



Science and Technology Parks Global Best Practices and Key Success Factors Report

Prepared for the
Government of Santa Catarina
State, Brazil
including the
Sapiens Parque Technology Park
Authority

GLOBUSTRAT Consulting Group
Transnational Executive MBA (TEMBA)
College of Business and Economics
California State University, East Bay
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Executive Summary

Fundação Certi (The CERTI Foundation), in partnership with the State of Santa Catarina and its associated agencies (particularly the Sapiens Parque Authority herein referred to as “Sapiens Parque”) commissioned the GLOBUSTRAT Consulting Group to conduct a research study to understand Global Best Practices, Investor Requirements, Global Financing and Marketing practices of technology parks worldwide. The GLOBUSTRAT Consulting Group assumed this study under the auspices of the Global Business Strategy Consulting (GLOBUSTRAT) program. GLOBUSTRAT is a key component of the Transnational Executive MBA (TEMBA) program offered by the College of Business and Economics at the California State University, East Bay (CSUEB). This study examines the global technology park industry (including global financing and marketing) and provides Sapiens Parque with information on best practices and key success factors (KSFs) for optimal technology and innovation park development. The key areas as outlined in this executive summary are as follows:

- Sapiens Parque’s Objectives For This Study
- Research Methodology
- The GLOINTECH Model of Technology Parks
- General Overview of The Global Technology Park Industry
- Financing of Technology Parks
- Identification of Key Success Factors
- Identification of Key Success Factors to Parks and Tenant Firm Financing
- Marketing Strategy for Technology Parks
- Santa Catarina and Brazil’s Endowments
- Recommendations

Sapiens Parque's Objectives For This Study

The primary objective of this study was to provide Sapiens Parque with recommendations for optimal park development, management and marketing that may enable them to:

- make Sapiens Park relevant and different by integrating the concepts of knowledge (Scientia) and human experience (Experientia) into a single innovation park.
- gain Sapiens Parque, Florianopolis, Santa Catarina, and Brazil world-wide visibility and recognition for innovation and technology.
- strategically leverage the financial resources and human gifts of Santa Catarina and Brazil to continue development of state and country.

In order to achieve these management objectives, the research team developed the following research objectives to define the scope of the study:

- Provide profiles of technology parks by supplying a comprehensive analysis of the size, composition and structure of the technology park industry worldwide.
- Provide a clear understanding of the specific key business sectors for Sapiens Parque and the Santa Catarina Government to target.
- Provide a clear understanding of the supply chain/distribution/logistics necessary to reach the firms that are targeted as potential investors and participants in Sapiens Parque.
- Recommend financing options to Sapiens Parque management by investigating alternative modes of financing and related best practices as follows:
 - Government financing of infrastructure, venture capital, angel financing, leasing, equity capital, bank capital and other types of funding sources.
 - Best practices in technology firm financing and firm exit strategies such as IPO's, acquisitions, mergers, spinouts and corporate venture capital.

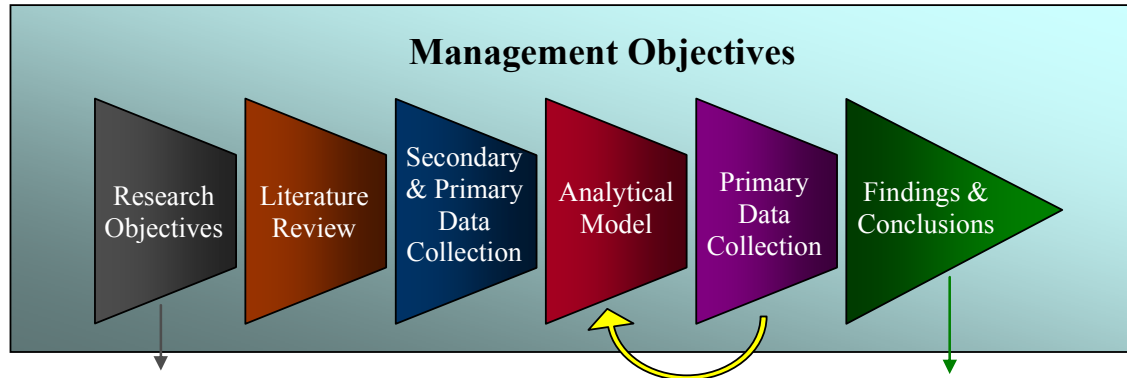
EXECUTIVE SUMMARY

- Suggestion of an appropriate mix of financing options for the Sapiens Parque management to adopt in order to provide short-term, medium-term and long-term funding.
- Identify the Key Success Factors (“KSFs”) that are instrumental in the success of such parks.
- Recommend a marketing strategy to the management of Sapiens Parque.
- Recommend an optimal development strategy for the creation and growth of a successful technology park including:
 - Models, characteristics, and profiles of technology parks that have succeeded including:
 - Elements of available services, rivalry, company concentration, proximity to markets and networking.
 - Importance of specialization, innovation, promotion, and management.
 - Involvement by educational institutions and the interdependency among stakeholders.
 - The key traits of the industries present in the parks.
 - The specific role of the government in those parks.
 - The historical evolution of the technology parks and their future prospects.
- Identify the key U.S. and Canadian firms and business/government organizations to target as potential investors and participants in the Sapiens Parque.
- Provide the names and addresses of the key contacts in the target firms and organizations including (on a best-effort basis) facilitation of meetings with key-decision makers.
- Provide contact information for technology park development officials, local technology park authorities, and technology park experts worldwide.

Research Methodology

We conducted both quantitative and qualitative analyses of a variety of data collected from various primary and secondary sources. The approach we followed to execute this research study is depicted in Figure ES-1.

Figure ES-1: Research Approach Followed in This Study



With knowledge of the management objectives and definition of the research objectives, we initially conducted an extensive review of the extant literature on technology parks. The literature we reviewed included both printed and electronic media. We complemented our preliminary research of literature with the collection of primary data obtained from expert interviews and field visits to technology parks in the Silicon Valley, California, and overseas (Thailand, Taiwan etc.). We used this acquired knowledge to form the basis for the GLOINTECH analytical model that we developed to help identify the factors that impact technology park performance. This model is explained next.

GLOINTECH Model of Technology Parks

Our literature review regarding the causes of locational success helped identify the key factors that may affect success of technology parks. This review included examination of the “new institutional economics” literature and the literature on economic geography. We also examined the major models that explained the formation and success of clusters such as:

- Alfred Marshall’s “Industrial Districts Model”
- John Dunning’s “Eclectic Model of international production location”
- Michael Porter’s “Four Diamonds Model”

We focused on understanding the limitations and exclusions of these models and identified the key missing elements that we believed would impact a technology park’s success. With these key missing elements identified, we presented a more comprehensive model of technology park success that substantially and critically extends Porter’s four diamonds to include eight factors that had not been previously integrated in to the technology park or cluster modeling literature. As a result, our Global Integrated Technology (“GLOINTECH”) model, shown in Figure ES-2, consists of twelve variables (Porter’s Four Diamonds Model. This revised model included our eight additional General Economics and Management System (GEMS) factors. These eight GEMS are:

