
Parent:	COUNTRY		
Child:	SITE		
Cardinality:	0, n		
Join:	COUNTRY	SITE	
	COUNTRY_NUMBER	=	COUNTRY_NUMBER
	COUNTRY	=	SITE
Modification rule for parent Table:	Restrict		
Deletion rule for parent Table:	Restrict		
Parent mandatory for the child Table:	Yes		
Change parent allowed for the child Table:	Yes		

Description

A site belongs to a country

Reference Correspond1

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Name:	Correspond1		
Code:	CORRESPOND1		
Label:			
Parent:	MEASURING_STATION		
Child:	TIME_SERIES		
Cardinality:	0, n		
Join:	MEASURING_STATION MEASURING_STATION_ID MEASURING_STATION	=	TIME_SERIES MEASURING_STATION_ID TIME_SERIES
Modification rule for parent Table:	Restrict		
Deletion rule for parent Table:	Restrict		
Parent mandatory for the child Table:	Yes		
Change parent allowed for the child Table:	Yes		

Description

A time series correspond to a measuring station, a data type and a starting date.

Reference Correspond2

Name:	Correspond2		
Code:	CORRESPOND2		
Label:			
Parent:	DATA_TYPE		
Child:	TIME_SERIES		
Cardinality:	0, n		
Join:	DATA_TYPE CATEGORY_NUMBER DATA_TYPE_NUMBER DATA_TYPE =	=	TIME_SERIES CATEGORY_NUMBER DATA_TYPE_NUMBER TIME_SERIES
Modification rule for parent Table:	Restrict		
Deletion rule for parent Table:	Restrict		
Parent mandatory for the child Table:	Yes		
Change parent allowed for the child Table:	Yes		

Description

A time series correspond to a measuring station, a data type and a starting date.

Reference Give

Name:	Give
--------------	------

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Code:	GIVE		
Label:			
Parent:	DATA_TYPE		
Child:	GIVE		
Cardinality:	0, n		
Join:	DATA_TYPE	GIVE	
	CATEGORY_NUMBER	=	CATEGORY_NUMBER
	DATA_TYPE_NUMBER	=	DATA_TYPE_NUMBER
	DATA_TYPE =	GIVE	
Modification rule for parent Table:	Restrict		
Deletion rule for parent Table:	Restrict		
Parent mandatory for the child Table:	Yes		
Change parent allowed for the child Table:	Yes		

Description

All the values of a data type is given by several data sources or none. A data source could be for example : « public administration », « ditty partner », « university »...

Reference Give

Name:	Give		
Code:	GIVE2		
Label:			
Parent:	DATA_SOURCE		
Child:	GIVE		
Cardinality:	0, n		
Join:	DATA_SOURCE	GIVE	
	DS_ID =	DS_ID	
	DATA_SOURCE =	GIVE	
Modification rule for parent Table:	Restrict		
Deletion rule for parent Table:	Restrict		
Parent mandatory for the child Table:	Yes		
Change parent allowed for the child Table:	Yes		

Description

All the values of a data type is given by several data sources or none. A data source could be for example : « public administration », « ditty partner », « university »...

Reference Have

Name:	Have		
Code:	HAVE		

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Label:		
Parent:	UNIT	
Child:	DATA_TYPE	
Cardinality:	0, n	
Join:	UNIT	DATA_TYPE
	TYPE_UNIT_NUMBER	= TYPE_UNIT_NUMBER
	UNIT	= DATA_TYPE
Modification rule for parent Table:		Restrict
Deletion rule for parent Table:		Restrict
Parent mandatory for the child Table:		Yes
Change parent allowed for the child Table:		Yes

Description

All the data type have a unit. For example for the data type « Speed of current » the unit type will be the speed, and the unit will be m.s-1.

