State of preparation for 3D-CAD design in Asian Sample Site

CFS (Conventional Facilities & Siting)
ALCPG (American Linear Collider Physics Group) 09 Parallel Session

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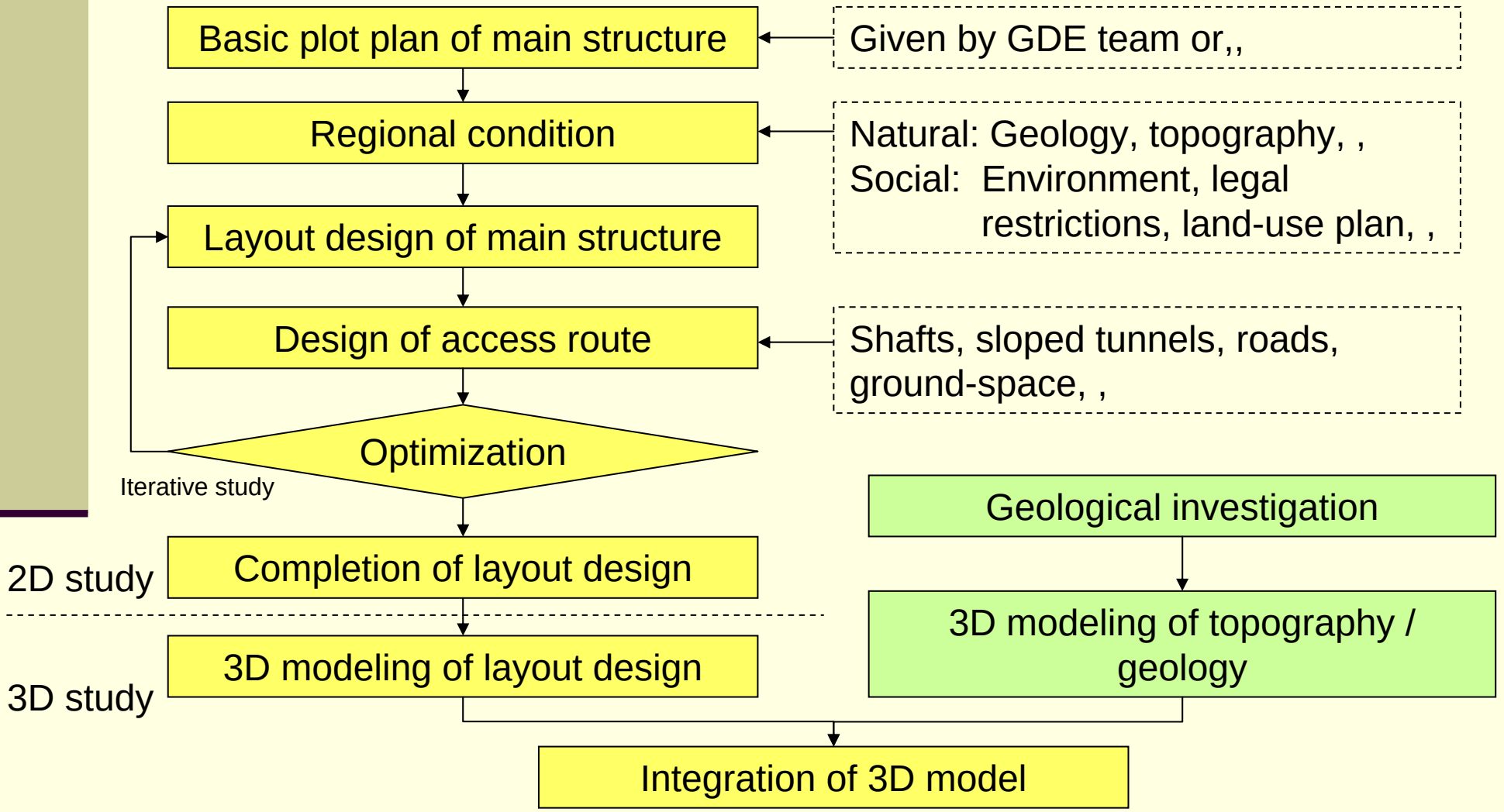
Design procedure and 2D/3D CAD model

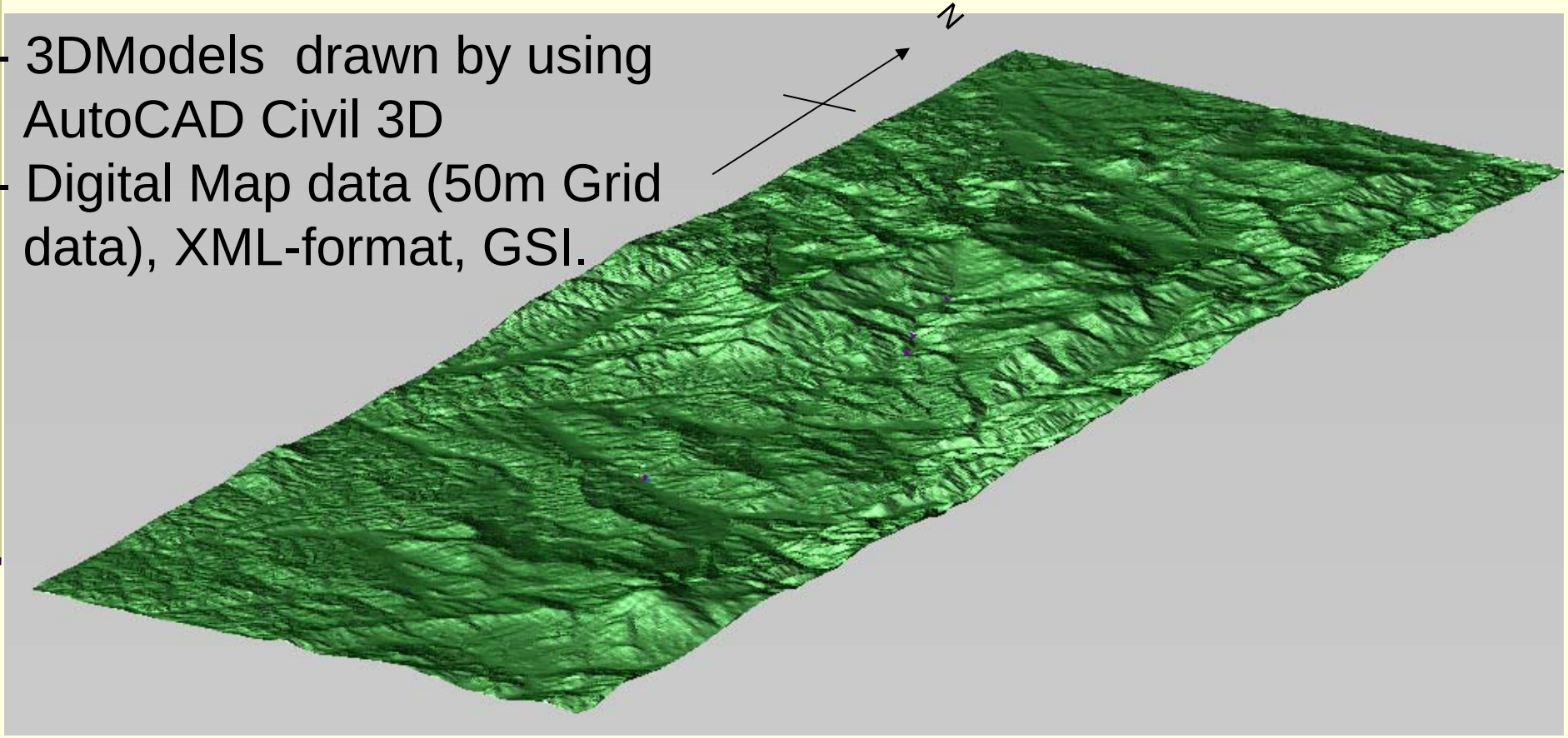
- Entire layout model
  - Topography
  - Outline of underground structures (not detailed)
- Detailed Cavern and Tunnels model
  - Detector hall
  - Beam tunnels
  - Other tunnels for experimental equipment
  - Access tunnels (Shafts, Sloped tunnels)
- Detailed Surface facilities and Land formation model
  - Main Campus area
  - Access tunnel portal area

