

Information modeling

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Chapter 1

Introduction

This extension to 2c8 Modeling Tool lets you create information models and concept models. You can reuse existing objects from the standard models to describe their information content or use completely new entities that only exist in the information models and concept models.

Chapter 2

Creating models

When the extension is installed you will see a new group in the model navigator called »Information models«. The group contains the new model types »Information model« and »Concept model«. You create new models in the same way you create standard models.

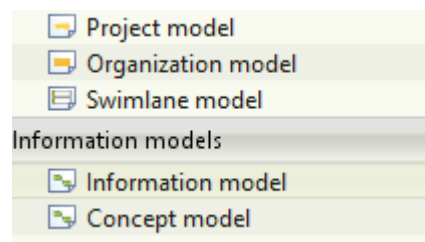


Figure 2.1 New model types in the navigator

The information models are edited in the same way as standard models and you can use all of the objects available in the standard models in information models as well. The placed symbols will however have a different appearance in the information models. The appearance of the object in other standard models is not affected and you can therefore reuse objects from other business models in the information models.

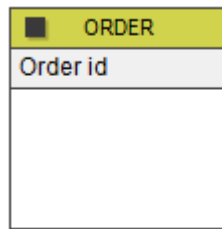


Figure 2.2 Business object in an information model

A few objects from the standard models are generally used to annotate the model in some way and not as information bearing entities. These object types cannot be used as entities in an information model. The types are:

- Problem
- Possibility
- Risk
- Strength
- Weakness
- Text objekt
- Web component

Objects of these types will behave like in the standard models when placed in an information model.

Chapter 3

New object types

The extension provides a few new object types that are specific for the model type. The new types are gathered in the first object group when editing an information model.

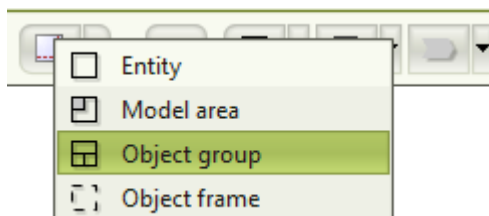


Figure 3.1 New object types

3.1 Entity

Use the object type »Entity« when you do not want to reuse objects from the standard models to describe entities in an information model. The objects will only be usable in information models and concept models and cannot be placed in other models. The symbols placed will not have the icon showing its object type.

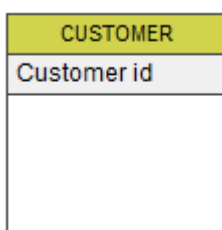


Figure 3.2 Entity in information model

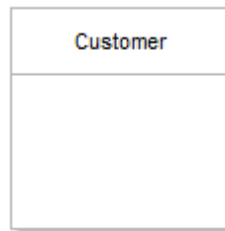


Figure 3.3 Entity in concept model

3.2 Model area

The model area is used to divide the model into areas where the content in different areas belong together in some way. The object type provides no additional functionality except the purely visual. This type is only usable in information models.

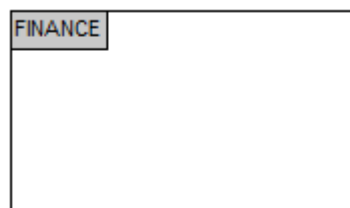


Figure 3.4 Model area

3.3 Object group

The object group is like the model area in that it provides only a visual division of the model content. The difference is that object groups are used to group objects into smaller groups where the contained objects have a strong connection to each other. This type is only usable in information models.

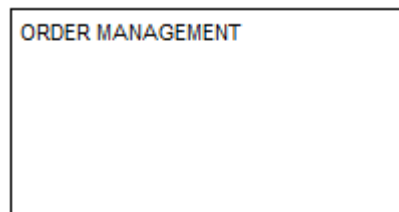


Figure 3.5 Object group

3.4 Object frame

The object frame makes it easier to visualize relations between entities. When a relation is needed from one entity to multiple others you can place the other entities in a frame and then draw the relation to the frame. This type is only usable in information models.

