

Topology based naming method

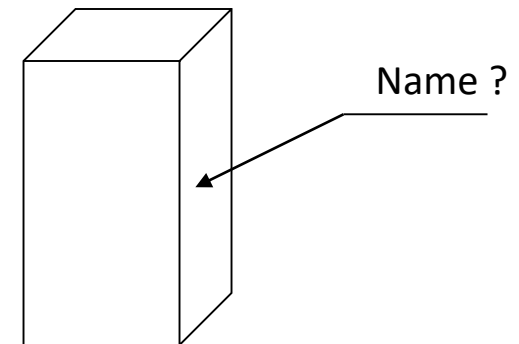
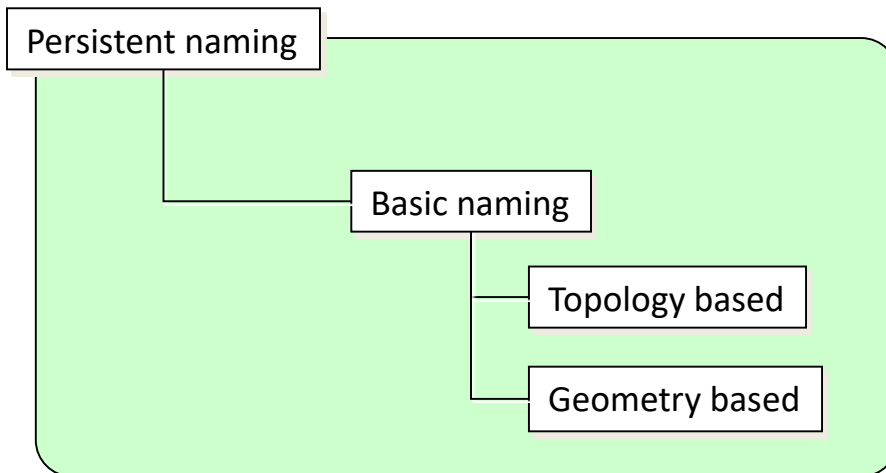
(Consistent Identification of Elements in Procedural Solid Modelling)

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Persistent naming

- Persistent naming :
 - The naming of shape entity internally created during the modeling process
 - To record user selected entity in the procedural modeling
 - One of the problems of the procedural modeling



Naming method?