“Hard” Factors GEMS

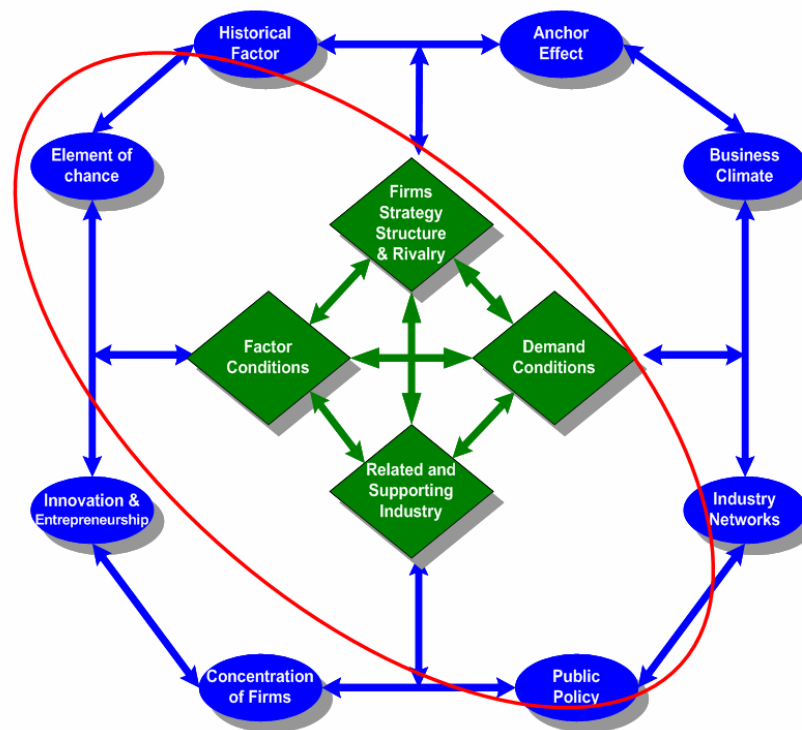
- Public Policy
- Anchor Effect
- Concentration of Firms (“Agglomeration”)
- Historical Factors (“Path Dependence”)

“Soft” Factors GEMS

- Business and Socio-political Climate
- Innovation and Entrepreneurship
- Industry Networks
- Element of Chance

While Porter discussed two of these eight additional factors (public policy and the element of chance) he underplayed their importance and excluded them from his model.

Figure ES-2: GLOINTECH Technology Park Model



Source: GLOBUSTRAT TEAM, California State East Bay, TEMBA Program

We used data collected from a worldwide sample of technology park managers and tenants to empirically test our model in order to identify the KSFs of technology parks

General Overview of the Global Technology Park Industry

The overview of the technology park industry worldwide is separated into three sections:

- Nomenclature of Technology Conurbations
- History of Technology Parks
- Overview of the principle features and best practices in Technology Parks

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In order to define and place technology parks in their proper context and in order to frame our discussion of firm and technology conurbations, we provide definitions and terminology associated with technology conurbations as follows:

- **Technopoles** – Large areas possibly expanding multiple cities that offer attractive environments and technology transfer services.
- **Technology Parks** – Covering only a medium expanse, technology parks focus on the transfer of technological innovation and accommodate companies that are involved in the application of high technology involving R&D, production, sales and servicing.
- **Science or Research Parks** – Comparable in size to technology parks and seek to develop SMEs; although science and research parks can be synonymous with technology parks, science or research parks usually locate within or near a university or research institute.
- **Innovation Centers and Business Incubation Centers (BICs)** – Geographically smaller (30,000 square meters), these promote the creation of advanced technology through a focus on new enterprises with unique technological ideas that are likely to lead to a new and marketable product.

Origins of the technology park concept can be traced back to the 1950s with the establishment of the Stanford Research Park in Palo Alto, California, and the Research Triangle Park in North Carolina. The phenomenal (subsequent) success of Silicon Valley and the Stanford Research Park opened the door to the worldwide expansion of similar technological capacity and economic expansion initiatives in the form of new technology parks (and other similar vehicles). Seventy-eight percent of today's technology parks were established during the 1980s and 1990s. However, the current growth rate (estimated to be 58% in the 2000s) is on par with that of the 1990s. Tenant focus differs between technology parks and science/research parks whereas a mix of IT and Biotechnology represents 47% of tenant firms in technology parks it represents 80% of tenant firms in science and research parks. There are over 500 science and technology parks worldwide with the majority located in the U.S. (which tend to be the largest), Europe, and Asia. Science and technology parks in the EU use either a property-led (France, Spain), technology-led (Greece, Italy) or a cluster-based (Germany, Sicily) park strategy. While parks in both the U.S. and EU have strong university links, this is more prevalent in the U.S. and has been

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decreasing in the EU. Most research, science and technology parks, in Asia, are built either as part of government initiative or privately owned.

A major objective of this study was to understand the global best practices and KSFs of technology parks in the world. The best practices and KSFs/KFFs in each region are summarized as well as the major features of the technology parks in each region are isolated. The major best practices and KSFs contributing to the technology park's success can be summarized as follows:

North America:

- Presence of social and economic networks and linkages
- Presence of high quality of life and a mobile work force
- Presence of transportation and technology infrastructure
- Presence of culture of innovation and risk taking
- Collaboration between businesses, academic and public resources (have been most helpful for tech park success).
- Many science and technology parks coordinate with private high-tech firms.
- Existence of supporting institutions and ancillary services.
- Government has been supportive and facilitating not directive or interventionist.
- Successful U.S. and Canadian clusters tend to be organic.

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Europe:

- Presence of local demand markets
- Existence of investment incentives and related-aid to attract tenant firms
- National and regional regulations for FDI exist
- Market-creating and facilitating public policy has played a critical role in development of technology parks/clusters.
- A lack of a culture of innovation and risk taking has been a hindrance to European technology park and cluster success.

Asia and Oceania:

- Abundance of specialized / quality labor at competitive price
- Presence of a highly mobile work force
- Existence of government initiative & support
- Collaboration between Universities or Businesses is very minimal and primarily driven by the cost factor and proximity to the developing market.
- Presence of supporting institutions and ancillary services necessary for tech park success.
- Anchor effect plays a major role in the success of the park.
- Parks focus on few selected areas (Software, Manufacturing etc.)

A summary of case studies of one successful park and one unsuccessful park, in each region, are included in chapter 4. Our study included detailed profiles of over 30 major technology parks. These profiles can be found in Appendix 1.

Financing of Technology Parks

We identified essentially three aspects to the financing of technology parks. These aspects include:

- Financing of the initial investment of the technology park
- Financing for continuing operations
- Financing of tenant companies

The costs and methods of developing and financing technology parks vary from country to country. Nevertheless, the creation of a successful technology park by any standard is a costly endeavor. The costs of development are usually much greater once buildings are considered as part of the development. It needs to have the appropriate infrastructure to support growth. The provision of reliable infrastructure (e.g. utilities, emergency response) increases the attraction of the park to research and technology organizations, which leads to the likelihood of high occupancy. Initial expenses include start up costs relating to the feasibility studies, market research, physical planning, promotion and administration. Government may engage directly, through provision of land, financial incentives, or negotiations to attract anchor tenants, or indirectly through provision of normal infrastructure.

A technology park represents a major investment which spans several decades. Adequate continuing or renewable financial resources are required to provide satisfactory services to tenants and maintain proper operations of parks. In addition, because tenant firms are the life-blood of a technology park, the park management must do their best to facilitate the fundraising needs of their tenants.

