

VNCI Policy Paper # 10

POLICY REVIEW OF THE VIETNAMESE IT SECTOR



July 2006

This publication was produced for review by the United States Agency for International Development (USAID). It was prepared by Nguyen Thanh Ha of Vietbid and Jay Gullish of VNCI with invaluable comments from David Ray of VNCI.



The Vietnam Competitiveness Initiative (VNCI) is an economic growth project of the United States Agency for International Development (USAID) to improve the competitiveness of small and medium-sized enterprises (SMEs) in Vietnam. The project has three components: (1) Improving the regulatory climate for SMEs; (2) SME capacity building; and (3) SME access to finance. VNCI is managed by Development Alternatives, Inc. (DAI). The Asia Foundation is the principal subcontractor to DAI and is responsible for implementing component one of the project.

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ACKNOWLEDGEMENTS

This report was prepared by Nguyen Thanh Ha of Vietbid Technology & Investment Consulting Center and Jacob Gullish of the VNCI.

This report is a result of cooperation between VNCI and Vietbid. It is primarily prepared by Nguyen Thanh Ha of Vietbid and Jay Gullish of VNCI with invaluable comments from David Ray, VNCI Deputy Project Director.

The authors express their special gratitude to representatives from Vietnam Association for Information Processing (VAIP) and provincial branches of VAIP for their significant assistance in arranging interviews and questionnaire surveys, without which it is impossible to construct this report. Particular thanks go to Le Hong Ha of VAIP for his coordination and inspiration. Thanks are also due to Nguyen Van Anh and Ngo Thi Minh of Vietbid for data processing.

All remaining errors and omissions, and interpertations and opinions expressed in this paper, are the sole responsibility of VNCI.

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The Vietnam Competitiveness Initiative (VNCI) is an economic growth project funded by the United States Agency for International Development (USAID).VNCI is managed by Development Alternatives Inc (DAI).

The Asia Foundation is the principal subcontractor to DAI and is responsible for implementing the research and policy component of the VNCI project. The objective of this component is to improve the regulatory environment for business, with a particular focus on regulations governing small and medium sized private businesses. This is the tenth in a series of policy studies produced by The Asia Foundation under VNCI.





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ABBREVIATIONS

3G	Third general [cellular] technology
4G	Fourth general [cellular] technology
ADS	LAsynchronous digital subscriber lines
BCC	Business cooperation contract
BPO	Business process outsourcing
BTA	Bilateral Trade Agreement between the United States and Vietnam
BSA	Business Software Alliance
CAGR	Cumulative average growth rate
CDM	Code division multiplexing modulation
CIAJ	Communication and Information Association of Japan
CIT	Corporate income tax
DLD	Domestic long distance
ESC	[Indian] Electronics and Computer Software Export Promotion Council
EIU	Economist Intelligence Unit
FBO	Network or facility based operations
FCC	US Federal Communications Commission
FDI	Foreign direct investment
GATS	General Agreement on Trade in Services
HCA	Ho Chi Minh City IT Association
HCM	CHo Chi Minh City
HR	Human Resources
ΗT	Hanoi Telecom
ICP	Internet content provider
ICT	Information and communication technology
ILD	International long distance
IP	Internet protocol
IPR	Intellectual property rights
ISP	Internet service provider
IT	Information technology
ITES	IT-enabled services
ITU	International Telecommunications Union
IXP	Internet exchange providers
JDS	Japanese Grant Aid for Human Resource Development Scholarship
JICE	Japan International Cooperation Center (JICE)
JV	Joint venture
KBE	Knowledge-based economy

KBS	Knowledge-based society
KIPA	Korea IT Promotion Agency
LAN	Local area networks
MARD	Ministry of Agriculture and Rural Development
MCI	Ministry of Culture and Information
MNC	Multinational corporation
MoST	Ministry of Science and Technology
MoT	Ministry of Trade
MoU	Memorandum of understanding
MP3	Moving picture experts group layer-3

