Southeast Asia Competitiveness Initiative

VIETNAM

Software/ICT Cluster Strategy

Final Draft May 2003

Vietnam Competitiveness Initiative (VNCI)
Funded by the U.S. Agency for International Development (USAID)
J. E. Austin Associates Vietnam Representative Office
502 North Star Building
4 Da Tuong Street
Hanoi, Vietnam
Tel: 844 942 5185; Fax: 844 942 5183

Table of Contents

Acknowledgements

The Vietnam Competitiveness Initiative (VNCI) is funded by the U.S. Agency for International Development (USAID) and implemented by J. E. Austin Associates. VNCI is working with the Vietnamese software/ICT industry to help improve its competitiveness in international markets.

The VNCI team would like to thank the leaders of the software companies in Hanoi and HCMC who were actively involved in the development of this strategy, especially TMA Solutions, Saigon Software Development Company (SDC), Pyramid Software Development (PSD), Paragon Solutions (PSV), Vietnam Data-communication Company (VDC), FPT, VietSoftware, and Harvey Nash. We are grateful for the continual support of other stakeholders including the Ministry of Science and Technology, Ministry of Post and Telematics, People's Committees of Hanoi and Ho Chi Minh City, Quang Trung Software City (QTSC), Hanoi School of Business (HSB), University of Natural Science Ho Chi Minh City (UNSH), Informatique Francophonie Institut (IFI), the Vietnam Software Association (VINASA) and Kenan Institute Asia (KIAsia).

This report was developed by Mr Mark Frazier, Mr George Sadowsky, Dr Roger H. Ford, Mr Kevin Murphy, Mr Nguyen Hong Truong and Ms Jennifer V. Herink. The methodology used in this study includes a variety of industry cluster and competitiveness diagnostic tools. An industry expert and competitiveness specialists have applied these diagnostic tools to the data collected from software industry stakeholders. While the strategies and initiatives outlined in this report have a high probability of making a major impact on the sales growth and profitability of the software cluster over a 3-5 year time period, this study was limited by time, scope and budget. Further study and technical assistance will be required to validate and implement the initiatives identified in this report.

List of terms

BTA	Bilateral Trade Agreement
CMM	Carnegie Mellon Capabilities Maturity Model
CoE	Centers of Excellence
EIU	Economist Intelligence Unit
GITR	Global Information Technology Report
HSB	Hanoi School of Business
HSC	Hanoi Software Cluster
ICT	Information and Communications Technologies
IFI	Informatique Francophonie Institut
IPR	Intellectual Property Right
ISO	International Standards Organization
ISP	Internet Service Provider
IT	Information Technology
IXP	Inter-Exchange Point
JAA	J. E. Austin Associates Inc.
MOU	Memorandum of Understanding
MPT	Ministry of Post and Telematics
OSS	Open Source Software
PERC	Political and Economic Risk Consultancy
QTSC	Quang Trung Software Center
SSC	Saigon Software Cluster
SW	Software
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UML	Universal Markup Language
UNDP	United Nations Development Program
UNSH	University of Natural Science Ho Chi Minh city
USAID	United States Agency for International Development
VINASA	Vietnam Software Association
VNCI	Vietnam Competitiveness Initiative
VNPT	Vietnam Post and Telecom
WIPO	World Intellectual Property Organization
WTO	The World Trade Organization

Preface

In an era when technological and transportation advances are making the world seem smaller and smaller, businesses, industries, and even governments are having to learn how to compete in the global economy. The internet, decreasing telecommunications and transportation prices, and international trade agreements are causing goods, services, raw materials, jobs, and even direct labor to flow rapidly from country to country, among firms and consumers that are always looking for better quality at a better price. Many manufacturers in developing countries continue to depend on comparative advantages, such as cheap labor, and find themselves stuck in a 'low-cost trap', competing with other developing countries in a way that actually keeps them poor.

At the national level, competitiveness can be defined as sustainable growth in productivity that results in an improved standard of living for average citizens. A nation's competitiveness is driven by its micro-environment, macro-environment, and quality of business strategy and operations.[1] At the industry level, competitiveness is also driven by the cooperation and coordination of all firms within an industry, including each point of the supply-chain. This grouping, which includes all stakeholders in an industry, is referred to as a 'cluster'.

For more than 20 years, research by Dr Michael Porter and others has demonstrated that a key to both industry and national success is the presence of industry clusters.[2] Dr Porter explains that,

> "Once a cluster forms, the whole group of industries becomes mutually supporting. Benefits flow forward, backward, and horizontally... Interconnections within the cluster, often unanticipated, lead to the perception of new ways of competing and entirely new opportunities... National industries are thus more able to sustain advantage instead of losing it to other nations who innovate... As more industries are exposed to international competition in the economy, the more pronounced the movement toward clustering will become."[3]

Cooperation and coordination facilitate efficiency. By supporting each other in a cluster, competing firms will increase their own market-share as they leverage pooled resources to tackle international markets together.

As part of its commitment to facilitate a smooth and successful implementation of the Vietnam/USA Bilateral Trade Agreement, the United States Agency for International Development, (USAID) has funded the Vietnam Competitiveness Initiative (VNCI). J. E. Austin Associates (JAA) is managing VNCI through its

---

[1] Michael Porter, 1990. *The Competitive Advantage of Nations*, Free Press, New York., pp. 6-19.
[2] Ibid, p. 73.
[3] Ibid, pp. 151-152.

Vietnam Representative Office and its counterpart, the Hanoi School of Business, Vietnam National University.

VNCI investigated approximately 20 potential industry clusters during the fall of 2002. That research led to a decision to offer assistance to four clusters in two cities: the Software/ICT Clusters in both Hanoi and Ho Chi Minh City, the Fruit Cluster in Ho Chi Minh City, and the Fine Arts Ceramics Cluster in Bat Trang village outside of Hanoi. VNCI is working with the leadership and members of these clusters to identify weaknesses in their competitiveness and to formulate strategies, implement initiatives, and remove constraints to competitive growth in the local, regional, and global economies.

VNCI initiated its work with the industry clusters by identifying and bringing together 'cluster champions', including the heads of industry business associations, leading entrepreneurs, appropriate government officials, and other key individuals to explain and drive the process. This involved applying a set of business and industry diagnostic tools, rather than relying on a single diagnostic tool, to better understand the local industry and its current competitive position in both the local and global economies.

VNCI staff, along with other JAA experts and industry consultants, are assisting the cluster leadership to develop and implement a strategic plan for each cluster, including a menu of specific strategic action initiatives designed to improve the competitiveness of the industry and individual firms. A key component of this process is developing a strong cluster by identifying appropriate areas for cooperation among firms that can remove constraints and improve competitiveness for all.

This document is the Competitiveness Strategy for the Software Cluster in Vietnam. We hope that the contents are useful to furthering the development and success of the cluster, resulting in improved competitiveness, which will lead to higher exports, employment, company profit and added value for the industry and the nation of Vietnam. This is only a strategy, however. The end result will depend on the continuing collaboration of the cluster members as they implement the strategies and action initiatives suggested in the document, and, even more important, as they discover new ways to innovate and cooperate that the strategy authors have not even considered.

It has been said that,

> "competitive advantage starts with an explicit strategy shared within the cluster itself."[4]

We would like to thank and congratulate the Saigon and Hanoi Software Clusters for taking this important first step towards building a lasting competitiveness strategy.[5]

---

[4] Michael Fairbanks and Stace Lindsay, 1997. *Plowing the Sea*, Harvard Business School Press, Boston, p. 82.

[5] For a more detailed explanation of the cluster approach used by J. E. Austin Associates, please see the Cluster Engagement Model located in Annex 2.

1. Executive Summary

Vietnam is moving to apply information and communications technologies (ICT) as a spearhead of economic and social development. This study explores the competitive context for such an initiative, and offers strategies for an emerging software and ICT cluster to take practical steps towards this end.

