武漢大学
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Case-driven category analysis of 3D building property

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3D Cadastres

7th International FIG Workshop on 3D Cadastres
11-13 October 2021, New York, USA

1 Introduction

自由贸易试验区第六批改革试点经验
复制推广工作任务分工表

序号	改革事项	主要内容	负责单位	推广范围
9	以三维地籍为核心的土地立体化管理模式	建立三维地籍管理系统，将三维地籍管理理念和技术方法纳入土地管理、开发建设和运营管理全过程，在土地立体化管理制度、政策、技术标准、信息平台、数据库等方面进行探索，以三维方式设定立体建设用地使用权。	自然资源部	全国

2 Relations between 3D building property and surface

Where is the ground? Is the ground surface same or flat?

slope

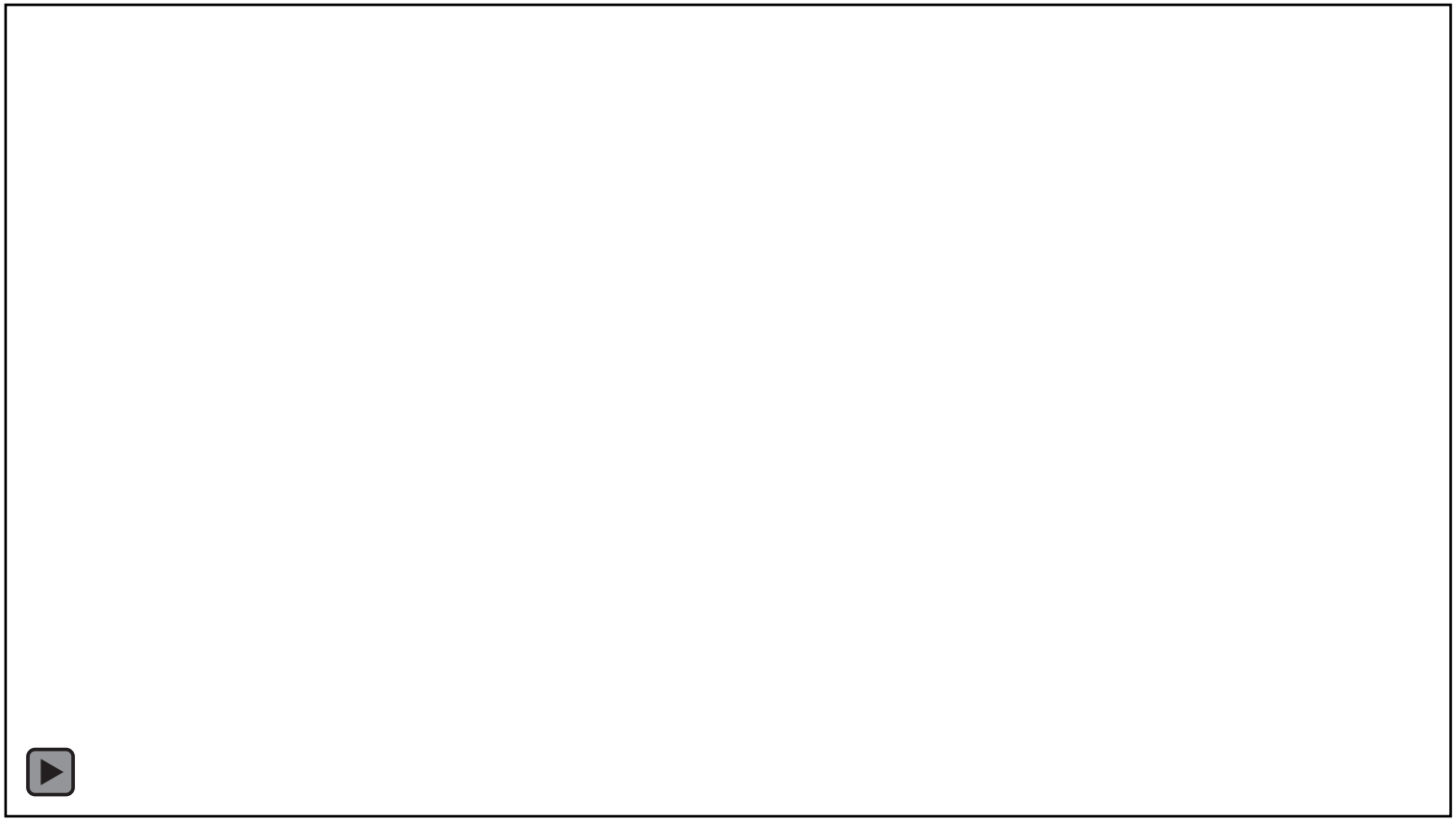
2 Relations between 3D building property and surface