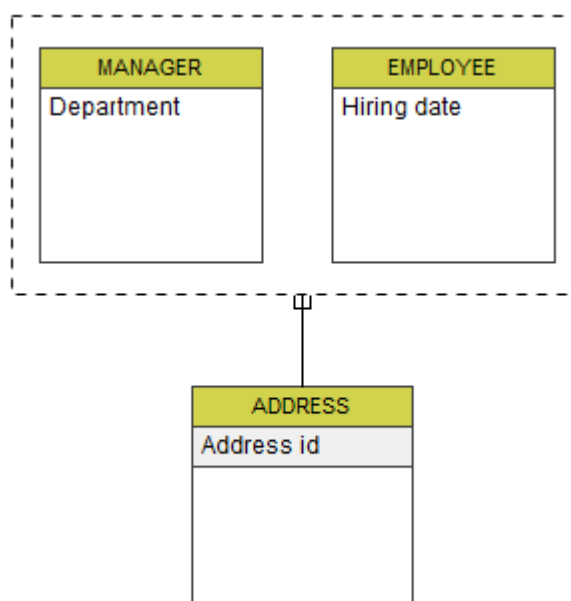


Figure 3.6 Object frame

Chapter 4

New relation types

The information model provides three new relation types and these are the only ones that can be used in information models.

4.1 One to one (1-1)

The relation type »One to one« is used when objects of type »A« can relate to no more than one object of type »B«, and the other way around.

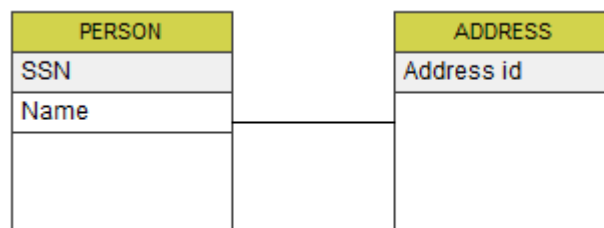


Figure 4.1 One to one

A person has an address and an address can only belong to one person. In a real example it could be possible for an address to belong to multiple persons, or for a person to have multiple addresses. The 1-1-relation is commonly used to divide information into multiple entities in cases where you could alternatively keep all information in one entity, i.e. let the person entity contain address information as well.

4.2 One to many (1-M)

The relation type »One to many« is used when objects of type »A« can relate to multiple objects of type »B« but objects of type »B« can only relate to one object of type »A«.

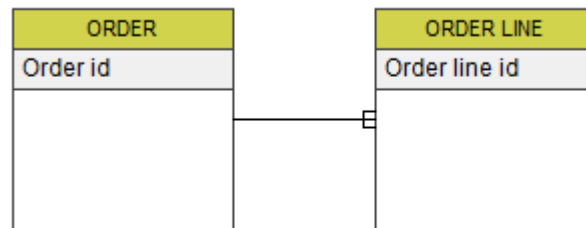


Figure 4.2 One to many

An order can have multiple order lines but an order line always belong to one specific order.

4.3 Many to many (M-M)

The relation type »Many to many« is used for entities where both types of entities can relate to multiple entities of the other type.

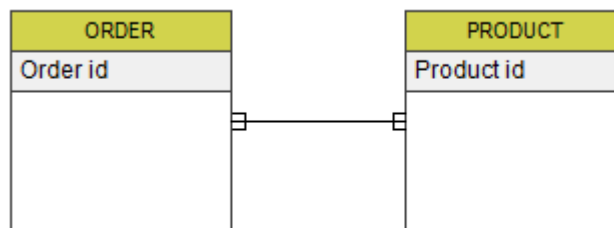


Figure 4.3 Many to many

An order can contain many products and likewise a product can belong to many orders.

