



A Multi-jurisdiction Case Study of 3D Cadastre in Shenzhen, China: as Experiment using the LADM

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Overview

1. Introduction

2. Relevant aspects of the LADM

3. Case study

- the changing status of the 3D spatial unit
- the modeling of the related elements among party, RRR,
- the 3D geometric primitive representing the 3D spatial unit.

4. Conclusion



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1.Introduction

- The emergence of newer objects and interests on 3D parcels have increased discussions on the need for legal property objects.
- LADM provides a basic model to truly support the 3D parcels.
- We takes the registration of special case as an example, both the physical and legal space, and the involved parties and RRRs.





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2.LADM

- LADM is a final draft of ISO 19152.
- Land administration involves both the legal and spatial aspects of cadastral objects.
- LADM provides an abstract model to build concrete application 3D cadastral model.



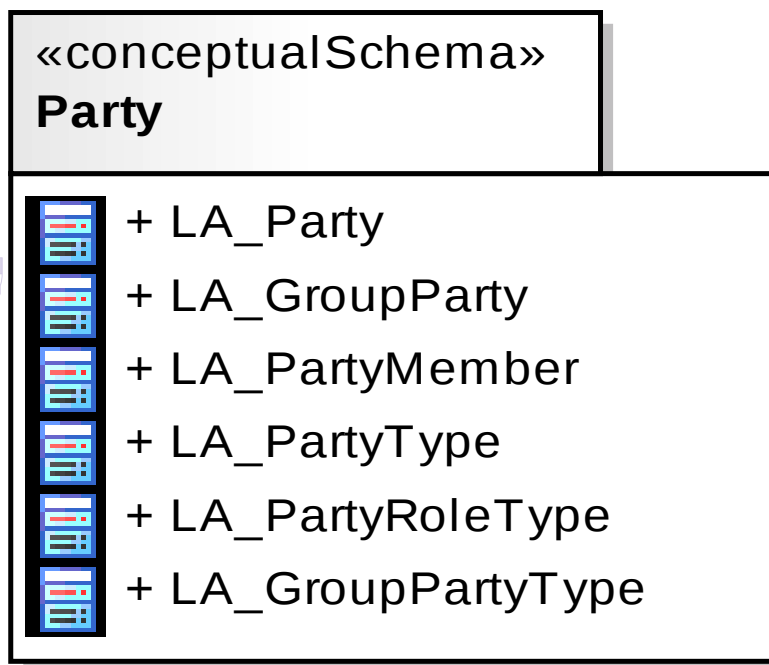
Three packages :1) Party Package, 2) Administrative Package, and 3) Spatial Unit Package.

Four basic elements:

- **The parties <> Class LA_Party**
- **basic administrative units <> Class LA_BAUnit**
- **spatial units <> Class LA_SpatialUnit**
- **RRRs <> Class LA_RRR**

A party

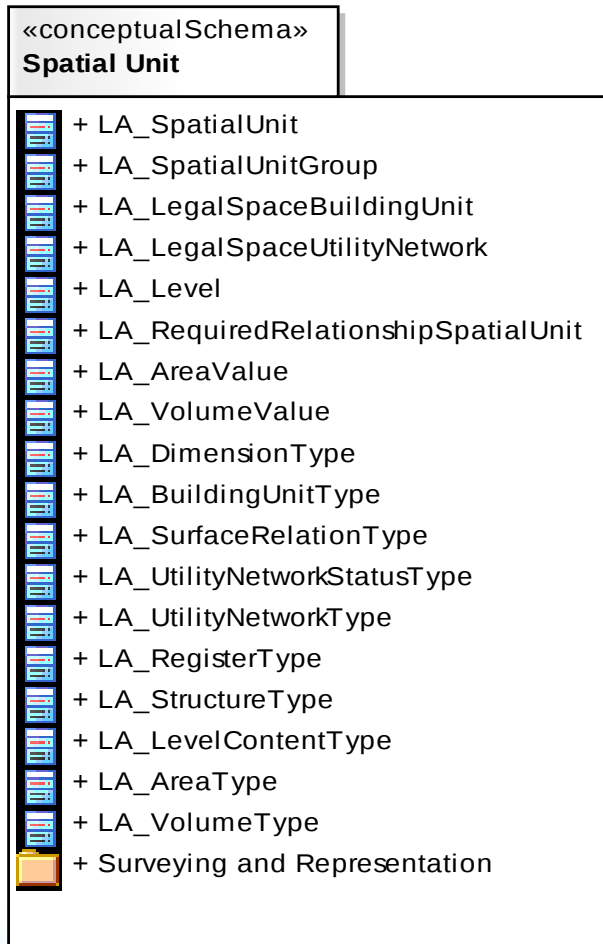
- the government, a natural person or a “legal person”, a group or an organization



(from LADM classes)

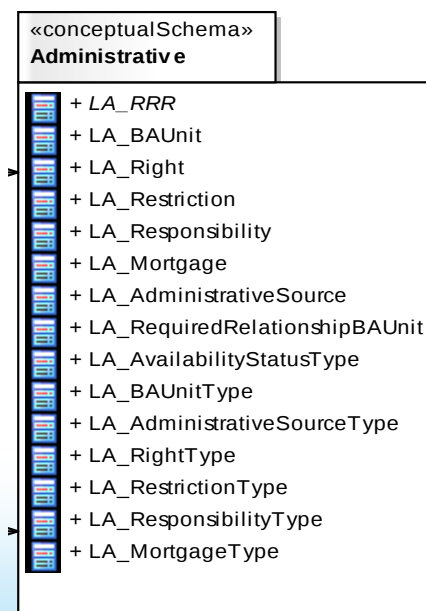
A spatial unit

- a parcel of land, or more specifically a volume of space, under a homogeneous and unique right.



RRRs

- 1) Rights: ownership, lease and mortgage.
Rights are primarily in the domain of private or customary law.
Ownership rights are generally based on (national) legislation.
- 2) Restrictions
A mortgage is a special restriction of the ownership right.
- 3) The responsibility refers to the formal or informal obligation to do something.



