

The Sustainable City-State of Singapore in the 21st Century

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It is significant to note that the first-ever reference to sustainable development was made as early as some 2,500 years ago by Gautama Buddha thus:¹

The Forest is a peculiar organism with boundless compassion and endless life-giving qualities that makes no demand for its sustenance, and of its life activity; it affords protection to all living beings and offers shade even to the axeman who destroys it.

Since then, the world has undergone momentous changes from the agricultural age through the industrial age and to the IT age. Thus, it is postulated that the advent of IT has facilitated global interdependence which in turn has made the most profound impact on sustainable development. Singapore is an exemplar.

With the implementation of IT2000 Report – a national IT masterplan to transform Singapore into an intelligent island in tandem with the 1991 Revised Concept Plan decentralising Singapore into five regional centres, it is my contention that sustainable urban development in Singapore will begin to assume a synergistic process never before witnessed in the history of the city-state. To complement the urban planning strategy of using IT at the macro level, an intense multiple-use development of smart buildings as the urban design strategy at the micro level is used. This is decidedly central to Singapore's sustainable development strategy in the IT age.

INTRODUCTION

Let me preface my paper with a brief comparison between the ancient city-state of Athens and the city-state of Singapore in the 21st century.

Athens under the leadership of Pericles (495-429 B.C.), experienced unprecedented prosperity and sphere of influence and enjoyed a flowering of arts and sciences unsurpassed in history. By pursuing an aggressive and open foreign policy of strategic trade alliances and building up Athenian maritime strength, Pericles brought Athens to the summit of its power. The period under his rule is commonly referred to as the Golden Age of Athens.

Through webs of strategic trade alliances worldwide, the city-state of Singapore aspires to be a sustainable global city which transcends the particularities of place to become the Golden Age of Singapore in the 21st century.

SUSTAINABLE URBAN DEVELOPMENT STRATEGY IN 21ST-CENTURY SINGAPORE

Two instruments are central to sustainable development in Singapore. They are: IT2000 masterplan and Revised Concept Plan.

IT2000

In anticipation of the strategic role IT will play in the next lap

of Singapore's development, the government initiated the IT2000 Report – a national IT masterplan to transform Singapore into an Intelligent Island – in tandem with the 1991 Revised Concept Plan. In endorsing the IT2000 Report, Prime Minister Goh Chok Tong noted that Singapore was forced:²

To run on the fast track of economic development ... or face being left behind ... It is our lot in life that we continue running in the fast lane to keep up with changes in the new world economy ... The (IT2000) plan reaffirmed the strategic role IT will play in the next lap of Singapore's development, and showed that because the country dared to dream it will become a reality.

The vision of the Intelligent Island is based on the far-reaching use of IT. It sees Singaporeans tapping into a vast web of electronically-stored information and services which they can use to their best advantage – to improve their business, to make their work easier and to enhance their personal and social lives. The essence of IT2000 to transform Singapore into an Intelligent Island is therefore, the synergistic development of a well-integrated and extensive national information infrastructure.

Revised Concept Plan

Acting in concert, the Revised Concept Plan is to plan for the longterm physical development of Singapore into a Tropical City of Excellence and an international investment hub for a population of 4 million by the first quarter of the 21st century. It is significant to note that the decentralisation strategy of the Concept Plan through regional centres to accommodate information and knowledge-based industries complements the national information infrastructure (NII) of IT2000. Together both IT2000 masterplan and the Revised Concept Plan are to help Singapore sustain urban development through IT.

The research paper postulates that the unprecedented opportunities offered by IT allow Singapore to cap its domestic population at 4 million people as planned, while promoting the synergy of strategic trade alliances worldwide to create offshore space to become sustainable Singapore Unlimited.³ As envisioned by the Economic Development Board:⁴

Singapore Unlimited is rooted in a vision of a better Singapore. This vision is of an economically vibrant Singapore that has a developed country standard of living, a high quality of life, a strong national identity and the attributes of a global city. It is a quantum leap from our current level of development. It represents a whole new world of possibilities ... that exist beyond the realm of the ordinary.

THE NETWORK PARADIGM OF SYNERGY

To realise the effects of IT2000 and the Revised Concept Plan, a network paradigm of synergy at the national level cannot be overemphasised.

