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The Vertical Corporate Campus: Integrating Modern Workplace Models into the High-Rise Typology

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Abstract

As the great urban migration continues to drive the growth of cities worldwide, global companies are seeking new approaches to the urban workplace and corporate campus. In light of environmental and economic imperatives to develop taller and denser central business districts, a key challenge is merging contemporary workplace concepts, which emphasize large, open floors and high levels of connectivity, with high-rise typologies with smaller floor plates set around center cores. This paper traces the evolution of the corporate campus and emerging design strategies for translating contemporary workplace models into a vertical campus typology that allows companies to realize the benefits of urban locations, while contributing to a more sustainable future.

Keywords: Campus, Density, Economics, Vertical Urbanism, Verticality, Workplace

1. Introduction

The Vertical Corporate Campus is an emerging typology for urban development. Arguably the most sustainable workplace development model today, it has evolved as a direct response to continued rapid urban growth. The United Nations 2014 projections of an additional 2.5 billion urban dwellers by the year 2050 demonstrate an unprecedented migration that continues to drive the growth of cities worldwide. With the development of new cities as well as the transformation of existing downtowns, the key ingredients of housing, retail, dining, and walk-to-work offices combine to enliven urban cores, spur investment and development, and raise the quality of life for urbanites. This is embraced by both the millennial generation's desire to work and live there as well as aging baby-boomers returning to city centers for retirement. Both are after the same thing – proximity to the activity, amenities, and culture that cities continue to provide us. As a result, cities throughout the world are embracing an increasingly dense future based upon leveraging verticality and integrating modern workplace models into this high-rise typology.

2. The 24-Hour City

In a 2015 study, the Urban Land Institute (ULI) and PricewaterhouseCoopers (PwC) identified the distinction between nine-to-five downtown markets and 24-hour urban markets as the key to superior investment performance as defined by trends in capital flows, occupancy rates, and relative pricing changes. The "24-hour city" concept has become part of the common lexicon of the real estate industry and of city planners (ULI & PwC, 2015). Generation Y is the largest generation, the most racially and ethnically diverse, and the one not yet fully immersed in the housing and jobs markets, but is likely to have the most profound impact on land use. The majority surveyed at 62% prefer developments offering a mix of uses with 76% placing high value on walkability (ULI, 2013). For economic viability, density is required – "cities-within-the-city" turn the streets up into the air and stack daytime and nighttime use of the land, leveraging a mix of co-dependent activities within the same structures.

The most progressive high-rise towers now incorporate all necessary resources and amenities for working, living and playing, guided by a strong urban design structure, but in a vertically stacked fashion. Efficiencies nearing 90% help these facilities respond to rampant urbanization, rapidly rising land costs, shifting demographics, tightening economic drivers, and escalating environmental concerns. Thus the claim of most sustainable workplace development model.

Of course, this vertically stacked model is not without its challenges, most often centered around connection – externally between the structure and its surroundings, and internally with the difficulty of connecting occupants distributed on stacked floors. But in general, our horizontal past is being tipped on end with great success. Four categories of concern, outlined in Table 1, help define the value proposition for the Vertical Campus:

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Table 1. Four key components to a be addressed for a successful Vertical Campus model (Source: Woods Bagot)

EFFICIENCY	SUSTAINABILITY	ACCESSIBILITY	URBAN CONTEXT
Floor Plate	Materials	Convenience	Revitalization
Occupant	Microclimate	Access	Land Valuation
Operations	Carbon Footprint	Circulation to/from/in	Community Service

1. Efficiency
2. Sustainability
3. Accessibility
4. Urban Context

As important as these four components are, occupant experience is still the underlying driver and most important determinant of success. As the Millennials, who were born in the 1990s, are getting more established in the workforce they are looking to embed themselves in cities that are walkable, vibrant, flexible, have adequate transportation, provide social and professional experiences – an underlying desire for urban authenticity. If carefully planned, there exists a natural alignment between important experiential expectations with others more centered on financial and corporate social responsibility concerns.

3. The Corporate Campus

At the turn of the past century and during the great depression, several major city design movements developed in response to the poor living conditions of the nineteenth century industrial city. Movements such as Ebenezer Howard's Three Magnets (Fig. 1) and Garden City movement (Fig. 2) as well as Corbusier's Athens Charter and Radiant City (Fig. 3), presented new approaches to urban planning that depended upon the segregation of uses so as to isolate and maximize their inherent qualities. Greenbelts surrounded city components, and industry was separated from independent zones for living, working, recreation, and circulation. It was on the backs of these principles that the corporate campus was born, launching the ongoing process of decentralization that has long shaped our cities.

Expanding offices of the postwar economy had three choices of location:

1. Downtown presence at a relatively high price;
2. Small offices in suburban retail zones with limited parking; and
3. Newer planned districts at the urban periphery.

By the end of the 1950s, the market for exclusively white-collar facilities in the suburbs spurred private investment in office parks. These quiet campus-like environments were most often self-contained, small tracts of less than 75 acres with a maximum of 25-33% lot coverage (Mozingo, 2011). Strict control of setbacks, landscaping, land-use, and design features resulted in orderly, controlled environments.