(from LADM classes)



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3. Case Study

- Hong Kong is a special administrative region (HKSAR) in People's Republic of China.



- Shenzhen is neighbor to Hong Kong.



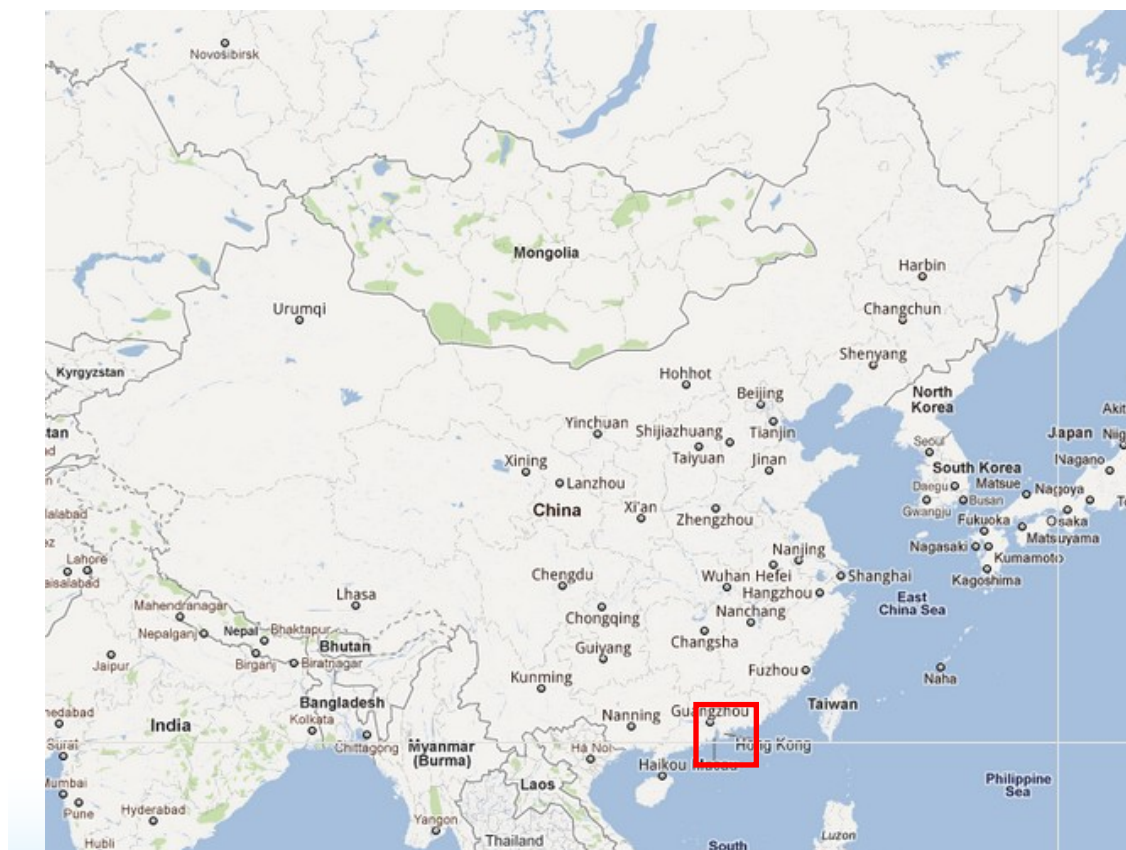
One country, Two systems

- Under the principle of "one country, two systems", Hong Kong has a different political system from the Mainland.
- Hong Kong's independent judiciary functions under the common law. Hong Kong shall have a high degree of autonomy in all matters governs its political system, except foreign relations and military defence.

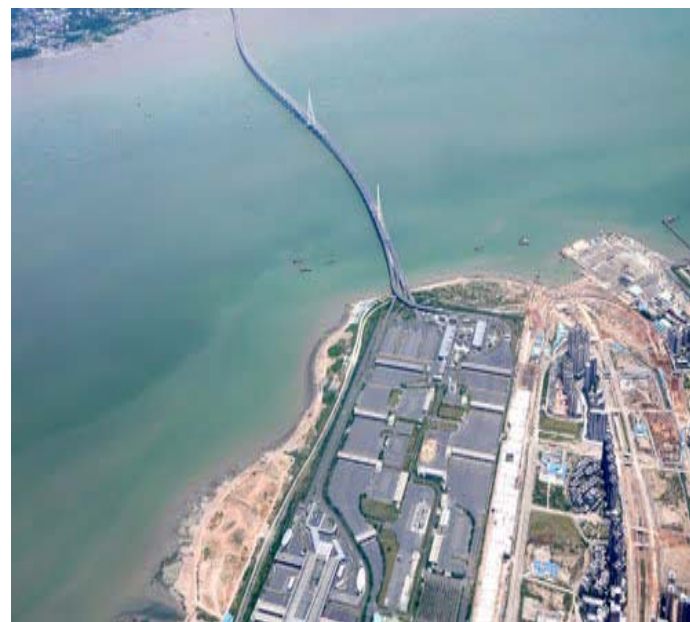


Shenzhen Bay Port

- **Shenzhen Bay Port to promote the mutual transportation and personnel and cargo exchanges between Hong Kong and Shenzhen (the Mainland).**



Shenzhen Bay Port



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3.1 History: 31 October 2006

- The Standing Committee of the Tenth National People's Congress at its 24th Meeting decided as follows:
- (a) HKSAR is **authorized to exercise jurisdiction** over the Hong Kong Port Area at the Shenzhen Bay Port (SBPHKPA) according to the laws of HKSAR from the day on which the Shenzhen Bay Port commences operation, and HKSAR is to **administer** the Hong Kong Port Area at the Shenzhen Bay Port **as a closed area**;
- (b) **the area** of the Hong Kong Port Area at the Shenzhen Bay Port **will be stipulated by the State Council**; and
- (c) **the land use period** of the Hong Kong Port Area at SBPHKPA **will be determined by** the State Council according to the provisions of the relevant laws.





