Title: **Vertical Community: Achieving a Harmonious Mix**

Authors: Sam Cuccurullo, Director of Property/Asset management Operations, CBRE
Tony Long, Global President of Asset Services, CBRE
Andy To, Executive Director of Asset Services , CBRE
Titus Kwong, Senior Manager of Asset Services, CBRE

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Vertical Community: Achieving a Harmonious Mix

垂直社区: 和谐的多用途建筑

Sam Cuccurullo

Tony Long

Andy To

Titus Kwong

Sam Cuccurullo, Tony Long, Andy To & Titus Kwong

CBRE
Suite 1204-06 (Main Reception), 3/F & 4/F, Three Exchange Square, 8 Connaught Place, Central
Hong Kong
China

tel (电话): +852.2989.5199, +1.214.863.3334, +86.21.2401.1392, +86 21 2401 1355
fax (传真): +852.2736.9910
email (电子邮箱): sam.cuccurullo@cbre.com.hk; tony.long@cbre.com; andy.to@cbre.com.cn; Titus.Kwong@cbre.com.cn
www.cbre.com

Sam Cuccurullo has nearly 30 years experience in property management services. Sam is the Director responsible for Property/Asset management operations in Asia Pacific and sits on the Global Executive Committee for Asset Services.

Sam Cuccurullo有近30年的物业管理服务经验，是负责亚太地区物业/资产管理业务的董事，资产管理服务全球执行委员会成员之一。

Tony Long is Global President of Asset Services for CBRE. As President, Mr. Long leads the real estate services business line for the company's Asset Services.

Tony Long在世邦魏理仕担任资产服务部全球总裁，管理着业务线下所有的物业项目。

Based out of Shanghai, **Andy To** oversees all services associated with the operations of the Asset Services business line across China. Mr. To manages the whole portfolio in Asset Services, particularly holds the position of overseeing properties of supertall buildings.

杜日生先生居于上海监督整个中国的资产服务线和相关联的所有服务。杜先生管理着业务线下所有的物业项目，尤其对于超高层大楼的项目，杜先生担任监督的角色，其中最为显著的项目是上海中心，有632米高。

Titus Kwong is involved in CBRE's strategic and potential business development, existing client relationship management, service delivery, and brand marketing for Asset Services in China.

邝信尧的主要职责是负责世邦魏理仕在中国各个地区范围的战略与业务拓展协调工作，客户关系的管理，业务线服务资产管理品牌的市场经营。

Abstract

This paper explores the definitions of mixed-used supertall and community and probes into the prerequisites of harmony community within supertall. By reviewing China's top 12 completed supertalls, it was discovered that number of uses within supertall is increasing, from more or less pure office to 6 or more different uses. Regulatory requirements, commercial and operational considerations are key drivers for adding uses in supertalls.

Because of the size, diversified use and number of population, people start to name mixed-use supertall as vertical community. However, there is a still a fine line between a vertical mixed-use project and a community, that is human factors. Without taking into human factors like interdependence, cohesiveness and we-feel, a mixed-used supertall can be viewed as structures of difference uses stacking over and linking together by vertical transportation system.

Keywords: Mixed-Use Supertall, Vertical Community, Driver, Human Factor

摘要

本文探讨了复合多用途超高层建筑及社区的定义，探究超高层建筑内营造和谐社区的先决条件。通过回顾中国已建成的前12座超高层建筑物，发现超高层建筑的用途逐渐增加，已从单纯的办公用途到现在6种以上不同用途。由于监管要求、商业及运营操作考虑是推动超高层建筑用途多样化的主要因素。

由于超高层建筑面积大、用途多、可容纳人口量大，人们认为多用途的超高层建筑是垂直社区。然而，垂直综合体和社区仍然有明显的差别，即人因要素。如果没有考虑人因要素如相互依赖性、凝聚力及社区集体感，多用途超高层建筑仅仅是不同用途叠加在一起由垂直交通系统联结起来的建筑结构。

关键词: 混合超高层建筑，垂直社区，驱动力，人因要素

Diversification In Usage: A Review of Supertall

Mixed-use development is any urban, suburban or village development, or even a single building, that blends a combination of residential, commercial, cultural, institutional, or industrial uses, where those functions are physically and functionally integrated, and that provides pedestrian connections[1 2].