top level becomes ground level

2 Relations between 3D building property and surface

top level becomes ground level

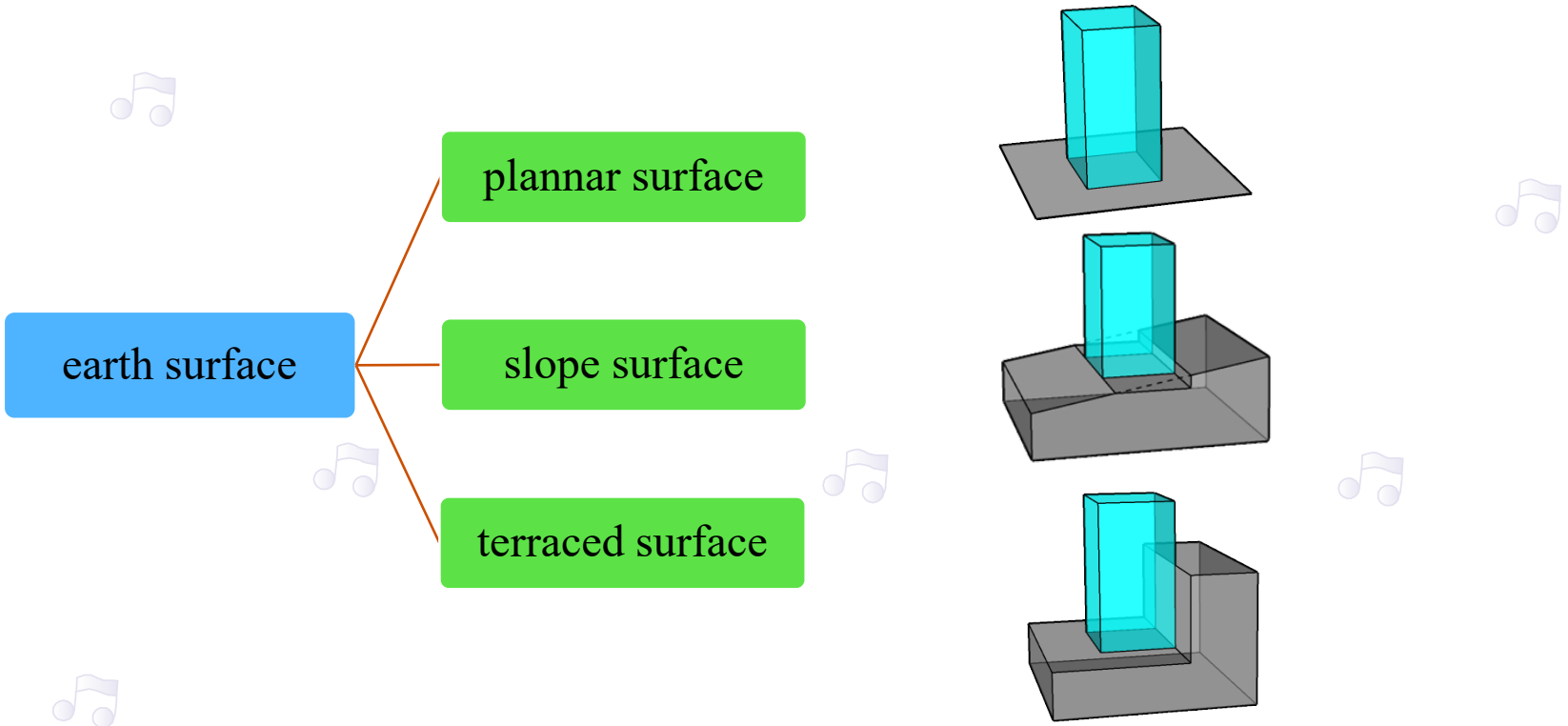
2 Relations between 3D building property and surface



ground level to the top level / middle level

2 Relations between 3D building property and surface

- **Definition：**



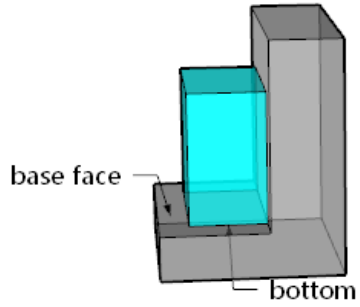
bottom face：the lowest bottom face of the building