3.1 History : 30 December 2006

- In the Letter No. 132 [2006] of the State Council, the State Council:
- (a) **stipulated the area of** the Hong Kong Port Area at the Shenzhen Bay Port (“the Stipulated Area”); and
- (b) determined that **the land use right of** the Stipulated Area **be acquired** by HKSAR **by way of a lease under a lease contract** for State-owned land signed **between HKSAR Government** and the People’s Government of **the Shenzhen Municipality** of Guangdong Province, that the **land use period** shall commence on the day on which the Shenzhen Bay Port commences operation and shall **expire on 30 June 2047**, and that with the State Council’s approval of a submission made after the parties’ mutual consultation and submitted in accordance with the relevant procedures, the land use right may be terminated earlier or the lease may be renewed after its expiry.





3.1 History: 27 April 2007

- Hong Kong's Legislative Council adopted **a special Ordinance** “Chapter 591: Shenzhen Bay Port Hong Kong Port Area Ordinance (L.N. 138 of 2007)”
- **to enact the details of the 3D geographic area, administrative, legal and judicial issues, and related rights, responsibilities and restrictions under HKSAR.**





3.1 History: 26 June 2007

- Shenzhen Government and HKSAR **signed the lease contract** about this area and other cooperation pact on Shenzhen bay port.
- From then on, the “co-location” arrangement of “two checks at on place” is practically realized.



3.1 History: 1 July, 2007

- The port commences operation.
- Chapter 591 becomes effective.





3.2 Modeling

- Legal issues
- Spatial representation
- semantics



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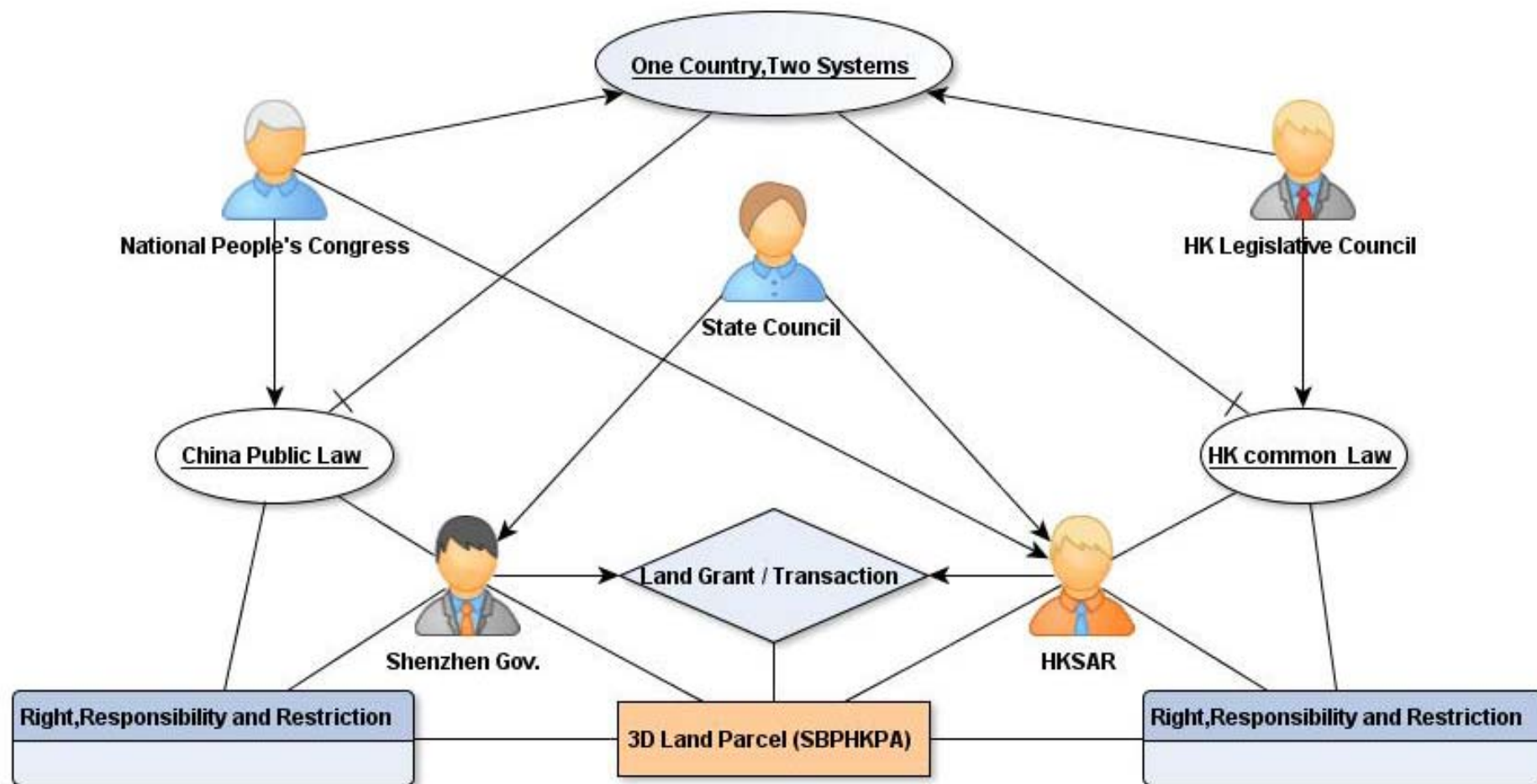


3.2 Modeling

- Generally, we suppose, the parties in LADM are within the **same** legal or political system. But this case is **not**.
- During these procedures, **several parties** are involved with **different administrative level, political system and legal system** to handle the issues about the area SBPHKPA.
- The huge **difference** with other normal land transactions is that the **RRRs are not under the same administrative and legal system, and the corresponding RRRs have their own specifications.**



Case Diagram





3.2 Modeling

- Claimed, according to **China law**, all the **lands** are **owned by the country**, and the **government on behalf of the nation** to manage them. **Any party**, except the government, only have the **usufruct or the use right** of the land through the land transaction or land grant.
- **Official lease agreement** over use right that involves the seller/buyer is a special **transaction** in land administration system.
- This transaction covers both on **administrative** and **spatial** aspects .