NATIONAL INFORMATION INFRASTRUCTURE

In the global economic network of the 21st century IT will drive change just as manufacturing has been the driving force in the industrial era. To equip the city-state for the IT age, Singapore is building a National Information Infrastructure which will enable the national information, communication, and transaction system to work. Since Singapore is already a hub for businesses, financial services and transportation, the application of IT has obvious relevance. By the turn of the century, it is envisioned that Singapore will interconnect computers in virtually every home, office, school and factory.⁵

With the state-of-the-art telecommunications infrastructure in place, Singapore is strategically well placed to transcend the physical and demographic constraints of its small size and limited resources by creating offshore space for a worldwide network of relatively small and medium-sized companies to compete and cooperate in the international arena. The strategy is to avoid the formation of gigantic, unwieldy, unfocused conglomerates built on centralised management with a perceived notion of economies of scale. It is the global paradox that the bigger and more open the world economy becomes, the more small and medium-sized companies will dominate. Economies of scale are giving way to economies of scope, finding the right size for synergy, market flexibility, and above all, speed.

The parts are worth more than the whole in which one plus one equals three or more.⁶ The immense success of a relatively small firm like Microsoft Corporation founded by Bill Gates is a notable example. A homegrown company in the likes of Microsoft is Creative Technology Ltd. founded by Sim Wong Hoo.

GLOBALIZATION

The trend of IT is highly globalised, with multinational corporations competing and spawning alliances around the globe. As the world economy is increasingly more dependent on telecommunications, Singapore is poised to exploit the many unprecedented opportunities offered by IT to enhance economic competitiveness and cooperation in the global marketplace. Competition and cooperation have become the Yin and Yang of the global marketplace of sustainable development. Like Yin and Yang they are always seeking balance and always changing. One thrust of the new cooperation in setting up the new strategic alliances, is to carve out a piece of the world market in which you agree to cooperate with your strongest competitor who very much remains your competitor.⁷

More cities have come to recognise the importance of IT firms in shaping their economic development policies. In Cologne, the city has created a "Media Park" with a teleport as part of a programme to strengthen its position as a media centre for broadcasting and publishing, providing performers, writers, composers and others with the most flexible and efficient communication techniques. In Japan, there is an almost obsessive attachment to the concept of information cities. Over the past decade, Japan has pursued the development of IT with a singlemindedness and zeal which cannot be surpassed by any other nation-state. One example of this emphasis on IT is the decision by Kawasaki to become an information city by creating 18 "intelligent plazas" that will be nodes of smart buildings linked by a 30 km optical fibre system. Approximately 240,000 workers commute to Tokyo from Kawasaki each day, and one goal of the Kawasaki plan is to stimulate intense neighbourhood development at each of the 18 "intelligent plazas" by relying on advanced IT.⁸

Through webs of strategic alliances, it is now possible for companies utilizing IT to produce a product anywhere, using resources from anywhere, to be sold anywhere. Mazda, for example, produced a sports car designed in California, financed in Tokyo, and assembled in Michigan and Mexico. Some of its advanced electronic components were invented in a laboratory in New Jersey but manufactured in Japan.⁹ Thus in the IT scenario, a car or a computer can be built in four countries and assembled in a fifth. Markets, too, expand beyond national boundaries. This is synergy, borrowing external resources to complement one's own. For this to happen, companies must be equipped for electronic interaction known as the electronic data interchange (EDI) networks. The EDI networks simply permit the electronic exchange of documents between companies – invoices, specifications, inventory data, and the like. By wedding one another's data bases and electronic systems, companies are able to form highly intimate partnerships. The benefits of EDI are not only a reduction in paperwork and inventory, but a quicker, more flexible response to customer needs. Together these can amount to massive savings. The rapid adoption of TradeNet by the international trading community has spurred the development of MediNet, LawNet and other sectoral networks. Singapore is among the top few countries to have effectively exploited the EDI technology.

Singapore's current investments worldwide are webs of strategic trade alliances to create a win-win situation to realise sustainable Singapore Unlimited. As an emerging global city, Singapore is keenly aware that the global economy is not a zero sum game, but an everexpanding universe. With IT increasingly at its disposal, Singapore is able to conserve and expand space by creating space outside the country through webs of strategic trade alliances. GE's Transportation Systems division builds locomotives. When it began using advanced information – processing and communications to link up with its suppliers, it was able to turn over its inventory twelve times faster than before and to save a full acre of warehouse space.¹⁰ More importantly, the new telecommunications capacity makes it possible to disperse production out of the high-cost urban centres, and to reduce energy and transport costs even further. This is decidedly central to Singapore's sustainable development strategy in the IT age. More and more therefore, new multimedia industries in which telecommunications needs with the world at large are vital, are expected to emerge from the IT urban scene.