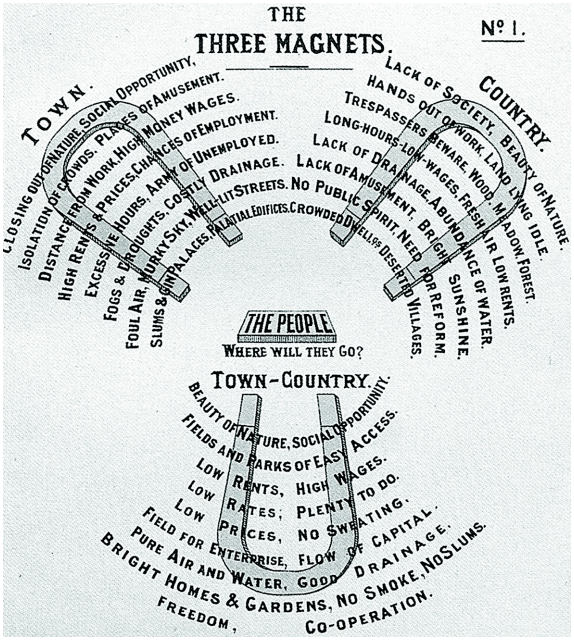


Figure 1. Three Magnets: Town, Country, Town-Country. From the Garden Cities of To-morrow, 1902. (Source: Ebenezar Howard).

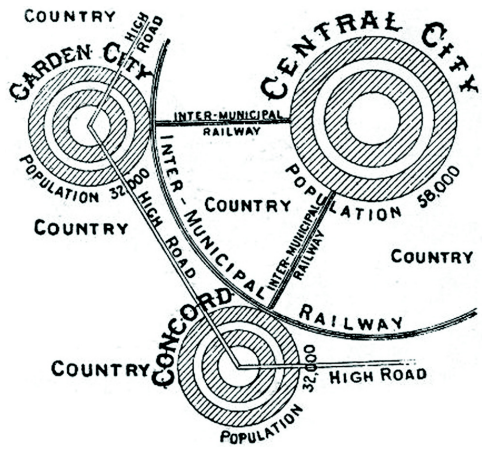


Figure 2. Garden City. From the Garden Cities of To-morrow, 1902. (Source: Ebenezar Howard).

With the expansion of urban highway networks, by the 1980s office parks dotted the suburban landscape. Positive attributes included open, country-like settings, plenty of

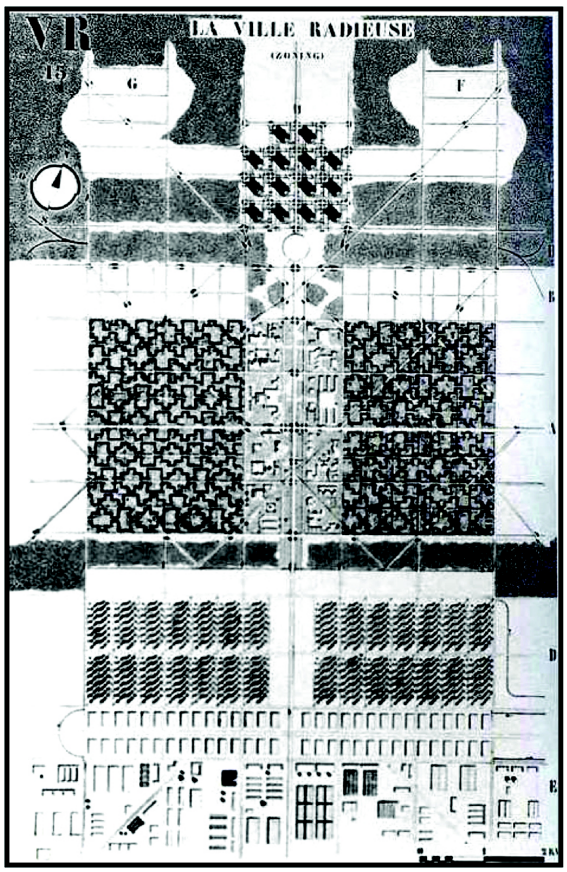


Figure 3. Ville Radieuse (The Radiant City). (Source: Le Corbusier).

parking, and convenient access to suburban homes. Less desirable attributes included increased traffic, segregation of work from community, and the fueling of extensive urban flight.

In reality, cities and towns have suffered from strategies that segregated functions and favored vehicular movement. Although efficient and economical in terms of construction and management, the resulting places do little for social cohesion and cannot be mistaken for diverse, vibrant neighborhoods. Despite decades of suburban growth, the balance between suburban and urban workplaces is now tipping in favor of denser working and living conditions. The comfortable familiarity of the self-contained suburban work environment that has long dominated some markets is being challenged, and reimagined in a high-rise urban setting.