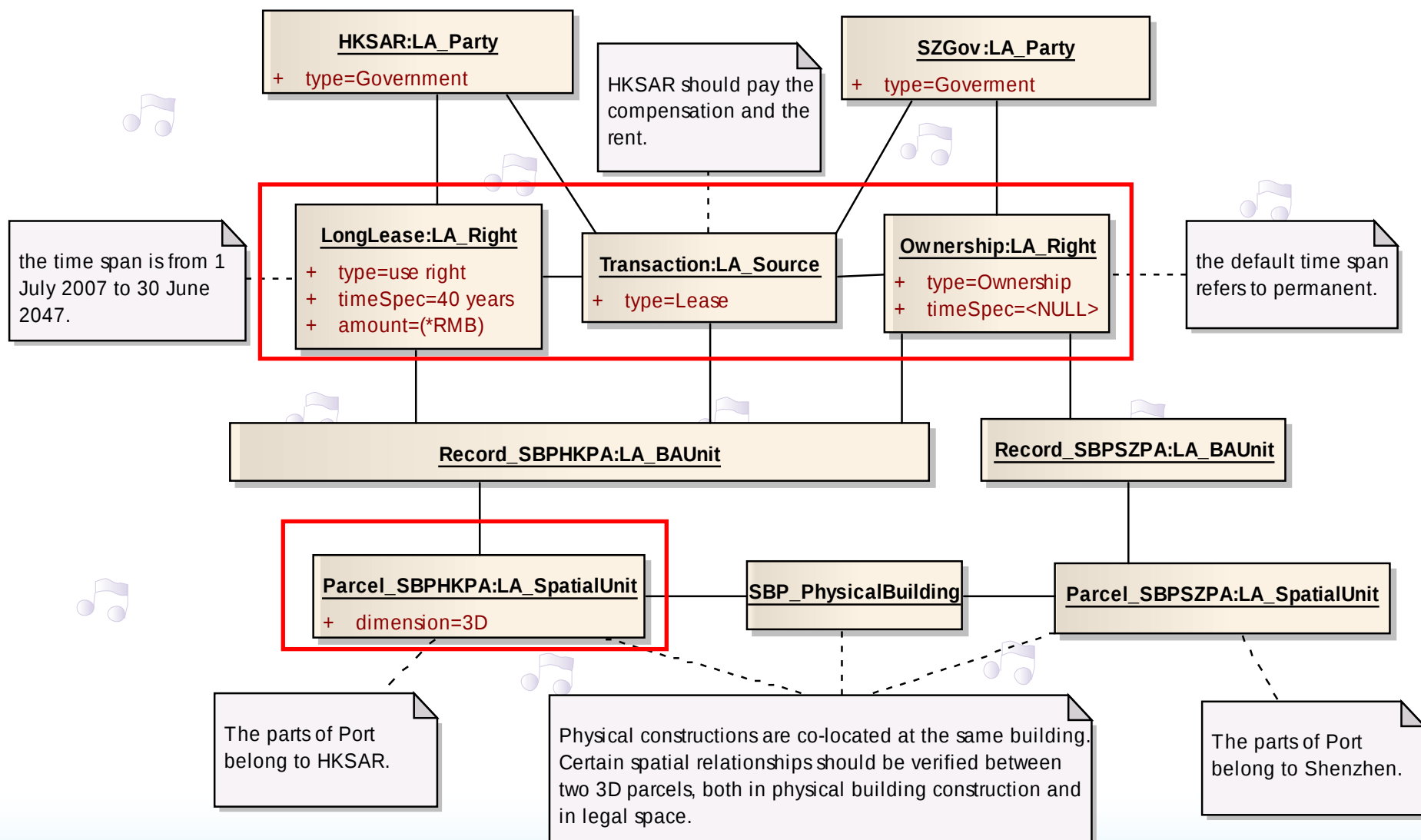


3.2 Modeling

- Under the principle of “one country, two systems”, the RRRs in HKSAR are **completely different** with that in the Mainland.
- This land transaction involved the **compensation** and the **rent** that HKSAR should paid to Shenzhen.
- **After** the land transaction, the 3D parcel SBPHKPA is under the administration of HKSAR, comply with HKSAR’s legal system and jurisdictional administration.