- A similar example of the map system



40°44',29.29" N
73°59',44.96" W

136w, 20th st,
New York

18st-7Av

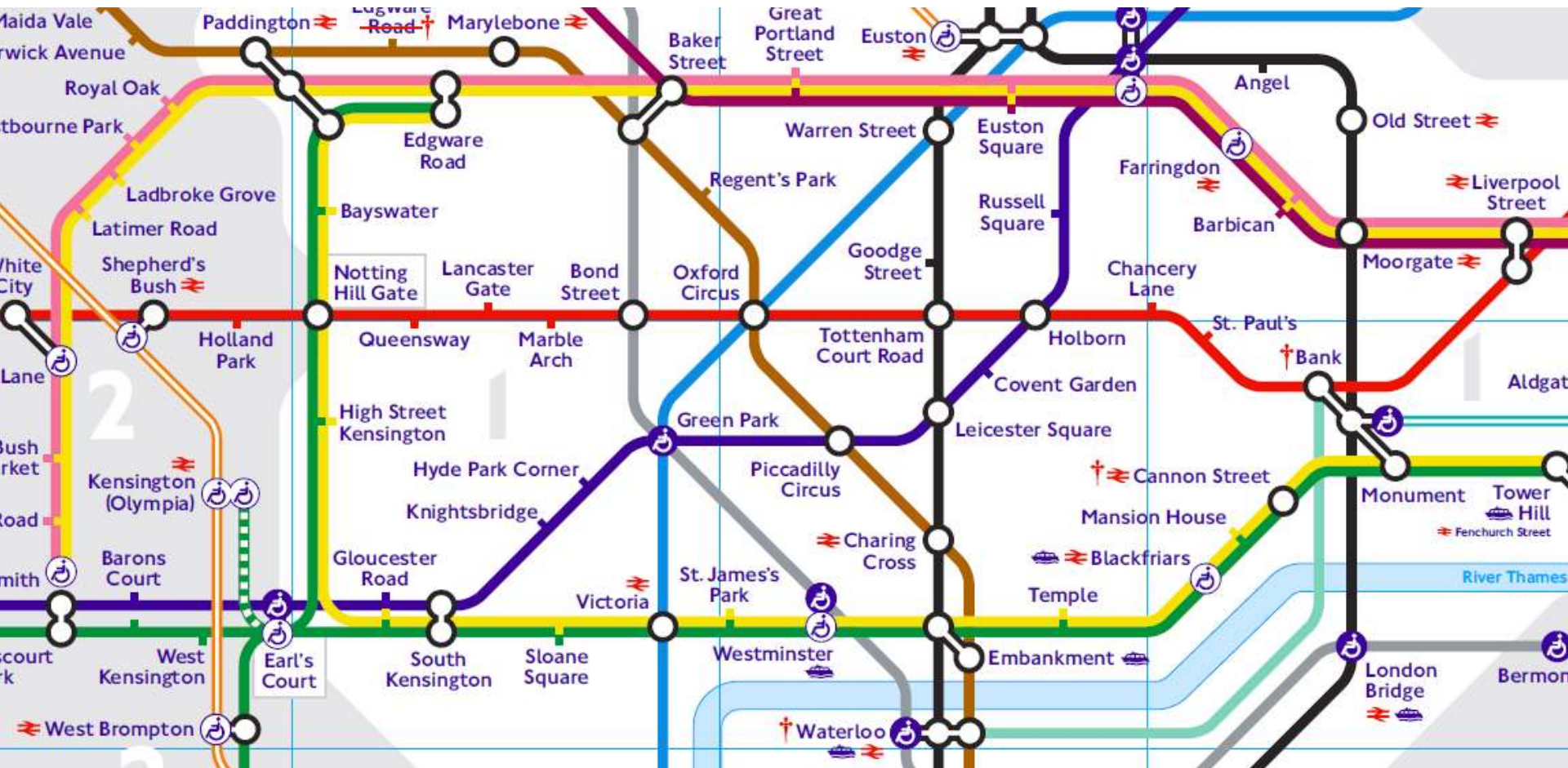
40°44',27.66" N
73°59',52.79" W

Topological naming

Geometric naming

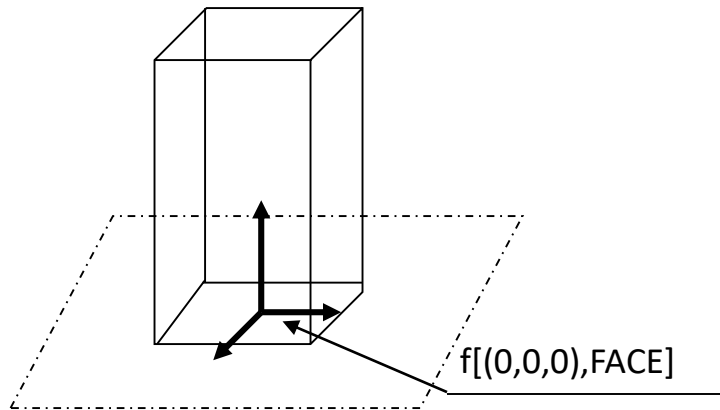
London Tube

- An example of topological naming system



Geometry based Persistent naming

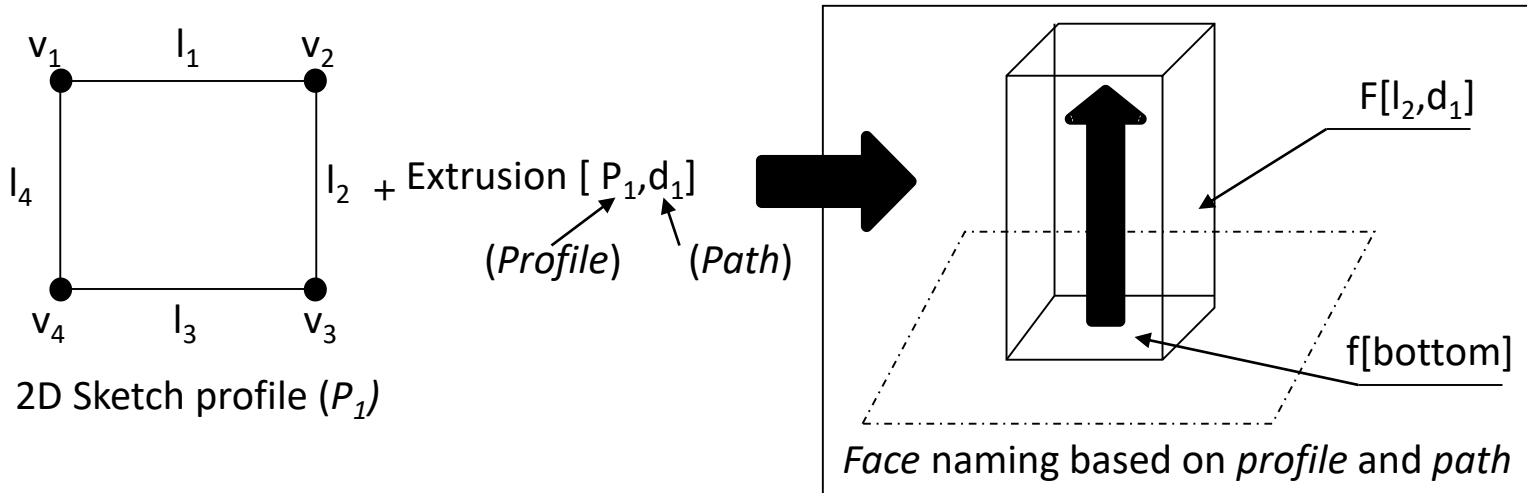
- Identification based on geometry