INTRODUCTION AND EXECUTIVE SUMMARY

apid innovation and widespread use of new technology has altered our lives and fundamentally changed the way our society functions and interacts. Globalization brings the world ever closer by facilitating the movement of people, goods, ideas and information. Closer to home, technological innovations alter the way people live, work and play. From the mobile camera phone that carries voice communications and captures video photography to new business models that outsource key processes, the rapid evolution of technology has impacted on numerous aspects of day-to-day living. This transformation creates

incredible benefits for people and society, but may disrupt traditional models of business, community and communication. The foundations for the emerging information age are based on a recent phenomenon commonly referred to as information and communications technology (ICT). ICT represents the convergence of three traditionally discrete industries: telecommunications, computers and information services. The technology and new products and services resulting from such convergence require changes to the traditional business models of these services. These changes both disrupt traditional companies and providers, and at

the same time create tremendous opportunities for new players and innovators.

The Internet is a central force behind ICT and convergence business models. By shifting (and improving) the underlying structure of networks, the Internet not only introduces new technology into the emerging "networked economy" but also, and more importantly, creates an efficient, well-distributed and interconnected system to carry information. New technologies create competition between old and new providers, and require rapid change in the way governments and businesses operate, as well as how people and communications interact (Figure 1).

Figure I: Traditional and Emerging IT Models



Information technology (IT) is a key component of ICT and convergence. IT is defined as the development, installation and implementation of computer systems, networks and applications¹. Of course, a very broad range of IT systems and applications exists, from public mobile networks that carry voice and text communications to private, secured automated accounting systems that track inventories, costs and payments. But in all cases, software is used to manage the devices and peripherals that transmit information through the underlying infrastructure.

Access to information technology is no longer viewed as a luxury but rather as an economic and social necessity. Of course, understanding and forecasting the current technological revolution – and how it influences innovation, infrastructure, business models and socio-economic systems – is a daunting task. At the same time, understanding these trends is critical to managing the reform process. Several technological trends are emerging as influential drivers within the sector:

- Technology adoption rates: New products and services – such as satellite radio, cellular phones, computers and the Internet – have been quickly accepted by large segments of society, in part due to advances in telecommunications itself.
- **Growth of wireless systems:** The commercialization of various

wireless technologies such as th so-called third and fourth generation (3G, 4G) cellular technology, wireless local loop (WLL), broadband transmission systems such as broadband fixed wireless, wireless fidelity (WiFi)) and worldwide interoperability for microwave access (WiMax), as well as RFID has impacted on the development of telecom equipment, networks and services.

- **Satellite technology:** New cost-effective satellite service providers, such as PanAmSat, play an increasingly significant role in global communications networks.
- Data compression technology: Compression technologies such as transmission control protocol/Internet protocol Internet protocol (TCP/ IP) for the Internet, code division multiplexing modulation (CDMA) for wireless, Moving Pictures Expert Group (MPEG) Audio Layer 3 for audio, free space optic lasers and wavelength division multiplexing now allow higher data transfer rates.
- The rise of networking: The commercialization of the Internet, intranets and extranets changes the organizational structure and hierarchy of telecom networks. As the growth of local and wide area networks (LAN, WAN) and virtual private networks (VPN) continue, the installation of home networking systems (may emerge as a major industry.
- Electronic commerce: A wide variety of products and

services are available online, fundamentally altering traditional advertising, marketing, sales and customer care processes.

- **IP telephony:** Circuit-switch voice systems and mobile networks are migrating toward voice over Internet protocol (VoIP) technology, impacting on traditional equipment manufacturers and service providers.
- Intelligent networks and software: Network intelligence is evolving through the introduction of more sophisticated Internet routers. Software is becoming smarter and user-friendlier, while voice recognition systems are likely to be a major future application.
- **Convergence:** The borders between computing, telecom and entertainment will increasingly blur. New hybrid "infocomm" or "telematics" services are becoming increasingly commercialized.

These technological trends interconnect in sophisticated ways. In each case, IT software plays a critical role in their maturation, success or failure. Other trends may grow in importance, such as broadband that uses electrical transmission lines to receive power and communicate. But most importantly, there will be new innovations, technology and business models that will promote or disrupt technology change.

Based on a definition by The American Heritage Dictionary of the English Language, Fourth Edition. 2000, Houghton Mifflin Company.