Design procedure and 2D/3D model Entire layout model



3D topographical map for entire layout model on sample site

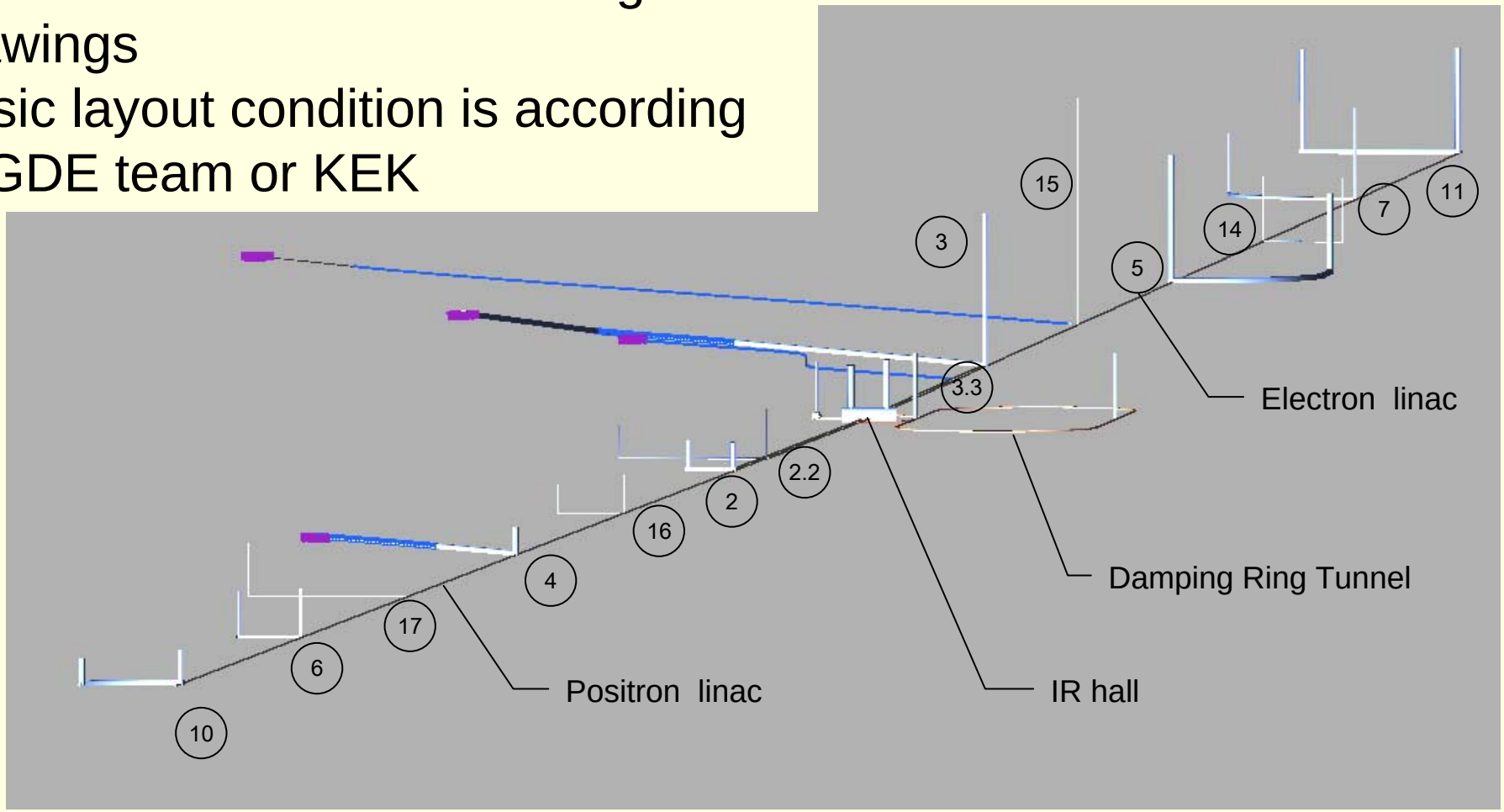
- 3DModels drawn by using AutoCAD Civil 3D
- Digital Map data (50m Grid data), XML-format, GSI.