New forces in global ICT markets that are prompting the movement of software and related industries away from traditional producers and towards emerging markets present excellent opportunities for Vietnam to develop its ICT sector and achieve significant growth. Although these are powerful and favorable trends, Vietnam to date has done little to capitalize upon them. The benchmarking analysis conducted for this study indicated that Vietnam possesses strengths of affordable, high-quality labor, a low geopolitical risk to investment, and close proximity to the growth economies of China and India. However, impeding capitalizing on these strengths are the weaknesses of comparatively expensive high bandwidth links, and poor English language and general business skills. Further, the legislative environment comprising low levels of commitment at a national level to e-government and weak intellectual property safeguards contributed to the inability to build on this positive foundation. Weak international marketing and promotion was also perceived as a problem.

A clear commitment to change is essential if Vietnam is to achieve its potential. Vietnam enjoys opportunities that, if grasped, could result in rapidly overcoming its gaps in competitiveness. This study has identified many areas such as workforce skills and experience, and improved global marketing and promotion that could be capitalized upon. The government has signaled its intent to support growth within this sector. It has encouraged dialog with the private sector to identify the most useful path forward. The Software/ICT Cluster has been formed to assist with creating linkages between private software and services firms, educational institutions, infrastructure providers, and public and private sector suppliers.

From data gathered from seminars and working group meetings with stakeholders, VNCI has identified key strategies in critical action areas for Vietnam to improve its competitiveness in global software and services markets:

1. Workforce skills and experience
2. Innovation, entrepreneurship, and business management
3. Telecommunications and Internet access
4. Other infrastructure
5. Business climate
6. Market penetration
7. Sustainability and success-sharing

A menu of recommended initiatives which correspond to each action area have been identified to help the ICT industry achieve its growth goals in these areas. These action items are offered in the hope that some will receive the support of the

cluster, VNCI, and other donors as they partner to fulfill the strategic objectives of the cluster.

2. Background

Large and small companies around the world are seeking partners who can deliver software and related knowledge-based services that are of high quality, value and speed. Onshore firms that find the right offshore partners gain multiple benefits, including higher margins made possible by labor cost savings, faster speed to market through round-the-clock work sharing, and better customer service through new multicultural and multilingual support capabilities. Additionally, key pressures on the ICT industry, such the intensified pressure of labor and other on-going business costs, are driving the movement of this industry away from its traditional base in the developed world towards locations in emerging economies. Developments within the sector itself, such as the growth in online auctions, the lowered cost of telecommunications bandwidth, and the predominance of international working groups, are making Internet solutions to business operations more viable and attractive to producers. Developing countries such as Vietnam, which can offer a well-trained, well prepared labor pool and a stable political environment are therefore highly attractive as bases for ICT industry operations.

Four key areas of the 'knowledge industry' feature predominantly in this flow of the ICT industry to developing countries;

1. Software development and related services
2. Customer support and technical support operations
3. Claims processing operations
4. Media conversion and multimedia content development
5. Other knowledge-based service exports, such as remote secretarial, translation or on-line consulting services.

Overall, the value of the market opportunity for developing countries to export software and knowledge-based services is estimated by Dun & Bradstreet at over $200 billion per year.

For Vietnam, and indeed other emerging economies, to be able to attract these ICT industry areas and develop their software and service export potential, certain adverse forces must be addressed. Issues include the need to tighten software quality standards, offer affordable and abundant bandwidth, and develop a bureaucratic and legislative environment that provides confidence to businesses in dispute resolution frameworks and intellectual property protection.

Vietnam's aims to develop a world-class environment for growth of its ICT industry are supported by sympathetic interests of international organizations such as the World Trade Organization (WTO) and the World Intellectual Property Organization (WIPO) who have a strong interest in seeing a reduction in trade barriers and improved intellectual property safeguards.

Over the past three years, the government of Vietnam has indicated a clear determination to see software and ICT as main drivers of economic growth and social advancement. In the government's vision for Vietnam articulated in a resolution passed in June 2000, the software and services industry shall become a spearhead economic sector with the highest annual growth rate relative to other sectors. A national telecommunications network is to reach all parts of the country, having broad bandwidth, high speed and quality and low cost. The Internet penetration rate is to reach the world average.

National and local governments are taking action to put the resolutions and directives into tangible effect. FPT, a public sector-funded company, has won the second highest quality ratings offered by the Carnegie Mellon Capabilities Maturity Model (CMM). VINASA, the government-backed Vietnam software association, has taken steps to increase quality standards for the industry. High technology zones and software parks are moving to operational status, offering incentives to firms exporting software and technology-based services. Recent government decisions have also led to a lowering of international telecommunications prices and to the introduction of competitive Inter-Exchange Points (IXPs) and internet service providers (ISPs). Pilot projects for web-assisted company formation have been launched in Ho Chi Minh City, as a prelude to further automation of the public sector.

By the year 2005, the Government anticipates that such measures, in tandem with the ongoing growth of dynamic Vietnamese software enterprises, should enable the software and ICT industry to reach a $500 million turnover, half of which is expected to be in exports. By 2010, Vietnam is to become a leader in southeast Asia in applications of information technology and in software and related services exports.

3. *Diagnostics*

3.1. Diagnostic approach

The ICT specialist team undertook an intensive review of prior studies, web-based research findings, in-country interviews, and direct experiences in onshore and offshore outsourcing markets. The specialists then chose a group of countries to serve as points of comparison for Vietnam, and applied analytic tools to assess their relative competitiveness. Different diagnostic tools where then applied to analyze this data, giving a comprehensive indication of the current status of the industry and suggesting strategies for development.

3.2. Selection of comparison countries

The project team selected 14 competitor countries, divided into three groups for comparison, to try to establish a benchmark for performance in the ICT sector.

The first group consisted of countries that have proven to be the world's most successful (on a per capita basis) in exporting software and related ICT services, having robust technologies, high levels of productivity and a business climate conducive to ICT sectoral growth. This group comprised Hong Kong SAR, Ireland, Israel, Singapore, and Taiwan.

The second group comprises successful software and ICT exporting competitors having moderate to industry success and with attractive fundamental resources and potential. These countries tend to have lower labor costs than those of the first group. This group consists of China, India, Korea, Malaysia, and Russia.

The third group consists of countries that are now lagging in software exports, despite having labor costs that are conducive to growth. Countries in this group are Bangladesh, Indonesia, Sri Lanka, Thailand, and Vietnam.

Countries in this third group have the potential to become highly successful competitors, provided that they systematically remove constraints that now hinder their software and ICT export performance.

3.3. Selection of areas for comparison

The project team selected the following "vital signs" to compare performance of the selected countries:

- Export sales generated by software and ICT-related services;
- Jobs generated by software and ICT in export industries;
- Number of ICT export firms, relative to total ICT firms in country;
- Achievements in global branding, defined as creating world-known export successes by local firms, and/or by attracting top multinationals;

- Diffusion of telecommunications, Internet access, and computers throughout society (as measured by teledensity, Internet use, and computer use among the population);
- Independent ratings and certifications confirming quality, including World Economic Forum and Economist Intelligence Unit international rankings of country competitiveness, and firm-level certifications of compliance with standards, such as Capability Maturity Model Integration (CMM), International Standards Organization (ISO), Global Information Technology Report (GITR), and Economist Intelligence Unit (EIU) reports.

The results of this comparison are given in Table 1.