Figure A: Process for Granting Business Registration in Ha Noi



Source: Adapted from Thailand ICT 2010: National Information Technology Policy

This discourse on the role of technology in development is based on two complementary explanations of rapid technical, economic and social changes: convergence and a knowledge-based society. Convergence is a technological and economic phenomenon that erodes the boundaries between computing, telecommunications and entertainment, industries that until recently were discrete in terms of technology and business. As the lines between telephone services, computer systems, and media and information services blur, new hybrid technologies and business models such as "info-communications", "infotainment". "telematics" and Internet protocol television (IPTV), to name a few, emerge. These services are becoming increasingly commercialized as technical and regulatory barriers dissipate.

The second area of widespread discussion is the socio-economic impact of the emerging knowledgebased society. Access to information and technology that is used to create and disseminate knowledge is now seen as a prerequisite for sound economics and social development. The development of knowledge-based systems involves all areas of society – government, business and civil organizations – and requires each stakeholder to interact in new ways. (Figure 2).

So What Does This Mean for Vietnam?

Vietnam's leadership understands the fundamental changes facing the global community, and in particular that competition in the 21st century increasingly requires a knowledge-based economy, eroding the traditional advantages of raw material and cheap labor. Understanding this emerging reality, the Vietnamese Government launched doi moi (translated as "renovation") in 1986, a broad economic and social policy aimed at modernizing Vietnam's economy by introducing competition in multiple sectors. In many respects, the Doi Moi has been a tremendous success:

- Overall economic output has increased from US\$5 billion in 1990 to US\$50 billion in 2005, or an average of 7% annual inflationadjusted growth over 15 years.
- Exports have increased from US\$2 billion in 1990 to US\$30 billion today, nearly 60% of economic output.
- A structural transformation of the economy has taken place, where industry has increased from 20% to 40% of economic output, over the same period.
- Vietnam has benefited from cumulative foreign direct investment (FDI) of about US\$60 billion and official development assistance of around US\$30 billion.
- The percentage of the population living in poverty has been reduced from 58% in 1993 to 24% in 2004².

ICT drivers play a critical role in economic growth and the Government has recognized this key component by focusing on liberalizing the telecommunications sector and supporting the emergence of an IT industry in recent years. Vietnam's nascent IT industry has made important strides by boosting investment in human capital, expanding the

 [&]quot;High-Tech Development and High-Tech for Development", Paper by Prof. Nguyen Quang Thai, General Secretary of VietNam Economists Association, UNESCO International Symposium, Hanoi September 29-30, 2005

enterprise base and increasing business activity. In 2000, the country's educational system produced about 4,000 IT graduates, increasing to about 10.000 in 2005, with another 10,000 or so graduating from a two-year vocational training institute course. The size of the industry has also grown; there were about 230 companies in 2000 and about 600 in 2005, a 22% cumulative average growth rate (CAGR) number of software companies over the past five years. These companies generated increased revenue, from US\$300 million in 2000 to US\$685 million during 2004, with an 18% CAGR revenue growth. These companies in turn raised employment from about 4,600 people in 2000 to about 15,500 in 2004³.

Recent news from Vietnam suggests that overall government policies are positively impacting on ICT in general and software in particular. For example, the US-based Intel Corp. is planning to introduce WiMAX, a broadband wireless technology, into Vietnam before the end of 2006. Other news also points to positive changes in government policy, convergence infrastructure, software development and public/private partnerships:

 The Ministry of Education and Training, with technology from Hewlett-Packard Vietnam and assistance from the United Nations Educational, Scientific and Cultural Organization (UNESCO), opened its e-learning portal at http://el.edu.net.vn, an integral part of the EduNet education network.