Putting this definition into supertalls' context, a project with 2 or more uses, apart from parking facility, will be considered as mixed-use supertall. It has come to our notice that in the past a couple decades, supertalls are moving from single-use to mixed use. By reviewing the top 12 completed supertalls in China (including Hong Kong and Taiwan), it is not difficult to find this trend (see Figure 1).

Supertalls which were completed in the early 90's mainly served one to two uses. Over 95% of the space of Bank of China Tower and

用途多样化: 超高层建筑评价

混合用途开发是任何城市、郊区或乡村抑或仅仅一座建筑物的开发模式，其将住宅、商业、文化、行政或工业用途结合在一起，给与互相融合相互运作和行人连接的功能[1 2]。

将上述定义运用到超高层建筑的情境中，除了停车设施外，有2个或以上用途的项目被视为多用途超高层建筑。我们注意到过去几十年里超高层建筑开始由单一用途发展到多用途。通过回顾中国前12座已建成超高层建筑 (包括香港和台湾地区) 已经是个趋势 (见图1) 。

在90年代初期建成的超高层建筑主要有一至两个用途。比如在香港的中国银行大厦和中环广场95%以上的空间都是为办公服务。从90年代中期，超高层建筑在同一建筑物中开始有两个或多个用途，更多的零售因素开始崭露头角，比如这期间中国南方最高且以零售商场为依托的两大建筑物有深圳的信兴广场及广州的中信广场。跨

[1]Business Geography and New Real Estate Market Analysis, Grant Ian Thrall, p.216
[1]商业地理及新房地产市场分析，伊恩格兰特思罗尔第216页
[2]"Quality Growth Toolkit: Mixed-use Development", Atlanta Regional Commission. p.2
[2]"质量提升方式: 混合用途开发"，亚特兰大区域委员会，第2页

Central Plaza in Hong Kong are office premises. Starting from the mid 90's, supertalls began to carry two or more uses to the same building. More retail elements came in. Instances would be Shun Hing Square in Shenzhen and CITIC Plaza in Guangzhou. They were the top two office supertalls in Southern China during that period which they were both erected on a retail podium. Stepping into the Millennium years, supertalls entered a transforming stage. Uses became more diversified in most of the newly built ones. Jin Mao Tower, Shanghai World Finance Center, Taipei 101 and Hong Kong International Commerce Center were all constructed with multiple uses within the same building. On top of commercial elements, these buildings began to drag in cultural elements showing the embryos of communities.

This trend remained in the 2010's. Uses in supertalls became more diversified and balanced. Supertalls were constructed with at least three uses. By looking at constructing supertalls, such as Shanghai Tower, it can be seen that the supertall itself will carry a lot of different functions.

Vertical Mixed-Use Project: Drivers

There are a number of drivers for mixed-use supertalls. Government policies, commercial and operational considerations interact with each other encouraging the bloom of mixed-use supertalls.

First of all, regulatory requirements frame the uses of supertalls. Town planning authorities seem to free out from their traditional approach in designing a mixed-use district, i.e. the horizontal integration that uses are placed next to each other, such as a shopping mall or an office tower is adjacent to a group of residential estates. Town planners are warmer to the vertical integration approach. Riding on the critical mass and diversified use of supertalls, town planners may easily adjust or enhance the usage mix of a district. It is particularly effective in mature CBDs where land and infrastructure are limited resources. It is not uncommon to see uses and their proportion are pre-determined in the conditions of sales or land lease of a supertall. Developers only have the options to go or not go.