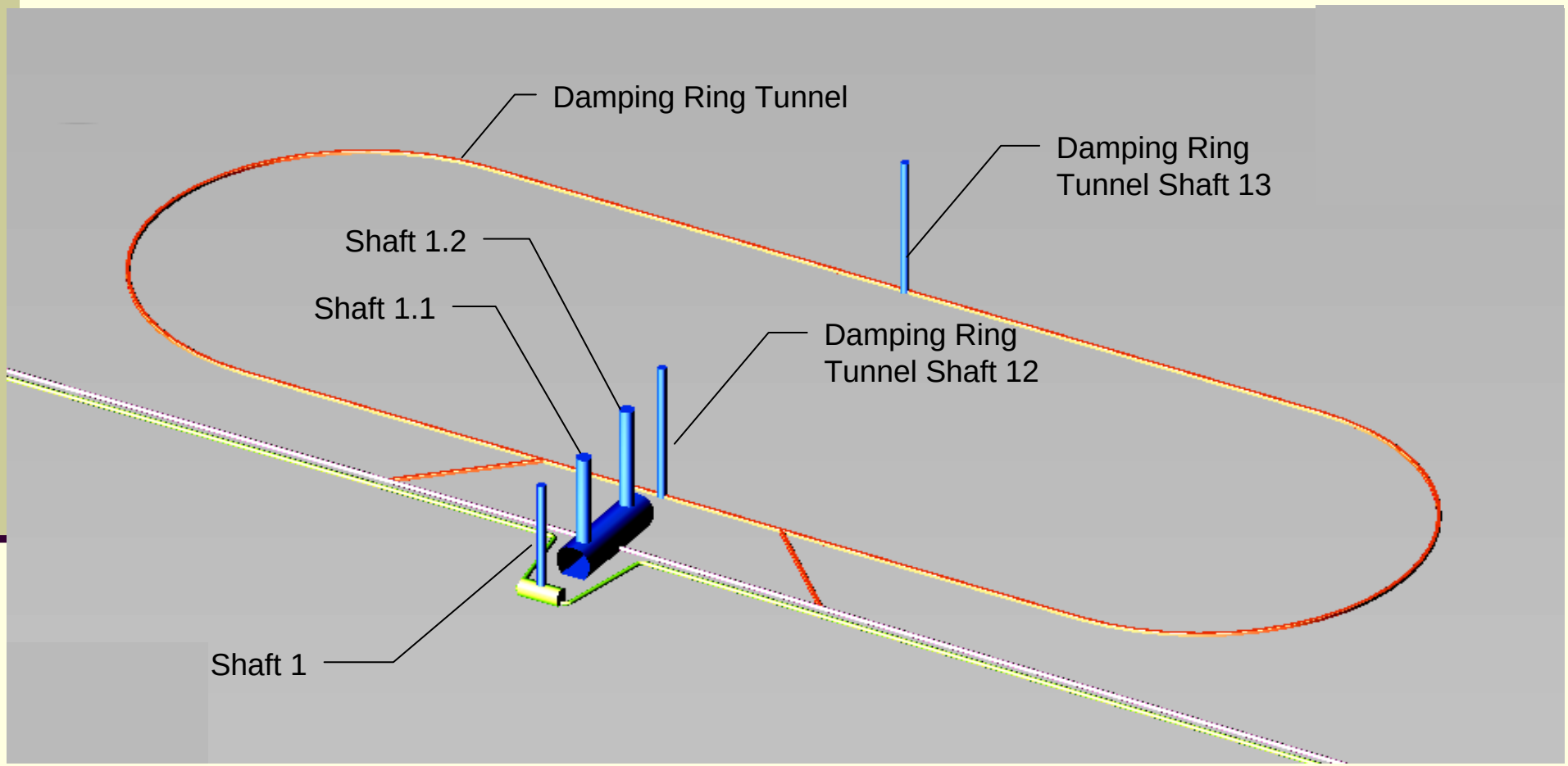
Map data are imported to AutoCAD point data by “Digital map reader”.
Ground surface can be displayed as a surface model, consist of small triangles “TIN”.

3D model of underground structure Entire view model

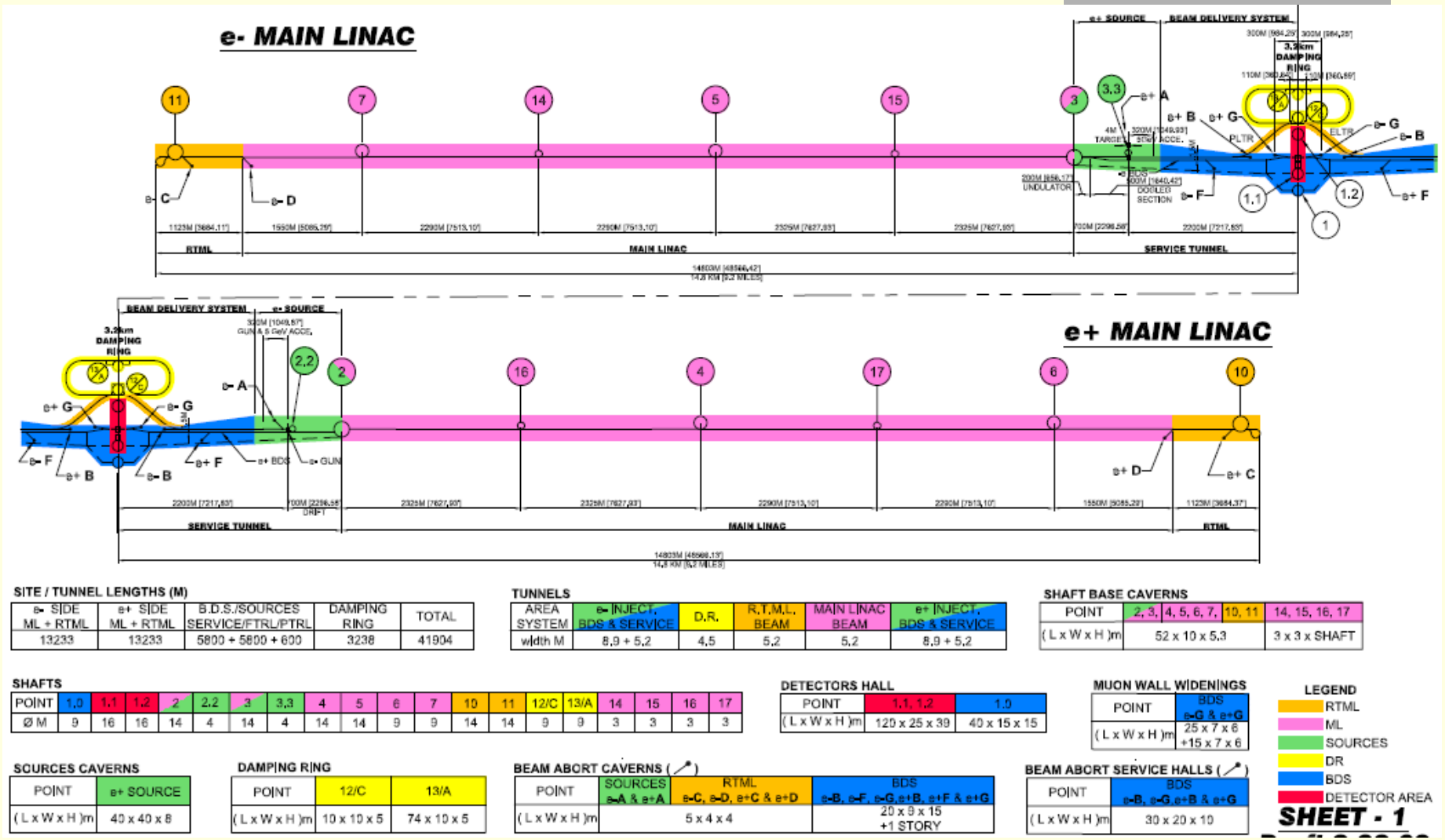
- Entire model is made referring to 2D drawings
- Basic layout condition is according to GDE team or KEK