Table 1. Comparison of ICT success

Comparison criteria	Group I countries					Group II countries		
	Hong Kong	Ireland	Israel	Singapore	Taiwan	China	India	Korea
ICT export sales	N/A	$8.5 billion (2001) [UBS Warburg]	$1.1 billion (2000) [DI est.]	$1 billion [SIVN report]	$224 million -1999 [DI est.]	$.76-.85 billion (CSIA-FEER 2001) $1.1 billion (2003) [UBS Warburg]	$7.2 billion (2002) [UBS Warburg] $6.2 billion (2001) [FEER]	$290 million (2001)
ICT jobs generated	14,000 total -2001 [HK Govt]	23,000 export/ 35,000 total [CIO/Warburg]	35,000 export [CIO]	N/A	N/A	27,000/150,000 [CSIA/FEER]	415.000/522,000 (2002) [CIO.com/FEER]	N/A
Number of ICT firms	720 total (2002) [SIIC]	750 exporters/NA	400 total [CIO]	N/A	N/A	N/A - exporters 6000 total [FEER]	900 exporters 3000 total [FEER]	615 total
Success in global branding	Local: N/A Multinational: N/A	Local: CBT Systems Multinational: Dell, IBM, Microsoft, Vodafone, many more	Local: Crystal, Eronet, Checkpoint Multinational: Motorola, IBM, HP, many more	Local: Creative Labs Multinational: IBM, NTT, TI, many more	Local: Trend, Acer, Ulead Multinational: IBM, TI, HP, many more	Local: NeuSoft, Chinasoft, Eastsoft Multinational: Microsoft, IBM, TI, HP, many more	Local: Tata, Infosys, Wipro, NIIT Multinational: IBM, TI, HP, many more	Local: Samsung, Blizzard, Apex Multinational: IBM, HP, many more
Telecoms, Internet, and computer ubiquity	57.7 tel lines/100 34.7 PCs/100 33.6 Internet users/100	42.6 tel lines/100 36.5 PCs/100 27.9 Internet users/100	48.2 tel lines/100 25.4 PCs/100 17.5 Internet users/100	48.4 tel lines/100 48.3 PCs/100 46.1 Internet users/100	56.8 tel lines/100 21.9 PCs/100 28.1 Internet users/100	11.1 tel lines/100 1.6 PCs/100 1.7 Internet users/100	3.2 tel lines/100 0.45 PCs/100 0,49 Internet users/100	46.4 tel lines/100 19.0 PCs/100 40.3 Internet users/100
Independent ratings & certifications	GITR Rating: 13 EIU Rating: 13 CMM: N/A ISO: N/A	GITR Rating: 19 EIU Rating: N/A CMM: N/A ISO: N/A	GITR Rating: 22 EIU Rating: N/A CMM: N/A ISO: N/A	GITR Rating: 8 EIU Rating: 7 CMM: N/A ISO: N/A	GITR Rating: 15 EIU Rating: N/A CMM: N/A ISO: N/A	GITR Rating: 64 EIU Rating: 49 CMM: N/A ISO: N/A	GITR Rating: 54 EIU Rating: 45 CMM: 37 ISO: >400	GITR Rating: 20 EIU Rating: N/A CMM: N/A ISO: N/A

Table 1. Comparison of ICT success (continued)

Comparison criteria	Group II countries (cont.)		Group III countries					***Comments***
	Malaysia	**Russia**	**Bangladesh**	**Indonesia**	**Sri Lanka**	**Thailand**	**Vietnam**	
ICT export sales	N/A	$210 million (2002) [UBS Warburg]	$3 million software (1999) $20 million all ICT (2000 DI est.)	N/A	$55 million - 2002 [DI est.]	$ .14 million (2000) [DI est.]	$20 million - 2001 [FEER] $25 million - 2002	*Vietnam is among the lowest software exporters per capita*
ICT jobs generated	N/A	11,000 (2001) [UBS Warburg]	N/A	N/A	2000 export [DI est.]	N/A	4000/20,000 [UBS Warburg/FEER]	*Vietnam is lagging*
Number of ICT Firms	NA/460 total foreign firms registered	N/A	>15 [DI est.]	N/A	40/100 [DI and Board of Investment est.]	N/A	40/450 [DI and VNCI est]	*Ratio differs sharply from India's*
Success in global branding	Local: N/A Multinational: Microsoft	Local: EPAM, Spirit, Novosoft Multinational: Sun, Citibank, SAP, Nortel, Microsoft	Local: N/A Multinational: NIIT	Local: N/A Multinational: N/A	Local: Millenium Multinational: IBM, TI, HP, many more	Local: Frontware, Softsquare Multinational: Dell, Sunguard, Glovia	Local: TMA, FPT Multinational: IBM, Cisco, NTT, IDG, possibly Intel	*No Vietnamese firms are yet "household names"*
Telecoms, Internet, and computer ubiquity	19.9 tel lines/100 10.3 PCs/100 15.9 Internet users/100	21.8 tel lines/100 4.29 PCs/100 9.5 Internet users/100	0.34 tel lines/100 0.09 PCs/100 0.04 Internet users/100	3.1 tel lines/100 1.0 PCs/100 54.3 Internet users/100	4.1 tel lines/100 0.6 PCs/100 0.6 Internet users/100	8.7 tel lines/100 2.4 PCs/100 2.0 Internet users/100	3.2 tel lines/100 0.9 PCs/100 0.1 Internet users/100	*Far lower than most*
Independent ratings & certifications	GITR Rating: 36 EIU Rating: 33 CMM: N/A ISO: N/A	GITR Rating: 61 EIU Rating: N/A CMM: N/A ISO: N/A	GITR Rating: 73 EIU Rating: N/A CMM: N/A ISO: N/A	GITR Rating: 59 EIU Rating: 54 CMM: N/A ISO: N/A	GITR Rating: 62 EIU Rating: 43 CMM: N/A ISO: N/A	GITR Rating: 43 EIU Rating: 28 CMM: 8 ISO: N/A	GITR Rating: 74 EIU Rating: 58 CMM: 1 - FPT ISO: N/A	*Even lower on GITR "network readiness" rating than Bangladesh*

3.4. Comparison of key factors influencing success

The project team also identified key factors that influence success in the ICT sector and the assessed the selected countries against these factors. The key factors were identified as follows:

- Human resources, defined to include language skills, the average monthly wage for a programmer, technical skills, and the number of IT graduates per year;
- Entrepreneurial culture, including traditions of risk-taking in business, and the potential contribution from skilled workers returning to the home country after gaining experience overseas (termed 'diaspora inputs');
- Telecommunications and internet costs;
- Other supporting infrastructure, such as software and technology parks and the availability of affordable and reliable power supplies;
- General business environment, including geopolitical stability geopolitical and the presence of IP safeguards/
- Marketing and promotion, comprising image quality and marketing effort.

The assessment of the countries according to these factors is given in Table 2.

