Flow of Events for Use Case – Place 2D Spatial Shape

Change Log	
09/06/2004	Created
30/10/2004	Finalized for pre-integrated model

Overview

This is a general use case that is used for all situations where a 2D spatial shape representation is required. That is, it can be used in geographic information for the specification of construction footprints, external spaces within a land parcel or on a construction site, land parcels, and other geographic spaces.The specification of shape is regardless of whether adjoining shapes have contiguous (shared) boundary entities or are allowed to overlap.

The specification for shape representation is derived directly from the specification of the shape of IfcSite contained in the IFC 2x2 documentation set.

Process

Preconditions

None

Actors

Authority (for base map or situation map)
Applicant (for situation plan)

Main Flow

Flow	Entity
1. Determine the placement of the spatial shape with reference to the overall coordinate system; this placement forming the datum for the local coordinate system of the spatial shape.	IfcObjectPlacement
2. Determine, progressively, the points that define the spatial shape.	
3. As each point is determined, a line or curve connecting it to the previous point is required. • Determine the type of curve to connect from the current point to the previous point • Create the line • Add the line to the set of lines that will form the boundary	
4. On completion of point specification, create an instance of the appropriate entity for which the specified shape is to be a shape representation	
5. The shape representation is one of the representations that can be defined through the inherited IfcProduct.ProductRepresentation (which can comprise a list of representations)	IfcProduct.ProductRepresentation
6. The 2D spatial shape may be geometrically described as a single 2D curve (such as IfcPolyline or IfcCompositeCurve), or by a list of 2D curves (in case of inner boundaries). The representation identifier is assigned according	IfcPolyline IfcCompositeCurve IfcShapeRepresentation.RepresentationIdentifier

	to the purpose of the shape (identified specifically in other use cases). This should be determined from a list of allowed purposes.	
7.	The type of the shape representation should be set using the attribute ‘RepresentationType’ such that IfcShapeRepresentation.RepresentationType = 'Curve2D' or 'GeometricCurveSet'	IfcShapeRepresentation.RepresentationType

Post Conditions

Spatial shape representation is created

IFC Usage and Extension Requirements

Existing Entity/Class Usage

Entity Class Name	*Usage*
IfcCompositeCurve	A geometric representation item
IfcObjectPlacement	Reference to the placement location of a product.
IfcPolyline	A geometric representation item
IfcProductRepresentation	Representations of a product
IfcShapeRepresentation	Representation identifier to be set according to purpose. Representation type set according to the form of product representation used.