Reference is composed by

Name:	is composed by	
Code:	IS_COMPOSED_BY	
Label:		
Parent:	TIME_SERIES	
Child:	VALUE	
Cardinality:	0, n	
Join:	TIME_SERIES	VALUE
	TS_ID	= TS_ID
	TIME_SERIES	= VALUE
Modification rule for parent Table:		Restrict
Deletion rule for parent Table:		Restrict
Parent mandatory for the child Table:		Yes
Change parent allowed for the child Table:		Yes

Description

A time series is composed by several value

Reference is given by

Name:	is given by
Code:	IS_GIVEN_BY
Label:	
Parent:	CONTACT

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Child:	DATA_SOURCE	
Cardinality:	0, n	
Join:	CONTACT CONTACT_NUMBER CONTACT =	DATA_SOURCE = CONTACT_NUMBER DATA_SOURCE
Modification rule for parent Table:		Restrict
Deletion rule for parent Table:		Restrict
Parent mandatory for the child Table:		Yes
Change parent allowed for the child Table:		Yes

Description

A contact is characterised by a name, an e-mail... A contact belongs to a data Source. For example M. Martin(table Contact) who belongs to University(table data source) have given all the values of the inorganic carbon (table Data type)of lagoon system data sediment data (table Category).

Reference Is located2

Name:	Is located2	
Code:	IS_LOCATED2	
Label:		
Parent:	PLACE_COORDINATES	
Child:	MEASURING_STATION	
Cardinality:	0, 1	
Join:	PLACE_COORDINATES COORDINATE_NUMBER PLACE_COORDINATES	MEASURING_STATION = COORDINATE_NUMBER = MEASURING_STATION
Modification rule for parent Table:		Restrict
Deletion rule for parent Table:		Restrict
Parent mandatory for the child Table:		Yes
Change parent allowed for the child Table:		Yes

Description

A measuring station is located with three co-ordinates X,Y,Z. A triplet (X,Y,Z) don't locate necessarily a site measuring.

Reference Measure

Name:	Measure
Code:	MEASURE
Label:	
Parent:	SITE

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Child:	MEASURING_STATION	
Cardinality:	0, n	
Join:	SITE	MEASURING_STATION
	SITE_NUMBER =	SITE_NUMBER
	SITE =	MEASURING_STATION
Modification rule for parent Table:		Restrict
Deletion rule for parent Table:		Restrict
Parent mandatory for the child Table:		Yes
Change parent allowed for the child Table:		Yes

Description

A measure station measure data of one and one site

Triggers

Trigger List

Table	Trigger	User-Defined
MEASURING_STATION	ti_measuring_station	No

Trigger ti_measuring_station

Name:	Measuring Station
Code:	MEASURING_STATION
Trigger:	ti_measuring_station
Type:	InsertTrigger default trigger

Trigger Code

```

/* Trigger "ti_measuring_station" Insert control for "MEASURING_STATION" table */
create trigger ti_measuring_station on MEASURING_STATION for insert as
begin
    declare
        @maxcard int,
        @numrows int,
        @numnull int,
        @errno int,
        @errmsg varchar(255)

    select @numrows = @@rowcount
    if @numrows = 0
        return

    /* "PLACE_COORDINATES" code must exists for the "MEASURING_STATION" creation */
    if update(COORDINATE_NUMBER)
    begin
        if (select count(*)
            from PLACE_COORDINATES t1, inserted t2
            where t1.COORDINATE_NUMBER = t2.COORDINATE_NUMBER) != @numrows
        begin
            select @errno = 30002,
                @errmsg = 'Code de "PLACE_COORDINATES" inconnu. Cr,ation de "MEASURING_STATION"
interdite.'
            goto error
        end
    end

    /* "SITE" must exists for the "MEASURING_STATION" creation */
    if update(SITE_NUMBER)
    begin
        if (select count(*)
            from SITE t1, inserted t2
            where t1.SITE_NUMBER = t2.SITE_NUMBER) != @numrows
        begin
            select @errno = 30002,
                @errmsg = 'Code de "SITE" inconnu. Cr,ation de "MEASURING_STATION" interdite.'
            goto error
        end
    end
end

```

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```
end

/* the cardinality of a father "PLACE_COORDINATES" on a sun "MEASURING_STATION" can't be
bigger than 1 */
if update(COORDINATE_NUMBER)
begin
select @maxcard = (select count(*)
from MEASURING_STATION old
where ins.COORDINATE_NUMBER = old.COORDINATE_NUMBER)
from inserted ins
where ins.COORDINATE_NUMBER is not null
group by ins.COORDINATE_NUMBER
order by 1
if @maxcard > 1
begin
select @errno = 30007,
@errmsg = 'Cardinalit, maximale d'un pŠre d,pass,e!. Cr,ation de "MEASURING_STATION"
interdite.'
goto error
end
end

return

/* Gestion d'erreurs */
error:
raiserror @errno @errmsg
rollback transaction
end
go
```