Table 2. Factors influencing ICT success

Factors	Group I countries					Group II countries		
	Hong Kong	**Ireland**	**Israel**	**Singapore**	**Taiwan**	**China**	**India**	**Korea**
Human resources								
▫ *Language skills*	Excellent	Excellent	Excellent	Global Leader	Good	Limited	Very good	Fair
▫ *Programmer monthly wage (US$)*	N/A	$2400 [CIO]	$2500 [DI]	N/A	N/A	$650 [Warburg]	$500 [Warburg]	N/A
▫ *Technical skills*	Excellent	Excellent	Global Leader	Excellent	Excellent	Excellent	Global Leader	Excellent
▫ *# of IT graduates*	N/A	N/A	N/A	N/A	N/A	50,000 p.a.	55-110K p.a	N/A
Entrepreneurial culture								
▫ *Risk-taking tradition*	Global leader	Good and rising	Global Leader	Good	Excellent	High-rising	Medium-Rising	Good
▫ *Venture capital access*	Excellent	Good	Global Leader	Good	Excellent	Medium-rising	Medium-Rising	OK; chaebol
▫ *Diaspora inputs*	High	Excellent	Global Leader	Excellent	Global Leader	High	Global Leader	Good
▫ *Drive to set world standards*	Global Leader	Global Leader	Global Leader	Global Leader	Global Leader	Medium and rising	Global Leader	Excellent
Telecoms and Internet								
▫ *Availability*	Excellent	Excellent	Excellent	Global Leader	Excellent	OK and improving	Uneven	Global Leader
▫ *Affordability*	Global Leader	Excellent	Global Leader	Very affordable	Affordable	High but dropping	OK for exporters	Global Leader
▫ *Dialup (20 hrs/mo)*	$16.50	$19.10	$17.70	$18.75	$7.83	$6.64	$6.66	$12.12
▫ *[GITR]*	N/A	N/A	N/A			$1248 [2001-GPC]	$120-400 [DI]	N/A
▫ *Dedicated 64 kbs/mo*	$1200-1800[FPT]			N/A	N/A			
▫ *Dedicated 2 mbps/mo*				$1400-2200 [FPT]	N/A			
Other supporting infrastructure	Underperforming-Cyberport	Excellent (4)	Excellent	Excellent	Global Leader – Hsinchu Sci. Park	Good – e.g. Suzhou Park j.v. w/Singapore	Global Leader (e.g. Bangalore)	Good (e.g. Daedok Science Town)
▫ *Software parks*	Excellent						Uneven	Excellent
▫ *Reliable power*		Excellent	Excellent	Excellent	Excellent	Uneven		
Business climate								
▫ *Geopolitical risk*	Low risk	Excellent (lowest)	High risk	Excellent (lowest)	Medium risk	Moderate risk	High risk	High risk
▫ *Simple startup procedures*	Global Leader	Excellent	No	Global Leader	Fast	No	No	No
▫ *Incentives for exporters*	Level field policy	Yes	Yes	Yes, fast to get	Yes, fast to get	Yes	Yes	Yes
▫ *Labor code flexibility*	Highly flexible	Excellent	Low	Global Leader	Liberal	Liberalizing	Liberalizing	Liberalizing
▫ *Intellectual property safeguards*	Piracy - 57% (GITR)	Piracy - 41% (GITR)	Piracy - 41% (GITR)	Piracy-50% (GITR)	Piracy-53%(GITR)	Piracy – 94% (GITR)	Piracy - 63% (GITR)	Piracy-56% (GITR)
Marketing/promotion								
▫ *Image as market leader*	Excellent	Global Leader	Global Leader	Global Leader	Global Leader	Good to Excellent	Global Leader	Excellent
▫ *Promotional effort*	Excellent	Global Leader	Medium	Global Leader	Excellent	Medium	Excellent	Excellent

Table 2. Factors influencing ICT success (continued)

Factors	Group II countries (cont.)		Group III countries					
	Malaysia	**Russia**	**Bangladesh**	**Indonesia**	**Sri Lanka**	**Thailand**	**Vietnam**	***Comments***
Human resources ▫ *Language skills* ▫ *Programmer monthly wage (US$)* ▫ *Technical skills* *# of IT graduates*	Fair N/A Good N/A	Fair $500-800 [Warburg] Global Leader 1 million [Warburg]	Limited $350 [DI est] Low N/A	Limited N/A Low N/A	Fair, improving $350-600 [DI] Good to excellent 1000-1500 p.a.	Fair $900 [CIO] Fair, improving 195,000 [total-CIO]	Very limited $325 [Warburg] Poor to good 10,000 p.a.	*Vietnam has best price, but is among the very lowest in global language capabilities*
Entrepreneurial culture ▫ *Risk-taking tradition* ▫ *Venture capital access* ▫ *Diaspora inputs* ▫ *Drive to set world standards*	Low State is active Low but rising Excellent(in govt)	Low Low but rising Low but rising Excellent	Low Low Low but rising Low	Low Low Low Low	Low, but rising Low (2 Funds) Low, but rising Moderate	Low, but rising Low Low, but rising Good	Low Almost none Low, but rising Moderate	*Lagging in all areas, except drive to excel*
Telecoms and Internet ▫ *Availability* ▫ *Affordability* ▫ *Dialup (20 hrs/mo)* ▫ *[GITR]* ▫ *Dedicated 64 kbs/mo* ▫ *Dedicated 2 mbps/mo*	Good Good $16.00 N/A N/A	OK, improving Moderate $14.83 N/A N/A	Poor High cost $25.46 N/A N/A	Poor Poor $6.67 N/A	Limited Expensive $8.15 $200-450 [DI] N/A	Uneven Expensive $6.52 $879 [2001-GPC] N/A	Fair Very expensive $13.43 $350-1446 [FPT,GPC] $18,000 [2003-FPT]	*Dialup access is average price; all other connection is prohibitively high cost*
Other supporting infrastructure ▫ *Software parks* ▫ *Reliable power*	Underperforming (Supercorridor) Good	N/A Uneven	Poor Uneven	Suspended (Bandung Valley) Uneven	Improving – Malabe started; 2 pending Uneven	Poor - Phuket Cyberport N/A	Improving - Quang Trung, SSP etc Fair	*Govt-run parks often have problems*
Business climate ▫ *Geopolitical risk* ▫ *Simple startup procedures* ▫ *Incentives for exporters* ▫ *Labor code flexibility* ▫ *Intellectual property safeguards*	Low risk Fair Yes Uneven Piracy-66% (GITR)	High risk No Yes Uneven Piracy-88% (GITR)	Moderate risk No Yes Uneven Piracy – N/A	High risk No Yes Uneven Piracy - 89% (GITR)	Medium risk Slow Yes-slow in practice Rigid Piracy - NA	Low risk Global Leader Yes-slow in practice Limited Piracy -79% (GITR)	Excellent (lowest risk) Fast for local Yes-can be slow Good Piracy -97% (GITR)	*Vietnam is lowest risk in area; has improving startup/ Incentives; worst IPR safeguards*
Marketing/promotion ▫ *Image as market leader* ▫ *Promotional effort*	Mixed Excellent	Mixed Very low	Very low Very low	Very low Very low	Low Low-medium	Low-medium Medium	Low Very low	*Among the weak promoters*

3.5. SWOT analysis

One of the most basic business diagnostic tool is the SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis. This is performed early in the diagnostic process to provide an initial indicator of the most obvious issues and problems faces, as well as key opportunities available to the industry.

The sources of information for this analysis include background studies undertaken over the past three years (Annex 1), web-based information resources, and results from in-country discussions with individual software and services exporters and with other ICT cluster stakeholders.

Strengths

Vietnam was found to enjoy the key advantages of strong geopolitical stability, as assessed by international geopolitical risk assessors , reinforced by national government commitment to ICT growth. The education system is successful in producing technically well-prepared and talented graduates in software development and other ICT areas, and the labor market offers exceptional labor price advantages (averaging 30-50% relative to established offshore software exporting competitors.) Vietnam also enjoys close proximity to huge future markets (China, India, and Indonesia.)

Weaknesses

Competitive weaknesses identified in the SWOT analysis were that Vietnamese ICT graduates and professionals have relatively poor skills in English and other major international languages, in comparison with established outsourcing competitors. Training fails to offer “hands on” study or internship opportunities. ICT professionals also lacked project management, presentation, entrepreneurial and other business skills.

The industry is weakened by a lack of credentialing and certification mechanisms reflecting the lack of resources and experience in obtaining internationally recognized ratings, exacerbated by the fact that Vietnam is the “world leader” in software piracy, with current estimates of 97-99%.

Additionally, the general operating environment is not conducive to sectoral growth. Vietnam pays exceptionally high prices for bandwidth services, averaging from 15–100 times prices found elsewhere, and suffers from a lack of private venture capital funding sources and market research into potential target opportunities. Bureaucratic delays and uncertainties over incentive applications, visas for travel to overseas markets, poor follow-on preparation and coordination with Vietnamese commercial attaches overseas and a lack of confidence in the legal system regarding interpretation and enforcement of contracts further hamper growth. Government project tendering procedures limit the opportunities for small companies to participate in public sector projects

Marketing of Vietnamese software products fails to convey a distinct image or brand, reflecting a lack of marketing and presentation skills. The absence of secure electronic payment mechanisms limits use of credit cards and other online purchasing options which are becoming requisite for competition in the global marketplace.