THE CHINESE DIASPORA

To reinforce the concept of sustainable Singapore Unlimited, it is significant to note that Singapore played host to the First Overseas Chinese Entrepreneurs Convention in 1991. The convention discussed the changing economic trends in the new global order, and the role of Chinese enterprises and entrepreneurs in contributing to the new world order. The convention also strengthened economic and cultural exchange and cooperation among them. It is estimated that there are more than 50 million overseas Chinese around the globe. Many have long entrepreneurial experience. Describing the enterprise and industry of the overseas Chinese as long ago as 1900 Rudyard Kipling wrote:¹¹

If we had control over as many Chinese as we have natives of India, and had given them one tithe of the cossetting, the painful pushing forward, and studious, even nervous regard of their interests and aspirations that we have given India, we should long ago have been expelled from, or have reaped the reward of, the richest land on the face of the earth.

But perhaps it was the lack of cossetting that spurred them. Among the overseas Chinese themselves, a very complimentary self-image is upheld:¹²

... they see themselves as nothing less than the very embodiment of Diligence and Thrift, and the claim that these are Chinese

dualities. Their confidence in the superiority of their own culture reinforced at every turn by the visible evidence of their wealth, they have no doubt at all that it is hereditary flair that does it. To their way of thinking, to be Chinese is to be business-minded, and it is a combination of genetics and upbringing that makes them the dedicated entrepreneurs they are.

The passion for business, to be sure, is by no means a general Chinese trait, and in China itself, the merchant has been disparaged as the lowest of people. In a society ordered by Confucian values, the ability to profit from trading was never admired, and this put rather a damper on a universal flowering of Chinese entrepreneurship. The majority of the Chinese believed that entering the civil service was the surest way of getting on in the world. For every Chinese who prospered from trading there were hundreds who held themselves aloof from commerce. If there is such a thing as a tradition of enterprise among the Chinese, it is to be found mainly among the Chinese Diaspora,¹³ of which Singapore is part of the phenomenon. The overseas Chinese entrepreneurs have demonstrated a talent for forming partnerships and joint ventures with expatriates and citizens alike based on economic self-interest. Plugged into this global network of the Chinese Diaspora referred to by Harvard Professor John Kao as the "Chinese Commonwealth," the growth and expansion of Singapore Unlimited in its regionalisation and globalisation drive is exponential. Indeed, the Singapore Chinese Chamber of Commerce & Industry (SCCCI) in 1995 launched the World Chinese Business Network (WCBN) system to deliver on-line information via the Internet. The WCBN, the first on-line Chinese business directory system in the world, gathers information on global Chinese business organisations. The network provides corporate data like company name, contact number and address, year of establishment, line of products and services, key personnel and other operational characteristics. As a result of the innovative use of IT, an opportunity is created for the world of Chinese speaking business to communicate and conduct business on-line.

MULTIPLE-USE DEVELOPMENT CONCEPT AS AN URBAN DESIGN STRATEGY

Singapore's present population of 3 million people within a land area of less than 700 square kilometres is expected to stabilise at 4 million by the first quarter of the 21st century as conceived in the 1991 Revised Concept Plan. By then the population density would have reached 6,000 people per sq km as compared to the current population density of over 4,000 people per sq km (which is already 20 times more congested than the most congested country in Europe – Holland). Capitalising on such an intense urban environment, it is conceivable that a highly charged multiple-use development strategy at the urban design level where a multiplicity of programmes that exploits density and complexity in an unusually compressed space becomes a positive phenomenon of 21st-century Singapore.

The strategy is to set up a dialogue between constituent elements of the complex which generates its own urban effects.¹⁴ From a distance it is perceived as a single mass. Upon coming closer, the division into separate volumes becomes apparent, opening up the complex. To lend support to such an urban multiple-use development, it is inevitable that a broad spectrum of events with successive and simultaneous peaks is created to fill a 24-hour activity cycle to maximise the location and its existing infrastructure. In such a 24-hour activity cycle, light plays an important role to intensify the multiple-use development.