 - As is method in ISO 10303-55



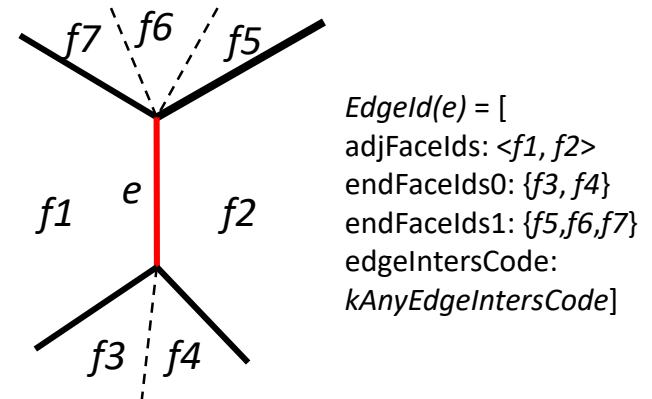
Basic naming using the entity type and coordinate

Topology based Persistent naming

- Identification based on topology
 - Proposed naming method
 - Profile sketch information and feature creation type(extrude path)

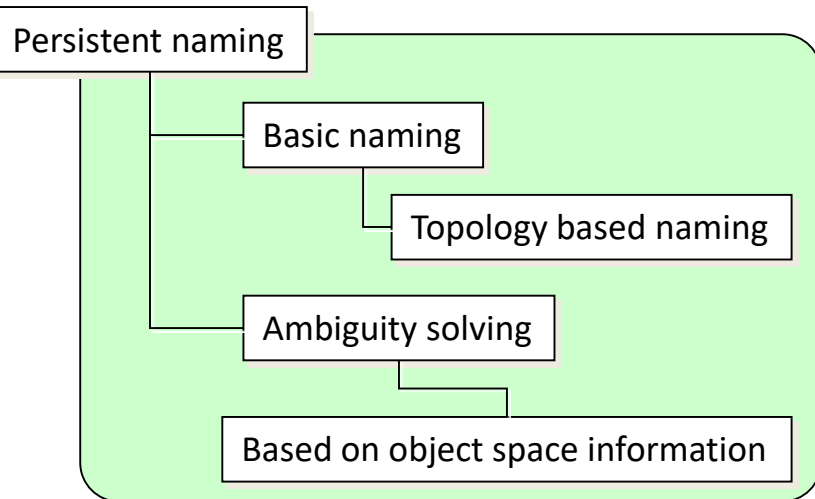


- Face name is the basis name.
 - Edge and vertex name is determined by face name