Commercial consideration is the second driver for mixed-use supertalls. Developers, like other investors, tend to avoid putting all the eggs in one basket. They prefer to diversify their risks by including sub-products with different income-generating characteristics into a supertall. Office, retail, hotel, residential apartment, observatory deck and etc. are having different financial performance and liquidity along the economic cycle. A composition of two or more sub-products in a supertall will be a rational choice for risk averse developers.

Operational consideration may be an understated driver for the trend of mixed-use supertall. Although there are a lot of technical challenges in planning, designing, constructing and operating mixed-use supertalls, like fire separation, sound attenuation, connectivity of various uses, egress and etc., operational benefits of mixed-used supertall are definite. For example, parking space demand in a mixed-use supertall can be reduced. A case study illustrated that a mixed-use project with office, restaurant and entertainment uses can result in a decrease in necessary parking space by about 40%[3] benefiting from the timing difference of peak demand on parking space of various uses. Similar kind of saving can be achieved in designing the electrical supply system.

[3]Glatting Jackson & Associates
[3]格拉特杰克逊等

入21世纪，超高层建筑进入转变阶段，大部分新建建筑的用途开始多样化。金茂大厦、上海环球金融中心、台北101及香港环球贸易广场都是在其建筑物内有多种用途。在最重要的商业因素基础之上，这些建筑物开始带有文化因素，呈现出社区的雏形。

这一趋势在21世纪依旧持续。超高层建筑的用途更加多样化及均衡化，其至少有三种用途。通过审视在建超高层建筑，如上海中心大厦，可以清晰看出未来超高层建筑本身将拥有多种不同的功能。

垂直综合体: 驱动力

有许多因素促进多用途超高层建筑的发展。政府政策，商业及运营因素互相作用，推动多用途超高层建筑的蓬勃发展。

首先，监管要求构成了超高层建筑的用途。城市规划机构似乎从传统的设计多用区域上跳跃出来，例如横向一体化使建筑物用途，比如购物中心或办公大楼与住宅群相邻。城市规划人员更善于使用垂直整合方法。身在超高层建筑的临界与多种用途处，他们更容易调整或促进区域用途多样化。尤其是在发达的商业中心区，当土地和资源是有限的。超高层建筑的用途及用途比例由其销售及土地租赁的条件先行决定也众人皆知，而开发商只能选择建或者不建。

商业因素是超高层建筑用途多样化的第二推动力。开发商像其他投资者一样，避免将所有鸡蛋放在一个篮子里。他们通过多元素发展不同的创收特征来分散超高层建筑的风险。办公、零售、酒店、住宅、展望台等根据不同的经济周期有不同的盈利方式和流动性。在一座超高层建筑中结合两个或多个副产品线对于规避风险的开发商来说是明智的选择。

运营操作因素可能在推动多用途超高层建筑的发展中被低估。虽然在规划、设计、建造及运营超高层建筑中有许多技术性挑战，如防火分隔、降低回音、各种用途及出口的连接等，超高层建筑运营操作的好处却显而易见，比如减少停车位需求。案例研究表显示办公、餐饮及娱乐用途的工程能够减少40%[3]的必要停车空间，得益于各种用途在不同时间对停车位的需求。同样，在设计电力供应系统中也可以节省开支。

另一个例子是热电联产或三联供系统的应用。每个人都知道热电联产或三联供系统可以节省能源和成本。上述已说该系统当缩放至适应同时需要电力、供热及冷供应的建筑物或建筑物时受益最

Figure 1. Proportion of uses in the top 12 completed supertalls in China, including Hong Kong and Taiwan, versus a constructing supertall – Shanghai Tower (Source: CTBUH, CBRE Research and CBRE China Asset Services Titus Kwong)
图一. 中国前12座已建成超高层建筑，包含香港及台湾地区，与一座在建中的超高层建筑作对比的用途比例图 (出自: 世界高层建筑学会、世邦魏理仕研究部及世邦魏理仕中国资产服务部邝信尧)

Another example will be the application of cogeneration or trigeneration system. Everyone tells cogeneration or trigeneration system can achieve saving in energy and cost. Having said that the system has its greatest benefits when scaled to fit buildings or complexes of buildings where electricity, heating and cooling are simultaneously needed. This benefit can be well received by a mixed-use supertall with office, retail, hotel and other uses.