The task therefore, is to coordinate and constitute a sustainable unified development with seemingly contradictory realities. For example, the revenue-producing uses are positioned in relationship to uses that do not produce revenue so as to give each its appropriate emphasis and image. Such a multiple-use development demands that the different facilities be segregated with different centres of control, having the ability to operate independently but at the same

time to combine the different functions together such that it works as a single complex to ensure a market synergy.

CONCLUSION

To conclude, the present city-state of Singapore of 3 million people seems to be shaping up exactly as Le Corbusier would have wanted for his visionary city of 3 million inhabitants when he said in 1922: "A city built for speed is built for success."¹⁵ Anticipating the strategic role IT will play in the next lap of Singapore's development, the government has already put a state-of-the-art telecommunications infrastructure in place. Singapore is poised to become the first fully networked society – one in which all homes, schools, businesses, and offices will be interconnected in an electronic grid. Well tapped into the global information superhighway through webs of strategic economic alliances, the growth of Singapore Unlimited is virtually limitless. Over time, it is envisaged that the locals and expatriates working with overseas Singaporeans will acquire citizenship rights through marriage and trade alliances thereby extending Singapore Unlimited not unlike the unprecedented growth and prosperity of Athens under the leadership of Pericles in the 5th century B.C. In the dispersal of overseas Singaporeans around the globe, the Singapore International Net serves as a vehicle to bring Singaporeans overseas closer. This can be an extension of the community telecomputing network to Singaporeans overseas, strengthening emotional attachments and national consciousness.¹⁶ In the IT scenario emerging, the network paradigm of synergy at the macro urban planning level translating into an intense multiple-use development of smart buildings at the micro urban design level will propel the city-state to sustain the Golden Age of Singapore in the 21st century.

NOTES

- 1 P. Kulatilake, "Research and Training Centre for Wild Life for Nature Protection Society" (MSc Thesis, Department of Architecture, University of Moratuwa, Sri Lanka, 1994), p. 12.
- 2 National Computer Board, "A Vision of an Intelligent Island: The IT2000 report" (Singapore: NCB, 1992), p. x.
- 3 It is significant to note that the EDB has likened the Singapore Unlimited approach to a Japanese landscaping strategy in which the scenery from one's garden is enhanced by incorporating the scenery from afar such that the combined scenery is far superior than each on its own. (This is synergy, borrowing external resources to complement one's own). For more details, refer to *Singapore Unlimited* (Economic Development Board, Yearbook 1992/93).
- 4 *Ibid.* pp 8, 14.
- 5 M. Batty, "Urban Information Networks: The Evolution and Planning of Computer Communications Infrastructure," in J. Brochie, et al., *Cities of the 21st Century: New Technologies and Spatial Systems*. Longman, Australia: 1991), pp 139-157. National Computer Board, op. cit. (1992), p 19.
- 6 J. Naisbitt, *Global Paradox: The Bigger the World Economy, the More Powerful Its Smallest Players*. London: Nicholas Brealey Publishing Ltd. London, 1995), p 14. See also M.J. Cronin, *Doing More Business on the Internet: How the Electronic Highway is Transforming American Companies* (Van Nostrand Reinhold, 1995), p 18.
- 7 *Ibid.* p 18.
- 8 M. Moss, "Telecommunications and Urban Economic Development," in *OECD Cities and New Technologies* (Paris: OECD, 1992), pp 19, 82.
- 9 *Ibid.* pp 19, 82.
- 10 A. Toffler, *PowerShift: Knowledge, Wealth and Violence at the Edge of 21st Century* (New York: Bantam Books, 1991), p 85.
- 11 L. Pan, *Sons of the Yellow Emperor: The Story of the Overseas Chinese* (London: Mandarin Paperbacks, 1994), p 131.
- 12 *Ibid.* p 244.
- 13 *Ibid.* p 243.
- 14 B.T. Tan, "Hybrid as Counterpoint: A Space for Contemporary Art Within an Urban Mixed-Use Development" (B.Arch. Thesis. School of Architecture, National University of Singapore, 1994-95).
- 15 G. Broadbent, *Emerging Concepts in Urban Space* (London: Van Nostrand Reinhold, 1990), p 131.
- 16 National Computer Board, op. cit. (1992), p 31.