Many companies are undercapitalized, have unstable manpower and lack the business and organizational skills to conquer larger and more sophisticated software projects. Only 8.8% of capitalization comes from foreign investment and only 5.1% from the state. With the average software engineer having only three to five years experience, it is difficult to compete in the global market where most engineers have at least ten years experience. Limited human resources further hinder competitiveness as the average firm only has 30 employees.

Opportunities

The forces that are changing the global ICT market context in favor of emerging economies offer Vietnam potential opportunities to become a formidable competitor. Political uncertainties in many of the industry's traditional low-cost producers, such as India, provide opportunities for Vietnam to make an entrance to this market segment. Overseas Vietnamese expatriates offer opportunities for promotion, investment and joint ventures, and outsourcing.
Technological advances in on-line education offer the opportunity to rapidly spread new workplace skills through these mechanisms.

Additionally, many countries have found successful industries can be nurtured by providing 'hot-housed' environments, such as centres of excellence, software parks and business incubators, which can stimulate innovation and entrepreneurship.

The government's commitment to providing affordable bandwidth access can only have positive future benefits to the industry and represent substantial cost savings. Government can also act to strengthen the industry by committing to e-government initiatives, whereby many government services could be offered via the Internet, and by passing and enforcing intellectual property safeguards.

Threats

Expansion of the ICT sector in Vietnam must be mindful of potential threats. The particular conditions existing currently that make it favorable for Vietnam to make an entrance to the global ICT market may not persist for much longer; accordingly, delays in capitalizing on these opportunities may risk losing these opportunities.

The ICT industry in Vietnam needs to cultivate a reputation as a respected software producer; cybercrime and socially offensive businesses would pose a threat to this aim. Industry codes of conduct and auditing regimes could counter this threat to some extent. The industry must also be mindful of vendors attempting to create 'lock in' arrangements with clients, forcing clients into long-term dependency. Emerging 'open source' and web services solutions provide a potential means of minimizing this threat.

3.6. GAP Analysis

The GAP analysis presented in Table 3 illustrates the compares major software and ICT-producing countries.

In comparison with Group I countries, Vietnam lags substantially in the areas of intellectual property rights safeguards, entrepreneurial traditions, telecommunications costs, and global marketing and promotion.

Vietnam compares unfavorably as well with most Group II countries, which have more software success despite labor costs and skills more in line with Vietnam's. Differences in the affordability of international telecommunications, and in global marketing and promotion are evident in this comparison.

Among Group III countries Vietnam performs well. Greater political stability and a wider skills base provide Vietnam with key advantages that other countries in this class generally lack, with the exception of Sri Lanka. Yet the comparatively favorable performance within this group holds little prospect in itself of rapidly generating the growth sought by the Vietnamese government and private sector alike.

Table 3. GAP analysis

(*Factors influencing success*)

Group	Country	Innovative software products	Skills	Workforce attitude	Technical and process quality	Global marketing & promotion	Intellectual property rights	Affordable bandwidth	Subjective rating (scale 0 to 10)
Group I	**Ireland**	Excellent	Excellent	**World Leader**	Excellent	**World Leader**	Very high	Excellent	8.0
	Israel	**World Leader**	**World Leader**	High	**World Leader**	High	Very high	**World Leader**	8.5
	Singapore	**World Leader**	Excellent	**World Leader**	**World Leader**	**World Leader**	**World Leader**	**World Leader**	7.5
	Taiwan	Very high	Excellent	**World Leader**	**World Leader**	Excellent	Medium	Excellent	7.0
Group II	**India**	**World Leader**	**World Leader**	High	**World Leader**	Excellent	Medium	Good	7.0
	China	Very high	**World Leader**	High	Medium	Medium	Very Low	Good	5.5
	Russia	**World Leader**	**World Leader**	Medium-high	Medium	Low	Very Low	Low-Medium	5.5
	Korea	Very high	Excellent	High	High	High	Medium	Very Good	5
	Malaysia	Medium	Medium-high	Medium	Low-medium	High	Low-medium	Good	4
Group III	**Bangladesh**	**Lowest in Group**	Low	Low	Low	Low	Very Low	Poor	1.5
	Indonesia	Very low	Low	Low	**Lowest in Group**	**Lowest in Group**	Very Low	Poor	1
	Sri Lanka	Good	Medium-high	Medium	Medium	Medium	Medium	Medium-Good	5
	Thailand	Good	Medium-high	Medium	Low-Medium	Medium	Low	Medium	4
	VIETNAM	Very Low	Medium-high	High	Low-Medium	Low-Medium	**Lowest in Group**	**Lowest in Group**	3.5

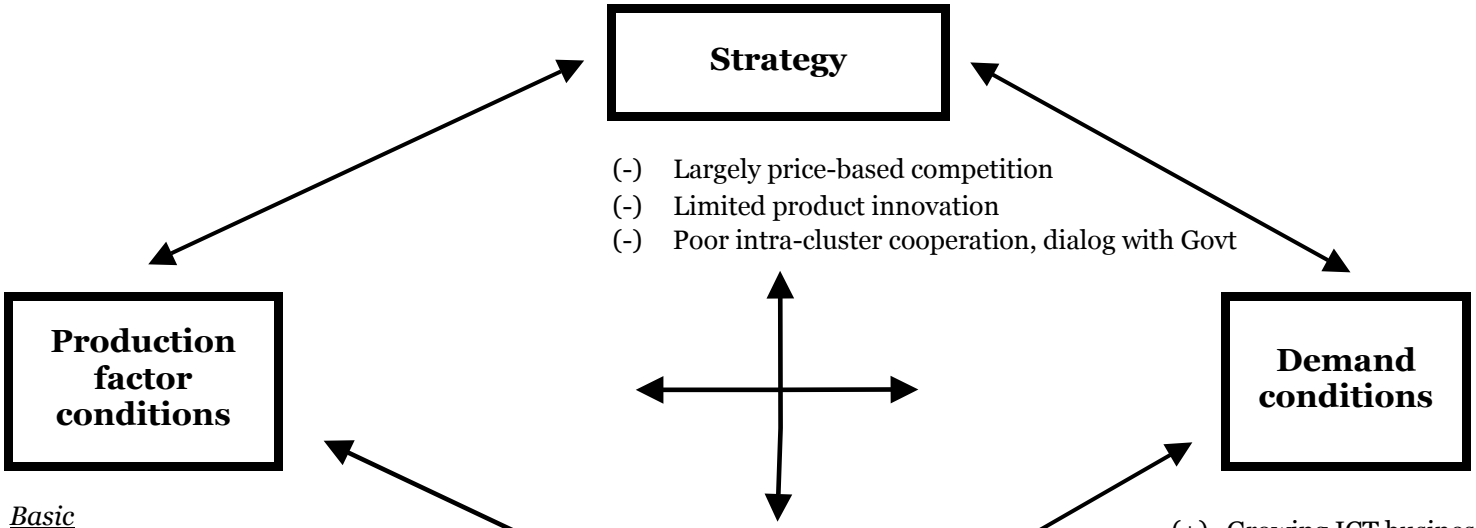
3.7. Diamond analysis

The Porter Diamond[6] is a strategic tool used to analyze the competitiveness of firms, industry clusters and regions. Fortune 500 companies and governments in many parts of the world have used it as a diagnostic tool to identify opportunities to improve competitiveness. The tool was based on the findings of extensive research that identified key factors explaining competitiveness of industry clusters in widely varying national environments. For further information on Diamond Analysis, readers should refer to Dr. Michael Porter's key work on this strategic tool.[7] The Diamond Analysis given on Table 4 demonstrates the four determinants of competitiveness, in the context of Vietnam's emerging software and related ICT services industry. A key conclusion of this analysis is that close linkages to demanding export markets and foreign investors will stimulate improvements in strategies, technologies, and skills found among Vietnam software and services exporters.