- The Ministry of Planning and Investment (MPI) granted Vietnamese Internet service provider FPT a 30-year license to open affiliate FPT Software Japan Company in Tokyo, and a representative office in Osaka.
- The electronic government recently launched a governmentwide web portal at http://www. egov.gov.vn.The trial project integrates information from multiple government agencies.
- The Ministry of Posts and Telematics (MPT) finalized new regulations to manage Internet infrastructure, including new monthly gateway leasing and circuit leasing charges for intraprovincial, inter-provincial and international frame relay services.
- The Prime Minister on 29 July 2005 issued a decision to develop the Vietnam Television Technology Investment and Development Company (VTC), an affiliate of the MPT, into a holding company with more than 10 subsidiaries. The new company, named the Vietnam Multimedia Corporation, will focus on broadcasting, post and telecommunications and information technology, and will conduct research into utilizing high technology to produce multimedia products.
- The Vietnam Posts and Telecommunications Corporation (VNPT) solidified plans to launch a telecommunications satellite into orbit at an inclination of 132 degrees, and intends to build two satellite control stations, one main and one standby station.
- The joint-stock Telecommunication and Information Company (CT-IN), a member unit specializing in

software production for VNPT has signed a partnership contract on software manufacturing with Thailand's Mustang Technologies Company.

- Vietnam Telecom International (VTI) and Quang Tri P&T, both member units of VNPT, recently worked together to install the first VSAT-IP station to give telephone access to 100 out of 117 communes in Quang Tri Province, representing a teledensity of 4.2 lines per 100 people.
- Vietnam Datacommunications Company (VDC), a subsidiary of VNPT, reduced its frame relay charges by 50% on average. The service has been available since February 2004.
- VNPT began free trials for TV service via next generation networks (NGN) that provides convergence services such as IPTV,VoD and cable TV.
- FPT announced the completion of Vietnam's first fiber optic metro Ethernet using Cisco IP/MPLS technology.
- In January 2006, the Vietnamese media reported that Intel planned to build a US\$600 million greenfield semiconductor manufacturing facility near Ho Chi Minh City (HCMC).
- Swedish-owned Ecton Group plans to invest US\$250 million to construct manufacturing facilities for telecom equipment, digital TV and broadband VoIP electronics.
- UK-based Brain General established a training center in cooperation with Vietnamese, British and Japanese interestsVietnam. The Brain IT Engineer Training Company is a US\$1.2 million Joint Venture (JV)

Company figures based on VINASA; Revenue figures based on HCMC IT association as written in Vietnam Economic Times, No 31 Vol 5. Aug 2, 2005

between Japan's Unico Technos and Vietnam's Kobe Company.

- US-based Qualcomm opened a 3G development center in Vietnam, based in the northern province of Hai Duong.
- Norway's Telenor, which runs mobile networks in 12 countries with 53 million subscribers, opened an office in Hanoi.
- The Vietnam Software Association (VINASA) and Korea IT Promotion Agency (KIPA) signed a memorandum of understanding (MoU) to co-operate in the development of online games, the convening of regular seminars to seek exchange opportunities between the two parties, game production technology transfer and market expansion.
- The Vietnam Chamber of Commerce and Industry (VCCI), the MPT, and leading IT companies launched a campaign to promote the use of IT applications among small- and medium- sized enterprises (SMEs). Known as the national "Smart PC, Smart Business" program, the initiative will offer SMEs integrated IT solutions and provide financing options and methods on educating staff about advanced IT in order to create a more efficient, productive and competitive sector by optimizing business processes.
- Representatives of Vietnam Electronics Incorporation Association (VEIA) and Communication and Information Association of Japan (CIAJ) signed a MoU in the fields of electronics, IT and telecommunications. Accordingly, the two sides agreed to cooperate on information and experience transaction via multichannels.

 VCCI and Intel signed a cooperation agreement to promote IT application activities in Vietnam, notably research and surveys on the IT application situation, information campaigns and the introduction of IT to improve the competitiveness of businesses⁴.

These developments showcase improvements in Vietnam's ICT and software sectors. However, critical gaps remain in policy, development and execution. There is a general consensus that the government's policy toward software has significant shortcomings, including slow development and poor implementation. There also continues to be significant state ownership of software companies that fails to optimize investment, technology and competition, and, most importantly, crowds out private companies and entrepreneurs. Protection of intellectual property also remains an issue, and there is insufficient educational capacity to train enough software engineers.