3.2 Modeling-instance level diagram





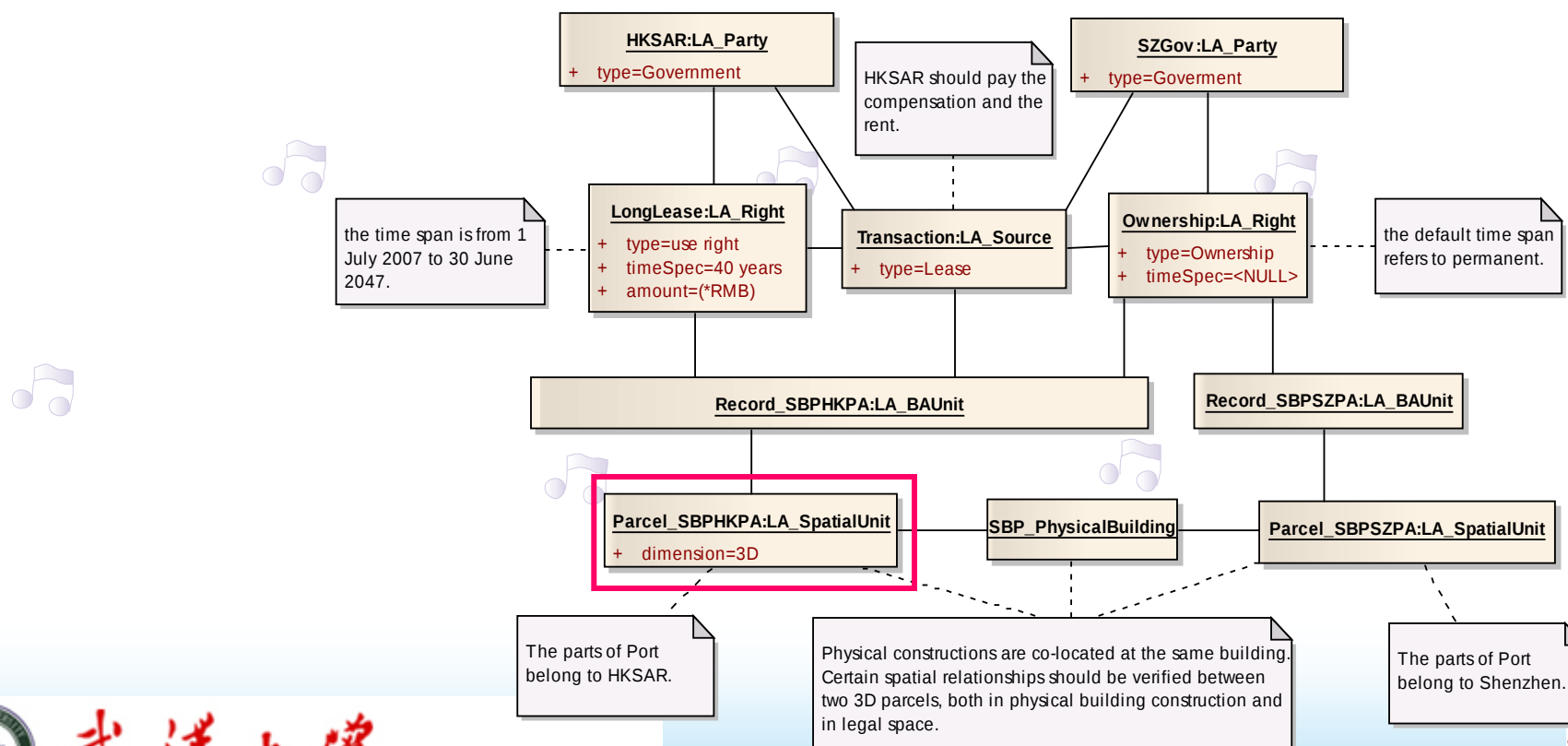
3.2 Modeling

- During the **valid lease period**, the administration and legislation of this area is an **exempt** from the justification of China and **under that of HKSAR**, but the **ownership** of this 3D parcel still belongs to the **Mainland**.
- The application of laws of HKSAR includes: 1) Hong Kong port area be closed area; 2) application of laws of HKSAR in Hong Kong port area; 3) land in Hong Kong port area be regarded as government land; 4) jurisdiction of courts is the same as the operation of the laws of Hong Kong.
- Re-emphasize that the laws of HKSAR **only takes effect during the Relevant Date** (1 July 2007-30 June 2047).



3.2 Modeling

- Both HKSAR and Shenzhen government should **register** this particular area SBPHKPA in each land administration system attached with the corresponding **RRRs** as well as **the geometric representation** of geographic space.





3.3. Geometric modeling

- The geographic space of the **legal** limitation and the **physical** construction might often be **consistent**, but sometimes not, and the later is only used for reference purpose.
- And in this case they have different shapes.
- Focus on the Legal geo-space.



3.3. Geometric modeling

- The two Port Areas are co-located at the same building.
- The boundary between them is clear, both in physical and in legal geo-space.