Vertical Community: Human Factors

One of the essences of mixed-use projects[4] is that it brings people closer to the things that they need on a day-to-day basis. A supertall with multiple uses can easily achieve this objective. But, more and more people nowadays describe vertical mixed-use projects, i.e. supertalls, as vertical communities. Are all mixed-use supertalls qualified as vertical communities?

Critically reviewing the definitions and design criteria of a mixed-use project against a community, between the two, there is still a fine line – human factors.

Walkability, centralization, design quality, compact development and variety are considered to be the top 5 elements of mixed-use projects. Human factors are not there or they only exist between the lines.

Looking at the Classic Definitions of a Community:
"Community is a human population living within a limited geographic area and carrying on a common inter-dependent life" – G.A. Lundberg

"Community is an area of social living marked by some degree of social coherence" – MacIver

"Community is the smallest territorial group that can embrace all aspects of social life" – Kingsley Davis

"Community is the total organization of social life within a limited area" – Ogburn & Nimkoff

"A Community is cluster of people, living within a contiguous small area, who share a common way of life" – Arnold Green

"Community is a social group with some degree of 'we-feeling' and living in a given area." – E. S. Bogardus

The key words for a community are inter-dependent life, coherence, we-feel and common way of life which are not always on the top lines of the design brief of mixed-use supertalls.

A building of the size of a supertall can house as many as 10,000 people at any one time. In most countries around the world, a population of this size would be equivalent to a small country town. These communities are brought together by events. We have seen many different events around the world that allows people to feel the "community" aspects of a building. For example in QV1, Perth, they have a charity BBQ which supports various charities and can have as many as 2,000 people to attend the "community" event.

Without taking into the human factors, like interdependence, connectivity, coherence and "we-feel" of people of different uses, a mixed-use supertall can only be viewed as blocks of building, typically

[4]UBM's Future City, Mary Jander, June 14, 2013.
[4]博文关于未来城市，玛丽詹德，2013年6月14日

大。这好处可以通过具备办公、酒店及其他用途的超高层建筑得以实现。

垂直社区: 人因要素

综合体项目的本质之一是拉近人们与其日常所需物的距离，混合多用超高层建筑很容易达到这个意图。但是目前越来越多的人认为垂直综合项目如超高层建筑是垂直社区。所有的多用途超高层建筑都是垂直社区么?

批判性回顾综合体与社区的定义和设计标准，两者之间还是有清晰的界限-人因要素。

舒适行走、集中性、设计质量、集约发展及多样化被认为是综合体项目的最重要五个因素。4人因要素虽不在其中，但也存在于两者的界限之列。

我们来看一下社区的常用定义:
"社区是在有限的地理区域有共同且相互依赖的生活的人类群体"— G.A.伦德堡

"社区是具备某些社会凝聚力的社会生活的区域"— 莫克文

"社区是可以接受社会生活各个方面的最小的区域群体"— 金斯利戴维斯

"社区是在一定区域内的社会生活的整个组织团体"— 奥格朋&尼姆克夫

"社区是生活在连续性小区域内有共同生活方式的人类聚集体"— 阿诺德格林

"社区是生活在特定区域有着某些集体感的社会团体"— E.S.鲍格度

上述社区的关键词是相互依赖的生活、凝聚力、集体感以及共同的生活方式，这些并非是超高层建筑设计中考虑的首要因素。

一座超高层建筑的面积随时可以容纳一万人。这样的容纳率相当于世界上许多国家的乡镇。这些社区被各种活动及事件聚集到一起。我们看到世界上许多不同的事件让人们体验到一座建筑物的"社区"感受。比如珀斯的QV1大厦有一个慈善性质的烧烤活动助力许多的慈善组织，可容纳2000人参与其中。