A recent case illustrates the hurdles to the future growth of the high-tech industry, highlighting the limitations of the current scale of the industry to win large international projects. Recently, HCMC's Department of Science and Technology lost the opportunity to partner with a Japanese company because of the agency's inability to recruit 200 qualified candidates. Key issues raised by potential Japanese customers included the lack of English-language skills and experience. According to industry experts, more than 60% of software companies report difficulty in hiring highly skilled personnel⁵. While there are several companies that successfully target international customers, such as FTP,TMA and PSD, most companies lack the human and financial resources to market, sell and deliver services for even medium-sized projects.

As this example suggests, a key issue for Vietnam is to create the necessary foundation of human resources to enable participation in larger scale projects. As a service industry, the number of people a service can "bill to the client" limits outsourcing potential in the ICT industry. Customers require a very broad range of technical skills, industry experience and levels of expertise. One project may require 10 people with Java programming experience in developing banking applications for the Japanese market, while the next project requires 25 C++ programmers who can develop embedded systems for automotive electronics. If the industry lacks scale, either on a company or a country level, then IT providers have access to an insufficient quantity of resources with the right skill sets. In contrast, larger industries are able to pool and better manage these resources to collectively service the diverse needs of a domestic and international client base. While Vietnam is cost-competitive, few companies can provide significant resources or rapidly scale-up for larger engagements. The inability to service current customers has

^{4.} News summarized from VNPT news portal at http://www.vnpt.com.vn/

^{5. &}quot;IT sector must recruit new specialists to be competitive", Viet Nam News, Tuesday October 4, 2005, p. 2

a negative multiplier effect on the industry, as companies look elsewhere (perhaps to India) to obtain the services they need, and develop valuable long-term relationships with those providers.

The Purpose of this Report

The objective of this report is to evaluate the effectiveness of government policy on the ICT sector, with a specific focus on the software industry and the nascent IT-enabled services (ITES) sector. By providing a global perspective and background on the domestic structure and industry, the report reviews the specific policies suggestions of decision-makers and key stakeholders. This report intends to stimulate discussion and discourse within government circles, industry and society at large.

Background to IT Markets and

Structures provides an overview of the structure of the IT services market in order to understand the driving forces behind the rapid emergence of offshore software development and the global delivery model. This chapter provides definitions and explanations of the IT marketplace in three sections: IT products and services, ITES and business process outsourcing (BPO) and IT Hardware. Focusing on IT product and services and ITES/BPO, a market analysis and forecasts within a global context are discussed, as well as specific data on the Vietnamese market. Appendix 1 of the report includes summaries of several reports additional reports that rank Vietnam ICT competitiveness and highlight important areas for reform.

This chapter also includes an overview of Vietnam's human resources and their impact on the country's ability to compete in the global arena. There is also an assessment of Vietnam's attractiveness as an outsourcing destination, with a review of the country's strengths and weaknesses relative to its regional competitors, including a case study on India's success as the pre-eminent outsourcing destination for both software development and ITES/ BPO. This case study summarized in the report provides a perspective on India's "success" and its implications for Vietnam. The full case study is located in Appendix 2.

Institutional and Legal Framework offers insight into the current legal and institutional framework of Vietnam's ICT sector in general and software in particular. Vietnam has made important and fundamental changes to its legal environment with the objective of creating a robust and competitive ICT sector; however, the reform process remains incomplete. There are legitimate concerns that the government's ability to create policy and effectively implement it within a reasonably time frame is limited, particularly in relation to coordination across ministries and the ability within government agencies to effectively implement and enforce policy and decisions.

The chapter provides an overview of the government's policy-making structure for ICT, as well as the legal framework for ICT policy – including policies, laws and regulations – and of government initiatives in the area. The role of international agreements such as the US-Vietnam Bilateral Trade Agreement (BTA) are highlighted, as well as World Bank initiatives with respect to ICT and software development. The report also provides a case study of ICT policy development in Thailand to provide insight into the activities of other regional governments, and provide possible examples for improving Vietnam's policy environment. A complete list of Vietnam's ICT policies and regulations is located in Appendix 3.

Vietnamese Market Players

provides an overview of ICT infrastructure in Vietnam and the dependence of software firms and ITES/BPO on two telecommunications areas: high-speed Internet access and international private lines. This chapter also provides international comparisons, specifically of ICT indicators, between Vietnam and other countries in the region, an overview of several IT software companies and the few examples of ITES/BPO in Vietnam. Given the increasing importance of entertainment services as drivers of convergence products and services, a summary of Vietnam's telecommunications, television and payTV industry is included in Appendix 4.

