

LAD 202 – 3D COMPUTER MODELLING  
FOR LANDSCAPE ARCHITECTURE  
3D-MODELLING WITH AUTOCAD  
LECTURE 1

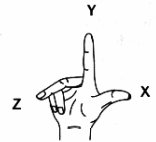
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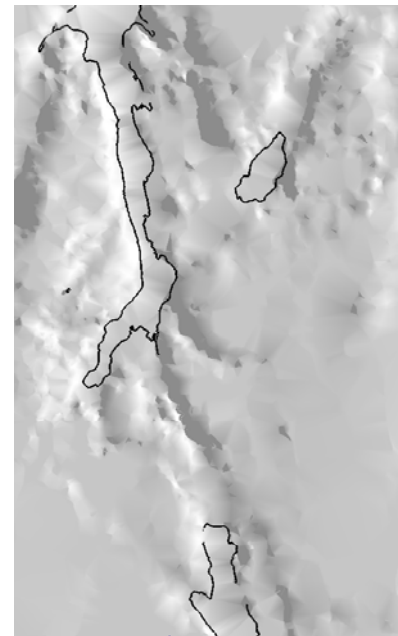
## INTRODUCTION TO 3D-MODELLING IN AUTOCAD COORDINATE SYSTEMS

- Understanding the Cartesian Co-ordinate System
- In AutoCAD the Cartesian System is referred to as the User Coordinate System (UCS)
  - to orient yourself to a model
  - reposition the location of the origin point (0,0,0) and the X,Y and Z axes for drawings
  - The so-called *right-hand* cartesian co-ordinate system. The thumb indicates positive direction of the x axis, the index finger positive direction of the y axis, and the middle finger the positive z axis.
  - To determine the positive rotation direction about an axis, point your right thumb in the positive direction of the axis and curl your fingers as illustrated. Your curled fingers indicate the positive rotation direction about the axis



## LEVEL OF DETAIL (LOD)

- A way of defining different levels of detail in Digital Elevation Models (DEM) and 3D City models
- LOD 0 – Regional model
  - 2,5 D Model with DEM and important landmarks
  - Roof Structure: none
  - precision of points in x,y,z : >5m/5m  
(Peter Zeile, lecture notes, MasterLA Workshop 2007)





## LEVEL OF DETAIL (LOD)

### ● LOD 1 – City- / Regional model

- only cubes without any roof structure
- Roof Structure: flat
- precision of points in x,y,z : >5m/5m (Peter Zeile, lecture notes, MasterLA Workshop 2007)



Barcode, Bjørvika, Oslo, <http://www.inventioproject.no/bjorvika> 2008 (Sketchup, Google Earth)



## LEVEL OF DETAIL (LOD)

### ● LOD 2 – City /Location Model

- roof structure, additional important textures and vegetation
- Roof Structure: roof type
- precision of points in x,y,z: >2m/1m (Peter Zeile, lecture notes, MasterLA Workshop 2007)



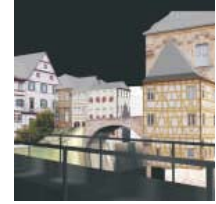
Model from Sentralparken, Fornebu, Norconsult and Bjørbekk & Lindheim AS, 2005 (Virtual Map)



## LEVEL OF DETAIL (LOD)

### ● LOD 3 – City /Location Model

- roof structure, textures ,vegetation, furniture
- Roof Structure: real representation
- precision of points: >0,5m/0,5m (Peter Zeile, lecture notes, MasterLA Workshop 2007)

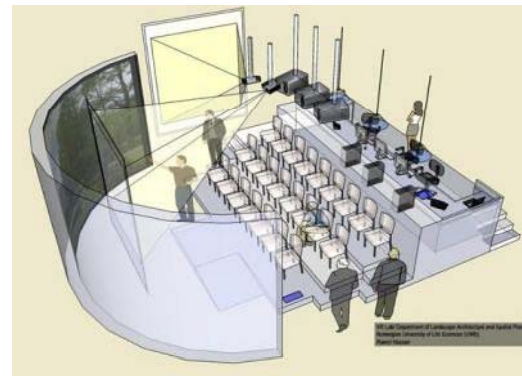


Model from UMB, Master thesis 2007, Jostein Dannevig and Jostein Akre Thorvaldsen (Virtual Map, SketchUp)

## LEVEL OF DETAIL (LOD)

### ● LOD 4 – Inside View

- Accessible architecture models  
(Peter Zeile, lecture notes, MasterLA Workshop 2007)



Model from the Virtual Reality Lab at UMB-ILP, Ramzi Hassan, 2006 (SketchUp)