4. The Ideal Workplace

Many factors contribute to the development of corporate environments – building the ideal workplace is a balancing act. Recent advancements in societal thinking about the work environment acknowledge increasingly creative drivers. These include flexibility and agility, creativity and innovation, efficiency and effectiveness, health and well-being, sustainability, and perhaps most importantly, occupant engagement.

There are the obvious differences between horizontally and vertically oriented campuses – outward expansion versus upward, predominantly suburban location versus urban, larger floor plates versus more compact ones. There is a fundamental difference in how they each connect people, and the values of the organization generally establish the preference. More traditional suburban campuses connect horizontally with visual contact being the key (Figs. 4 & 5). Vertical campuses connect vertically through stacked floors, potentially linked by open atriums, light wells, stairs, and elevator cores.

Beyond these differences lies a great deal of similarities. Both rely upon the same basic principles of economics – land use, occupancy costs, rental and resale values. Both have been greatly affected by a significant redefinition of workplace priorities. Work was a place with a boundary, now work is generally accepted as occurring anywhere at any time. A general shift in organizations from a process to an innovation focus has resulted in the emergence of Agile Working methodologies, with the 'Millennials' representing the majority of employees, placing a greater value on time and flexible working (PwC, 2013). Trust and empowerment of people in the workplace is key. A wider variety of space types is implied, with ownership shifting from individual to group with the potential of reducing



Figure 4. 3,400 employees on one floor - Facebook campus, Menlo Park. (Source: Facebook).

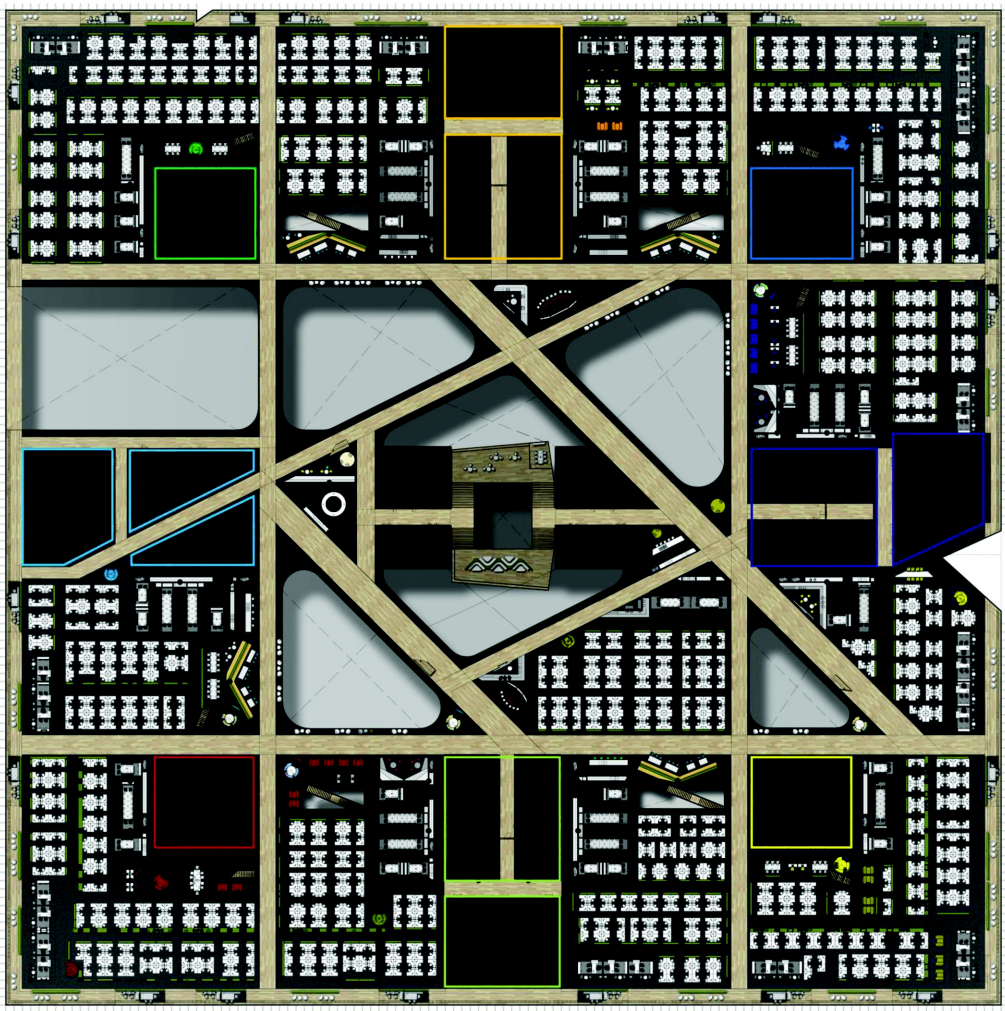


Figure 5. 1,000 employees on one floor - Tencent campus, Beijing. (Source: Woods Bagot).

churn costs. If positioned well, workplace makes a notable contribution to cultural change and creating a collaborative environment for the next generation.