Technology park ownership and operational structure typically follows four main models:

- Public or not-for-profit technology parks
- Private technology parks
- Academic institution-related technology parks
- Hybrid technology parks

Public or not-for-profit technology parks and incubators are usually sponsored by governments and not-for-profit organizations and serve primarily the purpose of local economic development such as job creation, economic diversification and/or expansion of the tax base. Private technology parks are initiated and developed by private investor groups, real estate development companies and large private companies for profit. They are created with the objective of generating market returns to their shareholders or owners. While our research and analysis indicates that, except for government R&D loan programs, the largest source of technology park funding is private. We list the major sources of technology park funding in Figure ES-3.

Figure ES-3: Major Sources of Technology Park Funding

<ul style="list-style-type: none"> ▪ Grants and gifts ▪ Sponsorship ▪ In-kind support ▪ Soft loans 	<ul style="list-style-type: none"> ▪ Commercial loans ▪ Commercial leases ▪ Income for services provided ▪ Rental Income 	<ul style="list-style-type: none"> ▪ Revenue sharing with partners ▪ Shareholder funds ▪ Equity participation with client companies ▪ Royalty Agreements
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Identification of Key Success Factors

In our GLONINTECH park model presented in an earlier chapter, we identified 12 factors that we believed were essential for the success of any technology park. In order to identify the relative role of these 12 factors in influencing the success of parks, we used the following measurement model.

$$\text{Relative Success of a Park} = f(\text{Relative Presence of 12 Factors In A Park})$$

In this measurement model, the dependent variable is the relative success of the park. The independent variables are the relative presence or absence of each of these 12 factors, from the model. Using our Worldwide Survey of Technology Park Managers and Technology Park Tenants, we collected relevant data on the relative success of their parks and a variety of other factors that may be responsible for their success or lack of success. Based on the regression analysis of park success data (based on a set of 15 variables representing these 12 factors), we showed that, although relative importance varies, all the 12

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factors presented in our theoretical model are important KSFs. In order to address the problem associated with multicollinearity of independent variables we factor analyzed 15 variables and reduced them to four factors as follows:

- Factor 1: Business Environment and Labor
 - Socio political climate
 - Government/public policy
 - Business climate
 - Labor
- Factor 2: Park-specific Endowment
 - Historical factors
 - Inter-firm linkages
 - High concentration of firms
 - Element of chance
 - Local innovation & entrepreneurship
- Factor 3: Co-opetition and Demand
 - Competitors/collaborators
 - Suppliers and related industries
 - Market demand

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- Factor 4: Input Prerequisites
 - Capital
 - Infrastructure
 - Leading/anchor firms

Our results show that all the 12 factors included in our conceptual model are key success factors although their individual contribution to success varies. The government definitely plays an important role in promoting the success of parks.

In addition to identifying KSFs, we have also identified so called key failure factors (KFFs) which are likely to discourage firms from locating in parks. For example, our research and analysis indicates that both park managements and tenants believe the high cost of entry and operation (fees, taxes, real estate rent, labor) in a technology park to be critical factors that may to discourage firms from locating in a park. Similarly, the lack of infrastructure and facilities (including laundry services, medical facilities, public transportation systems, etc.) were also identified as critical factors.

Key Success Factors to Parks and Tenant Firm Financing

Availability of funding is a significant barrier to the future growth of both technology parks and tenant firms. Many sources of financing for technology park tenants (including: private venture capital and equity financing, commercial bank loans, government loans and R & D grants, etc.) tend to be “stage” specific to the firm. Given the increased risk inherent in technology-based businesses, Venture capital is especially important to technology park firms. Venture capitalists use industry-focused investment models to seek quick and sizeable returns and, unlike traditional financing sources (banks, etc.) tend to take an active interest in the business operations of the firms they invest in. Much of the added-value that venture capitals bring to the technology industry is their ability to work with firms as directors to monitor, consultants to assist in the recruitment of management and provide other support services. The unique skill set requirements and tolerance for risk offer some explanation to why some regions of the world have smaller and less developed venture capital industries.

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Despite their tolerance for risk and failure, Venture Capitalists do manage their risk portfolio by investing a majority of their funds in more established firms that have, at least, reached the expansion phase. The exception to this trend occurred during sustained industry boom cycles such as the recent internet and dotcom boom of 1998-2001. Informal networks of investors, called Angel investors, are critical to early stage firms and act as a bridge to venture capital. Corporations also provide venture capital for early-stage companies; however they tend to invest for the strategic purpose of gaining access to technology or industry insight and not financial gain. For venture capital to work well, there must be a continual flow of new firms that meet venture capital investment criteria, and as important, there must be a viable path for the venture capital to exit the investment. Exits are usually done through merger and acquisition (M & A) or initial public offering (IPO) which requires secondary stock markets.

Government policy is an important driver of venture capital and can impact the relative size and robustness of the local industry. An example is when ERISA laws (in the U.S.) were changed to allow pensions funds to invest in venture capital. Tax policies are also an important driver for venture capital and can help create a favorable environment. However, too much government intervention “crowds out” private sector participation and creates an inefficient industry totally dependent on government support.

On a global perspective, the venture capital industry is cyclical. However, despite the dotcom bust, venture firms continued to increase their size and share in the economy. The largest and most successful venture capital industry in the world is in the U.S. where venture-backed firms outpaced the national economy and posted substantial wage increases in the last three years. Venture capital supports U.S. global competitiveness and has allowed the country to improve its income and standard of living over most other advanced economies. The global trend in venture capital shows heavy investment in high-technology. Israel, on a percent of GDP basis, leads the world in venture capital investment in high technology, followed closely by the United States and Canada. Korea, one of the least developed countries in the OECD, has an exceptional venture capital industry when measured as a percentage of GDP.

The U.S. venture capital industry is experiencing its first sign of growth since the collapse of the dotcoms. Several trends have emerged over the past five years. Investment flow has recently shifted towards life science (sector is at a five-year high) and wireless and somewhat away from software and networking.

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There is also recent shift towards investment in later-stage companies. Private equity funds continued to outperform the public markets (20 year returns of approximately 15%). Business angel investing has grown considerably from an estimated 50 formal networks to over 170.

The Asian private equity market is growing rapidly as Asian companies set the pace for global expansion. Whereas pension funds are the main source of venture funds in the U.S., they only represent 17% in Asia with the majority sourced from corporations (34%) and banks (19%). Japan and China are the leaders in investment and funds under management; however Korea has the highest as a percent of GDP. Unlike the U.S., traditional industries, in Asia, such as financial services and transportation attract a majority of the funding (60%), although IT is more of a focus in China and Korea. While fundraising in Australia has shown signs of slowing, China and India are expected to expand. Government is a key source of funds in several Asian countries and has led to success in the case of Hsinchu (Taiwan).

Bank financing is heavily used in Europe and, although it is a well developed industry. Venture capital represents only 2% of all funds. Differences in the private equity industry between EU countries are distinct and reflect political and economic conditions. The United Kingdom has the largest private equity market in Europe. European private equity has a much greater focus on buy-out than in the United States and, like Asia, venture capital tends to target traditional mainstream industries. In Europe, banks are the largest contributor of funds to private equity making up 22% of total funds with pensions coming in second with 19% of funds. Corporate venture capital plays a significant role and tends to focus more on start-up and expansion phase investments.

