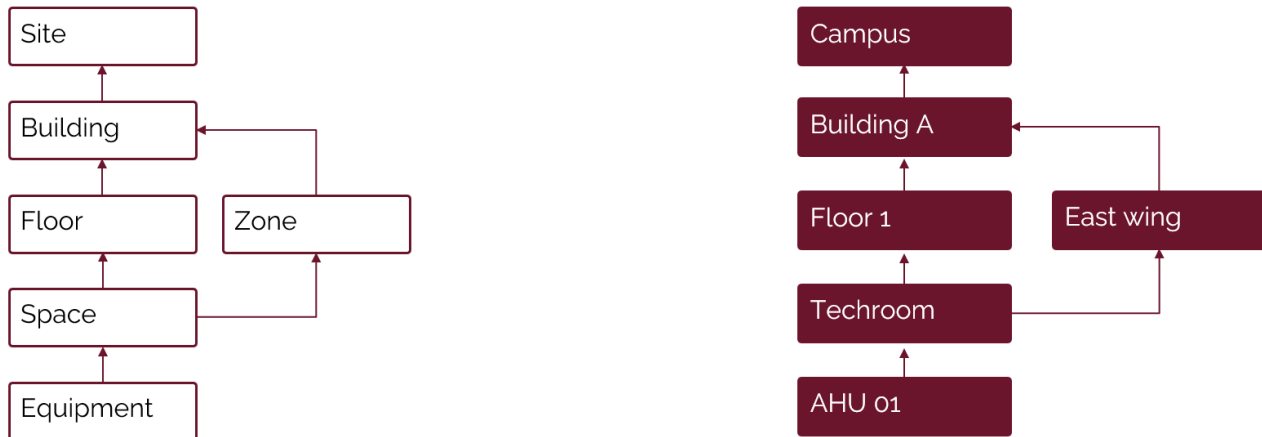# Structure Data Model

This data model is used to describe a building's spatial structure. This data model is based on the IFC standard consisting of a main tree of **Definitions**: Site/Building/Floor/Space/Equipment & Zone. <u>The model is custom implemented for the site but its structure remains identical.</u>

It can be originated from a BIM model or built from other sources. Linksper has a lot of tools to ingest a BIM model and handles its evolution across a building's evolution.

On the below schema, you can see on the left the common schema and on the right an implementation example:

- Equipment and Zones are not always implemented. It will depend on the level of integration of a site.
- A zone is independent from a floor following the IFC standard and is used to describe a global group of spaces like a west/east aisle, or to describe tenant's organization like Company A, Company B... Multiple overlayed zones can be found.

Additional information for each Node can be defined as described below:

Site

assetType = *"Model"*
id: String
displayName: String
bimCode: String
mepCode: String
ifcSite: Marker
siteAddress: String
refLatitude: Double
refLongitude: Double

Building

assetType = *"Model"*
id: String
displayName: String
bimCode: String
mepCode: String
ifcBuilding: Marker
buildingAddress: String
yearOfConstruction: Intégrer
netPlannedArea: Double

Floor

assetType = *"Model"*
id: String
displayName: String
bimCode: String
mepCode: String
ifcBuildingStorey: Marker
elevation: String
entranceLevel: Boolean
aboveGround: Boolean
netPlannedArea: Double

Zone

assetType = *"Model"*
id: String
displayName: String
bimCode: String
mepCode: String
ifcZone: Marker
isExternal: Boolean
netPlannedArea: Double

Space

assetType = *"Model"*
id: String
displayName: String
bimCode: String
mepCode: String
ifcSpace: Marker
capacity: Integrer
spaceUse: Enum
isExternal: Boolean
occupancyNumber: Integer

Equipment

assetType = *"Model"*
id: String
displayName: String
bimCode: String
mepCode: String
ifcifcProduct: String
ifcTypeProduct: String
ifcTypeProductEnum: String
xCoordinates: Double
yCoordinates: Double
zCoordinates: Integer

- A tag named "bimCode" may be added to every asset (Node of any Definition of Structure). It is used to define a unique identifier for each Node relatively to a BIM Model. It may be the GUID (if it's granted that it will not change during the project) or a combination of any attribute that makes it unique and unchangeable.
- A tag named "mepCode" may also be added to every asset to provide a MEP name if Mechanical, Electrical or Plumbing subcontractors used different naming from the MSI or BIM called.
- In a perfect world, the displayName, bimCode and mepCode would be similar
- The id (unique identifier of each asset) is most of the time self generated by the BOS but in some cases it can be defined from a third party data model such as BIM. (BIM guid are not always stable during a project and can't always be trusted)
- Additional tags can be added relatively to the site (a BIM guid, a manufacturer code...), they are not described here since they can be different from site to site.
- Syntheses and Global commands are defined by default in the relative to the Structure model. See Linksper Syntheses and Global commands for more information.

Example

Site

assetType: *Model*
id: **sdl4ff58sfdf44svsz@f**
displayName: **Campus**
bimCode: **CAMPUS**
mepCode: **CAMPUS**
ifcSite: **M**
siteAddress: **21 avenue de la Division Leclerc, 92160 ANTONY FRANCE**
refLatitude: **48.75**
refLongitude: **2.30**

Building

assetType: *Model*
id: **cvcv8sddf@df546**
displayName: **Building A**
bimCode: **Building_A**
mepCode: **Building A**
ifcBuilding: **M**
buildingAddress: **21 avenue de la Division Leclerc, 92160 ANTONY FRANCE**
yearOfConstruction: **2002**
netPlannedArea: **1275**

Floor

assetType: *Model*
id: **zzee34dfml74w1**
displayName: **Floor 1**
bimCode: **L1**
mepCode: **Floor_1**
ifcBuildingStorey: **Marker**
elevation: **12**
entranceLevel: **false**
aboveGround: **true**
netPlannedArea: **350**

Space

assetType: *Model*
id: **sn56d#fj1pwjz57**
displayName: **Techroom**
bimCode: **L1_Techroom**
mepCode: **Techroom**
ifcSpace: **Marker**
capacity: **3**
spaceUse: **technicalRoom**
isExternal: **false**
occupancyNumber: **3**

Equipment

assetType: *Model*
id: **qp%j3#cj45axcc21**
displayName: AHU_01
bimCode: **L1_Tech_AHU01**
mepCode: **AHU 01**
ifcifcProduct: **IfcEnergyConversionDevice**
xCoordinates: **458.10**
yCoordinates: **48.14**
zCoordinates: **12.25**

Zone

assetType: **Model**
id: **qslkdhqs78[dflf**
displayName: **East Wing**
bimCode: **EW**
mepCode: **EW**
ifcZone: **Marker**
isExternal: false
netPlannedArea: **460**