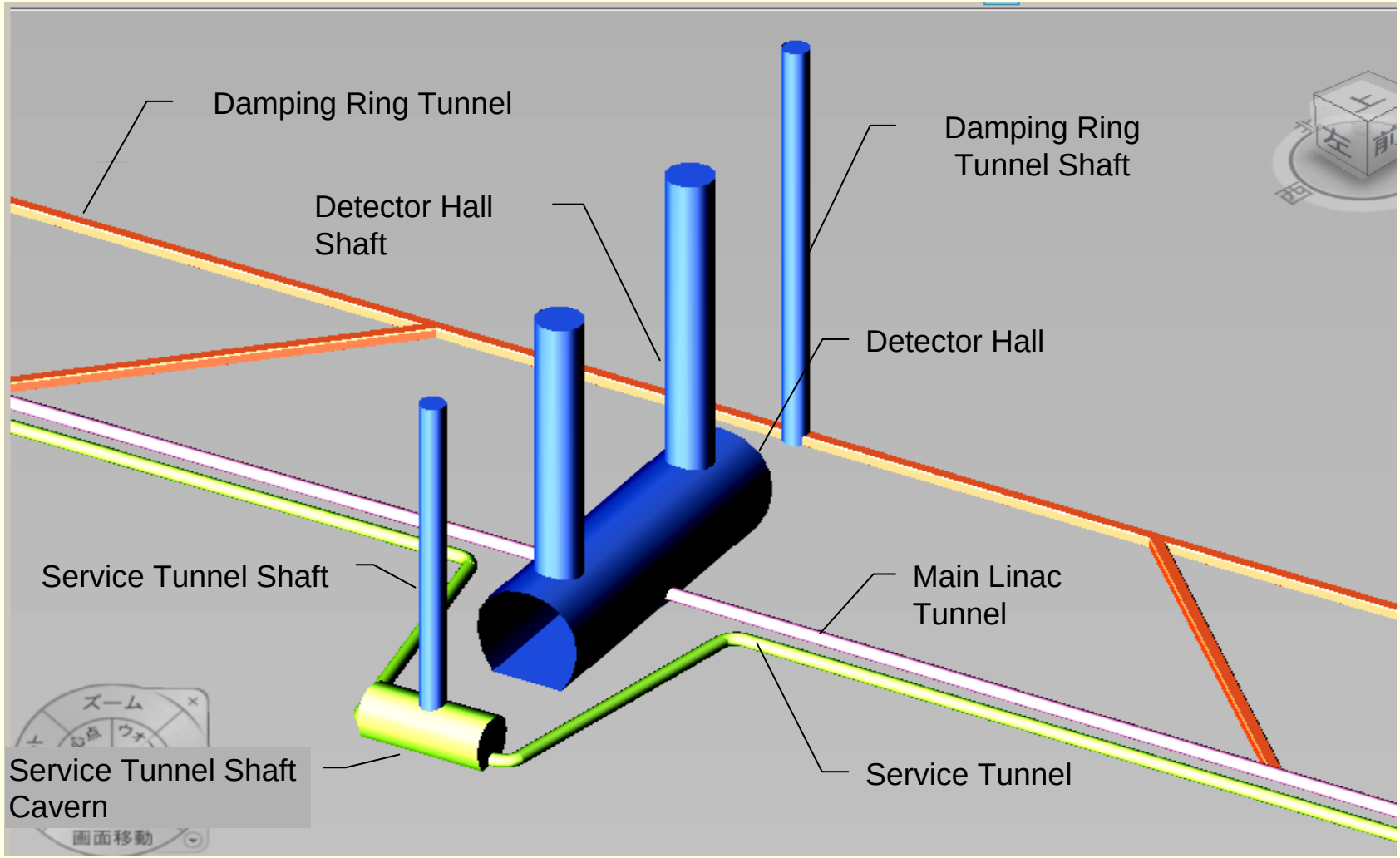
3D model of underground structure Damping Ring Region