5. Success and the Right Floor Plate

In the vertical environment, few things can influence success more than an efficient floor plate, as there are many of them, and the manner in which they are stacked and then linked is critical. To ensure the earlier claim of "most sustainable workplace development model" with "efficiencies approaching 90%", balancing of the following criteria to match desired organizational outcomes is key.

Efficiency – highly efficient floor plates can be greatly facilitated with:

- Structural and planning grid alignment, enhancing efficient planning;
- Clear lease-spans with perimeter columns (not internal), maximizing tenant flexibility; and
- Net to gross target for base building efficiency nearing 90%.

Effectiveness – a key contributor is in providing the base building with an optimal module. Most effective attributes include:

- Support the dominance of team-based work through the creation of high quality team-based environments for knowledge exchange, leveraging both physical and visual connections;
- Allow for easy accommodation of alternate configurations; and
- Ease of reconfiguration of tenancy layouts to suit changing business needs.

Depth of Space – specifically to gauge the penetration of natural light in support of:

- Quality work environments beneficial to human health and productivity;
- Quality social environments for human interaction; and
- Quality environmental outcomes including the reduction of operating costs.

Sub-divisibility – the potential for a floor plate to be sub-divided into multiple tenancies, all with good entrances, egress, and configurations, providing:

- Optimum options for landlords to meet tenant demands with flexible spaces; and
- Tenant occupation flexibility to suite changing organizational requirements.

Many of these issues will be illustrated through the following case study of a Vertical Campus in Jakarta.

6. Case Study: Telkom Landmark Tower, Jakarta, Indonesia

Telkom (PT Telekomunikasi Indonesia) is one of the world's oldest telecommunication companies tracing its roots to the Dutch Colonial Government telegraph service in 1856. A semi-privatized, majority state-owned company, it is currently the largest telecommunications services company in Indonesia. Following an international design competition, in February 2012 Telkom commissioned a design for a new corporate campus in Jakarta. Anticipated initial occupancy is in the third quarter 2015.

7. Urban Context

The project site is located on one of the main business corridors in Jakarta, lined with mid to high-rise commercial office buildings. The entire site area is approximately 22,900m² and contains an existing 16-story building which has been retained, refurbished, and integrated into the overall development. Three new buildings were designed, including a podium structure and two office towers of 48 and 20 stories.

In total the campus contains 115,000 m² of new development with 7,500m² in common campus facilities. Unlike a single building development, this combination of four distinct structures begins to provide the variety of a suburban campus albeit in a significantly vertical fashion. The taller Tower A features an average 1,650m² floor plate, while the lower Tower B features larger 3,500 m² plates. The new 6-story podium building is 15,000m², and links all three office buildings on the site together, providing common amenities along with a portion of the parking requirement. As a quasi-speculative development, metrics were driven by the desire for an efficient, flexible, and cost effective workspace. Targets for floor plate efficiencies were set at a minimum of 85%.

The arrangement of the buildings and program were heavily focused on connectivity for both public and internal users. Each of the three buildings serve individual corporate entities, however it was the intent of Telkom in the relocation of disparate offices into a central campus, to encourage a more cohesive corporate culture. Fig. 6 is a sectional view illustrating both horizontal and vertical connections through the campus. The podium is a primary pedestrian circulation path linking each tower to common campus facilities.

Three defining elements emerged to achieve the vision of building a cohesive culture:

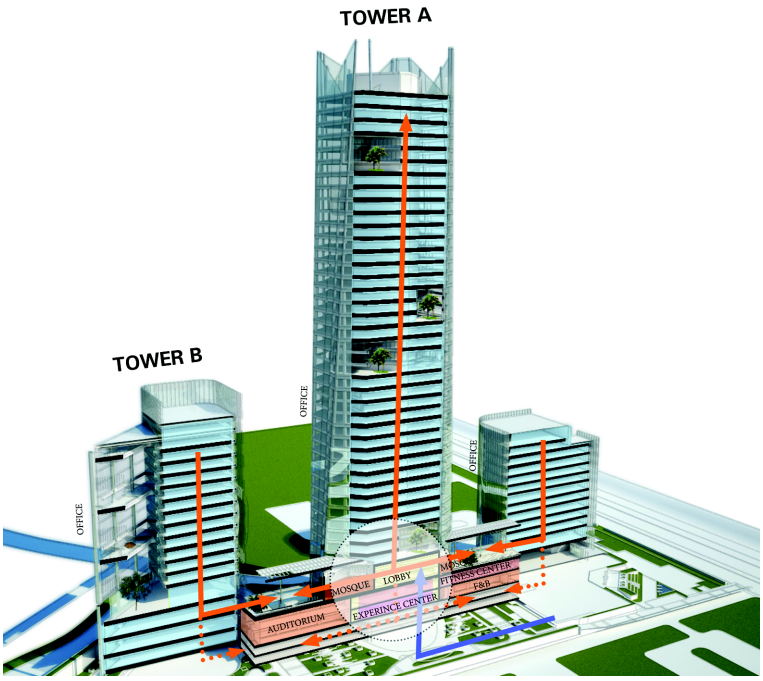


Figure 6. Vertical and horizontal connectivity through the Telkom campus. Towers A and B are connected to the existing building on site through a common podium structure. (Source: Woods Bagot).