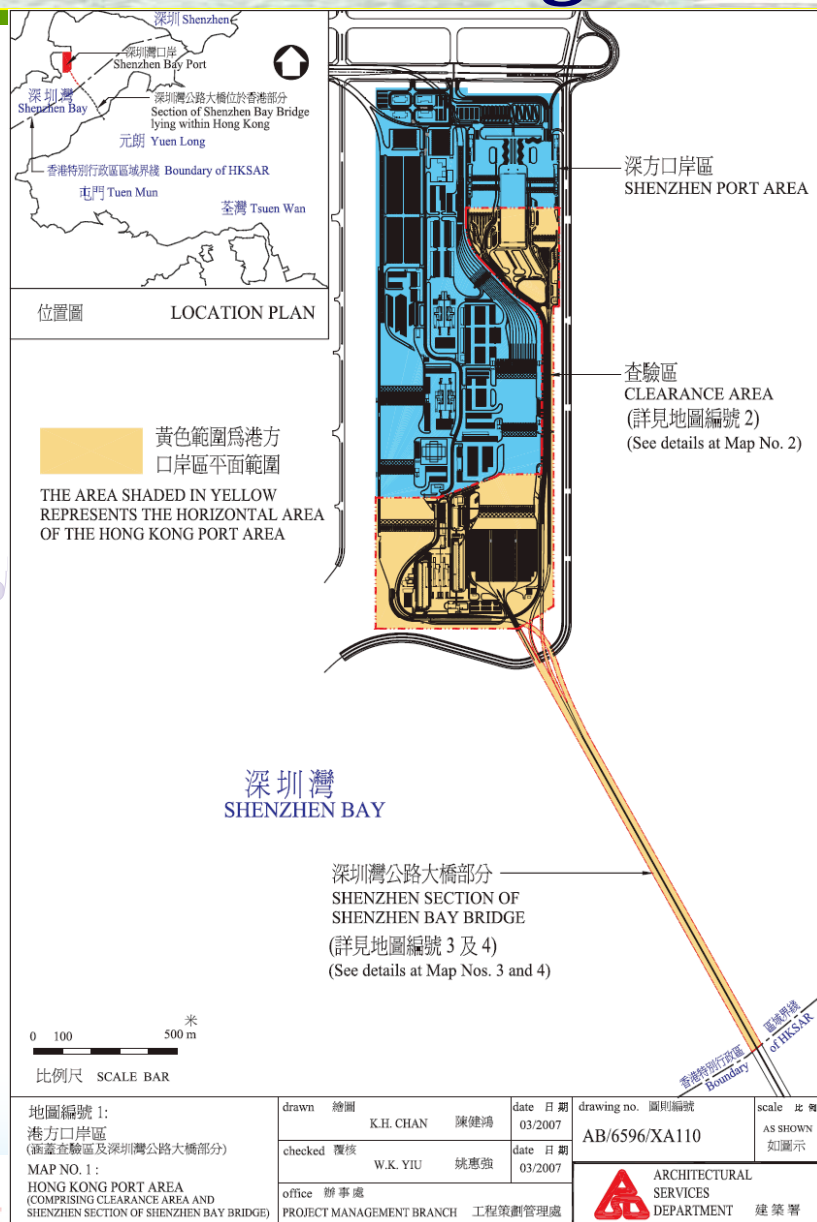


Co-location building



Boundary line in Building

3.3. Geometric modeling



Boundary line in land parcel

- 位置圖 LOCATION PLAN

黃色範圍為港方口岸區平面範圍
THE AREA SHADED IN YELLOW REPRESENTS THE HORIZONTAL AREA OF THE HONG KONG PORT AREA

深方口岸區
SHENZHEN PORT AREA

查驗區
CLEARANCE AREA
(詳見地圖編號 2)
(See details at Map No. 2)

深圳灣
SHENZHEN BAY

深圳灣公路大橋部分
SHENZHEN SECTION OF SHENZHEN BAY BRIDGE
(詳見地圖編號 3 及 4)
(See details at Map Nos. 3 and 4)

0 100 500 m
比例尺 SCALE BAR

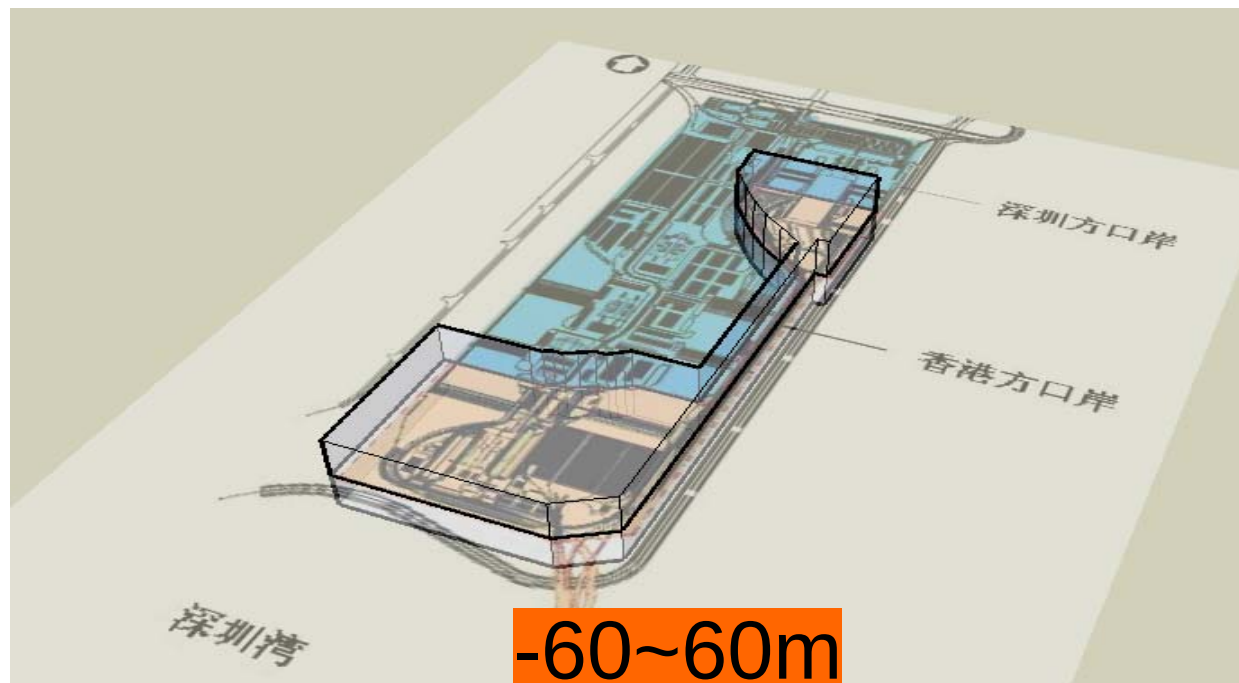
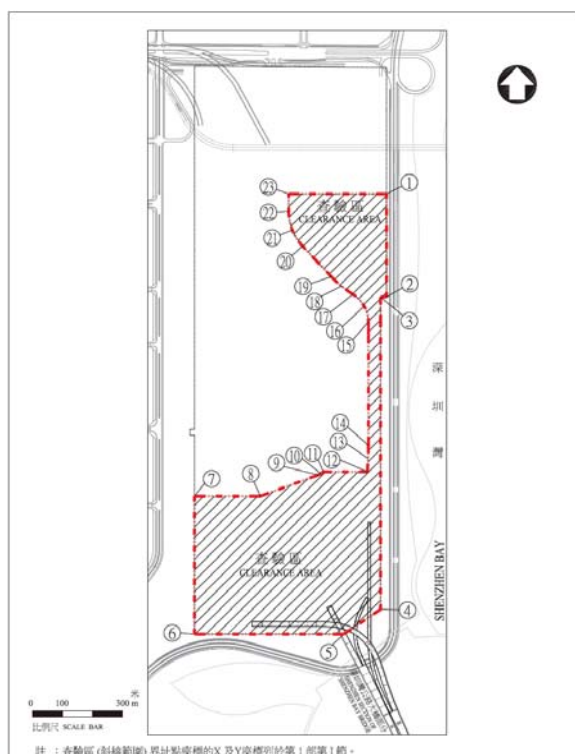
地圖編號 1: 港方口岸區 (包括查驗區及深圳灣公路大橋部分) MAP NO. 1: HONG KONG PORT AREA (COMPREHENDING CLEARANCE AREA AND SHENZHEN SECTION OF SHENZHEN BAY BRIDGE)	drawn 繪圖 K.H. CHAN 陳健清	date 日期 03/2007	drawing no. 圖紙編號 AB/6596/XA110	scale 尺 AS SHOWN 如圖示
	checked 覆核 W.K. YU 姚惠清	date 日期 03/2007		
	office 辦事處 PROJECT MANAGEMENT BRANCH 工程策劃管理處			