Results and Findings presents the results of the software survey and identifies key issues highlighted by the survey and other interactions undertaken with IT professionals in the government, industry, academia and civil society by the survey team. The key issues include:

• Government programs and procurement: difficulties in accessing programs and linking to government.

- Trade/Export Promotion: insufficient Government promotion of the industry.
- Education and human resources: insufficient human resources in terms of both the quantity of personnel and the quality of educational training and skills.
- Infrastructure: lack of development.
- Financing: limited access.
- Copyright protection/IPR: a serious problem and a key obstacle to innovation and product development.
- Tax incentives: the effectiveness of tax policy on stimulating the sector.

The Way Forward offers a customized framework that can be used to target specific gaps in Vietnam's software sector and create an underlying ICT framework to stimulate the industry. The recommendations are grouped into categories that provide example of specific actions, some of which are summarized in the following:

- Increase competition and reduce government ownership of software companies and reinvest funds in other IT initiatives, e.g., innovation grants, human capital.
- Strengthen institutional capacity for ICT policy development

and implementation: a series of practical steps are outlined to improve ICT policy making and implementation.

- Revamp Telecom Policy with a specific focus on enhancing the IT and ITES sectors.
- Create an information communications policy that sets policy for opening new "information" sectors such as radio, television and CATV to stimulate "content development".
- Migrate ICT information and content regulation to MPT, including the creation of guidelines for national security and disaster management.
- Dramatically Increase Vietnam's ICT Educational Capacity by establishing a Human Capital Fund and creating new Vietnam Institutes of Technology (VIT) & Vietnam Institutes of Management (VIM).
- Remove caps on foreign workers.
- Enhance Intellectual Property Rights by ensuring compliance within government institutions and improving the legal framework for IP protection.
- Facilitate a culture of innovation and entrepreneurship, e.g., provide "seed" money and support for entrepreneurial organizations.

• Identify effective mechanisms to finance growth in the sector.

Vietnam has serious economic and commercial competition from major economies, both developed and developing. Companies, both domestic and foreign, acknowledge Vietnam's internal improvements and change, but the present conditions in Vietnam do not compare favorably to its competitors. Vietnam competes directly for investment from developed technology powerhouses like Singapore, Taiwan, Japan and South Korea and the emerging economies of India and China, both of which have highly competitive aspirations in the sectors of manufacturing, outsourcing and technology innovation. Other regional players – including Malaysia, Indonesia, Pakistan, Thailand and the Philippines – are also competitive and focused on the ICT sector. These countries have highly advanced telecom frameworks and experienced IT players. There are tremendous opportunities for the Vietnamese IT sector, but each stakeholder government, industry and society must take critical and rapid action to realize the country's IT potential.

BACKGROUND TO IT MARKETS AND STRUCTURE

mid an increased rate of technological adoption and global competition, businesses worldwide are being forced to improve products and services at an accelerated delivery rate, while consumers increasingly demand high technology at lower prices. To adequately address these new business models, corporations are focusing on core competencies and utilizing outsourced technology service providers to increase productivity, develop new products, conduct research and development, share business risk, gain market access and knowledge, and more effectively manage their operations.

A number of drivers have fuelled the growth in offshore outsourcing services. Key among them is cost: labor costs in India are one-third to one-fifth of the costs in North America. Many global corporations open captive offshore research and development (R&D) centers or ITES/BPO to take advantage of lower cost structures. Another important factor is competitive pressure for quicker product cycle times and ramp up times for new companies such as venture capital (VC)-funded start-ups. As an example, US-based venture capital firms encourage their customers to use offshore facilities in India and China as a means to reduce costs and quickly ramp-up product development and production. An increased focus on customizing

products for regional, cultural and linguistic markets also increases the cost of new product development. Lastly, companies see offshoring as an initial step to gain market intelligence and understanding, which may in turn facilitate selling into the local market where the outsourcing takes place.