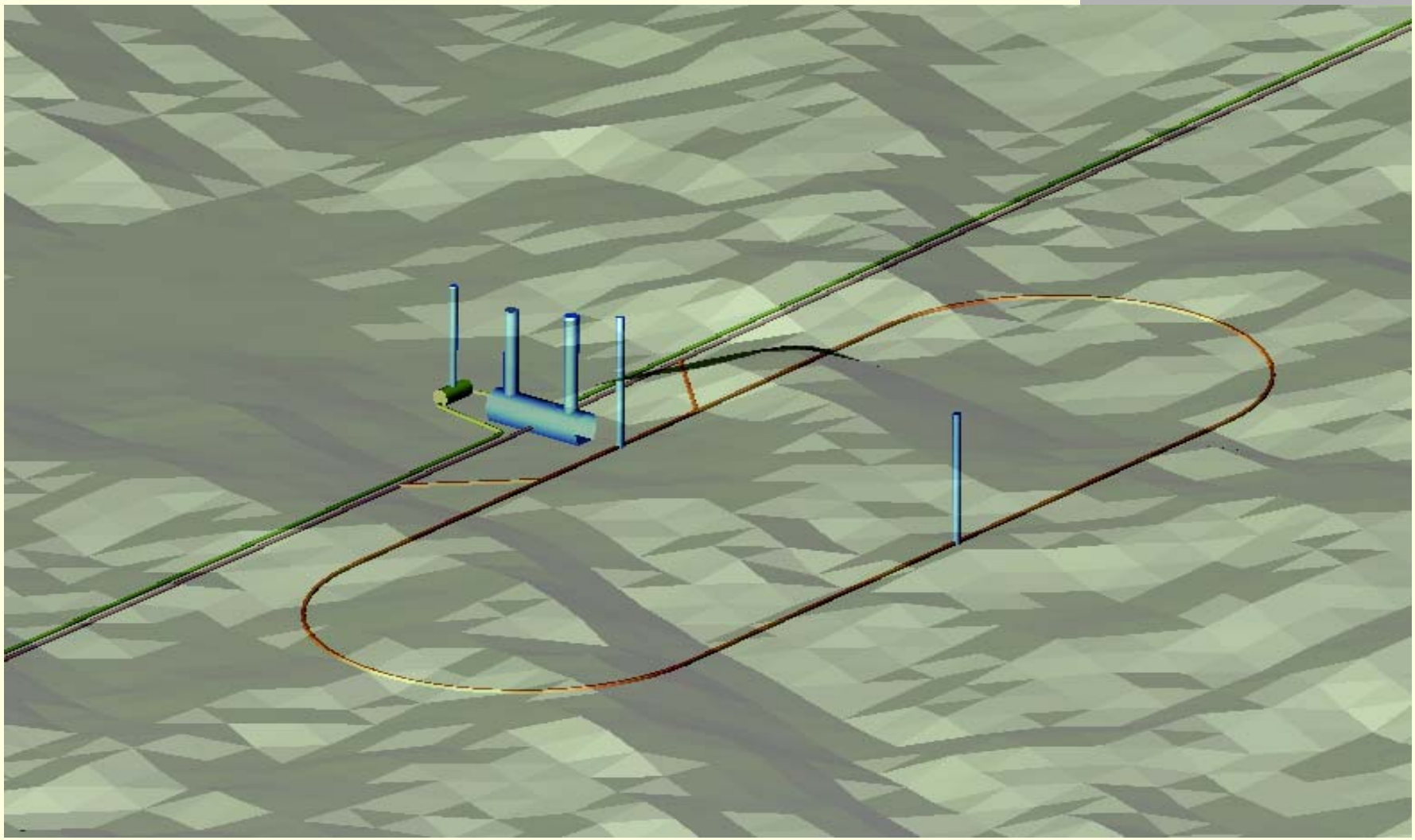
Plot plan


e- MAIN LINAC
e+ MAIN LINAC
e+ SOURCE
BEAM DELIVERY SYSTEM
3.2km DAMPING RING
RTML
MAIN LINAC
SERVICE TUNNEL
SITE / TUNNEL LENGTHS (M)
e- SIDE ML + RTML
e+ SIDE ML + RTML
B.D.S./SOURCES SERVICE/FTRL/PTRL
DAMPING RING
TOTAL
13233
13233
5800 + 5800 + 600
3238
41904
TUNNELS
AREA SYSTEM
e- INJECT. BDS & SERVICE
D.R.
R.T.M.L. BEAM
MAIN LINAC BEAM
e+ INJECT. BDS & SERVICE
width M
8,9 + 5,2
4,5
5,2
5,2
8,9 + 5,2
SHAFT BASE CAVERNS
POINT
2, 3, 4, 5, 6, 7, 10, 11
14, 15, 16, 17
(L x W x H)m
52 x 10 x 5,3
3 x 3 x SHAFT
SHAFTS
POINT 1,0 1,1 1,2 2 2,2 3 3,3 4 5 6 7 10 11 12/C 13/A 14 15 16 17
Ø M 9 16 16 14 4 14 4 14 14 9 9 14 14 9 9 3 3 3 3
DETECTORS HALL
POINT
1,1, 1,2
1,0
(L x W x H)m
120 x 25 x 39
40 x 15 x 15
MUON WALL WIDENINGS
POINT
BDS e-G & e+G
(L x W x H)m
25 x 7 x 6 +15 x 7 x 6
LEGEND
RTML
ML
SOURCES
DR
BDS
DETECTOR AREA
SOURCES CAVERNS
POINT
e+ SOURCE
(L x W x H)m
40 x 40 x 8
DAMPING RING
POINT
12/C
13/A
(L x W x H)m
10 x 10 x 5
74 x 10 x 5
BEAM ABORT CAVERNS
POINT
SOURCES e-A & e+A
RTML e-C, e-D, e+C & e+D
BDS e-B, e-F, e-G,e+B, e+F & e+G
(L x W x H)m
5 x 4 x 4
20 x 9 x 15 +1 STORY
BEAM ABORT SERVICE HALLS
POINT
BDS e-B, e-G,e+B & e+G
(L x W x H)m
30 x 20 x 10
SHEET - 1

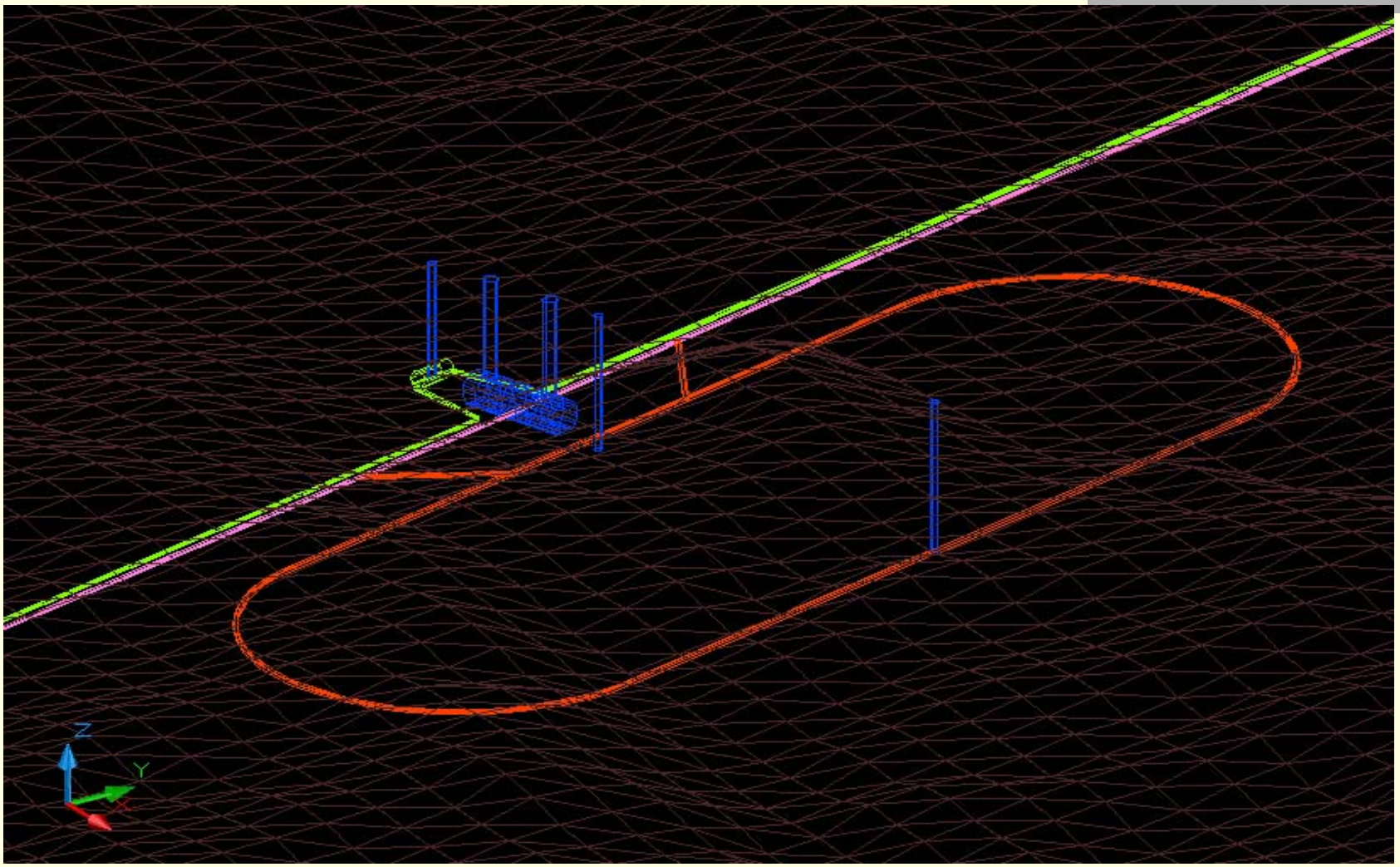
3D model of underground structure Interaction Regions



