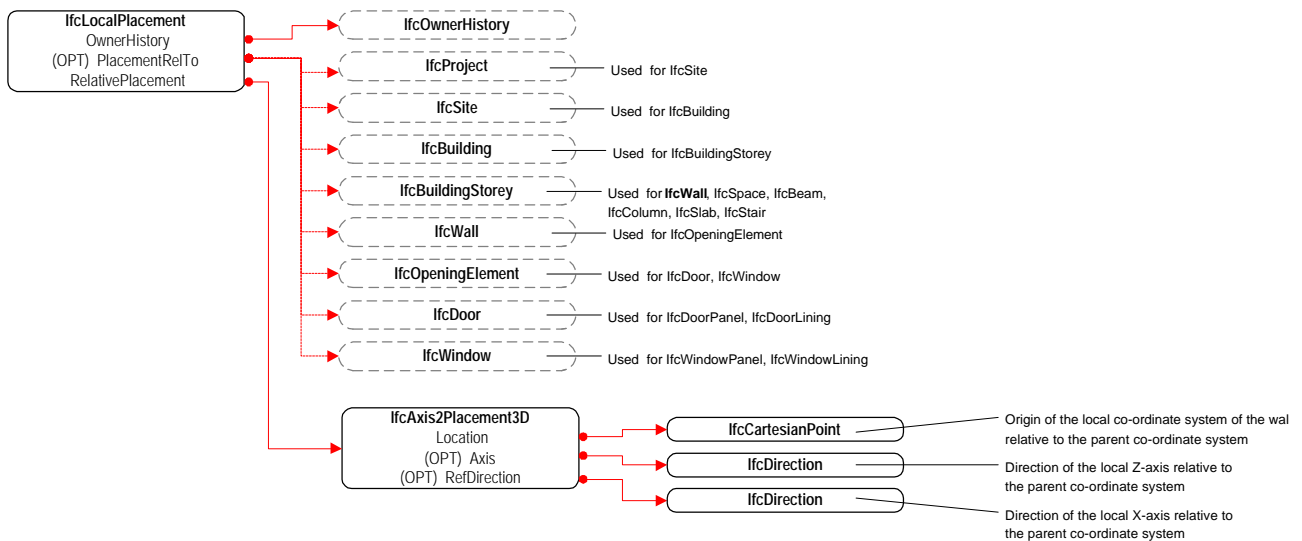


# Wall geometry in IFC R2.0

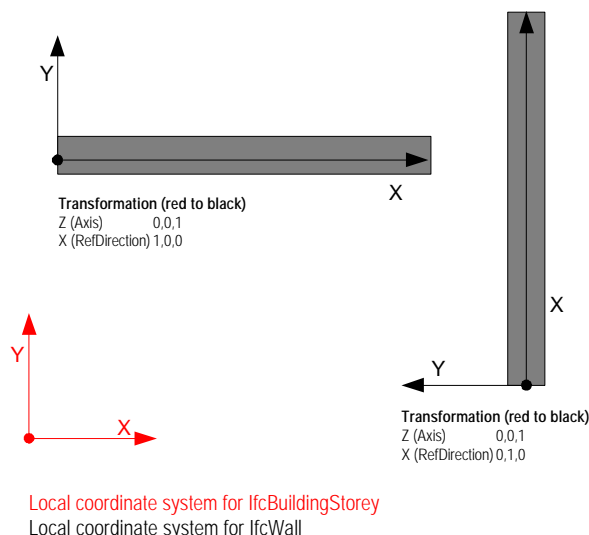
## DRAFT 1 – 07.11.1999

The IFC R2.0 documentation does not give a very clear and unambiguous definition for the wall geometry. The purpose of this paper is to clarify the geometry once and for all. Please forgive me if I go through things that may seem self-evident to you.

### Local placement

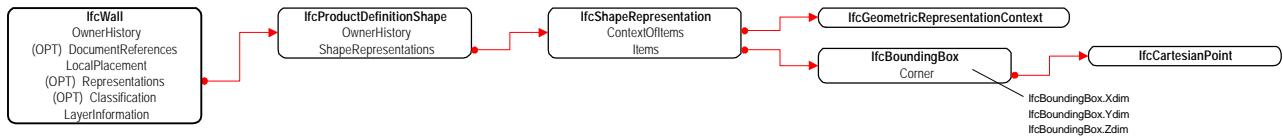


- The wall (IfcWall) is placed relative to the building storey (IfcBuildingStorey) object that contains the wall.
- The local placement of the wall is expressed in the coordinate system of the building storey.
- The wall does not have an explicit baseline object, but the baseline is implied in the wall definition. The origin of the wall's local placement is the start point of the wall baseline.
- The end of the baseline is on the positive X-axis of the wall's local coordinate system. The length of the wall is the distance between the wall's start and end point.