Marketing Strategy for Technology Parks

Our research focused on the elements of Product, Promotion, Price and Place as they pertain to technology parks. We focus on the immediate question of how to promote Sapiens Park based on the results of our Worldwide Survey of Technology Park Managers and Technology Park Tenants.

Promotion

The Product of technology parks is essentially the services and characteristics related to the park. Their simplified customer base, depending on the type of park, includes a mixture of public and private firms (at various stages of development), and other public and private institutions. Science parks can be positioned in the market to solve many problems faced by start up companies or mature technology companies. Among the top reasons for locating in technology parks include:

- Location of the park
- The image or reputation it gives the company
- Proximity to the customers or suppliers targeted by the company
- Proximity to goods and services required by the company
- Access to pools of highly-skilled labor
- Room for expansion
- Proximity to venture capitalists, other financing sources and professional services

Analysis of the results from our Worldwide Survey of Technology Park Managers and Technology Park Tenants indicates that two things are essential for a successful technology park promotion campaign to take effect. First, the technology park management must have direct contact with prospective clients and make forceful representations to persuade them to locate and invest in the park. Second, existing park clients must be satisfied enough to make a positive referral to others.

Pricing

Technology parks have a mix of services that must be bundled and priced appropriately in order to maximize revenues necessary for operating the park in a quality-oriented and responsive manner. Expense related to key functions, deemed important to attract and retain tenants, must be covered on a continuing basis. Some of these activities include:

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Park promotion to identify and securing tenant companies

Facilitating important links and collaboration between tenant companies, universities, research and development facilities and industrial enterprises

- Assisting start-up high technology companies with business plans and problem solving
- Planning, land and building management
- Park maintenance, upgrade and expansion

Place (Distribution)

Based on the product definition, of technology parks, given in this study, the line between promotion and distribution becomes very blurred. The “distribution process” is initiated with the contact and promotion made with the prospective tenant and ends once the tenant makes the decision to locate in the park. The technology park industry is a “high-touch,” highly relationship oriented industry. Many of the influencers in the decision making process are real estate agents or brokers. The channels of distribution are essential those that are involved with the promotion of the park.

Positioning of Technology Parks

The combination of the four marketing mix variables in implementation along with the relative image position that a technology park wants to create constitutes the positioning of the technology park. While this requires a full-scale analysis by itself we provide some guidelines in this section for Sapiens Parque based on our analysis of the positioning of some of the world’s leading technology parks. In order to understand how some of the world’s leading technology parks position themselves we examined ten technology parks by collecting their sales collateral, evaluating their websites and scouring the secondary literature to understand how they were positioned.

Santa Catarina and Brazil’s Endowments

Brazil is the fourth largest nation in the world in terms of land mass and the sixth largest in terms of population. Brazil’s government is a Federative Republic with an Executive, Legislative and Judicial branch. Some of the country highlights pertinent to this study are:

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- The most advanced technological nation in Latin America accounting for 70% of South America's GDP
- The only country in Latin America with its own satellite manufacturing and launching program (multiple satellites launched)
- Second largest depository of structural genomics research in the world
- Third largest manufacturer of aircraft (3610 planes delivered to 50 countries) and electrical motors in the world (Santa Catarina State)
- Fifth largest manufacturer of steel in the world
- Brazil has over 1,280 higher education institutions and R&D centers
- One of the world's largest communities of over 70,000 Java Engineers developing applications for medical, telecommunications, financial and government services for leading international firms
- Brazil has over 18,000 systems engineers and the largest JUG (Java Users Group) in the world

Thus, Brazil can be seen to have substantial assets in terms of skilled labor, advanced technology, large engineering and industrial base, world-class institutions of higher education and world-leading industries. This allows it to be ranked among countries like China and India in terms of its unexploited development potential.

Santa Catarina is located in southern Brazil between Rio Grande do Sul and Parana. Geographically, Santa Catarina's is flanked by the Atlantic Ocean on the east, prairies on the west and forests in the north and south. Santa Catarina's location is strategic to the dynamic markets of Chile deep water ports and shipping access of the Atlantic Ocean. It boasts a diverse population of more than 5 million people with deep roots of European, Japanese and Arabian influence and it has one of the highest standards of living in Brazil. Santa Catarina makes up a large portion of Brazil's economic strength. Although the state Government is supportive of business its bureaucratic and regulatory methods can be a hindrance.

Recommendations

Recommendations pertain to the following areas. These are the major areas and the summarized recommendations:

Target Industries

Strong industry candidates based S.C. endowments and demand:

- Agribusiness
- Food technology and food processing
- Aquaculture
- Electric, Electro-mechanical and Electronic industries
- Software services outsourcing
- Chemical
- Ceramics

Challenging industry candidates:

- Tourism
- Sports technology

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Park Financing

- Demand-pull
 - Build-as-you-go, finance as you go
- Diversify revenue sources
 - Buildings
 - Bonds with State Guarantee
 - Short-term lease
 - Ownership and use
 - Government funding
 - Operations
 - Sponsorship
 - User fees
 - Charged for services

Tenant Financing

- Establish Angel Network, Facilitated by Park
- Government R&D funding (INOVAR)
- Locate commercial lending institutions on site
- Network with foreign venture capitalist
- Establish loan guarantee programs
- Non-financial services typically provided by VC/Angel

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Park Management

- Minimize costs to park tenants: fees, taxes, etc.
- No taxes on processes and inputs, tax profits
 - Attraction of tenants
 - Enhance location of the park
 - Government support
 - Public – private partnerships
 - Bundled services
 - Common R&D & office center
- Promotion
 - Integrated promotion plan
 - Differentiating e-Business portal
 - Join IASP
 - Road show/site visit and attend targeted industry trade shows
 - Improve sales collateral
 - Develop strong relations with local or regional brokers
 - Open international sales offices in proximity of targeted industries
- Retention of tenants
 - One-Stop-Shop
 - World class operations management

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- Production oriented facilities (non R&D focused)
- Support services (tax, legal, accounting)
- Pricing

Park Development Strategy

- Develop financing plans
- Develop world class infrastructure
- Where government should not be involved:
 - Avoid setting up production-type operations
 - Rapid privatization of government funded financing programs
 - Avoid conflicting policies between federal, state and local government
- Public Policy
 - Fast track business licensing and permit process
 - Facilitate streamlined visa processing
 - Facilitate streamlined immigration and entry
 - Strong IP & private property protection
 - Fully TRIPS compliant (at the Federal level)
 - Tax laws and incentives

Industry and Company Follow-up Opportunities

List of Target Companies

- Potential Anchor Tenants contacts facilitated by GLOBUSTRAT team:
 - Sun Microsystems (MOU in place)
 - IBM and Cisco Systems (MOU in progress)
 - Intel Corporation
 - Sybase

Asia

- Agri – Pacific Agriscience
- Food Tech – Fontora
- Electronic – D-Link
- Alt. Eng. - Bhagwan

Europe

- Health – Siemens AG
- Bio – Neuraxo Bio Tech EMBA
- Health – GlaxoSmithKline Oral Care

List of Supportive Industries

- Legal, accounting, consulting, logistics and human resources

Contact Names

- See Appendices 2 and 3

1.0 Introduction

1.1 Overview

Sapiens Parque is a 2500-acre (4.5 million m²) development project located in the island-city of Florianópolis, the capital of Santa Catarina State, Brazil. Sapiens Parque is located 25 kilometers from the city's center in the northern portion of the island. The land on which Sapiens Parque rests is owned by the Santa Catarina Development Company (CODESC) in partnership with the State of Santa Catarina^{1,2} (see Figure 1-1)

Figure 1-1 Sapiens Parque Area



Source: Sapiens Parque

Figure 1-2 Phase 1 - Perspective Overview



Source: Sapiens Parque

Designed to be more than just a technology park, Sapiens Parque is planned and promoted as an **innovation** park. Planned in stages (see Figure 1-2 for an overview of Phase 1) and intended to provide a next-generation home for its tenant firms, Sapiens Parque will also offer

facilities where tourists and the local population can actually experience the science that is under development in the park. Sports, entertainment, shopping, dining, and lodging will also be available. The goal is to create a “technologically advanced community of industries and activities that also meets the highest standards of sustainability”².