1. Acting as both a circulation bridge and a symbolic "cultural bridge", the podium facilitates connectivity and ease of both physical and psychologically perceived access amongst the campus occupants. The amenities, including a mosque, provide a variety of services and common gathering places – all necessary contributions to a self-contained campus.
2. A variety of multi-floor atriums in each of the buildings provide open green space for congregation above the street plane. These spaces provide a sense of connection between floors and a means of orientation within the buildings. They also provide a focus for common facilities or amenity 'satellites' supporting convenient distributed access of services for occupants.
3. Indonesian cultural references contribute to a sense of comfort and cohesion across the campus. Plan geometries, façade components, and horizontal paving acknowledge design influences from Batik patterning and other local crafts and customs. The resulting cultural cohesion contributes to the overall brand image of the Telkom campus.

Engagement of occupants is one of the most important duties of successful workplaces. For the employee experience at Telkom, destinations and opportunities for connection within the corporate business were created at and between each floor. In support of client engagement, a seamless transition from the street to the ground floor and then into public receiving areas helped to create a positive expression of the business.

8. Architectural Features

Tower A is an iconic landmark building situated centrally on the site. Its form is inflected in response to the dynamic site conditions and the many view corridors from which it will be seen. Alternate core arrangements were tested, including investigations into side-loaded cores to achieve maximum flexibility. With the project being located in Seismic Zone 3, economics eventually dictated a central core for the Tower A 48-story building (the Tower B 20-story building has a modified side-loaded core). An all-concrete structural solution was chosen for all buildings based on economy and common construction practices. The resultant plan provides an average of 1,650 m² floor plate with 11.5m spans at an overall 85% efficiency.

Figs. 7, 8 and 9 show the basic repeated organizational component of Tower A. Primary vertical circulation is provided by an elevator spine allowing multi-floor connectivity. To provide additional connectivity around activated spaces, the building provides three-story atria to which are linked via internal stairways.

Tower B embraces the same connectivity and flexibility targets as Tower A. As a 20-story tower with an L-shaped floor plate, the building utilizes a modified side-loaded core positioned in the interior knuckle. The floor plate features lease spans of 15m resulting in a floor area of approximately 3,350m² for levels 1 through 8, and 3,000m² for levels 9 through 20. The larger size of this floor plate begins to track with a trending desire for organizations to collocate higher numbers of employees in horizontally contiguous space (Fig. 10), something that is often easier to accomplish in suburban locations. Tower B is organized around a large common atrium as illustrated in Fig. 10. To enhance connectivity each floor is connected by internal stairways. To further breakdown the workspace, at every fourth floor a conference pod and link bridge is

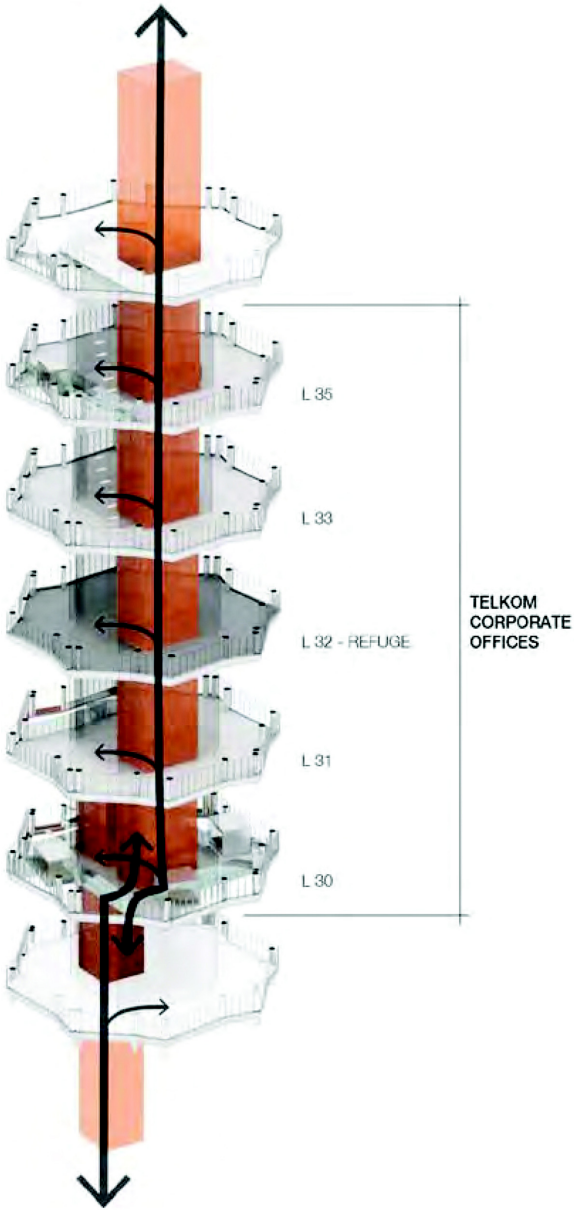


Figure 7. Vertical Highways elevatoring strategy (Source: Woods Bagot).