[6] The Competitiveness Diamond was highlighted as a useful tool in USAID's recent strategy document, *Foreign aid in the national interest: promoting freedom, security, and opportunity.* See Chapter 2, 'Driving economic growth', p.66.
[7] Michael Porter, 1990. *The Competitive Advantage of Nations*, The Free Press, New York.

Figure 4. Diamond Analysis – Software/ICT services

Four determinants of cluster competitiveness



Strategy

(-) Largely price-based competition
(-) Limited product innovation
(-) Poor intra-cluster cooperation, dialog with Govt

Production factor conditions

Basic

(+) High quality, low cost labor
(-) No private Venture Capital funds
(-) Limited entrepreneurial skills
(-) Poor skills in presentation, project management, international languages
(-) ICT Parks, Technology Zones often lack market-driven management and phasing
(-) High cost of land in urban areas

Advanced

(-) Lack of certification, process standardization and quality assurance

Demand conditions

(+) Growing ICT business from overseas Vietnamese
(+) Global outsourcing move to stable geopolitical environments
(-) Global move to single suppliers
(-) Overseas clients demanding higher quality, IPR standards
(-) Government, local firms reluctant to outsource and pay for fair value
(-) Increased onshore/offshore bandwidth needs
(-) Lack of direct contact w/ sophisticated and demanding customers
(-) Poor use of auction-style online markets by Vietnam firms to generate global business

Related and supporting industries

(-) Exceptionally costly and limited bandwidth
(-) Minimal IP and contract law safeguards
(-) Few industry-private sector linkages

3.8. Diagnostics summary

The diagnostic study disclosed current opportunities and threats to Vietnam's software industry, as well as providing an indication of its global competitiveness. From these results, we may represent the software/ICT cluster as having certain core values or ideals which development of the sector should aim to uphold. Additionally, development should be guided and directed by the principal aim of integrating Vietnam's talent and expertise, businesses and industry with the global information arena.

During the industry analysis process, two software clusters (one based around Hanoi, the other around Ho Chi Minh City, with some sub-clusters in each) appeared to emerge. For these clusters, 'zones' or 'boundaries of cooperation and competition' were identified. These zones can be used to indicate potential opportunities that could be exploited to progress the industry, as well and indicating ways of overcoming weaknesses and solve problems. Although the Hanoi software cluster takes a slightly different approach to the zones of cooperation versus the Saigon software cluster, the direction towards global competitive is the same. Further discussion on the zones of cooperation will be addressed in the next part of this report.

Lastly, the diagnosis also revealed key issues that need to be addressed by initiatives in the zones of cooperation, together with government activities or input by other stakeholders.

This summary of the diagnostic results is given in Table 5.

Table 5. Diagnostic Summary

Vietnam Software/ICT Cluster

Core values	• Vietnamese talent and expertise • Innovation & quality • International linkages (exporting and branding of products)	
Guiding principle	• Integrate Vietnam's talent and expertise, businesses and industry with the global information arena	
Zones/boundaries of competition and cooperation	***Hanoi software cluster***	***Saigon City Software Cluster***
	• Technical capacity	• Workforce skills and experience
	• Management capacity	• Innovation, entrepreneurship, and business management
	• Domestic market	• Telecommunications and Internet access
	• Global market	• Other infrastructure
	• Business environment	• Business climate
		• Rapid global market penetration
		• Sustainability and success-sharing
Key issues	• Low workforce skills • IPR piracy • High telecom pricing and low quality service • Lack of international experience • Lack of branding of Vietnam software products	

4. Recommendations

As a result of the diagnostic analysis, key zones of cooperation have been identified as critical areas to improve the competitiveness of the Vietnamese software/ICT industry. The Hanoi Software Cluster identified five Zones of Cooperation:

1. Technical Capacity
2. Management Capacity
3. Domestic Market
4. Global Market
5. Cluster and Business Environment

The Saigon Software Cluster identified seven zones of cooperation:

6. Workforce skills and experience
7. Innovation, entrepreneurship, and business management
8. Telecommunications and Internet access
9. Other infrastructure
10. Business climate
11. Market penetration
12. Sustainability and success-sharing

The recommended strategies and initiatives are described below and are shown in the strategic action grids in Table 6. The action items are provided in the form of a menu of suggestions, for which VNCI recognizes there may not be enough time and funding to undertake all initiatives. These action items are offered in hope that some will receive the support of the cluster, VNCI, and other donors towards fulfilling the strategic objectives of the cluster. It is expected that additional initiative will be created as the proposed action items are explored.

4.1. Workforce skills and experience

The Kenan Institute and/or other highly regarded specialists on systematic workforce development programs could be approached to offer assistance with the following recommended strategies:

a. Expanding technical skills including understanding of Capability Maturity Model Integration (CMMI) implementation, software project management, quality assurance, and process engineering. These skills can be imparted through seminars, university short- and degree courses, custom training, non-formal education, distance learning, on-demand learning, and simulations. This could be supported by a scholarship program.

b. Diffusing “soft skills” such as English, Chinese, and Japanese as a second language, business ethics, business presentation, team building and motivation, marketing, sales, support and customer care. These skills could also be provided through similar mechanisms as technical skills.

c. Promoting opportunities for students to gain early hands-on, "real world" experience (through internships, mentoring, coaching, co-op, and work-study projects, at local, national, and international levels.)

d. Partnering with prestigious certifications and independent assessment systems, enabling those entering the workforce to demonstrate proficiencies valued by employers.

Table 6. Strategic action grid – Software/ICT Cluster

Guiding principle: integrate Vietnam's innovation, businesses and industry into the global information arena

A. Hanoi Software Cluster (HSC)

Zones of cooperation	Short-term	Intermediate, long-term
1. Technical capacity	Organize joint training courses for practical skills; Continuous training supported by technical experts; Create a knowledge forum to exchange knowledge (email list/website); Develop training programs by universities and multinational corporations; Acquire funding from multinational corporations for training; Create short-term overseas study opportunities for Vietnamese software/ICT workforce; Internship opportunities; Work with Vietnamese and international universities.	Create linkages between companies, universities and training centers; High quality forum to exchange experiences; Create talent centers; Share ideas on development of hi-tech capacity, such as open source project.
2. Management capacity	Increase management salaries; Organize joint training classes (taught by experienced managers) on project management (for ages 25-30+); Information sharing/talent centers; Obtain government and donor support; Create internships opportunities for future managers (new graduates or students); Develop forum for entrepreneurs to share experiences; Work closely with universities to develop classes on general management, leadership/strategy (for ages 35-40 +).	Quality control certification (CMM/ ISO)
3. Domestic market	Discussion club; Forum to exchange information via magazine or website; Share clients/leads; Work with government to get more government contacts; Obtain copyright support from government; Build partnerships with companies; Foster entrepreneurship (PR events such as "Entrepreneur of the month"-VTV, Saigon Times); Develop cluster of contracts.	Identify niche market not yet mastered by China or India; Encourage Government to improve regulatory environment + transparency; Encourage government to spend money wisely; Develop company specialization; Become more competitive through specialization with the cluster; Focus on domestic market.

Zones of cooperation	Short-term	Intermediate, long-term
4.Global market	Organize forum/workshop to share experiences and information; Build clusters to sell VN software concept/image overseas; Solicit donor and multinational company support; Develop case studies on success (India); Study past failures (ex. why Vietnam lost AMEX project needing 600 programmers).	Build "Vietnam Software, Inc."; develop a strong image through branding; Develop more consulting knowledge by hiring consultants.
5.Cluster and business environment	Participate in UNDP/MPT roundtables as a cluster; Create code of conduct supported by VINASA; Obtain VDC help to build email list for cluster; Obtain VDC help for free broadband within cluster infrastructure for specific projects; Solicit Hanoi government to give building in Hao Nam for cluster; VDC company information sharing agreements - S & W; Contract sharing agreements with VDC and cluster; Government contract sharing with cluster via open source; Create clusters of convenience for shared advertising; Develop a framework for the cluster (I.D. Champion/ Committee of leaders).	Enforce copyright law; Website; P.R for the cluster; Virtual workshops; Position Vietnam Software Cluster as a major economic generator; On-going workshops within cluster to attract foreign clients.