In the Spring of 2005, California State University, East Bay (“CSUEB”) was engaged to conduct a research study to understand Global Best Practices, Investor Requirements, Global Financing and Marketing practices of technology parks worldwide. The study will provide Sapiens Parque with recommendations on what they should do for optimal park development, management and marketing in order to become the leading technology and innovation park, in Latin America, and a magnet for leading technology firms from all over the world. The research study was conducted for Fundação Certi (“The CERTI Foundation”), in partnership with the State of Santa Catarina and its associated agencies, particularly Sapiens Parque S.A. which was established for this purpose. It was conducted by three teams of mid-career and senior executives enrolled in the Transnational Executive MBA (TEMBA) Program at CSUEB, as part of their program requirements. This research report contains the findings, conclusions and recommendations of this research study.

The study examines technology parks on a global basis and provides the Sapiens Parque Authority S.A. with information on best practices and key success factors (“KSFs”) of these parks. It also addresses the global financing alternatives used in technology parks worldwide and recommends financing plans best suited for Sapiens Parque. The study considers various aspects of marketing and promotion of technology parks and suggests implementation measures Sapiens Parque management can take to improve the visibility and attraction of the park to potential investors and tenant companies.

In this chapter, we present the primary goals of The CERTI Foundation and its partners in commissioning this study and the research objectives that guided the research team (during the process of conducting this research study). A brief profile of the Sapiens Parque is presented especially for those who may not be familiar with its characteristics. We also present the concept of the Global Business Strategic Consulting (GLOBUSTRAT) Program, a component of the TEMBA program of CSUEB. TEMBA participants conducted this study and prepared this

research report. We present a brief profile of the Cohort 8 TEMBA participants who conducted this study.

This research report is organized into ten chapters. A brief description of each chapter is presented so that the reader knows where to look for specific information. A summary at the end closes this chapter.

1.2 The GLOBUSTRAT Concept



The Global Business Strategic Consulting (GLOBUSTRAT) Program, a unique California-based strategic consulting program offered by the College of Business and Economics at California State University, East Bay, is offered under the auspices of the Transnational Executive MBA (TEMBA) Program. The TEMBA program enrolls mid-career and senior executives, from leading technology, consumer and service industry companies in the United States, who participate in a 13 month series of specialized global class modules while conducting strategic consulting studies from non-U.S. based companies as part of the requirements for successful completion of the program.

The GLOBUSTRAT Program is part of a cluster of global consulting programs conducted by the College of Business and Economics, which has extensive experience in conducting strategic market entry and strategic alliance studies for companies in Europe, Asia and South America with a broad network of both industry and government contacts. The College also has extensive international business development expertise in North America and elsewhere. Previous projects conducted under the auspices of identical programs include strategic industry analysis, strategic market entry and strategic alliance studies conducted for over 100 firms in Austria, Belgium, Chile, Brazil, China, India, Indonesia, Philippines and Thailand with over 115 products, services and projects studied.

The principals of the GLOBUSTRAT program and the program itself have widespread global experience in conducting extensive research studies for the establishment of high-tech technology

and business clusters, foreign direct investment zones, stock exchanges and financial institution best practice studies, and for conducting feasibility studies for World Trade Centers and business incubators. The principals of the GLOBUSTRAT program completed a Global Business Incubator Benchmarking Study for the Instituto de Pesquisas Technologicas (“IPT”) at Fundacion Universidad Regional de Blumenau (“FURB”) in Blumenau, Brazil in 1999 and a Study for the Establishment of World Trade Centers for a private client in India in 1995.

Under the aegis of the GLOBUSTRAT program in 2001, the principals completed a Global Best Practices Study for the Establishment of a High-Tech Business Cluster in the Province of Styria in southern Austria for the Office of the LANDESRAT (Budget, Finance and Telecommunications Minister) on behalf of the Government of Styria. A study on the Establishment of a Foreign Direct Investment in the Silicon Alps in the southern State of Carinthia in Austria was completed for the Government of Carinthia. The Vienna Stock Exchange commissioned a Study of Organizational and Financing Practices of Global Stock Exchanges under the auspices of the Chairman and CEO’s Office. This “external” study was conducted in conjunction with an “internal” organization study conducted by the Boston Consulting Group (BCG) in the same year 2001-2002. One of the principals was involved with a number of high-tech and medium technology industry and investment studies for the Government of India in the 1970s in the heavy engineering, heavy electricals, electronics and financial sectors including studies for the establishment of R&D Centers, Dry Ports and Industry Logistics and Supply Chain Management Studies.³

1.3 Sapiens Parque – Knowledge plus Experience

Responsibility for implementation, operation, and management of Sapiens Parque is held by Sapiens Parque S.A, a corporation with privately held capital. The Board of Directors and Executive Board of Sapiens Parque S.A. is comprised of members representing its partners, Companhia de Desenvolvimento do Estado de Santa Catarina (“CODESC” – Santa Catarina Development Company) and The CERTI Foundation⁴.



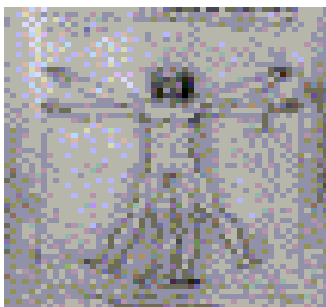
Created by state law in 1975, CODESC assists with the planning and management of economic programs within the State of Santa Catarina. The mission of CODESC is to “stimulate and develop, economically and socially, the Santa Catarina State in accordance with its status and objectives”.¹ In partnership with the State of Santa Catarina, CODESC owns the land on which Sapiens Parque is situated.



The CERTI Foundation is a private, non-profit institution headquartered on the campus of Universidade Federal de Santa Catarina (UFSC – Federal University of Santa Catarina) located in Florianópolis.⁵ The CERTI Foundation is technology-based and focuses on development of technological innovation, especially segments that “center on the human being and the quality of life”⁶.

The vision and name of Sapiens Parque draws upon *homo sapiens* (human being), suggesting society and experience, and *sapientia* (knowledge), which imparts a connotation of wisdom and education.^{1,2} Sapiens Parque is built upon these two primary themes, occupying one major area designated as *Sapiens Scientia*, and another designated *Sapiens Experientia*.

Sapiens Scientia, covering approximately 247 acres (one million m²), is designed to host organizations and firms from throughout Brazil and the world. With a primary focus on science, technology, R&D, and innovation, Sapiens Scientia will “promote and maintain a



Human



Knowledge

dynamic and creative atmosphere capable of influencing the enterprises as well as attracting new talents and competence to the region”¹.