假设不考虑人因要素如相互依赖性、连结性、凝聚力及社区集体感，一座多用途超高层建筑就只会被看成一座由典型零售、办公、酒店/公寓及观光层所堆砌的建筑物去满足监管要求、商业及运营考虑。

和谐垂直社区: 关键问题

混合多用途建筑创建和谐社区
创建和谐垂直社区最重要的关键考虑因素之一是在该超高层建筑中可以享受哪种用途。不同用途的"相互依赖"程度将直接影响使用者的凝聚力，因此将会影响"社区集体感"。

开发商、设计师及资产管理者可能会认为在大多数情况下，超高层建筑的用途和使用比例已经由相应部门及其销售和土地租赁条件决定，因此并不能在用途方面提高相互依赖程度。不同的用途定位带来不同的相互依赖程度可以由三个重叠的圆圈说明 (见图二及图三) 。

"生活/工作/娱乐/购物"是描述一个综合体包括超高层建筑在内所存在的优势的常用表述。然而，这四种用途是服务于四种不同的群体么? 抑或这样一群人，如垂直社区的核心成员真的是在同一

retail, office, hotel/apartment and observatory deck, stacking over to address regulatory requirements, commercial and operational concerns.

Harmonious Vertical Community: Key Issues

Mix Cultivating Harmonious Community

One of the most critical considerations in creating a vertical community is which uses will be allowed within the supertall. Degree of "interdependence" of different uses within the supertall will substantially affect the cohesiveness of users; hence affect their "we-feeling".

Developers, designers and asset managers may argue that, in most of the cases, the uses and their proportions within a supertall are pre-determined by the authorities and specified in the conditions of sales or land lease. Therefore, they cannot do too much on the uses to improve the degree of interdependence. Different degrees of interdependence resulted by positioning of the uses can be illustrated by multiple overlaying circles (see Figure 2 and Figure 3).

"Live/Work/Play/Shop" is a commonly used statement in describing the benefits of a mixed-use project, including supertall. However, are the 4 uses serving 4 different groups of people? Or is there a group of people, i.e. core members of the vertical community, really living, working, playing and shopping within the same supertall. Take an example, hotel guests use the retail areas for food and beverage as well as shopping whilst the office workers use sky lobbies not only for transit but also have their lunch there. Observation decks are used by tourists and locals who observe the skyline of a city. Serviced apartment inhabitants use retail and other facilities in a high-rise building including gyms, restaurants and retail areas.

Smart Growth America's Leadership Institute has developed a Smart Growth Project Scorecard[5] aiming to measure the qualities of the proposed development projects to see if they correspond to the community's vision for smarter growth. The scorecard measures the project's location & service provision, density & compactness, diversity of use and etc. Developers of vertical community may introduce similar scorecard system, with appropriate adjustments, in positioning the uses and if possible, selecting suitable occupiers of various uses echoing the theme of the vertical community.

Connectivity, Security and Internal Capture

An interdependent mix cannot be functioned well in vertical communities without a good connectivity among various uses. Connectivity, relying on vertical transportation, is always the biggest challenge of supertall. Commonly adopted vertical transportation strategies in supertalls are as follows:

- Office lobbies of each zone are connected to the entrance floor(s) by a group of high-speed elevators, in some cases Twins or Double-deck elevators. Between transition office lobby and individual office floors, they are served by medium to high-speed elevators.
- Hotel main reception will normally be placed on the high level transition floor. Entrance floor(s) / reception and reception / guest floors are connected by high-speed elevators and medium-speed elevators respectively.