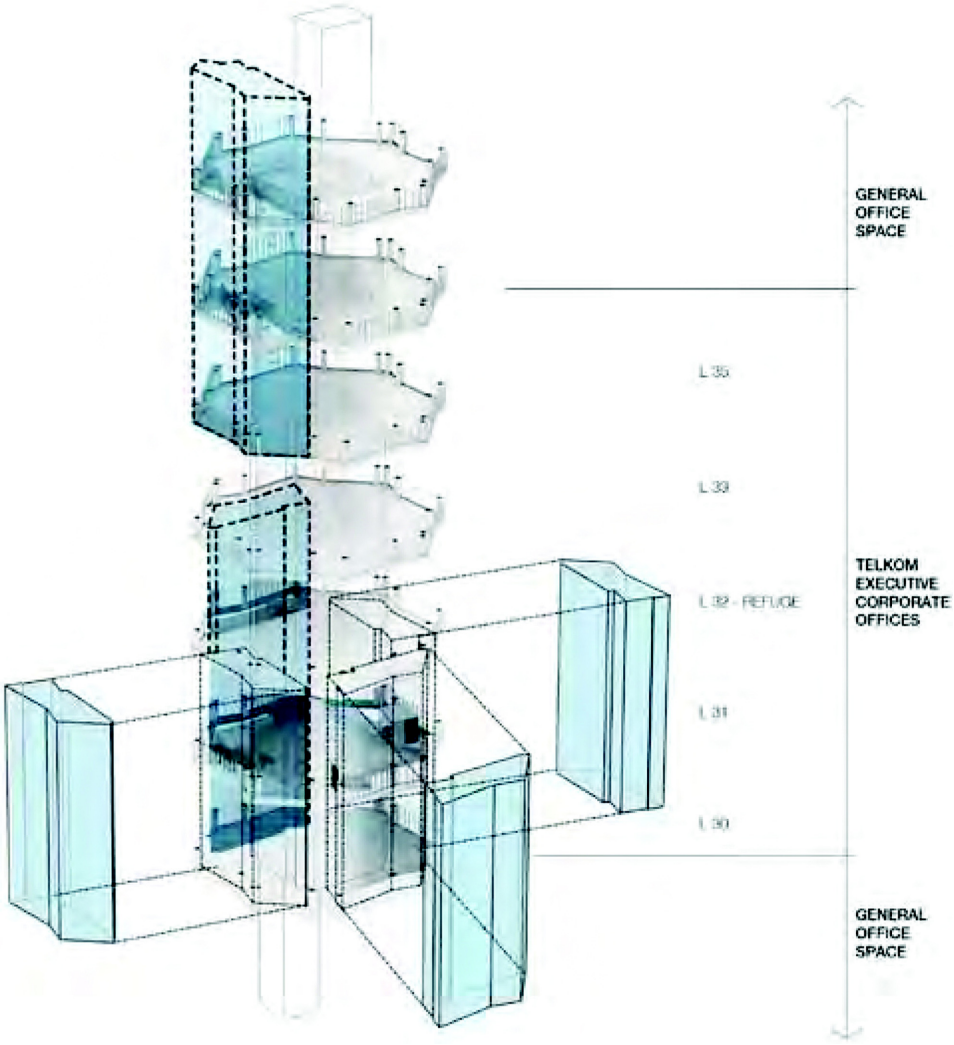


Figure 8. Three-story atria connectivity diagram. (Source: Woods Bagot).

incorporated to serve a more localized working group.

The Podium, at 6-stories, connects all three buildings in the complex and acts as the horizontal spine in which the common campus program elements are placed. The core in both towers is linked directly into the podium providing ready access to amenities as well as cross circulation between the towers. The podium contains a fitness center, medical clinic, auditorium, food and beverage facilities, experience center, banquet hall and a rooftop mosque. The podium is not entirely dedicated to campus employees however, and serves to support corporate public functions as well as public outreach. The experience center is a multimedia space which is intended to educate the public on the breadth of Telkom's current technology and provides insight into the company's view to the future.

The existing 16-story building is refurbished and integrated into the overall development, recognizing the environmental and economic value of retaining a viable asset.

9. Accessibility - the Atria

As the traditional horizontal campus typology gets turned on end to support a vertical application, the ability to humanize the experience of working in a high-rise becomes an important factor. Atriums create unique interrelationships between fundamental elements by not only providing a connection to the outside by bringing in natural light (Gritch & Eason, 2010), but allowing for physical and visual accessibility throughout the building. Telkom leverages a series of atria as powerful organizing elements to accomplish a number of key goals:

1. **Connectivity** – In the idealized campus setting, the ability to create vertical connectivity and compelling spaces for interaction is primary. Challenged to provide a dynamic work environment hinging on vertical connectivity, Tower A features a series of three-story connected atria which spiral around the tower.