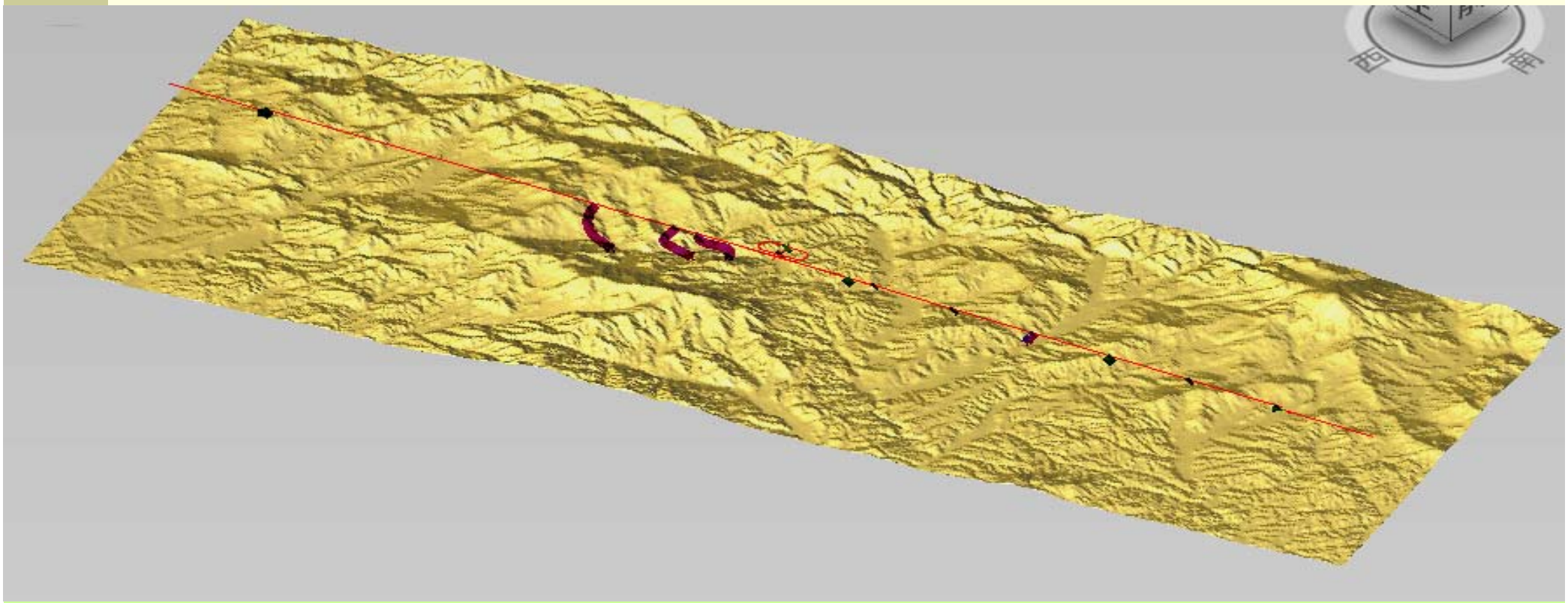
Over-lay view of ground-surface and underground structure (see-through)

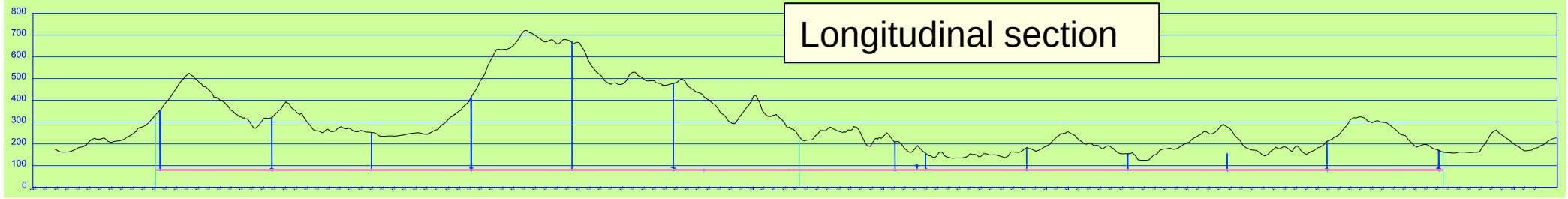


Over-lay view of ground-surface and underground structure (Wire-frame)