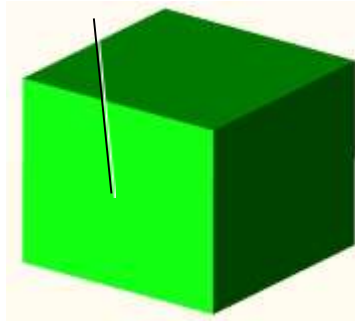
Edge naming with adjacent faces

Topology based naming



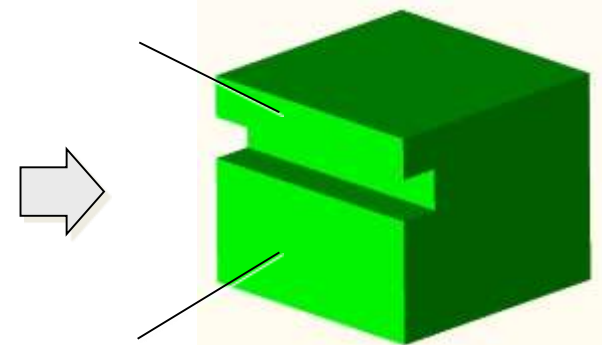
Basic Naming

[feat1,side1]

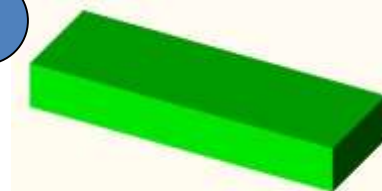


Ambiguity Solving

[feat1,side1], [1,2]



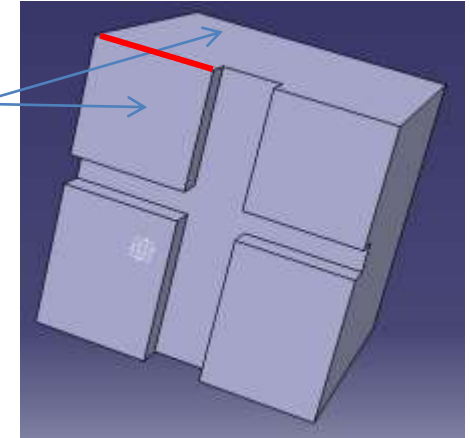
[feat1,side1], [2,2]



Naming method of CATIA V5R18

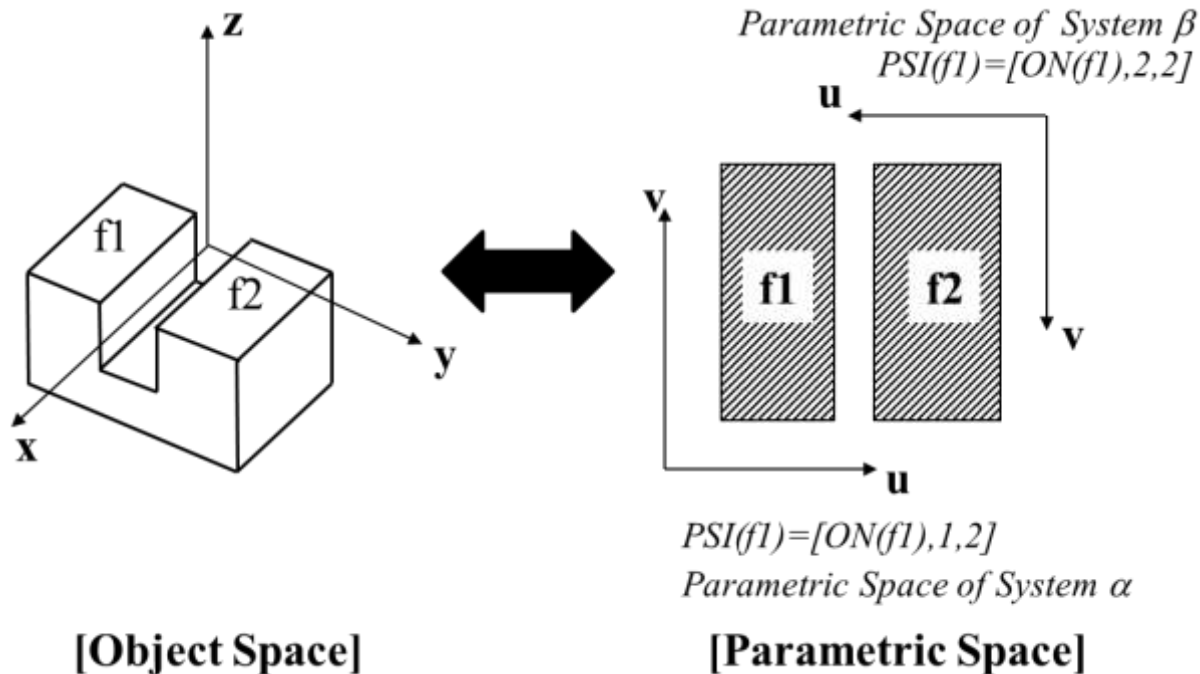
- Edge name based on two adjacent faces in CATIA system

```
Set reference31 =  
part1.CreateReferenceFromBRepName("REdge:(Edge:(  
Face:(Brp:(Pad.1;0:(Brp:(Sketch.1;6))); ————— Information of adjacent faces  
AllPartiallySharedIncluded:  
(Brp:(Pocket.2;0:(Brp:(Sketch.3;5)));  
Brp:(Pad.1;2);  
Brp:(Pad.1;0:(Brp:(Sketch.1;4)));  
Brp:(Pocket.1;0:(Brp:(Sketch.2;5)));Cf11:());  
Face:(Brp:(Pad.1;2); —————  
None:();Cf11:());  
None:(Limits1:();Limits2:());Cf11:());WithTemporaryBody;WithoutBuild  
Error;WithSelectingFeatureSupport;MFBRepVersion_CXR15)",  
pocket2)
```