香港特別行政區
HONG KONG SPECIAL ADMINISTRATIVE REGION

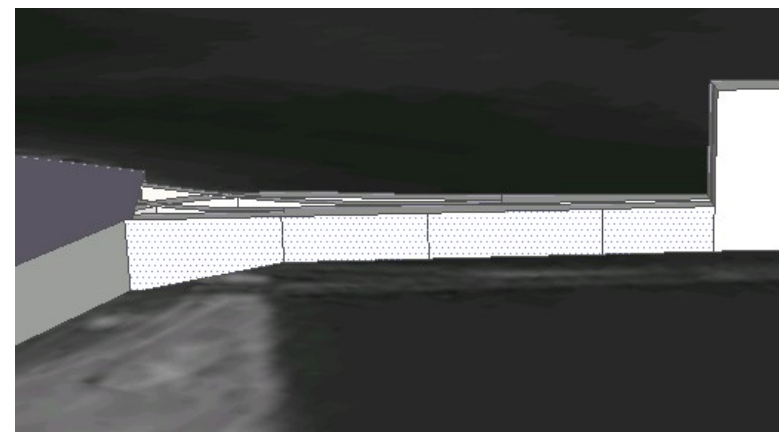
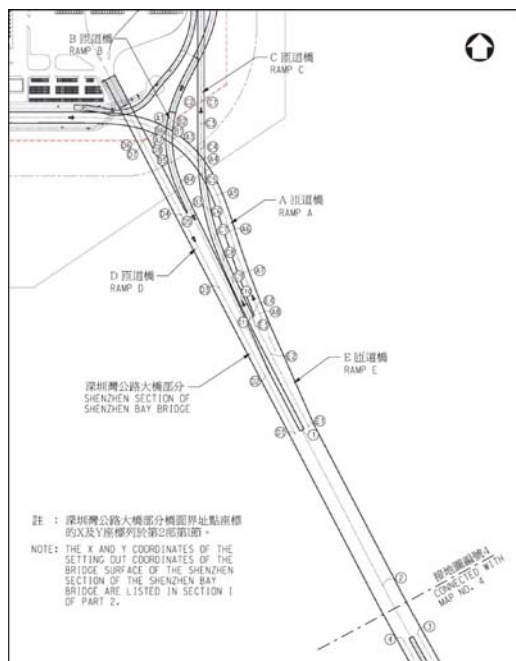
建築署
BUILDINGS DEPARTMENT

3.3. Geometric modeling: precisely

- Vertically, the limit is set from -60m ~+60m.
- For the link roads for passenger vehicles: -10m~+60m.

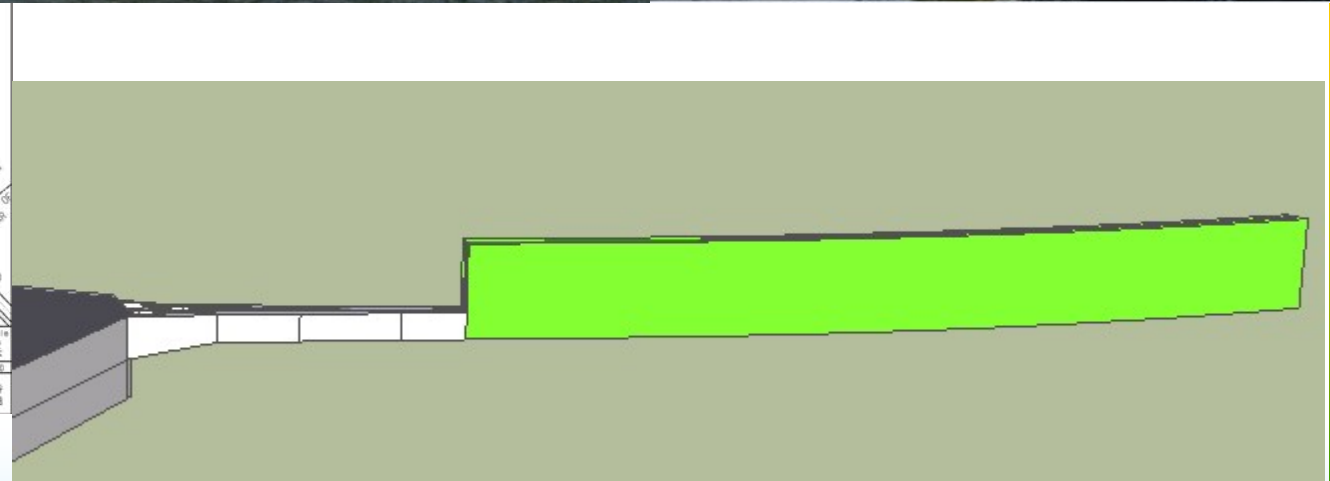


- for Ramps A to E, the set is from the bottom parallel edge lines of the bridge to +60m.



From bottom to 60m

- 



3.3. Geometric modeling

- Several parts of the legal space are defined by referring to physical objects, illustrating the interactions between legal and physical objects.