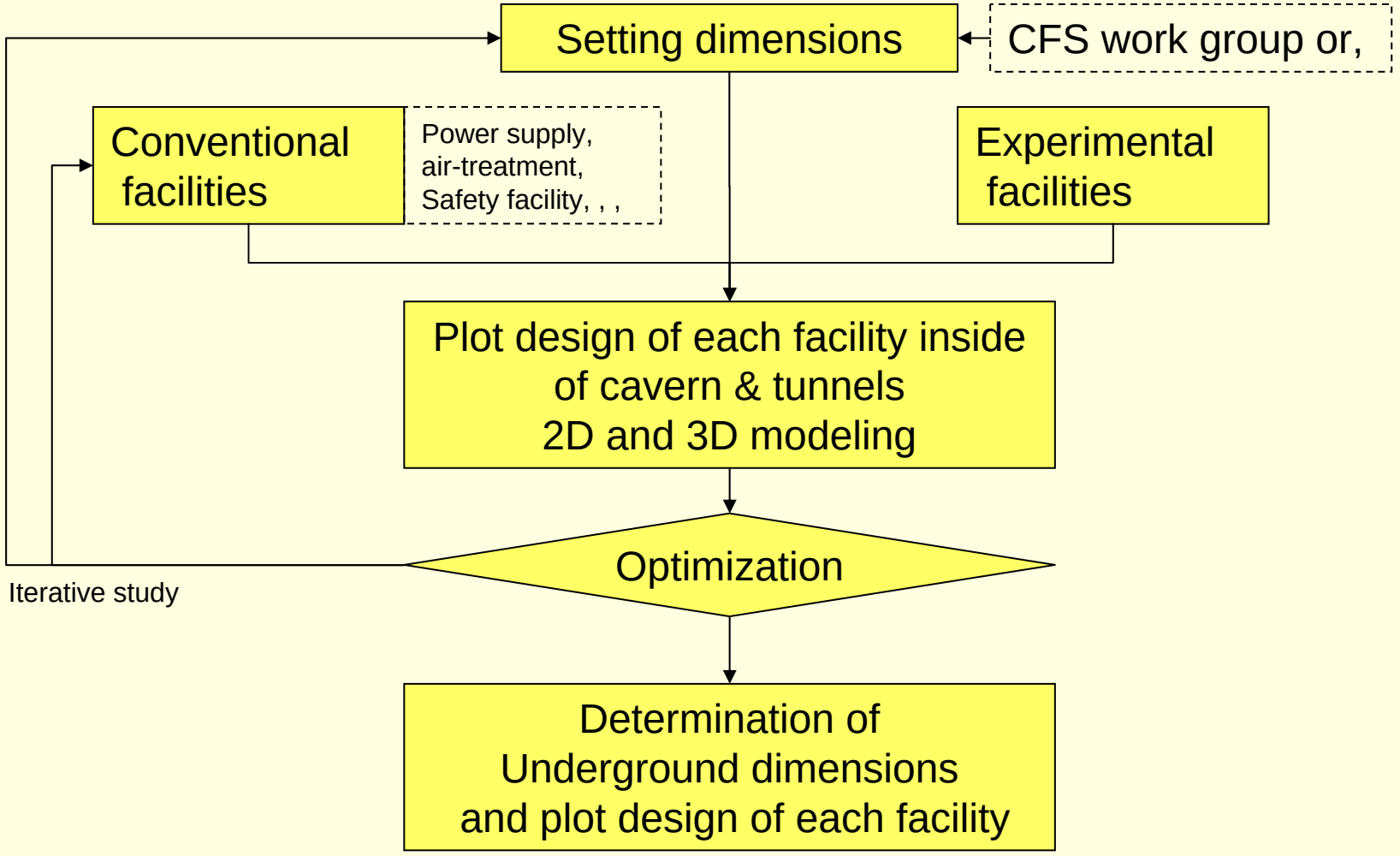


3D model of underground structure overlay topography and structure



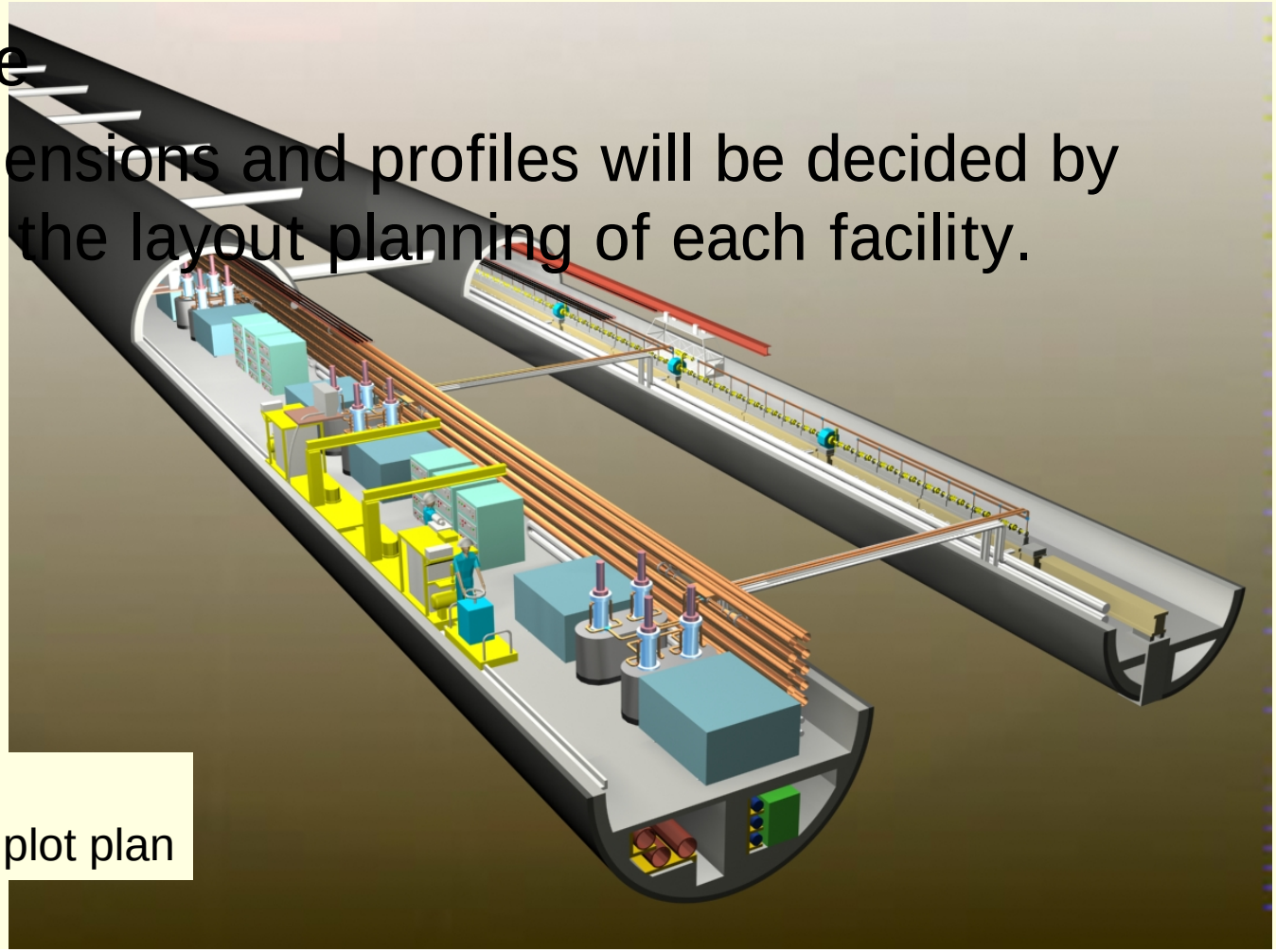


Design procedure and 2D/3D model Inside of Cavern and Tunnels



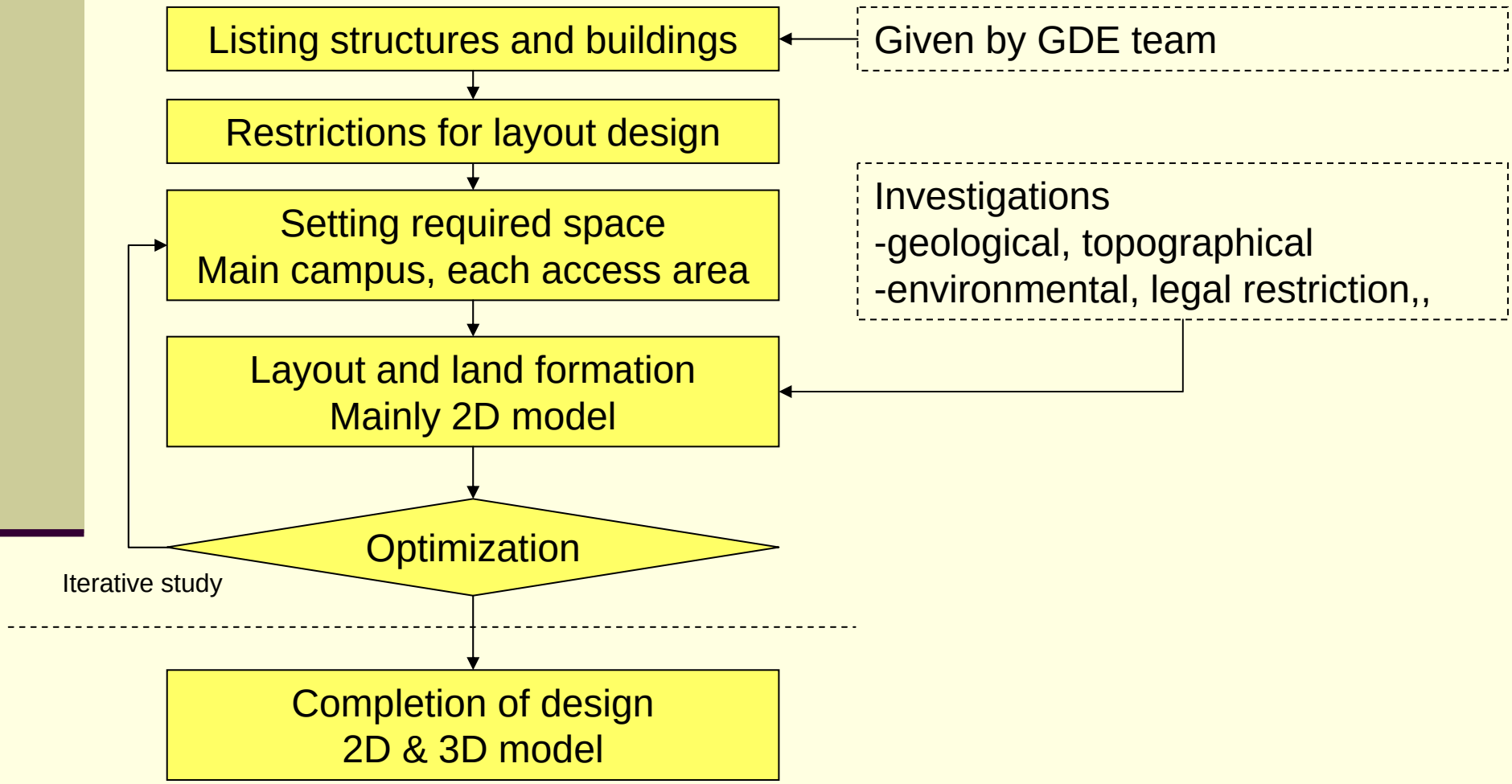
Layout design inside of underground structure

- Not yet studied.
- Section profile