base face：the face where building entrance locates

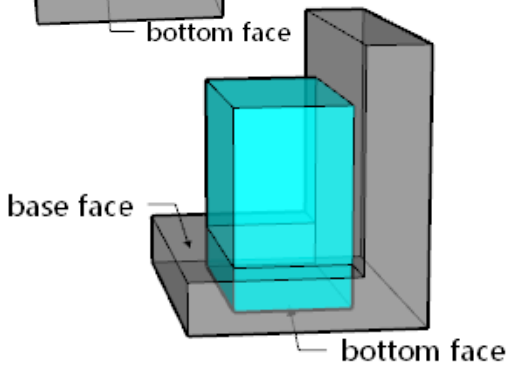
2 Relations between 3D building property and surface

relationships between 3D building property and terraced surface

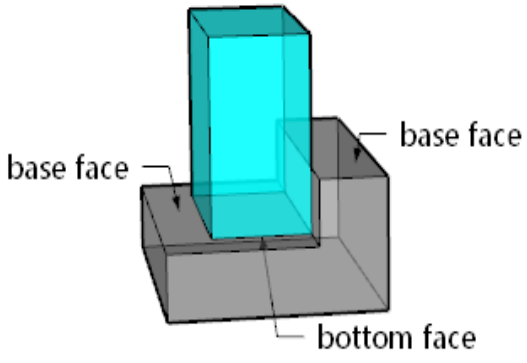
A. One base face that coincides with bottom face

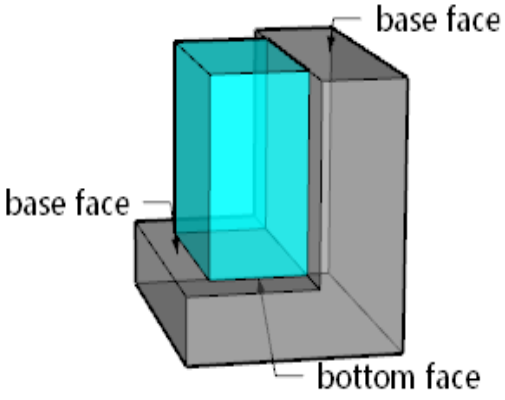


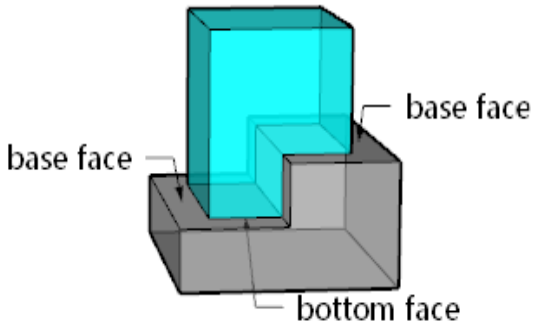
B. One base face that doesn't coincide with bottom face



C. Multiple base faces and one of them coincides with bottom face



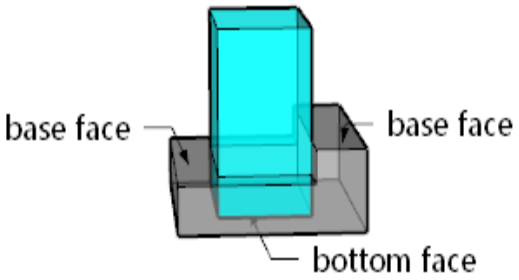


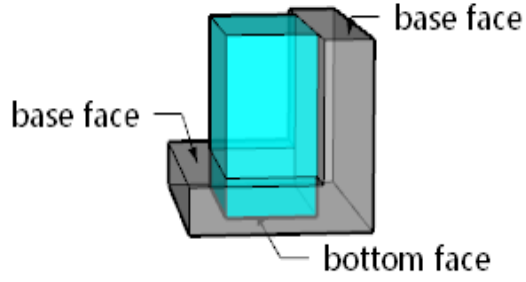


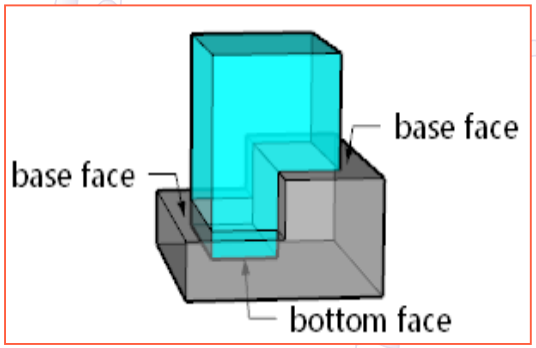
2 Relations between 3D building property and surface