Registration



三维地籍电子信息系统---三维展示 - 搜狗高速浏览器

账户(U) 文件(F) 查看(V) 收藏(O) 工具(T) 帮助(H)

http://localhost:7344/3DView.aspx?parceltype=3&T3DPARCEL_ID=8

输入文字搜索 兼容 搜狗

3D CADASTRE

深圳市规划和国土资源委员会

土地空间使用权管理系统

切换到地下模式 隐藏三维地籍 隐藏二维地籍 显示3D详情 返回

管理首页 | 退出

您好: admin
您的权限: 超级管理员

宗地管理

- 宗地查询
- 宗地插入
- 宗地删除
- 宗地更新

证书管理

- 证书生成
- 证书浏览

宗地图形管理

- 三维信息浏览
- 位置查询

用户管理

- 添加 | 管理

日志管理

- 登录日志
- 操作日志

三维宗地信息 二维宗地信息

- 4000014270. 显隐
- 4000015416. 显隐
- 4000014415. 显隐
- 4000014365. 显隐
- 4000014865. 显隐
- 4000015031. 显隐
- 4000013375. 显隐
- 4000015973. 显隐
- 4000013411. 显隐
- 4000013479. 显隐
- 4000015815. 显隐
- 4000014667. 显隐

属性信息

宗地号	T103-0035
面积	483891.84
表面积	2289490.89
体积	57136739.88
位置	西部通道
用途	西部通道
类型	建筑物结构,测量结果
行政区	南山区
使用人	

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Conclusion

- A special case of 3D parcel SBPHKPA is discussed here. The particularity of its administrative system and jurisdiction results in its complexity.
- Historical processes of this area are stated, and multiple jurisdiction case is modeling with a diagram showing the relationships among the various actors.
- 3D spatial representation is built to describe the boundary of 3D legal space that encloses the physical building.



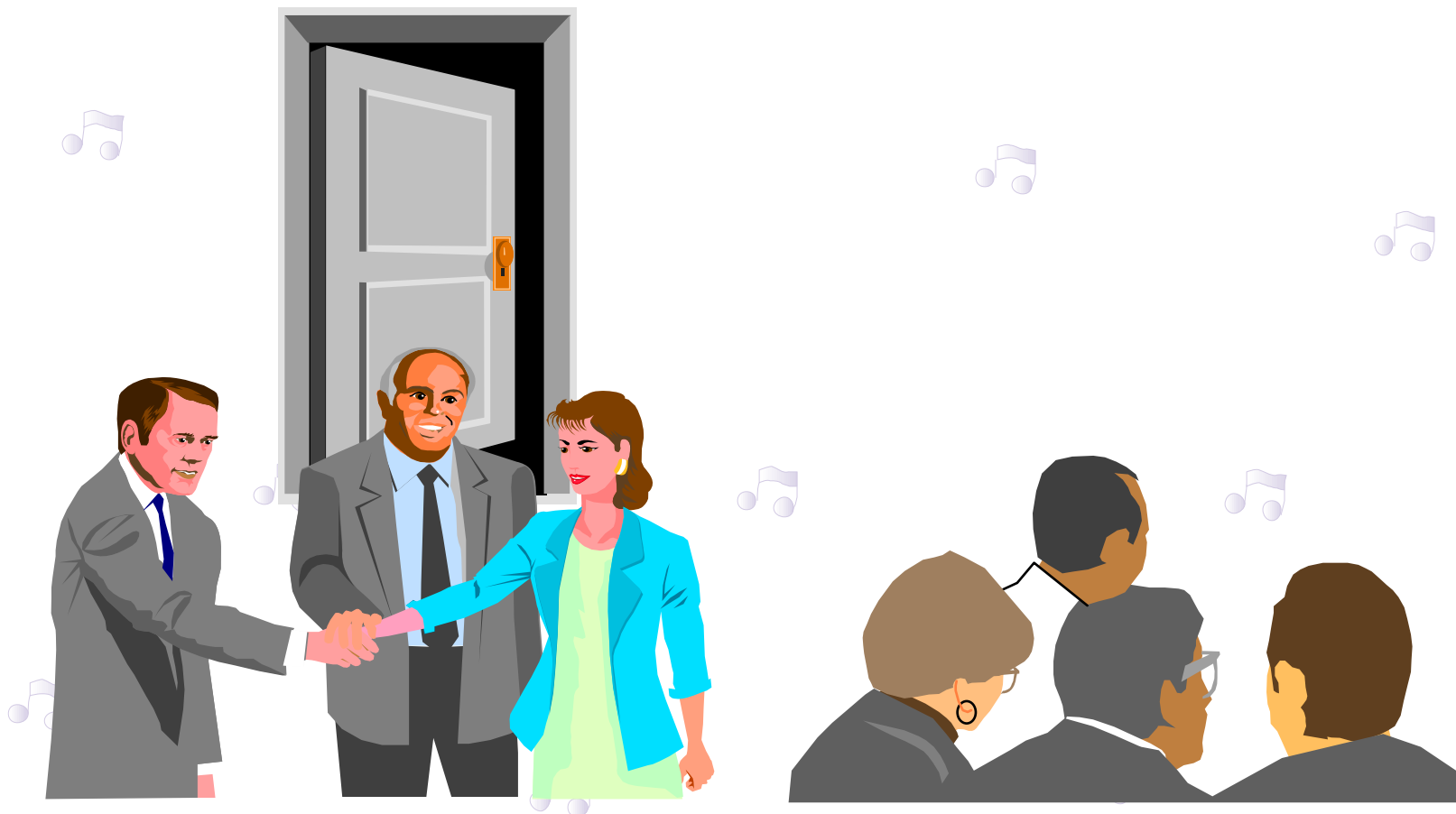


Conclusion

- The special case illustrates that multiple land administration jurisdictions can be imposed on the same 3D cadastral objects as corresponding rights, responsibilities and restrictions taken by corresponding parties.
- This study shows that even this special case can be well modeled with LADM model, but more attentions should be on the model and the realistic registrations of key RRRs in both sides of HKSAR and Shenzhen government.



Thanks



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