4.4 Relation to

The relation type »Relation to« can only be used in concept models and is used when there is a relation between two concepts but the cardinality is not important.

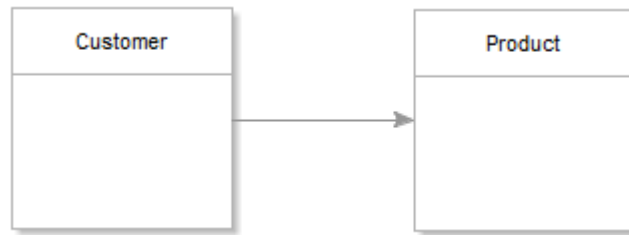


Figure 4.4 Relation to

Chapter 5

Model settings

To gain access to settings for an information model you right-click somewhere in the model and choose »Information model« or use the shortcut »Ctrl+Skift+M«. You can also double-click on the model to open the settings.

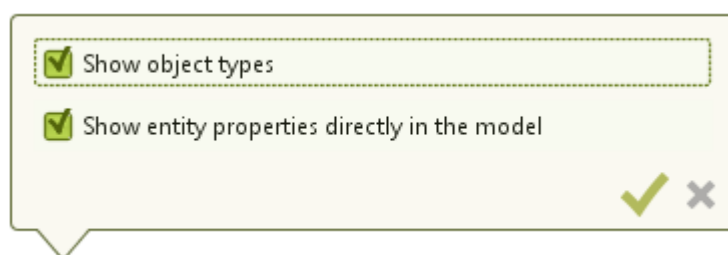


Figure 5.1 Settings for information models

By unchecking »Show object types« you can turn off the icons in the top left corner that shows the object types of the entities.

By unchecking »Show entity properties directly in the model« you can stop showing the entity properties visually in the model. The entities retains their properties but they are only visible in the entity settings.

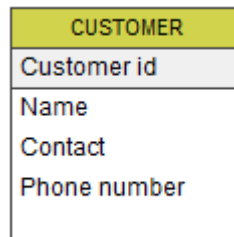


Figure 5.2 Entity with properties



Figure 5.3 Entity without properties

You can access the settings for concept models in the same way but they differ somewhat from the ones for information models.

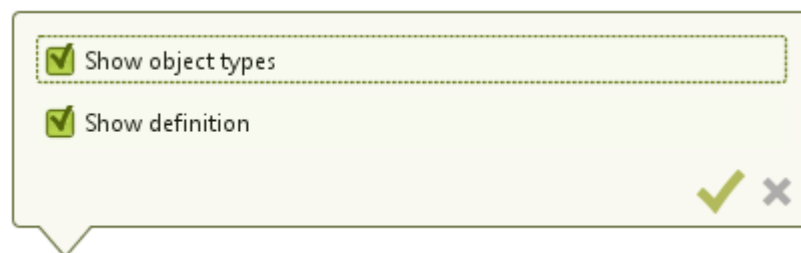


Figure 5.4 Settings for concept models

By unchecking »Show definition« you can alter the way the objects are rendered so that only the title is shown.

Chapter 6

Entity settings

To reach the settings for entities in information models you right-click on the object and choose »Entity« or use the shortcut »Ctrl+Skift+E«. You can also double-click the object to reach the settings.