[5]Smart Growth Implementation Toolkit, Smart Growth America' Leadership Institute, Dec 1, 2007.
[5]智能增长实施工具，智能增长美国领导研究所，2007年12月1日

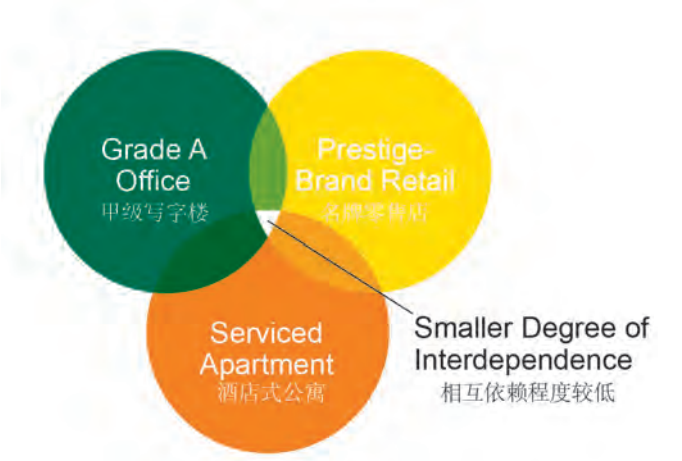

Figure 2. Degree of Interdependence among Grade A Office, Serviced Apartment, and Prestige-brand Retail (Source: CBRE China Asset Services Andy To and Titus Kwong)
图二. 甲级写字楼、酒店式公寓和名牌零售店的相互依赖程度 (出自: 世邦魏理仕中国资产服务部杜日生及邝信尧)

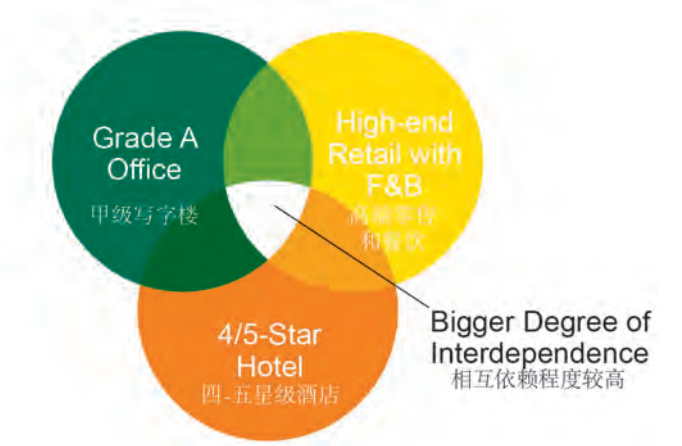

Figure 3. Degree of Interdependence among Grade A Office, 4/5-Star Hotel, and High-end Retail with F&B (Source: CBRE China Asset Services Andy To and Titus Kwong)
图三. 甲级写字楼、四-五星级酒店、高端零售和餐饮的相互依赖程度 (出自: 世邦魏理仕中国资产服务部杜日生及邝信尧)

超高层建筑中生活、工作、进行娱乐活动及购物? 举个例子，酒店客人在零售区域用餐和购物，而上班族使用空中大厅既可换乘电梯也可在此进食午餐。旅客和当地人可以在观光层看城市的天际线，酒店式公寓居民可以使用高楼里的零售和其他设施，包括健身房、餐馆及零售区。

智能增长美国领导研究所开发了智能增长项目计分卡5，旨在衡量该开发项目的品质是否符合社区智能增长的愿景。计分卡检测项目的位置和服务提供、使用密度和紧密度、用途多样性等。垂直社区的开发人员可考虑引入类似的计分卡系统,作适当调整来确定建筑物用途; 如果可能的话，会选择不同用途合适的用户来呼应垂直社区的主题。

连结性、安全性及内部捕获

如果没有各种用途间的良好连结，垂直社区中相互依赖的区域也难以良好运作。依靠垂直运输的连结性一直是超高层建筑的最大挑战。超高层建筑中常被采纳的垂直交通策略如下:

- 每个区域的办公大厅通过高速电梯 (有些是双子电梯或双层电梯) 与进口处相连。中转办公大厅与单独的办公楼层间供有中速及高速电梯。
- 酒店主要接待处通常在最高端中转层。进口楼层/接待处及接待客人楼层分别有高速电梯及中速电梯连结。

- In most cases, residential or serviced apartment, if any, will have a completely separated vertical transportation system within a supertall. Direct access will be provided to the residents from entrance floor(s) to the designated floor without transit.