  - Section dimensions and profiles will be decided by considering the layout planning of each facility.



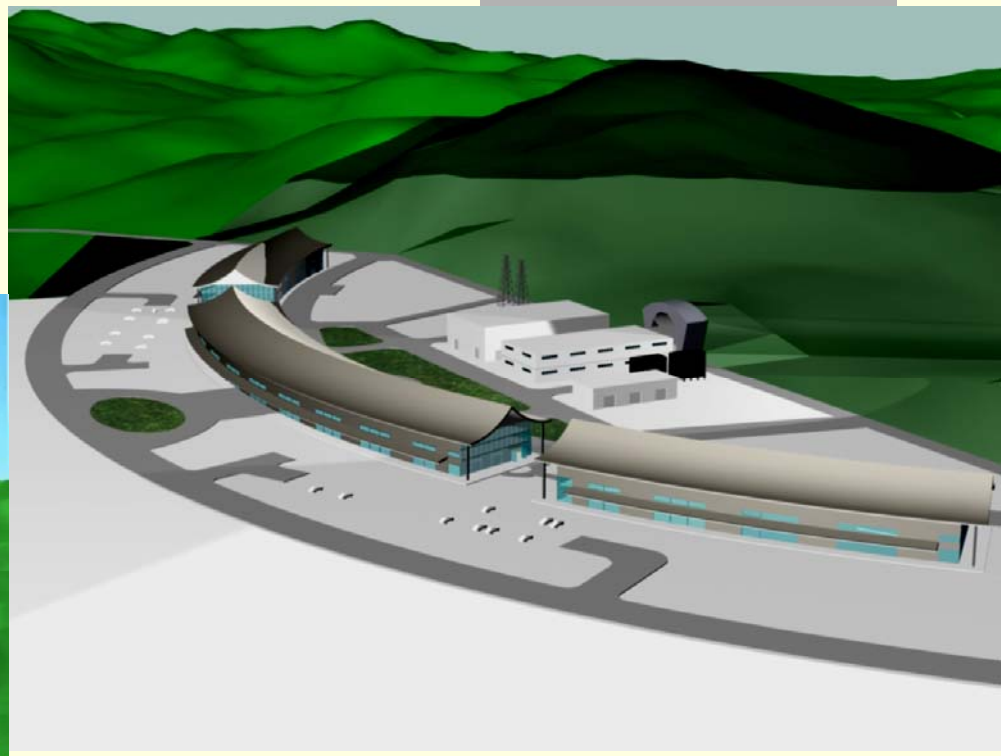
Note:
According to an old design plot plan

Design procedure and 2D/3D model
Surface facilities and Land formation



Land formation and ground-surface buildings & structures

- Not yet studied



Note:
According to an old design plot plan