B. Saigon Software Cluster (SSC)

Zones of cooperation	Short-term	Intermediate-term	Long-term
1. Workforce skills & experience	Expand technical skills through 1-5 day seminars on: • CMM/CMMI • Software project management • Quality assurance • Process engineering; software testing and documentation skills; programming skills • Marketing • Team building • Support and customer care Short customized courses for marketing, customer support, project management, and practical English skills; Annual job fair for IT students; Scholarship, internship, recruitment and practical skills training opportunities for students; Access to e-learning initiatives (e.g. Open World).	On-demand learning (1-8 week courses) in "real world" environment: • CMM/CMMI implementation (at specified levels) • CMM/CMMI appraisal • Project management (through work-study projects) Training for at least 2 Vietnamese SCAMPI assessors (certified by SEI); Train local trainers (by internationally certified trainers) on each "short-term" training initiative; Periodic meetings with universities (to reduce the gap between theory and practice), internships, work-study projects and scholarships.	Certify employee's proficiency (SEI, QAI, Microsoft); Certify by international standards software development processes (CMMI, ISO, SPICE); Establish club among software companies to share experiences and address technical issues.
2. Innovation, entrepreneurship, & business management	Training/seminars on entrepreneurship and business management; Develop Open Source Software (OSS) strategy and service provisions; Courses on how to create a business; Learn languages, cultures and business mentality of partners from other countries; Develop incubators.	Joint research between companies on innovation, entrepreneurship and management; Awards to recognize outstanding companies and innovators; Training on how to keep existing customers; Set up branch offices to support current customers in their own business environments.	Training on generating business; Encourage joint ventures or joint stock companies with powerful partners.

Zones of cooperation	Short-term	Intermediate-term	Long-term
3. Telecoms and internet access	Vietnam Post & Telecom (VNPT) cuts prices 10-40% on most telecom services starting April 1st 2003; most notable - the price for Internet access with price cuts of 80% (from 200 VND/ min. down to 40 VND/ min.); Implementation of proven technology such ADSL/ VDSL and cable modems	After April 1st 2003 the prices for telecommunication & internet access in Vietnam will be lower than the regional average; Due to the US-VN Bilateral Trade Agreement, US telecom companies will be allowed to provide telecom services in real competition with Vietnamese telecoms.	Competition will bring more value-added services at a lower cost.
4. Other infrastructure improvements	Software parks with good Internet access; More environmentally friendly and less congested software parks.		
5. Business climate improvements	Dialogue with government representatives and a push for national initiatives.	Continued push for national initiatives Push for increased IPR protection, tougher punishments.	
6. Rapid global market penetration	Very high skilled marketing team to brand "Vietnam, Inc."; Organize and join international trade fair and trade promotion tours.	Get support from overseas Vietnamese having influence over political and business decision-making; Set up a "piracy free" zone in a software park like Quang Trung.	Transparency in all situations to create a stabilize and safe investment community.
7. Cluster sustainability and success-sharing	Establish shell company to attract and implement large contracts with EU and US partners; Set up Rotary International club in Ho Chi Minh City and then Hanoi; Plan for members to get CMM and CMMI certification in the year 2003; Website for ICT related businesses and organizations; Provide training (priorities: CMM practice, project management, team work); Seminars and experience sharing.	Membership plan with real benefits.	Develop pride in membership.

4.2. Innovation, entrepreneurship, and business management

This report recommends the following strategies to develop an innovation, entrepreneurship, and business management program:

a. Identify partnership opportunities and potential alliances to develop entrepreneurial and business networks;

b. Conduct in-depth entrepreneurial and business management training (face-to-face and via the Internet);

c. Attract experienced and committed business coaches, mentors, and advisors;
   - Develop frameworks for sustainable university-industry linkages, including developing business plans for universities, software parks, or training institutes to establish centers of excellence. Specific aspects of the centers of excellence plans can include:
   - Identify specialization areas benefiting software/ICT exporters;
   - Examples of possible Memoranda of Understanding (MOU), between industries and centers of excellence implementers;
   - Identification of prospective advisors and associate faculties who could provide international assistance;
   - An initial agenda of proposed joint research, development, and pilot projects in a Center's area of specialization;
   - Awards programs recognizing outstanding Vietnamese innovations;
   - Establish a program of seminars or short courses on innovative technology applications;
   - Identify R&D and consulting opportunities.

4.3. Telecommunications and Internet access

To achieve the goal of Vietnam being competitive in its telecommunications and internet services, this report makes the following recommendations:

a. Conduct ongoing research and reporting on telecommunications and internet pricing/performance offered by competitor countries;

b. Takes study tours or conduct a review of affordable new telecoms/internet solutions, and on auditing regimes to ensure responsible business activity;

c. Identify models for private-public partnerships to introduce advanced telecoms services;

d. Implement pilot projects for enhanced connectivity, in line with the government aim for Vietnam to be competitive on bandwidth access and pricing.

4.4. Other infrastructure

Improved software and technology parks, and improved reliability of essential electrical power supplies are also key recommendations of this report. These strategies could include:

a. Software and ICT technology parks
    - Develop a reporting framework to provide information to the Cluster and to government on the performance of the industry in comparison with competitor countries;
    - Conduct study tours of exemplary technology parks around the world;
    - Provide advice to Vietnamese Park developers on market-sensitive management, marketing/promotion partnerships, and revenue enhancement opportunities.
b. Electrical and other utilities
    - Monitor prices charged by competitor countries;
    - Conduct study tours of exemplary projects, such as rural access initiatives, e-learning, and telework opportunities;
    - Provide advice to Vietnamese electrical power regulatory authorities on market-sensitive management, marketing/promotion partnerships, and revenues.

4.5. Business climate

The Government of Vietnam has welcomed inputs from the private sector in understanding what conditions can assist the country's goal of making ICT a spearhead sector of growth. In response, the Cluster should explore opportunities to improve the business climate in the following ways:

a. Provide regular reports on business climate trends such as incentives and institutional reforms in competitor countries, by drawing on short-term technical assistance, or market research.

b. Prepare an options paper on potential contract law, intellectual property rights, telecoms/Internet, technology working visas, technology scholarships, e-government modernization opportunities, and/or pilot initiatives. This paper could note revenue opportunities for Government based on precedents in other countries.

c. Conduct a study on methods of ensuring responsible exercise of business freedoms (codes of conduct, bonding, accountable sponsoring of firms, automated records archiving, audit/inspection, arbitration, etc.).

d. Explore opportunities to support e-government pilot projects.

e. Prepare detailed projection of fiscal and economic impacts of potential reforms and pilot projects.