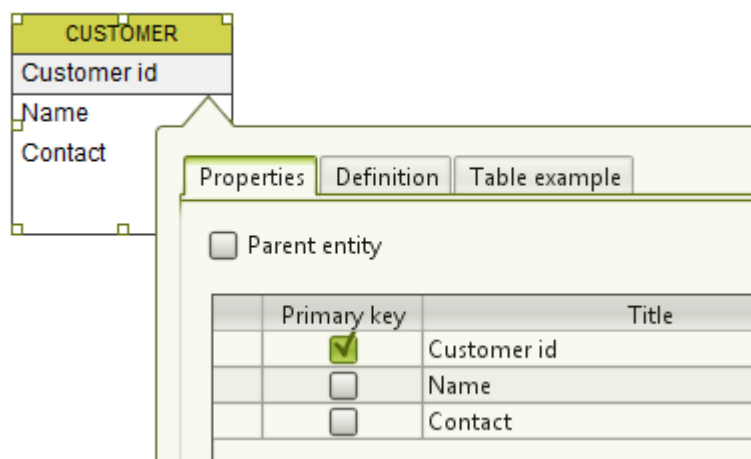
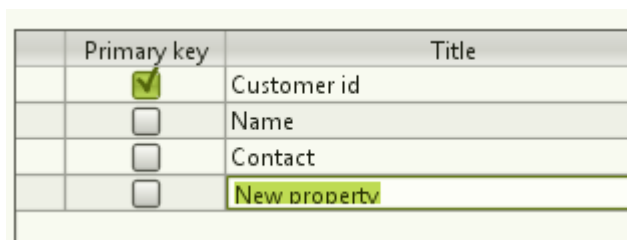


Figure 6.1 Settings for an entity

6.1 Entity properties

The information for an entity is made up of its properties and its relations to other entities. To add a new property on an entity you use the button to the right of the table, or the shortcut »Insert«. A new row will be added and you will go directly to the edit mode for the property name. Enter a name and press »Enter« to create the property. You can also add an optional definition that provides a short explanation of the purpose of the property.



Primary key	Title
<input checked="" type="checkbox"/>	Customer id
<input type="checkbox"/>	Name
<input type="checkbox"/>	Contact
<input type="checkbox"/>	New property

Figure 6.2 Adding a property

To edit existing properties you click the column you wish to edit, enter a new value and press »Enter«.

To remove properties you select the rows in the table by using the first (empty) column and then use the button to the right of the table or the shortcut »Delete«. You can also change the order of properties using the buttons below the table.

6.2 Primary keys

Each entity has a primary key that uniquely identifies an instance of the entity. It could be for example a social security number for a person. For new entities a primary key is automatically created from the entity name. The primary key is used together with foreign keys to create relations between entities (see [Table examples](#) and [Automatic foreign key generation](#)).

In some cases the primary key can consist of more than one property. In these cases an instance of the entity is uniquely identified by the combination of properties marked as part of the primary key.

6.3 Parent entities and inherited properties

The option »Parent entity« can be used to make the entity a »parent« for other entities. Other entities placed within the parent will inherit all properties from the parent entity.

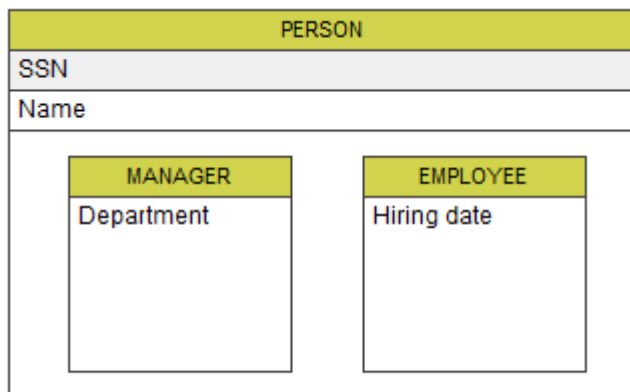


Figure 6.3 Parent entity

When you open the settings for an entity that inherits properties from another entity you can see these properties on the tab »Inherited properties«. You can see the property names and the entity they are inherited from but you cannot edit them in this view.

Properties	Inherited properties	Definition	Table example
		Title	
	SSN		Person
	Name		Person

Figure 6.4 Inherited properties

6.4 Foreign keys

When you draw relations between entity objects then foreign keys to the related entity's primary key will automatically be generated (see [Automatic foreign key generation](#)). When you open an entity that has foreign keys to another entity you can see these on the tab »Foreign keys«.

