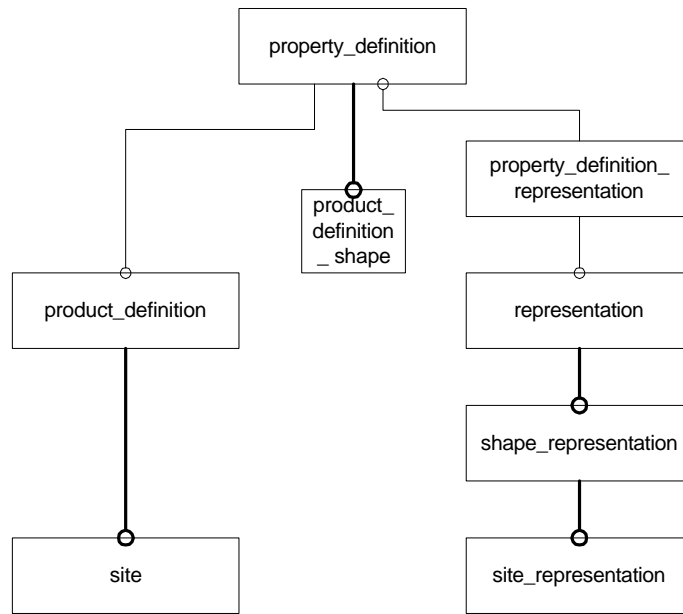


Typical example of Step shape_representation and relationship to product_definition

The example illustrates how STEP handles different types of products and their specific shape_representations, using the example of a site and its shape. The example taken from AP225. The following figure illustrates the basic data architecture. It has been simplified to better understand the underlying concepts. For example some attributes are missing.



A site is a subtype of product_definition. It has where rules among others to ensure, that its shape is always represented using the entity site_representation. On the other side, one has the entity site_representation with again rules, constraining the geometric elements which may participate. One local rule of the entity site_representation specifies, that it may only be used, to represent the shape of a site.

What are the advantages of this approach?

- It is adaptable and extensible to many kinds of products. As you get more products with new specific shape representations, one can plug in new subtypes of product_definition and of shape_representation.
- There is a clear separation of the definition of the product and its shape representation as a property.
- Since all constraints concerning the specific shape representation of specific product_definitions (obviously the equivalent of IFC objects) are represented in the Express, part 21 exchange files can be checked for conformance with the Express. There exist standard tools for this task such as EXPRESSO and ECCO.

The IAI has adopted the STEP entity shape_representation but not its underlying concepts.

The IAI equivalent to STEP shape_representation has also got additional optional attributes RepresentationIdentifier and RepresentationType which do not show up in the STEP entity. Obviously the latter to some very limited extend is intended to

distinguish between the different types of shape representation. In STEP we do this by among others subtyping and by adding where rules to the subtypes.

I have explained this point already two times, one time as a review of IFC 2.0 and then, in considerable detail, at the joint STEP/IAI workshop in Munich August 1998 – obviously both times without any result. I am still convinced that, in this respect, the STEP concept is superior to the IAI approach.

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