4.6. Market penetration

Rapid market penetration initiatives should include the following elements:

a. Prepare regular reports on global market trends and competitor marketing/promotion strategies and performance

b. Initiatives for industry-wide branding and promotion
   - Strengthening Cluster and related associations – including a potential Vietnam Software Alliance with VINASA) – by means of seminars and other methods;
   - Devise potential marketing theme(s) for Vietnam in global software/ICT markets;
   - Prepare industry-wide quality standards and good conduct codes;
   - Hold events, such as road shows and conferences in Vietnam and overseas;
   - Conduct publicity and advertising campaigns;
   - Develop linkages with Overseas Vietnamese;
   - Discuss with government opportunities to improve future competitiveness ratings (GITR, EIU, etc.).

c. Showcasing software and technology park initiatives
   - Explore marketing and promotion themes (perhaps based on specializations of Centers of Excellence);
   - Draft potential Park-specific programs, including quality standards and codes of conduct;
   - Provide publicity and advertising advice;
   - Assist in setting up partnering arrangements (For example, Centers of Excellence could be assisted with applying for "Piracy-Free" site licenses);

d. Branding and promotion of individual firms
   - Hold seminars on new business development strategies ;
   - Design quality assurance, certification, or other credentialing strategies ;
   - Define "standing offers" for investment, outsourcing or product development relationships;
   - Identify potential partners and networks for approach (diaspora, etc.);
   - Provide assistance on development an effective web presence;
   - Establish a pilot “virtual business incubator” featuring insights from leading Vietnamese ICT entrepreneurs and prospective investors, advisors, and sales allies for small/new software and ICT firms;

4.7. Sustainability and success-sharing

This report recommends the following strategies for success-sharing within the Cluster:

a. Establish a common agreement on the form, structure and functions of the Software/ICT Cluster;
b. Secure the go-ahead from seed-funders and providers of in-kind commitments;
c. Secure shared or leased premises from an established organization willing to provide office space and support;
d. Prepare presentation materials (web site, brochures, etc.) and a media kit including a press release as part of a national publicity, awareness-building, and membership campaign;
e. Develop a sustainability plan, including identification of program and revenue opportunities in areas indicated in Table 6.

Table 7. Revenue opportunities for Software/ICT Cluster

Category	Key aspects	Potential funding groups
Membership	Organizational membership Individual membership	All key Cluster organizations, corporations, and educational institutions
Special events	Workshops (three per year); may be sponsored jointly with Centers of Excellence and allied groups Tele-seminars (two per year); may be sponsored jointly with Cluster-affiliated Centers of Excellence and allied groups Annual conference; may be sponsored jointly with Centers of Excellence and allied groups	ICT-related organizations and enterprises ICT professionals Government decision makers
Online opportunities clearinghouse	This would be a web site where projects are advertised to ICT firms Projects could be grouped by entry-level opportunities offering online work/study and "virtual internship" opportunities, and advanced projects available to firms with favorable feedback on the entry-level work, as well as the Cluster's own needs for specialized services.	Overseas Vietnamese Established companies with ICT-related outsourcing project requirements Overseas universities and technical institutes Overseas and medium-scale enterprises Foundations and donor organizations concerned with digital divide
Virtual business incubator (VBI) *(introductory version)*	An introductory virtual business incubator on CD-ROM can feature insights from potential telework providers as well as a network of well-regarded Overseas Vietnamese entrepreneurs and investors of value to in-country enterprises. The Cluster's Introductory VBI would enable firms	Corporate sponsors and providers of "info-mercial" messages Contributions (financial and in-kind) by Overseas Vietnamese Option to take small equity share in startup firms that

Category	Key aspects	Potential funding groups
	throughout Vietnam to assess opportunities in a range of growing software and related services markets, engage in online internships and work/study projects, try their hand at sample telework projects, and build a track record prior to formal entry into the global market.	complete a series of qualifying trial projects
Roadshows and exhibitions	Actual and virtual roadshows Exhibitions on Cluster premises, learning events, and conferences; virtual exhibitions	Donor funding Cluster members exporting software and/or related services Multinational and national companies providing hardware and software solutions
Market tracking services and publications	Market opportunity profiles Member Newsletter	Sales of publications Subscription fee (portion of annual fee)
Support for national technology scholarship and visa initiatives	Prescreening role to evaluate technical qualifications of applicants for national technology scholarship funds or for technology visas (Note that this required government acceptance.)	Options for review fees can be explored with Government
Special projects	Market surveys and other contract or grant-funded projects	Government Donor organizations NGOs

5. Conclusion

Vietnam has the ability to rapidly grow in global software and related services industries if key constraints are overcome. The competitiveness comparison shows that the country has intrinsic advantages as a result of its human capital, political stability, and favorable geographic location. Its gaps are remediable, given concerted action by the Government and private sector in tandem.

The introduction and facilitation of the cluster approach to Vietnam's software industry comes at an opportune time as companies and other stakeholders are hungry for a sustainable way to develop the premature industry. The positive reaction to this initiative from the industry is very encouraging. The formation of clusters will enable joining business groups to share information, contract deals, create joint-market development programs and have a forum for optimizing business processes and resolving current and potential problems. Currently, responsibilities, benefits and codes of conduct are being initiated with the active participation of companies. Cooperation amongst firms is beginning to materialize as potential for increased business and operating efficiencies are recognized. Building upon Vietnam's identified strengths, this study identified seven areas that are key to increasing the ICT industry's competitiveness:

1. Workforce skills and experience
2. Innovation, entrepreneurship, and business management
3. Telecommunications and Internet access
4. Other infrastructure
5. Business climate
6. Market penetration
7. Sustainability and success-sharing

The strategies recommended in each of these areas are designed to enhance the industry's current strengths and take advantage of new opportunities and trends within the global market. A menu of proposed action initiatives given in Table 6 identifies steps towards achievement of these goals.

Although the clusters are in the process of formation, their effort towards, and commitment to, excellence are reasons to believe they can take initiative and grow. The action grid is a working document and clusters will add initiatives as the industry matures. Determination and cooperation are the internal keys of success for the industry. The cluster will utilize opportunities and overcome their weaknesses to achieve sustainable development and become a prominent member of the global software industry.

Annex 1

Primary references

Primary references

Primary sources of data for the comparisons in this report include:

[author], "FPT Internet proposes lower lease charges", Vietnam News, February 22, 2003.

[author], "Vietnam's emerging software industry: competitiveness, positioning, and strategy in a global market", AxamTrade and KIAsia, October, 2002.

[author], "A buyer's guide to offshore outsourcing", CIO Magazine, November 15, 2002 (www.cio.com)

Stratagem Consulting Ltd., *Vietnam software industry background analysis*, February 2003.

USAID, *Vietnam: ICT assessment*, September, 2001.

World Bank, *Accelerating information and communications technologies development in Vietnam*, June, 2002.

World Economic Forum, *The Global Information Technology Report 2001-2: Readiness for the networked world*, Harvard Center for International Development, Boston.

Annex 2

Cluster Engagement Model

Cluster Engagement Model

Pre-engagement: Cluster selection process.

STAGE 1. Cluster engagement and data collection

Engage stakeholders:

- Industry champions
- Business association leaders
- Government regulatory/oversight agencies

Meet and discuss

- Convene large groups
- Organize cluster steering committee
- Additional meetings/ focus groups

Gather data and conduct secondary research and other measurement

STAGE 2. Cluster diagnostics

Information gained from Stage 1 Data Collection used in applying diagnostic tools (multiple tools used to validate results)

- Industry analysis
- SWOT
- GAP
- Value chain
- Benchmarking
- Porter's Diamond
- Other analysis tools

Diagnostic tools allow for identification of:

- Core values
- Guiding principles
- Boundaries/zones of cooperation/action areas
- Major issues faced
- Effort made to build trust and formulate codes of conduct for cluster co-operation

STAGE 3. Zones of cooperation/action areas

Diagnostic tools and input from cluster members allows for identification of areas of potential strategic activities, called Zones of Cooperation, that are appropriate for unified action.

Boundaries of co-operation vs. competition are defined and agreed by the cluster

STAGE 4. Structuring the results

The Zones of Cooperation and supporting action initiatives are presented as a menu of potential activities.

Example: Strategic action grid

Zones of cooperation	Short-term	Medium-term	Long-term
1)			
2)			
3)			
….			

STAGE 5. Implementation

Action items are selected from the menu by:

- Cluster
- Sub-cluster(s)
  - Clusters of Convenience
  - Clusters of Contracts
  - Clusters of Opportunity
- Business association(s)
- Donors/helpers
- Individual firms
- Other stakeholders

Implementation of action items may be driven and/or limited by:

- Resources
- Determination
- Cluster maturity
- Innovation ability
- Dependence of effective use of comparative advantages
- Geopolitical factors/environment