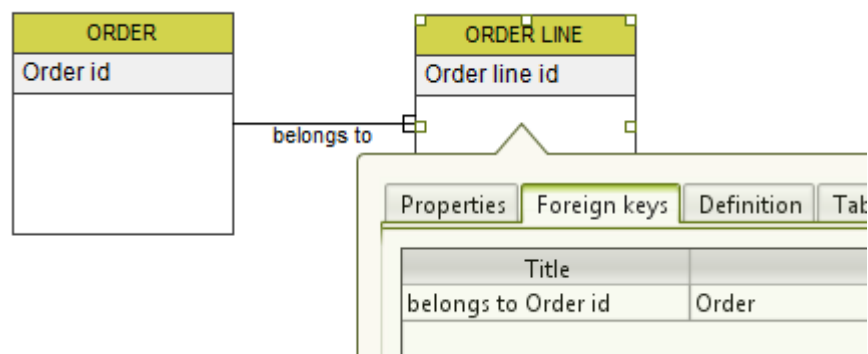


Figure 6.5 Foreign keys

6.5 Definition

You can add a definition for the entity itself in addition to the definitions for the entity properties. You do this on the tab »Definition«.

6.6 Table examples

To more clearly visualize the type of information contained in an entity you can create table examples. Table examples should not be used to keep current information but should instead be a small number of rows (instances) of the entity showing examples of the data they might hold and how they relate to each other.

	Order line id	Amount	contains Product id	belongs to Order id
1		17	PR-7564	ORDER-001
2		23	PR-0564	ORDER-001
3		12	PR-7564	ORDER-002

Figure 6.6 Table example for order lines

The table examples show all the properties for an entity. This includes properties, inherited properties ([Parent entities and inherited properties](#)) and foreign keys ([Foreign keys](#)).

Adding, removing and editing of table examples is done in the same way as for entity properties (see [Entity properties](#)). The exception is foreign keys where you get a drop-down with which you can choose

from the available primary keys created in the table example of the related entity.

Chapter 7

Relation settings

To reach the settings for a relation in an information model you right-click the relation and choose »Relation«, or use the shortcut »Ctrl+Shift+R«. You can also double-click the relation to reach the settings. The settings shown depends on the type of relation.

7.1 Required relations

For relations of type »One to one« and »One to many« you can choose if the relation should be required in either direction. A required side of the relation is marked with a short perpendicular line across the relation. The image below shows that an order line has to include a product but that a product does not necessarily belong to any order lines.

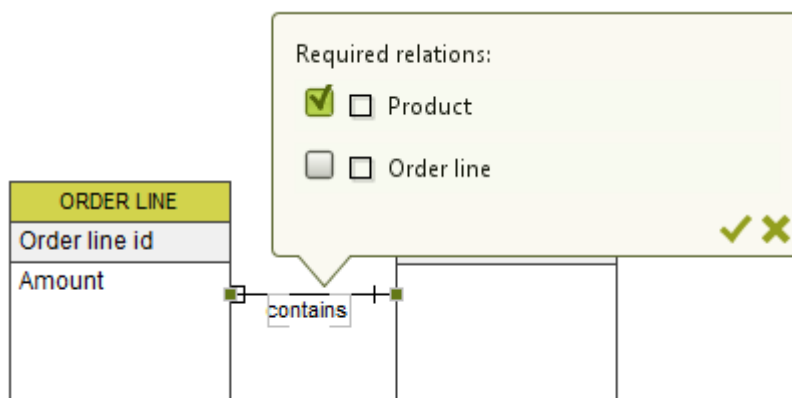


Figure 7.1 Required relations

One example of when both sides would be required is a person with a relation to an address. Multiple persons can have the same address and each person must have an address. Likewise an address has to belong to at least one person, otherwise we do no longer wish to keep the address in the system.

