

Flow of Events for Use Case – Define Footprint

Change Log	
09/09/2004	Created This use case replaces the previous use cases 'ProposeFootprint', 'ApproveFootprint' and 'FixFootprint'.
30/10/2004	Finalized for pre-integrated model

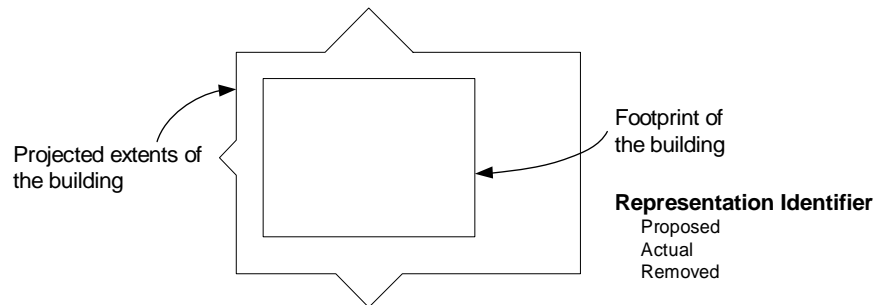
Overview

A 'footprint' is defined as the area that the construction is proposed to occupy at the point that it meets the ground.

This use case shows the area of ground that is either:

- put forward as being intended for a proposed construction,
- proposed as a modification of an existing construction,
- agreed (fixed) as the actual area for construction,
- used for an actual/completed construction,
- marks the area of a construction that has been removed

Note that this is not necessarily the same area as the projected 2D image of the extents of the building as discussed in 'Show Construction'.



Process

Preconditions

Initial preconditions

- Site and property boundary have been defined
- Allowed area has been specified

Later preconditions

- Footprint has been proposed and approved (for agreeing a proposed footprint)
- Construction work has been completed (for marking the footprint of an actual construction)

Actors

Applicant (for intended/proposed/used situations)

Authority (for agreed situation)

Main Flow

1. Determine whether a footprint is to be proposed (or modified), approved or fixed as part of an actual construction.
 - If proposed then <S1>
 - If to be approved then <S2>

- If to be fixed then

<S3>

Subflows

S1: Propose a footprint

Flow	Entity
1. Either <ul style="list-style-type: none"> • determine the placement of the construction with reference to the overall coordinate system; this placement forming the datum for the local coordinate system of the construction or, • determine an existing building whose footprint it is proposed to change. 	IfcBuilding <references to placement and particular geometry entities not shown here>
2. Determine, progressively, the points that define the footprint.	
3. As each point is determined, a line or curve connecting it to the previous point is required. <ul style="list-style-type: none"> • Determine the type of curve to connect from the current point to the previous point • Create the curve • Add the curve to the set of curves that will form the footprint 	
4. Specify the footprint as a shape representation that is one of the representations that can be defined through the inherited IfcProduct.ProductRepresentation (which can comprise a list of representations).	IfcProduct.ProductRepresentation <note that IfcBuilding is a subtype of IfcProduct and therefore inherits the ProductRepresentation attribute>
5. The footprint of the building 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).	
6. Set the representation identifier to IfcShapeRepresentation.RepresentationIdentifier = 'ProposedBuildingFootprint'	IfcShapeRepresentation.RepresentationIdentifier
7. On completion of point specification, if a new building is concerned create an instance of IfcBuilding to designate the construction	IfcBuilding

S2: Approve a proposed footprint

Flow	Entity
1. A footprint is a shape representation of an instance of IfcBuilding.	IfcBuilding
2. Approvals generally are applied using the IfcApproval which is applied via the IfcRelAssociatesApproval	IfcApproval IfcRelAssociatesApproval
3. Each approval has a name that can be set through the IfcApproval.Name attribute. This should be set to 'ApproveBuildingFootprint' or an equivalent agreed setting.	IfcApproval.Name

S3: Fix an actual footprint

Flow	Entity
1. Determine the construction (instance of	IfcBuilding

IfcBuilding) whose proposed footprint is to be fixed.	
2. Determine the shape representation that represents the 'ProposedBuildingFootprint'. This is achieved by determining the ShapeRepresentation whose RepresentationIdentifier attribute has this value.	IfcShapeRepresentation.RepresentationIdentifier
3. Make any changes to the footprint as necessary for it to become an actual building footprint.	
4. Change the value of the IfcShapeRepresentation.RepresentationIdentifier attribute to 'ActualBuildingFootprint'.	IfcShapeRepresentation.RepresentationIdentifier
5. Depending on requirements, approvals may be updated or deleted as necessary. Information on approvals may also be recorded in archive.	IfcApproval IfcRelAssociatesApproval

Post Conditions

Either

- A footprint for a new building is proposed
- A modified footprint is proposed for an existing building.
- The actual footprint of the building as constructed is part of the model and can participate in future planning requirements as an existing situation.

IFC Usage and Extension Requirements

Existing Entity/Class Usage

<i>Entity Class Name</i>	<i>Usage</i>
IfcApproval	Provides the approval to the footprint.
IfcBuilding	Identifies the construction of interest and has the shape representation of the footprint
IfcRelAssociatesApproval	Associates the approval to the construction whose footprint is to be approved.
IfcShapeRepresentation	The shape representation that defines the footprint of the construction.

Issue List

<i>Question</i>	<i>Answer</i>