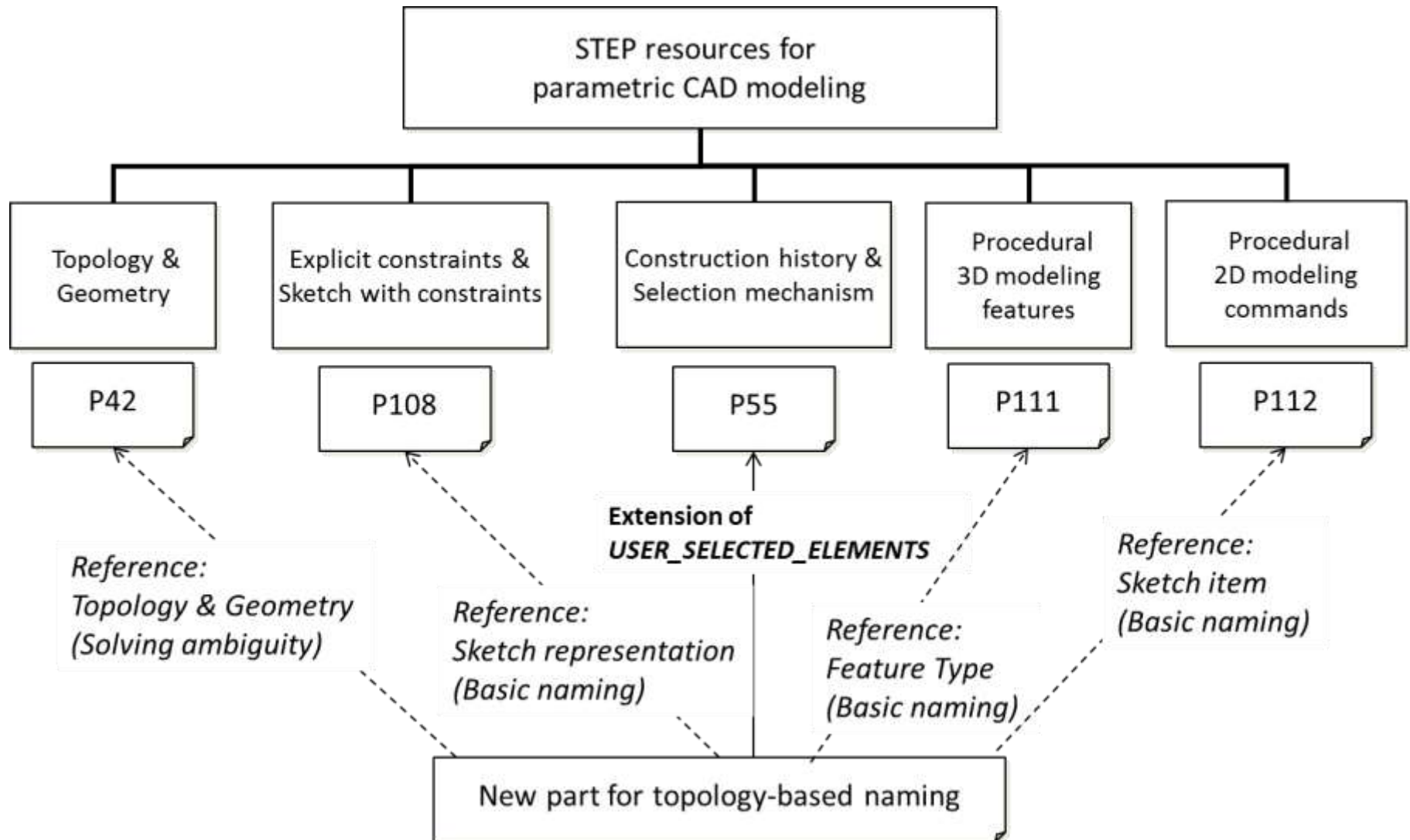


Ambiguity solving

- We use Object space information
 - Split face information
 - Merged face information
- Difference in PSI (parametric space information) among CAD systems