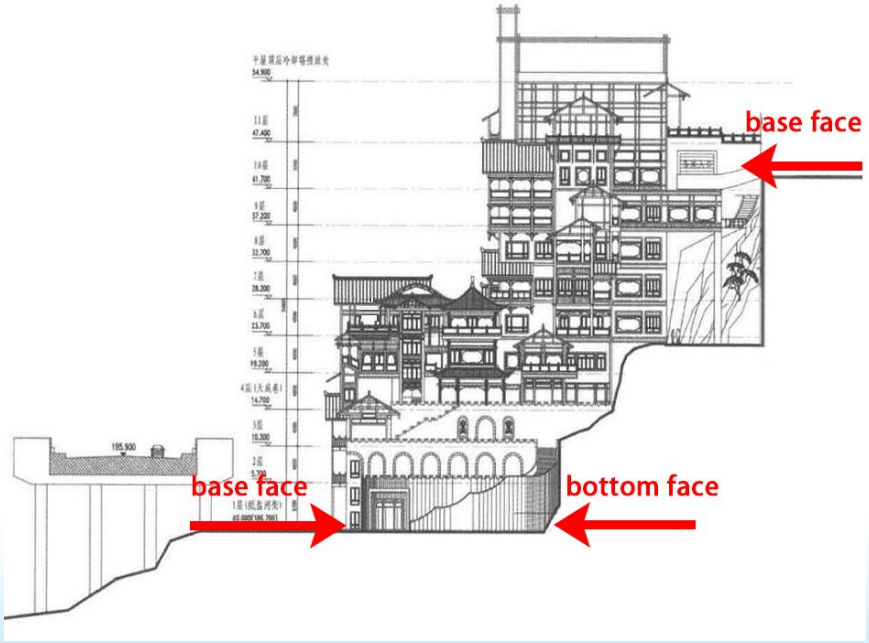
relationships between 3D building property and terraced surface

D. Multiple base faces and none of them coincide with the bottom face







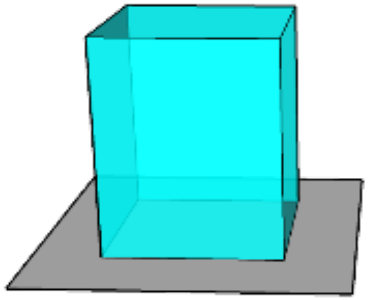


3 Earth surface reference

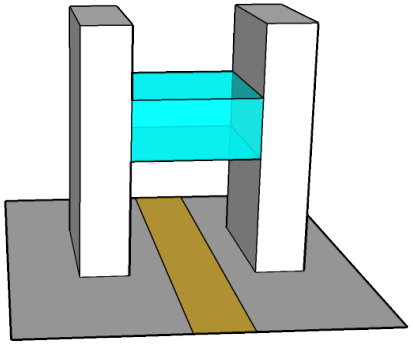
Buildings extending into overground and underground space

3 Earth surface reference

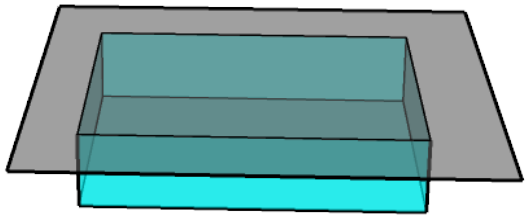
Relative locations between 3D building property and the ground surface