Sapiens Experientia will cover an area of 62 acres (250,000 m²). As the name implies, Sapiens Experientia will be a place of “experience”, stimulating visitors with “museums, show rooms,

theme parks, and test/experiment laboratories”¹. Sapiens Experientia will help bring together other segments of the park and facilitate expansion of the Sapiens Parque trademark as a “national and international reference in innovation, knowledge, quality of life and well being.”¹

The management of Sapiens Parque has three primary objectives for the park¹:

- To make Sapiens Parque relevant and different by integrating the concepts of knowledge (Sapiens Scientia) and human experience (Sapiens Experientia) into a single innovation park.
- To gain Sapiens Parque, Florianopolis, Santa Catarina, and Brazil world-wide visibility and recognition for innovation and technology.
- To strategically leverage the financial resources and human gifts of Santa Catarina and Brazil to continue development of state and country.

Through realization of these objectives, the management of Sapiens Parque expects to attract a cross section of local, regional and global industries related to³:

- High technology
 - Telecommunications
 - Micro-technology & Nanotechnology
 - Computer software and hardware
- Digital entertainment & technology
- Sports technology
- Tourism, trade & investment

The three objectives for the park also drive the management objectives of the GLOBUSTRAT research project as outlined in section 1.4 below.

1.4 Management Objectives of the Study

In order to properly proceed with any research project, it is important to understand the objectives for the investigation outlined by the management of Sapiens Parque. They are as follows³:

- **Identify technologies and business sectors to target.**

In order for Sapiens Parque to become a global magnet for advanced technology, innovation and market-driven business development, management must understand the technologies and business sectors best suited for the park.

- **Benchmark and exceed global best practices.**

Sapiens Parque management needs visibility to how the world's best parks became so and what those parks do to sustain excellence. Gaining insight into global best practices will assist Sapiens Parque management in reaching and exceeding world-class performance.

- **Confirm endowments to use for competitive advantage.**

Florianopolis, Santa Catarina State, and Brazil are all rich in certain human, financial, and natural endowments. In order for Sapiens Parque to achieve the status of technology and business leadership, management must be able to utilize and/or develop endowments that will meet the short and long term requirements of the industries the park is targeting.

- **Market demands for growth and sustainability.**

Sapiens Parque management must be able to confirm existing and identify new market demands that will drive the long term growth and sustainability of the park.

- **Harness cooperation and resources from around the world.**

In order to gain the financial strength and business potential needed by Sapiens Parque, management must be able to collaborate with world class organizations from around the world. These include technology companies, non-governmental organizations (NGOs), public sector organizations and governmental agencies.

- **Modes and types of financing sources and instruments**

It is imperative that the growth of Sapiens Parque become self-sustaining and perpetually funding. This necessity drives a requirement to explore and understand all modes of financing available to both Sapiens Parque management and its prospective tenants.

- **Promote and market the park to anchor tenants**

In order to quickly launch the park successfully, the management of Sapiens Parque wishes to locate and persuade anchor tenants to locate in the park in the 2005-2007 timeframe and to develop a marketing plan for marketing and promotion of the park on an ongoing basis.

The Sapiens Parque Management objectives guide the research objectives of the study as outlined in the next section.

1.5 Research Objectives of the Study

Research objectives are built upon the management objectives. The purpose of research objectives is to clearly convey what must be achieved by the research team. The following research objectives were developed by the GLOBUSTRAT Consulting Group in response to the Sapiens Parque management objectives³:

- **Profiles of technology parks.**

Provide profiles of technology parks by supplying a comprehensive analysis of the size, composition and structure of the technology park industry worldwide. Develop and deliver a global overview of technology parks including their stage of development and their potential growth. Identify current trends, and worldwide similarities and differences among technology parks.

- **Key business sectors to target.**

Provide a clear understanding regarding the specific key business sectors for Sapiens Parque and the Santa Catarina Government to target, including the product-technology sectors within these key business sectors. Ensure consideration is given to the following:

- Analysis of the world market potential and development in various sectors such as bio-technology, tourism, education, etc.

- The existing and probable future endowments available in Florianopolis, Santa Catarina State and Brazil including:
 - Human capital
 - Financial and physical capital
 - Natural resources
 - Cost-benefit of different product-technology segments.
- **Types of firms for establishment and growth.**

Provide to Sapiens Parque management a clear understanding of the supply chain/distribution/logistics channels necessary to reach the firms that are targeted as potential investors and participants in Sapiens Parque. Provide the aspects pertaining to these three areas that will be critical to the success of Sapiens Parque.
- **Financing options.**

Recommend financing options to Sapiens Parque management by investigating alternative modes of financing and related best practices. This recommendation will include:

 - Particular focus on government financing of infrastructure, venture capital, angel financing, leasing, equity capital, bank capital and other types of funding sources.
 - Examination of the best practices in technology firm financing and firm exit strategies such as IPO's, acquisitions, mergers, spinouts and corporate venture capital.
 - Suggestion of an appropriate mix of financing options for the Sapiens Parque management to adopt in order to provide short-term, medium-term and long-term funding.
- **Marketing strategy.**

Recommend a marketing strategy to the management of Sapiens Parque. Provide suggestions for how best to approach/contact target companies and organizations. Include information related to marketing mix (Product, Promotion, Placement and Price).

- **Key success factors for the development of successful technology parks.**

Based on a comprehensive investigation of the literature and secondary material available, regarding the factors that result in technology park success, and based on a worldwide study of technology park success, identify for Sapiens Parque management the Key Success Factors (“KSFs”) that are instrumental in the success of such parks.

- **Optimal park development strategy.**

Recommend to Sapiens Parque management an optimal development strategy for the creation and growth of a successful technology park. Include in the recommendation such elements as:

- Models and specific characteristics of technology parks that have succeeded and characteristics of the major technology parks worldwide with regard to:
 - Elements of available services, rivalry, company concentration, proximity to markets and networking.
 - Importance of specialization, innovation, promotion, and management.
 - Involvement by educational institutions and the interdependency among stakeholders.
- Detailed profiles of key successful technology parks and information on the industries represented in those parks, including:
 - The key traits of the industries present in the parks.
 - The specific role of the government in those parks.
 - The historical evolution of the technology parks and their future prospects.
 - An analysis of the overall attractiveness of the technology parks analyzed.

- **Potential investor firms and participants.**

Identify the key U.S. and Canadian firms and business/government organizations to target as potential investors and participants in the Sapiens Parque. Include consideration of the targeted business sectors discussed above.

- **Contact information - companies/organizations.**

Provide the names and addresses of the key contacts in the target firms and organizations. Included in this objective is support on a best-effort basis of facilitating meetings with key-decision makers.

- **Key park officials, authorities, experts worldwide**

Provide contact information for technology park development officials, local technology park authorities, and technology park experts worldwide.

1.6 Organization of the Research Report

This research report is comprised of ten chapters.