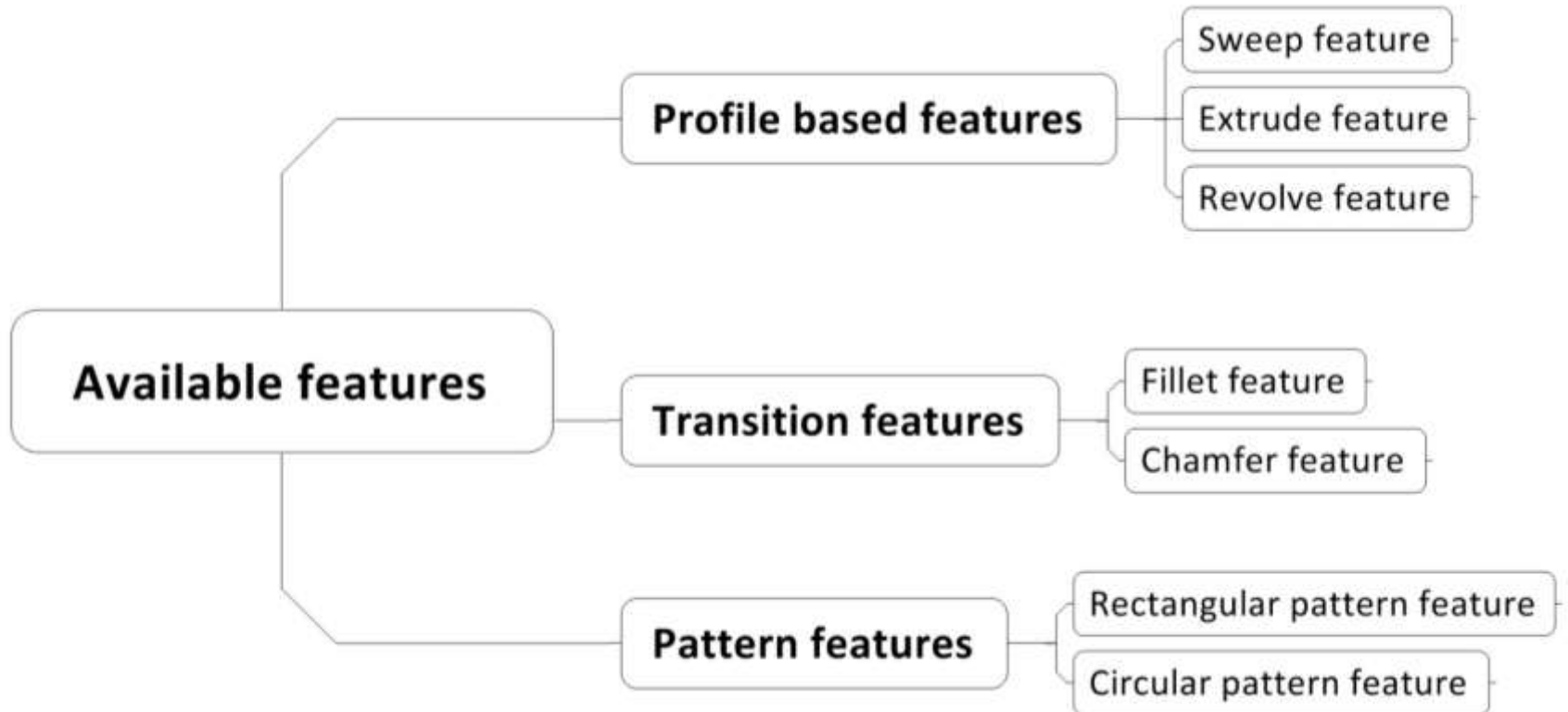


Standardization

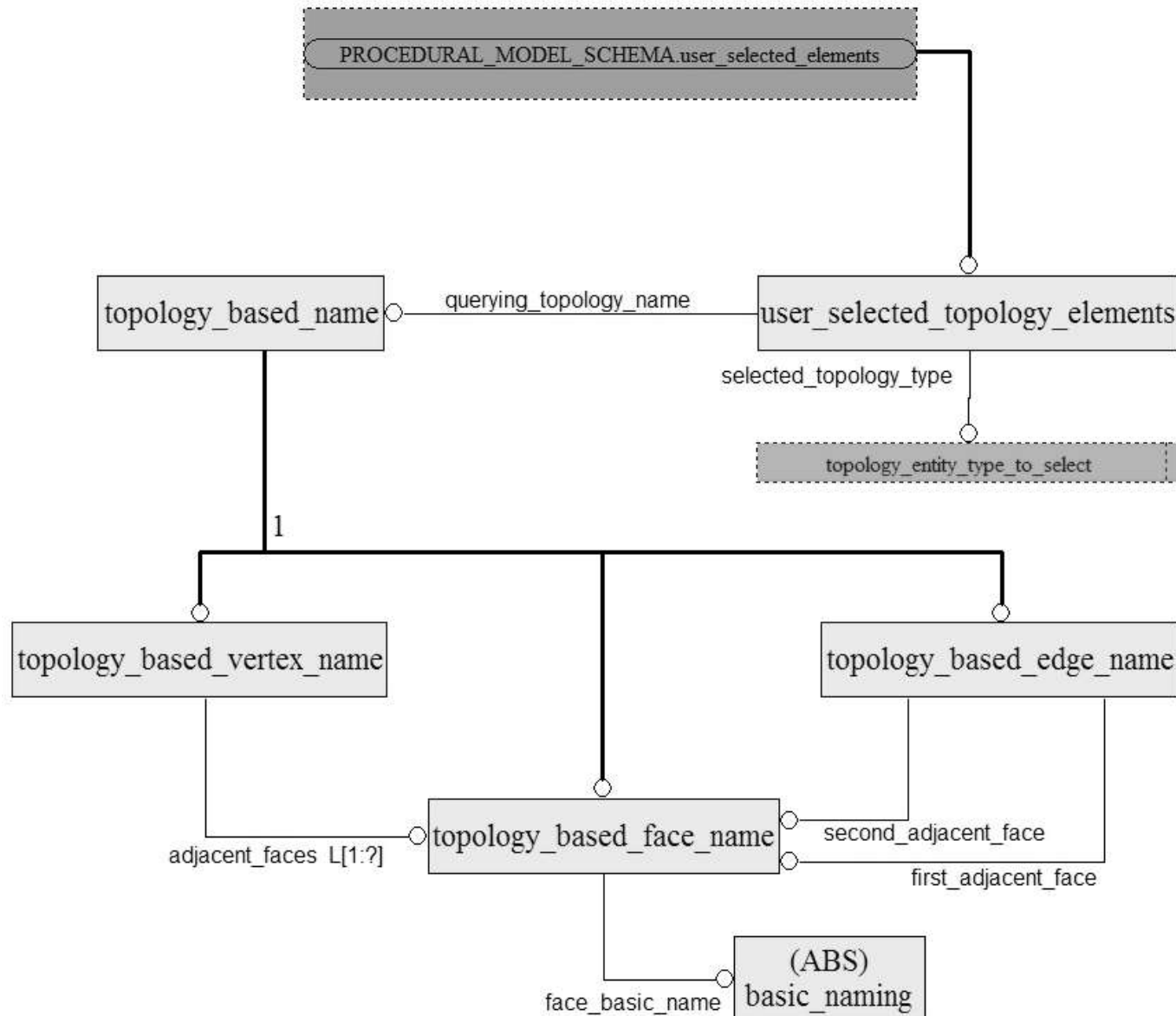