IT is an integral part of running any business, and as such impacts on a wide variety of industrial sectors. While IT use is widespread within most industries, for the purposes of understanding the sector, it is useful to categorize the development and provision of IT into three overlapping segments – IT services and development, ITES and IT hardware, each of which has multiple sub-segments (Figure 3).

IT services and development includes activates such as outsourced product development as well as services such as systems integration, implementation and maintenance, as well as R&D. This segment is largely dependant on software engineers with the technical and industrial skills required to develop IT products and/or provide IT services.

ITES – including IT-related, remote services or BPO – refers to services which:

• provide data entry, data conversion, information/data

development, processing and response;

- use IT in provision and/or transmission of the service;
- do not require any software programming expertise and, in most instances, do not require any particular education discipline other than on-the-job training for service providers; and
- are sourced off-site from the end user, i.e. are "outsourced"⁶.

While call centers activities, e.g., help desk and customer care, have received a lot of attention recently, other ITES/BPO activities include outsourcing back-office functions such as accounting, finance, HR, etc. as well as data entry, transcription, etc. Other examples, inter alia, include:

- administrative services
- advertising strategy services
- architecture, design and engineering support
- audio/video services
- billing and collection services
- business consulting services
- claims processing services
- content development services
- finance & accounting services
- geographic information systems

^{6.} ECS definition title

- graphic design
- human resource services
- litigation and legal support services
- medical services and transcription
- purchasing support
- sales & marketing support
- transcription
- writing, editing & translation.

While Vietnam has very few examples of ITES/BPO operations, this segment has tremendous long-term opportunity, and the Vietnam Competitiveness Initiative (VNCI) believes the government of Vietnam should initiative strategic planning for these services now in order to create a market in the near-term. Lastly, IT Hardware outsourcing includes the development, manufacturing and packaging of hardware equipment. There are a number of outsourcing models in the manufacturing space including joint ventures, original equipment manufacturing (OEM) and other collaborative models. This report does not focus on this IT segment and does not look at the effectiveness of government policy to stimulate high-tech manufacturing industries.

While this report does not focus on Vietnam's IT hardware sector, it is strongly suggested that government strategy and policy should not be developed segment by segment; rather the government should develop an ICT master plan that incorporates all aspects of the sector and linkages. For example, many Vietnamese companies (as well as global companies) provide a full range of IT solutions, including IT software, service, hardware and consulting. Similarly, customers often prefer to purchase turnkey solutions, which again include IT software, services and hardware components. For these reasons, this report provides an overview of Vietnam's hardware sector and, where appropriate, related background and reference information.

It is also important to note that IT companies often create industry-specific products and services. Sometimes called "verticals", companies often create a set of solutions to target a customer set and create specialized teams that focus on this industry domain. For example,

Figure 3: IT Outsourcing Segmentation



Source: NASSCOM

IT companies may develop IT products and services used by the telecommunications sector such as network management, operating system support and/or network security products and services. The same company may have a separate team focusing on banking IT, such as core banking systems, secure online services or network management of automatic teller machine (ATM) networks.

The same concept applies to the ITES segment, where a service provider develops an industryspecific package of customized and specialized ITES elements. In the telecom space, this may include backend legal, tax and financial services, as well as front-end call center support for ordering, product installation, billing, payments and other services. This same offering might be customized for banking customers by providing call centre insurance quotes, credit card issuance and credit assistance.

Global Market for Outsourcing IT Services and **BPO**

Forecasting the size and trends of any market is difficult and inherently provides an inexact perspective of the market; yet these same forecasts provide valuable insight and understanding. What is understood is that the market for outsourced IT and BPO services is large and growing. While an estimated 55% of Fortune 1000 companies offshore some activities, much of this activity remains within the geographic market, e.g., onshiore or nearshore outsourcing versus offshore outsourcing. The BPO market, for example, is forecast to reach US\$1 trillion by 2006, with a five-year CAGR of nearly 9%. The IT services outsourcing market, meanwhile is forecast to reach nearly US\$275 billion, with a CAGR of almost 7%. While the BPO market is larger that the IT outsourcing market, it is

important to point out again that BPO services represent a very wide range of products and services (many of which are purchased locally) vis-à-vis the IT software outsourcing market.