- **Chapter 1** provides an introduction to the study. An overview of Sapiens Parque and its management is included. Also provided are the objectives which drive the research starting with the overarching objectives of Sapiens Parque, continuing with the Sapiens Parque management objectives for this study and concluding with the research objectives developed by the GLOBUSTRAT Consulting Group. Chapter 1 also includes a profile on each of the researchers within the GLOBUSTRAT Consulting Group.
- **Chapter 2** outlines the research methodology that was driven from the research objectives. It provides an overview of the literature and park visits that were used for secondary research, the analytical Global Integrated Technology (GLOINTECH) Park model that was developed by the GLOBUSTRAT team and an explanation of the survey that was used for primary research. Chapter 2 concludes by touching on Findings and Conclusions.
- **Chapter 3** provides a detailed description of the GLOINTECH Park model of key success factors. It describes the background on how the model was developed and an explanation of each of the factors that are used in the model.
- **Chapter 4** provides a general overview of the global technology park industry, highlighting the size of the industry and outlining the major characteristics and findings associated with the industry. This information is considered globally and by geographic regions.

- **Chapter 5** provides insight into findings related to the of tenant companies within technology parks around the world. It discusses types and sources of funds available for firms and considers the forces that encourage financial entities to invest those firms. The chapter closes by examining and comparing the finance industries in North America, Asia, Europe, and South America.
- **Chapter 6** is designed to address two key issues. First, it identifies the factors that are crucial for attracting firms for locating in a technology park. Second, it presents a list of the Key Success Factors (KFSs) based on a quantitative analysis of survey data. A detailed description of the data and the procedures used to analyze the data to derive these results are presented in this chapter.
- **Chapter 7** presents an analysis of the principal modes and models of financing technology parks. It discusses the major strategies used by successful parks and provides insight into financing technology parks and zones. The chapter concludes by identifying the key modes of financing used by the respondents of our technology park manager and park tenant survey.
- **Chapter 8** This chapter deals with marketing strategy for technology parks. Marketing strategy relates to the means of attracting companies to locate in a park. Issues such as promotion of parks to the potential companies, distribution of parks services through intermediaries and positioning a park's value propositions to attract companies and organizations, consistent with the goals of the park are discussed in this chapter.
- **Chapter 9** The chapter outlines the human, financial, and natural resources available to Florianopolis, Santa Catarina State and the country of Brazil. The primary purpose of this chapter is to identify major location related advantages and disadvantages of Sapiens Parque so that the management of the park can build upon its strengths and addresses its limitations.
- **Chapter 10** The final chapter summarizes the major conclusions of this study. Based upon these conclusions, the research team has outlined a series of strategic and tactical recommendations for the management for the successful growth of the Sapiens Parque.

1.7 Profile of the Research Team

The GLOBUSTRAT Consulting Group is comprised of 14 middle and senior managers holding positions with firms throughout California's Silicon Valley and San Francisco Bay area. With educational backgrounds from prestigious universities throughout the world, the GLOBUSTRAT team has accumulated more than 200 years of business experience across a broad spectrum of disciplines.

The researchers were segregated into three teams, each with an area of focus:

The Americas Team



From left to right:

Mr. Piyush Mittal

Mr. Hussein Mukaled

Mr. Harish Arora

Mr. Travis Cox, CPIM

Piyush Mittal is founder and CEO of management consulting firm ROI IT, Inc., specializing in aligning the IT strategies of organizations with their business strategies, with particular focus on defining and measuring ROI. He has over 15 years of experience in the professional consulting services industry, with engagements ranging from Six Sigma based BPR at Cisco Systems to streamlining financial reporting and forecasting at DaimlerChrysler and Sun Microsystems. He has partnered with Unisys SynerCom Asia in providing systems integration services for MashreqBank in Dubai and TSB Bank in Ireland, and assisted the states of Oklahoma and West Virginia in developing systems to streamline Child Protection Services and Environmental Violations Tracking respectively. Piyush Mittal holds a Bachelor of Science degree in Electronics Engineering from the University of Mumbai, India.

Hussein Mukaled is a Vice President of Business Planning and Operations for Nikon Precision, Inc., a subsidiary of Nikon Corporation and a leader in advance lithography equipment and consumer products. He has extensive experience in North American, Asian and European markets promoting business with leading semiconductor manufacturers. Mr. Mukaled has a

Bachelor of Science in Electrical Engineering and Electronics from Arizona State University in Tempe, AZ.

Harish Arora has more than 16 years of experience in the full life cycle of business systems software consulting. He is currently Senior Solutions Specialist/Architect for Sun Microsystems, Santa Clara, CA, where he is responsible for the overall design and technical oversight of complex business initiatives in customer consulting engagements. Prior to Sun Microsystems, he held positions as Systems Engineer and Area Manager for ACXIOM Corporation and Digital Equipment Corporation in Delhi, India respectively. Mr. Arora holds a Bachelor of Engineering in Computer Science from Amravati University, India and is a Sun Cluster and Digital Unix certified professional.

Travis Cox, CPIM is the Principal Consultant for and the founder of ParaKletos Consulting Group, LLC. He has over two decades of experience helping domestic and global corporations implement complex enterprise software solutions. Travis Cox holds an A.A. in Accounting from Richland College, Dallas, Texas and a B.S.B.A. from the University of Texas, Dallas. He is Certified in Production and Inventory Management (CPIM) by APICS, the Association for Operations Management.

The Rest of the World Team



From left to right:

Mr. Mohan Kanthappan

Mr. Hamid Marshall

Mr. Camilo Pascua, CFM

Mr. Stephen Johnston

Mr. Frank Lucero

Mohan Kanthappan is currently working with Franklin Templeton as Manager, Business Intelligence he is also a founder and Vice President of Operations of Celer Services LLC, a healthcare services outsourcing company in Houston, TX and Bangalore, India. Previously, he was Manager of IT at 3Com Corporation in San Jose, CA where he led the technical architecture team and repository support. Other work experience includes Project Manager for Banca Sella in

Italy, Project Manager for Sella Synergy, Ltd in India and Project Leader for the Bank of Thailand in Bangkok, Thailand. Mr. Kanthappan earned a Bachelor of Commerce degree from the University of Madras and a Post Graduate Diploma in Computer Science & EDP Management from the Bureau of Data Processing Systems, Ltd in Bombay, India.

Hamid Marshall has 16 years of hi-tech work experience. As Staff Engineer for Netgear, Inc, Mr. Marshall leads the development of industry standard compliant high-speed wireless routers. He works with hardware and RF teams to develop the system architecture, software and engineering specifications and he developed the test plan and interoperability specifications for the WPA security standard for Netgear wireless routers. Prior to Netgear, Inc, Mr. Marshall was Software Development Manager for Cyberwatch Security Communication Technology, Inc and Software Manager for 3COM, Inc. in Silicon Valley. He was awarded a B.S. degree in Electrical Engineering with a minor in Economics and an M.S. degree in Electrical Engineering from the University of California, Los Angeles.

Camilo Pascua is employed by Genentech, Inc. in South San Francisco as Facilities Project Manager. He collaborates with engineering on construction projects from the design phase through commissioning and has established quality and performance standards for buildings and facility systems. His previous position was at Pfizer as a Facilities Planning Manager where he managed the design and construction of a 68,000 sq. ft. three-story R&D building. Other positions include Senior Facilities Engineer at Lam Research Corporation and Architectural Project Manager at WHL Architects * Planners, Inc. Camilo Pascua was awarded a Bachelor of Architecture from the California Polytechnic State University, San Luis Obispo, CA and has a certification from California State University, Hayward in Facilities Management.