Available features

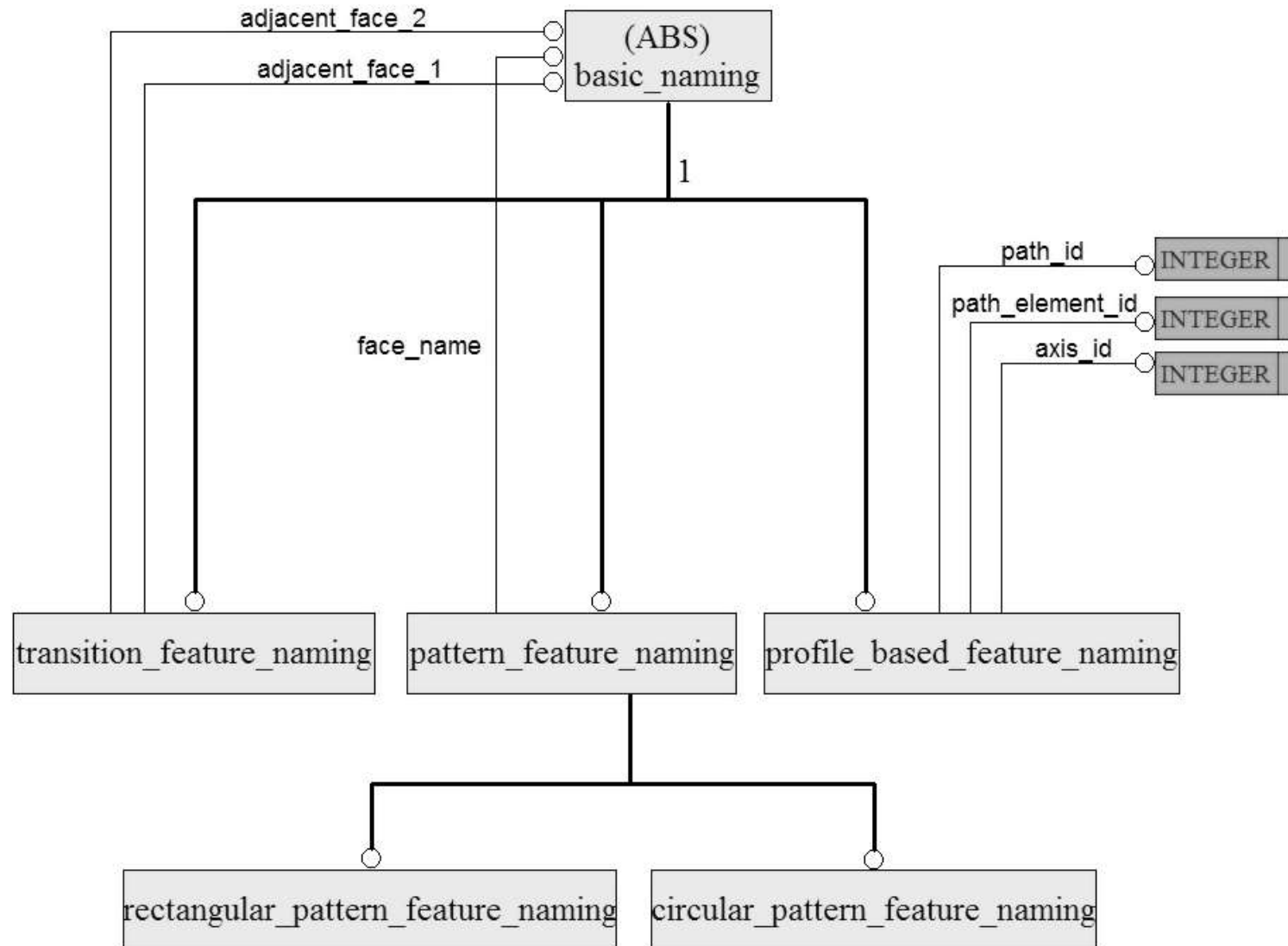
Topology based naming method supports:



Selecting based on topology name



Basic naming method



Ambiguity solving