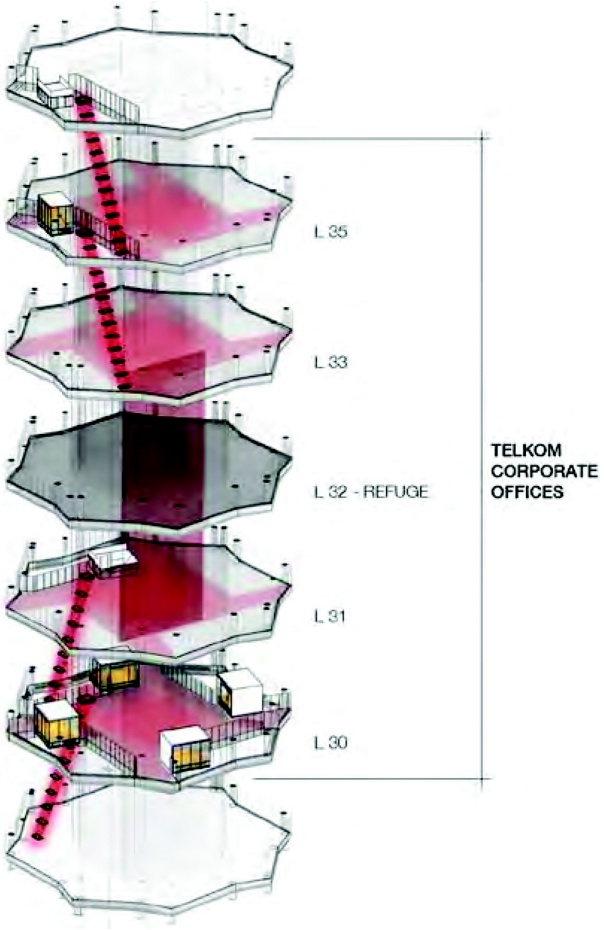


Figure 9. Internal stairway circulation linking floors within atria. (Source: Woods Bagot).

Beginning at level nine in Tower B, an atrium is created within the triangular void joining the floors above. Vertical connectivity is encouraged by the use of atrium-oriented balconies linked to each floor by stairway. To further activate the space, link bridges, common gathering spaces, and meeting rooms are contained within the atrium.

2. **Convenience** – The atria provide a place to locate convenient satellite services – a point of congregation above the street plane. These "activity hubs-in-the-sky" significantly shorten travel times between work areas and spaces that provide social relief and common services. They amplify, without replacing, functions that are provided in the podium, and their constituents tend to be more localized, bringing groups and teams together as opposed to the podium, which allows cross fertilization amongst the three separate Telkom organizations.
3. **Structural integrity** – In Tower A, the atria are offset in an upwardly spiraling fashion, not only providing a different orientation for views from the atria on increasingly higher floors, but also serving to strengthen the structural integrity of the building. The number of inter-connected atria floors was evaluated structurally for continuity in a seismic event acknowledging gravity and diaphragm equalization which resulted in rotating their position around the core. The resultant configuration provides an iconic expression in the building elevation, particularly evident when internally lit at night.
4. **Multi-tenant conversion** – The Telkom brief acknowledged the need to design a building which can adapt