Stephen Johnston is currently a Senior Software Localization Engineer at Yahoo!, Inc. (Sunnyvale, CA). He manages localization engineering as part of the Yahoo's global expansion program, with the goal of gaining the largest market share for the flagship Yahoo! Mail/PIM products in new Asian and European markets. Mr. Johnston has held senior engineering management positions at other top Silicon Valley companies including PayPal, Inc. (San Jose, CA), Lionbridge Technologies (San Francisco, CA), and SimulTrans LLC (Mountain View, CA). Mr. Johnston is originally from the United Kingdom and has also lived and worked in Ireland, France and Japan for top multinational companies. Mr. Johnston holds a B.Sc. (honors) in

Computer Science from The Queen's University of Belfast, Northern Ireland, and did graduate work in the Artificial Intelligence (Robotics) in the M.Sc. program at the University of Edinburgh, Scotland.

Frank Lucero is Director of Finance for NeoPath Networks, in Santa Clara, CA. Prior to joining NeoPath, Mr. Lucero was Senior Strategic Finance Analyst for Intel Corporation where he drove the strategic planning and investment process for the Software & Solutions Group. His analysis led to over \$20M in cash recovery for Intel. He also served as Optics Manufacturing Plant Analyst (in the Intel Optical Platform Division) where he drove financial planning & analysis for manufacturing operations. He also developed & implemented key business metric programs responsible for driving cost reductions in materials and manufacturing. His strategic analysis led to over \$9M in cash savings for Intel's offshore manufacturing strategy. He also led Finance & HR integration activities for two highly successful high-tech startup companies. Some of Mr. Lucero's past positions include Assistant Controller, LightLogic, Inc.; Accounting Manager, Clarify Software, Inc; and Senior Staff Accountant, Ernst & Young, LLP. He received a Bachelor of Science degree in Business Administration from the California State University, Hayward.

The Capital Funding Team



From left to right:

Mr. Bennett Gutmann

Mr. Michael Elkin

Dr. Christina Chan

Mr. Kalyana Sundaram

Mr. Eric Allegakoen, CPA

Bennett Gutmann is a Senior Manager with Solectron Corporations Global Program Management team. Mr. Gutmann is responsible for the management of customer accounts across all geographies and services that Solectron provides. Mr. Gutmann has over 10 years of experience in global contract manufacturing in both project lead and operational management. Previous to Solectron, Mr. Gutmann Worked for Celestica, as the New Product Introduction Manager, launching over \$300 million dollars of products a year into volume manufacturing. Mr.

Gutmann has also been a Program Manager for InnerStep, BSE in San Jose, CA and Account Executive for Future Electronics, FAI, also in San Jose, CA. He graduated with a Bachelor of Arts in History with a minor in Modern Literature from the University of California, Santa Cruz.

Michael Elkin is an independent consultant for the International Labour Organization's (United Nations) Start and Improve Your Business Project program and Assistant District Director of Entrepreneurial Development for the San Francisco District U.S. Small Business Administration in San Francisco, CA. He directs a private-public sector entrepreneur center and delivers management training, counseling and financial services to northern California small businesses. Previously, he was Manager at the SBA's One-Stop Capital Shop in Oakland, CA and California SBDC Project Officer at the SBA. He has also served as the SBA's Regional International Trade Officer. He served as a U.S. Peace Corps volunteer in Nairobi, Kenya and implemented IYB techniques for management process improvement for over 30 small businesses while there. He has also been a Retail Manager at Don's Toys in Rolling Hills Estate, CA. He earned a B.A in Economics and B.S. in Business Administration from San Francisco State University.

Christina Chan is Director of DSP Firmware at Ditech Communications, Mountain View, CA. With over 12 years of engineering experience, she is responsible for leading a team of engineers in the development and implementation of next generation VoIP products. Dr. Chan was Director of Engineering at Valence Semiconductors, Inc. in Irvine, CA prior to Ditech Communications and Manager of IAD Development at Accelerated Networks Inc., Moor Park, CA before that. Dr. Chan holds a B.S. degree in Electrical Engineering from the University of California, Berkeley and an M.S. and Ph.D. in Electrical Engineering from the University of California, Santa Barbara.

Kalyana Sundaram is a Solutions Architect at Cisco Systems, Inc. in San Jose, CA. He collaborates with users to implement process change that improves sales credit automation and presents the changes and feedback to top IT management. Other positions he has held at Cisco include IT Project Manager, IT Engineer and Software Engineer. Before joining CISCO, he was a Software Engineer at Infoserv Systems in Fremont, CA and with Square D Software Ltd. in Chennai, India where he did projects for Oracle, Singapore as Lead Analyst and Programmer/Analyst. He has also worked in Australia, India, Malaysia and Abu Dhabi. Mr. Sundaram was awarded a Bachelor of Science degree in Mathematics and a Masters of Science degree in Mathematics from the University of Madras, India.

Eric Allegakoen is Senior Finance Director and Chief Audit Executive of Adobe Systems Incorporated in San Jose, CA. He has over 15 years of global experience in Auditing and Assurance Services including Enterprise Risk Management. He reports to the Chief Financial Officer and to the Audit Committee of the Board of Directors of Adobe and is responsible for planning, developing and executing corporate-wide, risk-based audit plans and on-going internal risk assessment programs. Mr. Allegakoen is a member of Adobe's Disclosure Committee which reviews all SEC filings and is also a member of the Integration Task Force. As part of this role, Mr. Allegakoen was involved with Adobe's recent \$3.4 Billion strategic acquisition and integration of Macromedia Inc into Adobe Systems. Mr. Allegakoen also heads Adobe's global Sarbanes-Oxley (SOX) compliance efforts and is considered an expert in the area of SOX Compliance. He is a member of the National SOX Committee of the American Electronics Association (AeA) in Washington, DC. Other professional activities include being a member of the Editorial Committee of the "Internal Auditor" magazine, a global publication of the Institute of Internal Auditors; Immediate Past President and Board Member of the Institute of Internal Auditors' Silicon Valley Chapter. Past work experience includes Ernst & Young LLP, USA as Senior Manager in the Technology, Communications and Entertainment practice area; PricewaterhouseCoopers (Singapore), as Audit Manager in the High Tech Industry practice area; Westpac Banking Corporation, (Sydney, Australia) as Corporate Internal Audit Manager; and Deloitte & Touche, (Sydney, Australia) as Senior Auditor. Mr.. Allegakoen holds a Bachelor of Commerce degree from the University of Newcastle, Australia majoring in Accounting. Mr. Allegakoen holds the following professional memberships and certifications: Certified Public Accountant (CPA), licensed in the State of California, Fellow of the Institute of Chartered Accountants of Australia (FCA), Certified Practicing Accountant of the Australian Society of CPA's (CPA); Certified Internal Auditor, (CIA) and Certification in Controls Self Assessment (CCSA).

1.8 Summary

This chapter has introduced the study of Global Best Practices and Key Success Factors of Science and Technology Parks conducted by the 14-member, three-team GLOBUSTRAT Consulting Group of California State University, East Bay's TEMBA program. The study is conducted for the government of Santa Catarina State, Brazil, and, specifically, Sapiens Parque S.A.. The chapter provides an overview of Sapiens Parque, an innovation park, located in the capital of Santa Catarina, Florianopolis. The chapter also sets the stage for the remaining report by outlining the management and research objectives of the study and summarizing each chapter of the report. The chapter concludes with professional and educational profiles of each of the members of the research team.

Chapter 2 will build upon the management and research objectives outlined in this chapter. It will explain the research methodology used for the research project.

1.9 Sources – Chapter 1

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