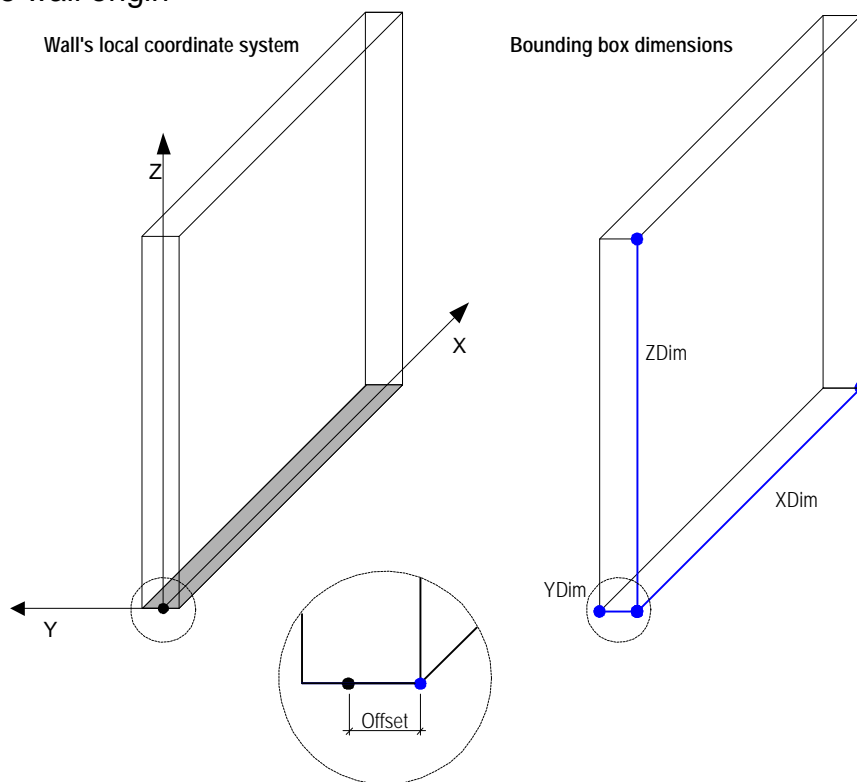


Local coordinate system for IfcBuildingStorey  
Local coordinate system for IfcWall

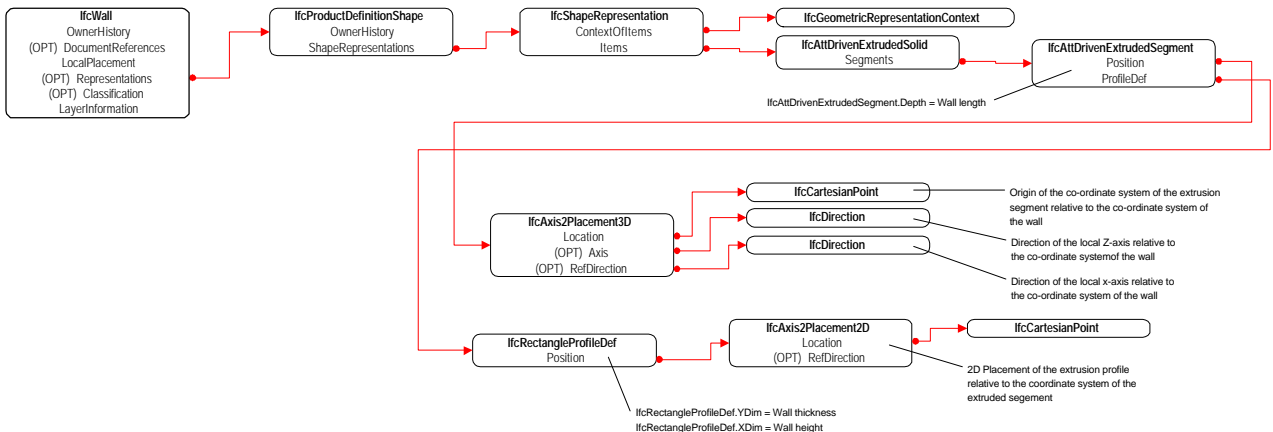
## Bounding Box



- The bounding box is placed relative to the wall's local placement
- The bounding box dimensions have to be positive
- For straight wall segments the following mapping applies
  - XDim = Wall length
  - YDIM = Wall thickness
  - ZDIM = Wall height
- The bounding box can have an offset from the wall origin, but uses the same coordinate directions as the wall. In most cases the bounding box will have an offset from the wall origin



## Standard geometric representation



- The standard geometric representation is done with an extruded solid (IfcAttDrivenExtrudedSolid). The wall dimensions are mapped to the following values:
  - Wall length = IfcAttDrivenExtrudedSegment.Depth
  - Wall height = IfcRectangleProfileDef.XDim
  - Wall thickness = IfcRectangleProfileDef.YDim
- The extruded segment is placed relative to the local placement of the wall
- To reach the mapping described above the coordinate system for the extruded segment has to be turned.
- To reach the mapping described above in most cases there has to be an offset between the wall's local coordinate system and the extruded segment's local coordinate system.