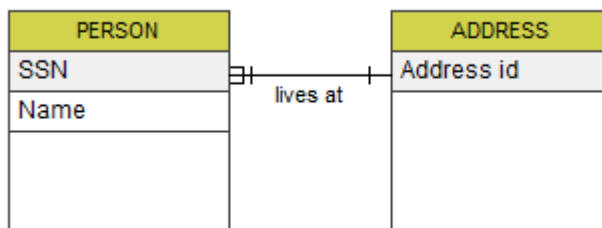


Figure 7.2 Required relations in both directions

7.2 Many to many (M-M)

For relations of the type »Many to many« both sides are always required. Each »instance« of the relation is a relation between two specific instances of the related entities. The »M-M-relation« instead has the same behavior as an entity in the sense that you can add properties to it and create table examples.

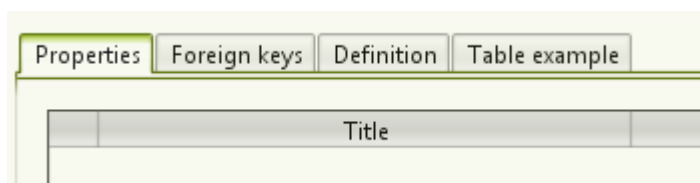


Figure 7.3 Settings for an M-M-relation

You can think of the »M-M-relation« as a visually simpler way to model two »1-M-relations«. We use the earlier example with order management as an example. We have orders and products and the content of the order is described with order lines.

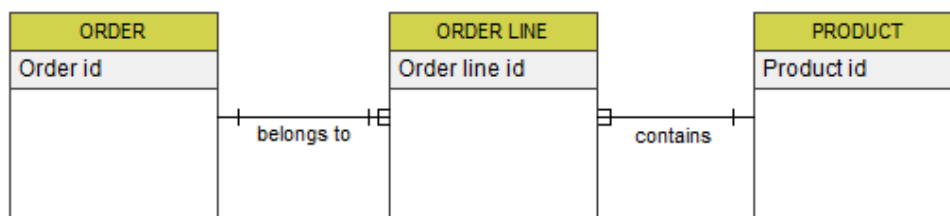


Figure 7.4 Order management with order lines

A simpler way to model the same information could be as a »M-M-relation« directly between order and product. The difference is that the properties of the order lines are no longer shown in the model but are instead contained in the relation. You can still add the same properties and the table examples will remain the same but the order lines will not be visual in the same way.

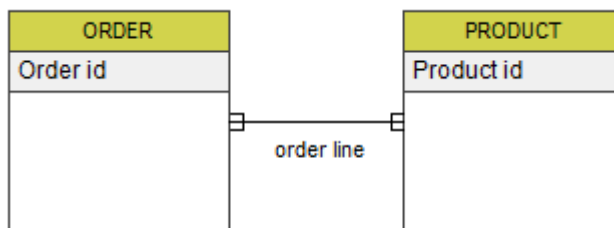


Figure 7.5 Order management without the order line as an entity

7.3 Automatic foreign key generation

When you create relations between entities in an information model foreign keys are automatically created. These are shown on the tab »Foreign keys« in the entity or relation settings. The placement of the keys depend on the type of relation and its direction.

For a »1-1-relation« the key is placed on the entity the relation starts from. For these types of relations the key can be placed on either entity and which one you choose depends on the application. If you wish to change the entity containing the key, right-click the relation and choose »Reverse direction«.

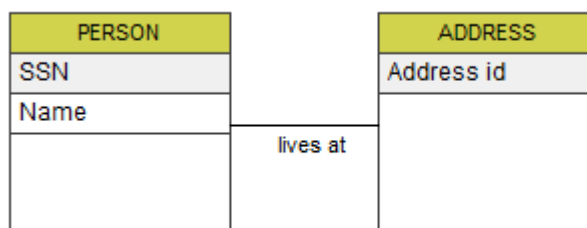


Figure 7.6 Person with 1-1-relation to address.