Such strategies serve the objective that no visitor (from outside of the building) has to take more than 2 elevator-rides to the designated floor. How about the internal users? For instance, an office lady having a drink after work in a hotel lounge, she may be required to take 4 elevator-rides within the same building.

In designing the transportation strategies, a lot of emphases have been put on the routing of ingress and egress, access control & security of office / apartment and exclusiveness of hotel. Sometime, experience of people travelling from one use to another within a supertall is not well taken care of.

Different uses have different requirements on access control & security and exclusiveness. An operator of a food court in the retail podium would like to have 24/7 access to the public, a 5-star hotel manager would insist to have exclusive entrance and completed isolated vertical transportation system, office security manager would tell you that turnstiles are essential and etc. All these requirements have their justifications but those physical barriers (turnstile) and psychological distances (number of elevator-ride) will have adverse impact on the connectivity of the vertical community. There is no best solution. A balance has to be struck among connectivity, security and exclusiveness.

Although there is no best solution, we could still measure the connectivity and degree of interdependence of a vertical community. "Internal Capture Rate" is normally used to measure the automobile trips in a district. By applying the test to the foot traffic of a vertical community – higher the "internal capture rate" on foot traffic, higher degree of connectivity and interdependence of the vertical community is.

Transition Lobby, Sky Lobby and Community Center

The functionalities of transition lobbies are evolving. People may recall, a trip to Central Plaza Apex, the observatory deck of the 374 meters supertall in Hong Kong, would pass through 3 to 4 lift lobbies on different floors. Going back to 1990's, the only function of those lobbies was holding passengers waiting for the lifts. They were "transition lobbies" – a proper name reflecting their function.

Time went by, coffee shop and sandwich express moved into those lobbies. Corporate seasonal cocktails and cultural events started taking place on these transition floors. Then, those transition lobbies renamed as "Sky Lobbies" – a more appropriate name for their enriched functionalities.

Looking ahead, we will see a huge bookstore to be opened in the sky lobbies of Shanghai Tower. Restaurants, shops, bars and clubs will be placed in the lobbies of Neva Hybrid, a mixed-use supertall to be located in St. Petersburg.

Will these sky lobbies just be an extension of the retail element from the podium of the supertall? Or can these sky lobbies also serve as the community centers to enhance the degree of social coherence and embrace all aspects of social life in the vertical community? Now it is not a question of availability of space, hardware nor design. Shanghai Tower has 8 sky lobbies, the floor area of those sky lobbies account

- 在大多数情况下，若有住宅区或酒店式公寓，则它们在超高层建筑中有完全独立的垂直交通系统。居民可以从入口层直接到达指定楼层而无需通过中转。

通过这些方案使外来客人 (非本建筑楼用户) 无须乘两次以上电梯到达指定楼层。那么内部使用者呢? 比如一个办公室女职员下班后在酒店休息室喝点东西，她可能需要在同一建筑楼里乘四次电梯。

在交通方案设计方面，很多重点都放在出入口动向、办公/酒店式公寓的进出口及门禁管制与安全性及酒店的专有性上。有时根本没考虑到超高层建筑中人们从一种用途转到另一种用途时人们的感受。

在进出口及门禁管制与安全性及专有性上不同用途有不同的要求。零售区域的食品经营商肯定想人们能随时进入到公共区域，五星级酒店的经理希望有专有的入口及全面独有的垂直交通系统，办公安全经理也会告知你十字转门至关重要等。所有这些需求都有其理由，但是由此造成的生理障碍 (十字转门) 及心理距离 (乘搭电梯的次数) 将对垂直社区的连结性有不利影响。因此没有最好的解决方式，必须使连结性、安全性及专有性协调发展。