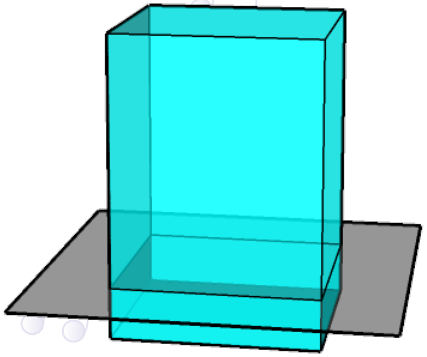
A on surface



B in the air



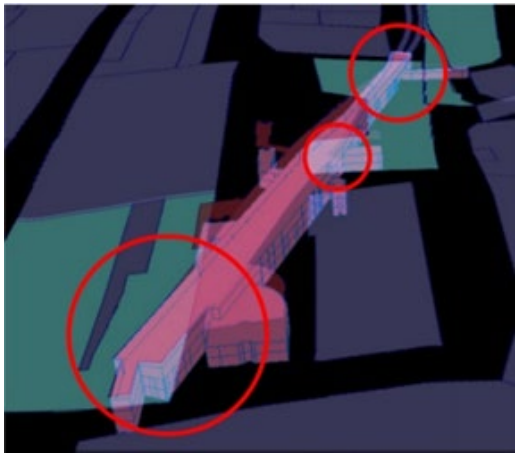
C underground

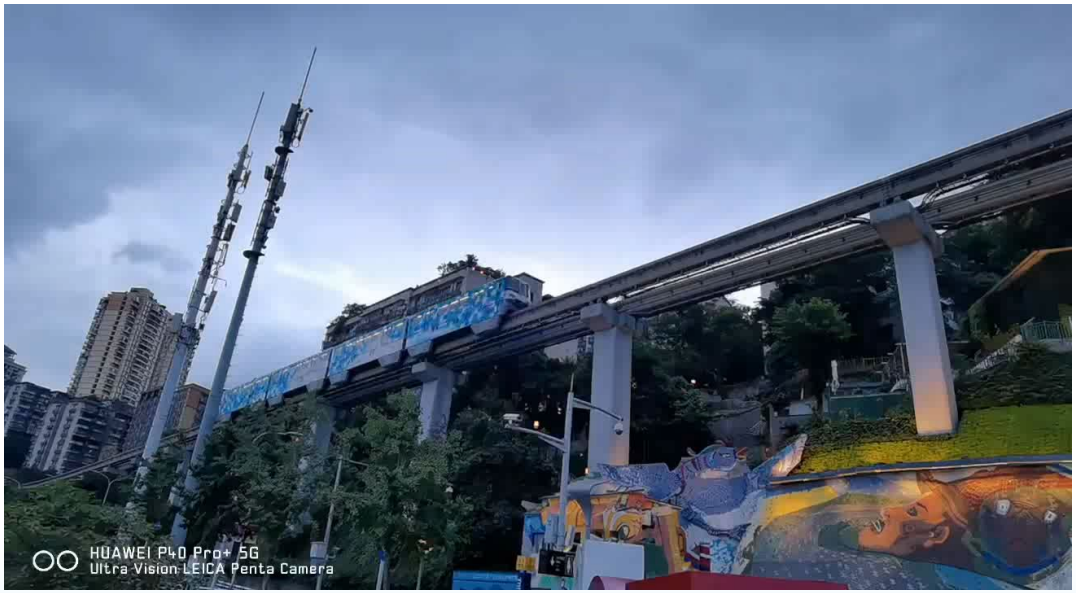


D across the surface

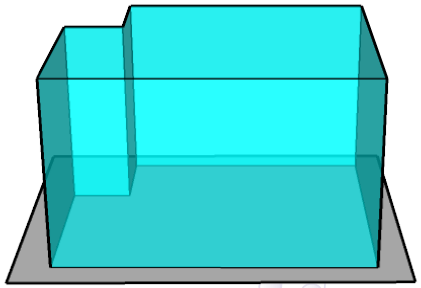
4 Correspondence between 3D building properties and surface parcel

3D parcels' locations and connection with 2D parcels become more complex

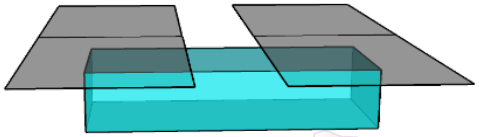




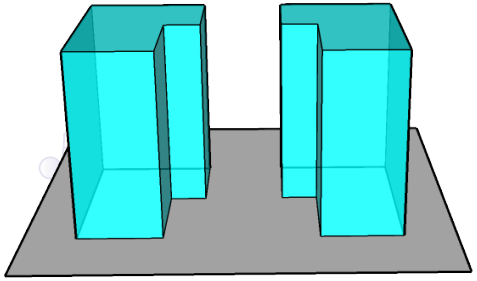
4 Correspondence between 3D building properties and surface parcel

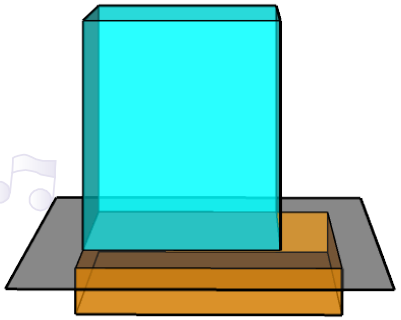


A 1-1

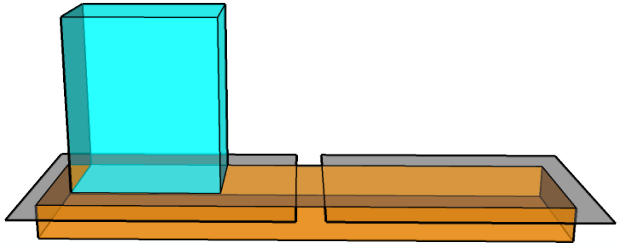


B 1-M





C M-1



D M-M

5 Conclusion

- Enhancing the descriptions of 3D building property
- Promoting the understanding about spatial situations for 3D building property
- further analysis about the consistency between legal geospace and physical geospace of building property

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Thank You !