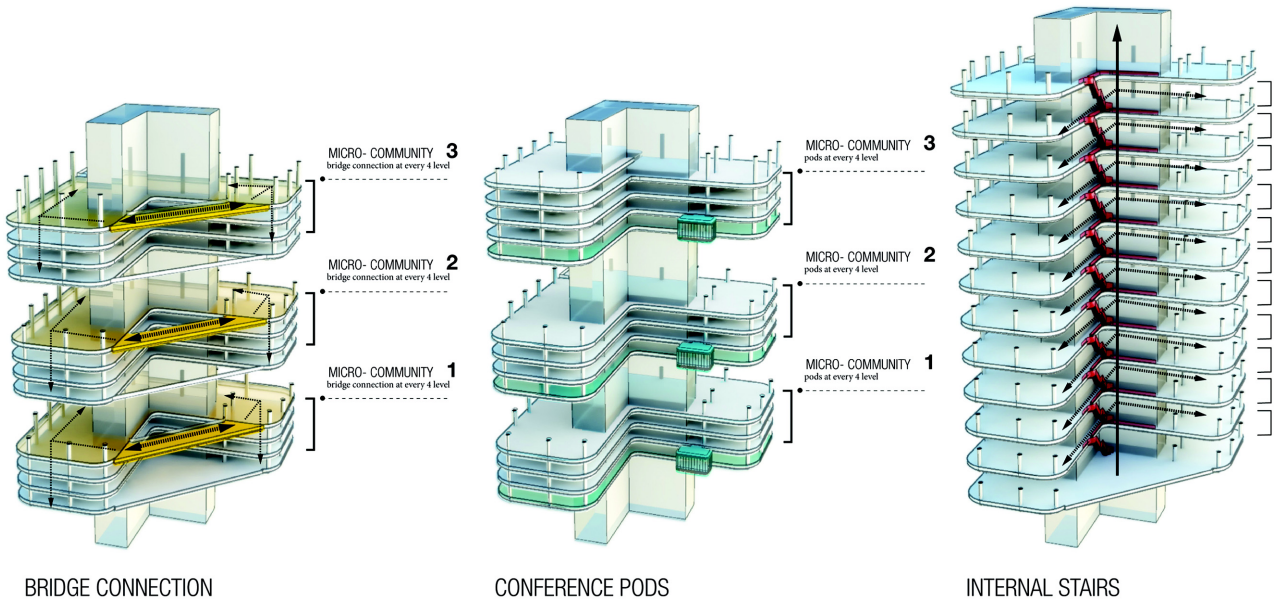


Figure 10. Diagram illustrating subdivision by bridge connections, conference pods, and internal stair connections. (Source: Woods Bagot).

its initial intent as a single-user headquarters to a multi-tenant building. The creation of atria was limited to three adjoining floors and a physical glazing separation to the atria was incorporated to facilitate the future divisibility of space. This type of "exit strategy" planning is common in more traditional campus environments where multiple buildings are involved.

5. **Thermal integrity** – Both towers provide a thermal separation between office occupancy and the atria to independently condition each area at levels appropriate to the intended use. For Tower B, heat gain resulting from the southwest orientation of the atrium was of significant concern. In initial studies, which included incorporating high-performance double glazing in the façade, the cooling loads for the atrium were equal to the total office floor occupancy. An external shading system was developed which reduced cooling loads by approximately 60%. To further reduce overall loads, the requirements for conditioning the atrium were tailored to specific space needs and uses. The atria were deemed acceptable to remain at higher conditioned temperatures when the primary occupancy is at its lowest level. Higher temperatures within the void above were allowed.

10. Office Floor Efficiencies

The prevalence of stacked office floors demanded a focus on efficiency. Floor plate planning embraced the following tenets:

- Activate arrival spaces around the stair and through the core;
- Concentrate built space against the core to allow access to light and increase views for all staff;
- Create a network of pathways to connect vertically and horizontally across the floors;
- Create collaborative spaces at nodal points between neighborhoods and locate meeting spaces throughout the building to promote movement and integration of teams across floors;
- Dedicate large blocks of space for built zones which do not break the contiguous nature of the floor plate, in order to maintain connectivity of staff; and
- Locate public shared spaces at the atrium edge to activate the space and connect Telkom Corporate Offices to the rest of the business.

11. Sustainability

Sustainability goals were set with the project targeted to achieve the Green Building Council Indonesia (GBCI) standard for Gold-minimum. The building incorporates high performance double glazing in a marketplace which commonly accepts single glazed solutions. Given the year-round intensity of solar exposure in Indonesia, the façades also incorporate vertical shading elements which reduce solar exposure by 20% on average for both towers.

Although public transportation systems infrastructure is rapidly under development, Jakarta currently remains heavily dependent on private individual transportation. Nonetheless, the Telkom site is located about 150 meters from the nearest bus station and a new light rail system is proposed which will provide direct access to the site. In the interim, Telkom is implementing a shuttle system for its employees serving the greater Jakarta area.

In support of sustainable development practices, Jakarta recognizes both the necessity and desirability in encouraging increased density in the city. As densities increase, the carbon footprint of any one building is reduced. During the project, negotiations around site density resulted in an increase from an FAR of 4.0 to 5.2.

12. Conclusion

Over the past decades, perspectives of the idealized workplace from the various stakeholders on a societal, municipal, organizational, and individual employee level have changed considerably. There have always existed distinctions between, and preferences for, workplaces either in the city or in suburbs. Density has largely been the driver of those distinctions, along with convenience and well-being factors.

Each idealized campus – the suburban low rise, the denser urban mid-rise, the densest vertical high-rise – has both positive and negative attributes which ultimately balance if properly aligned with occupant goals and aspirations. Now facing a considerable trend toward urbanization, our focus must necessarily shift towards refining solutions for the urban environment. The Vertical Campus successfully integrates the physical qualities and social aspirations of the idealized campus in a vertical application.

Both end users and speculative developers hold long-term asset value as a major driver in planning their developments. The consideration of a single or multiple tenant building is paramount, and the ability for the building to adapt to changing markets is a key determinant of market success. Although the weighting of these decisions between a corporate end-user and developer will vary, the underlying goals and drivers will largely be the same. The ability to incorporate campus design strategies allowing the building to adapt over time can be readily achieved. The impact of future workplace models is unknown which places a focus on adaptable facilities.

Whether corporate or speculative, it is the challenge of a successful developer to deliver a building which is best suited to the local market and separates itself from its competitors to achieve the highest return. The qualities exemplified in a Vertical Campus provide a solution which is well suited to evolving workplace strategies across

multiple office user sectors.

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