虽然没有最佳解决方案，我们仍旧可以衡量垂直社区的连结性及相互依赖程度。"内部捕获率"是通常用于检测一个社区的汽车旅行的一种方式。通过此实验检测垂直社区通过步行的频繁程度得知，步行的"内部捕获率"越高，该社区的连结及相互依赖程度越高。

中转大厅、空中大厅及社区中心

中转大厅的功能正在强化。人们也许会想起在不同楼层经过三至四个电梯大堂到达有374米高观光层的香港中环广场的经历。回想90年代，这些大厅的唯一用途在于让乘客等待电梯，即"中转大厅"，一个反映其功能的名字。

随着时间的发展，咖啡店和三明治快餐店进入这些大厅区域。这些中转层也开始迎来公司不同季节的鸡尾酒及文化活动。随即这些过渡性大厅开始被更名为"空中大厅"，一个符合其功能多样性的更合适的名称。

展望未来，我们将见证上海中心大厦的空中大厅上巨大书店的崛起。在圣彼得堡的多用途超高层建筑涅瓦河大厦上将会有餐馆、店铺、酒吧和俱乐部。

这些空中大厅难道仅仅是超高层建筑零售因素的延伸么? 抑或它们同时可以成为社区中心促进垂直社区内的社会凝聚力及社会生活各个方面的发展? 现在已经不再是空间、硬件或者设计可用性的问题。上海中心大厦有8个空中大厅，这些空中大厅占据的楼层区域面积是整个工程总楼面面积即581,327平方米的5.25%。涅瓦河大厦每20层就有一个空中大厅。这是拥有并运营超高层建筑的开发商及资金管理者的愿景问题—垂直综合体与垂直社区是有区别的。

结语

由此看出基础设施和不同用户以不同方式依赖超高层建筑的各个组成部分，就如同一个城镇或地方性社区。人们进行互动而成为更大社区的部分。当这样的超高社区运作良好，将会满足所有互动需求。

建设垂直社区不仅仅是营销或者定位超高社区的标记或口号。社会、环境、商业及运营操作需求使垂直综合体项目成为和谐社区。考虑超高层建筑成千上万用户的健康也是一种社会责任。超高层建筑中相互依赖程度越高，附近的基础设施和环境资源的需

for 5.25% of the total gross floor area 581,327 square meters of the whole project. Neva Hybrid will have sky lobby every 20 floors. It is a matter of the vision of the developers and asset managers who own and run supertalls – a difference between Vertical Mixed Use Project and Vertical Community.

Conclusion

As it can be seen that the infrastructure and various users depend on various components of a supertall in different ways, it is not dissimilar to a country town or local neighborhood. People interact and become part of the larger community. When it works well, a building will be able to cater to all sorts of needs and interactions.

Building a vertical community is not only a tag line nor slogan for marketing or positioning a supertall. There are social, environmental, commercial and operational needs to drive a vertical mixed-use project to a harmonious community. It is a social responsibility to take care of the well-being of tens of thousands of users of a supertall. The more interdependence in a supertall, the less demand will be on the infrastructure and environmental resources in the vicinity. Cross-selling among various uses will bring the yielding and commercial value of the whole development up.

In the past two decades, practitioners in the supertall field have done an excellent job in hardware like structure, curtain wall, vertical transportation system, firefighting equipment, energy management and etc. Now it is time for us to have a closer look on the "people".

求就越少。各种用途间交叉销售将会带来整个开发的收益和商业价值。

在过去二十年里，超高层建筑领域的从业人员在硬件如结构、幕墙、垂直交通系统、消防设备及能源管理等方面工作出色，而现在是时候让我们开始着眼于"人"的因素了。

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