Figure 7.7 Key in the person entity pointing to the person's address.

For a »1-M-relation« the key is placed on the »many«-side of the relation.

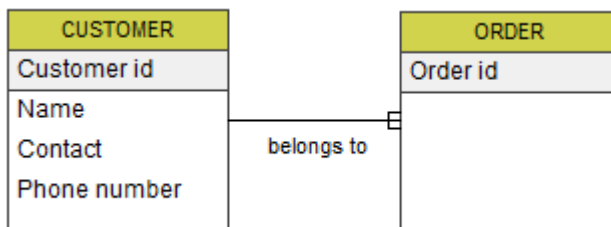


Figure 7.8 Customer with 1-M-relation to order.

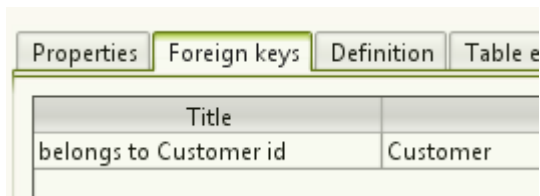


Figure 7.9 Key in the order entity pointing to the customer the order belongs to.

For a »M-M-relation« the keys are placed on the relation.

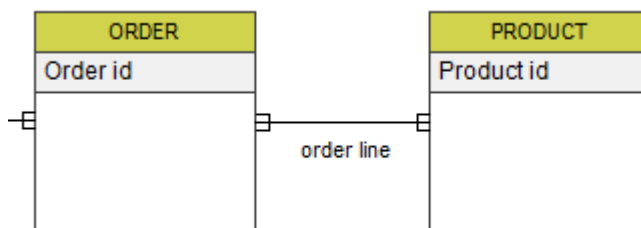


Figure 7.10 Order with M-M-relation to product.

The screenshot shows a software interface with a 'Foreign keys' tab selected. Below the tab is a table with two columns: 'Title' and 'Tab'. The table contains two rows of data.

Title	Tab
Order id	Order
Product id	Product

Figure 7.11 Keys on the relation describing an order line.

The names of the foreign keys are generated from any text on the relation and the name of the primary keys they refer to. The exception from this is the »M-M-relation« where only the primary key names are used.

Chapter 8

Publish

When publishing to the web there are three new fields that let you publish information from entities:

- Definition
- Properties
- Table examples

All these fields can be added to the panels in the same way as other fields in the web profile. The information will then be shown in the chosen panel when a symbol that is an entity is selected in an information model.

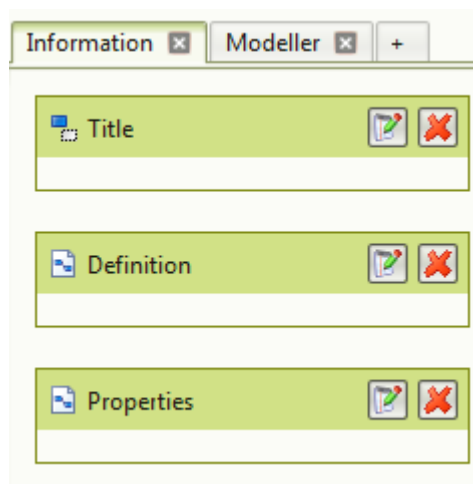


Figure 8.1 Definition and properties in the web profile.

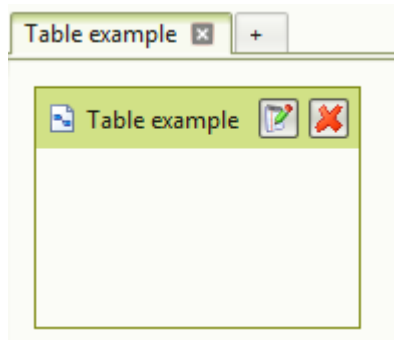


Figure 8.2 Table examples in the web profile.