As an example, many companies hire outside legal, financial and business consulting services and, while this is a form of outsourcing, these services are not generally purchased from an offshore market. The converse is true in the case of outsourcing call center services or IT product development, in that . offshore service providers provide most of the work.With regard to offshore outsourcing, the services receiving the most attention are IT services and customer care centers (BPO), which are largely driven by demand for software development and English-language call centers located in India. Figure 4 illustrates the scale and growth trends of the IT outsourcing market for IT services and BPO:

CAGy

7%

5%

8%

10%

10%

300



Figure 4: Global IT and BPO Spending

There are two significant trends that apply to both IT services and BPO markets: the consistent geographic breakout of outsourcing and its initial focus on Englishlanguage markets. In both cases, the Americas (largely North America) are the largest sources of outsourcing revenue, followed by Europe and then Asia. There are multiple reasons for North America's leadership in outsourcing, but two factors dominate: the size of its economy and the flexibility of North American business models. In simple terms, North America is a large, flexible economy that is open to the idea of outsourcing. Companies also have sufficient internal adaptability to institute and implement new business practices and, as a market leader in outsourcing, North American companies have significant corporate experience with these business models. In fact, outsourcing is n integral part of business in corporate America, and some would say accounts in part for the country's continued competitiveness in international markets. In fact, corporations in other major markets are rapidly implementing outsourcing strategies in order to retain competitiveness.

Europe, which also has a very large economy, has been slower to integrate outsourcing into its business model, with the United Kingdom and Northern European countries leading the way. It is important to note, however, that the development of the European Union in some ways provided a buffer to offshoring. Many western European companies developed "near-shore" operations in Eastern Europe to take advantage of lower costs and new markets. (In some ways this process was similar to the geographic movement in the US from the industrial north to the southwestern Sun Belt). The business processes developed during "near-shoring" will provide valuable lessons as European companies increasingly utilize offshore outsourcing business practices.

The developed economies of Asia -Japan, Australia, Hong Kong, South Korea, Singapore and Taiwan – have been slower to take advantage of outsourcing efficiencies. Perhaps the most important reason can be traced to macroeconomics, where the Asian economic crisis and slow growth in Japan has reduced the economic need for outsourcing. Secondly, the cost efficiencies of outsourcing are less compelling compared to North America and Europe, with the exception of course of Australia, Japan and perhaps Singapore. Lastly, and perhaps most important, business models in Asia often work through conglomerates, which in some ways provide a captive vendor market and limits the flexibility to enter outsourcing agreements.

Regardless of the reason for slower adoption of the global delivery model, Asian companies are utilizing and benefiting from outsourcing partnerships. Important examples of large and/ or growing Asian markets include Australia where the outsourced call centre market is forecast to grow from US\$190 million in 2003 to US\$365 million in 2008, or 14% CAGR. Singapore is also poised for growth based on costeffective outsourcing where the call centre market is forecast to grow from US\$9.8 million in 2003 to US\$78.2 million by 2008, an astonishing CAGR above 50%. The market for outsourcing is emerging even in low-cost China, where the outsourced call centre is forecast to grow from approximately US\$28 million to 2003 to US\$85 million in 2008⁷. The emergence of Asian countries as sizeable markets for purchasing outsourcing services has important implications for Vietnam due to is closeness to these markets – in geographic, linguistic and cultural terms.

Understanding Software Services and ITES

When developing IT strategy and policy, many governments combine efforts to stimulate both software development and other ITES. While the two sectors have commonalities, it is important to understand key differences in each industry, and create policies that target their divergence requirements. It is true that both software development and ITES rely heavily on telecommunications infrastructure, and particularly Internet technologies. However, in terms of market dynamics, human capital development and legal frameworks, the two industries have vital distinctions and, in fact, significant segmentations in their own right.

The key difference between software development and ITES are the technical skills required. Whereas software development necessitates coding,

^{7.} Source: Gartner

programming and defined methodologies, ITES often only requires computer literacy, e.g., common Web tools or data entry. Software development and ITES often require different levels of knowledge about business processes. Further, software development requires varying degrees of computer languages, such as C+ or lava, combined with knowledge about computer hardware, networks, programs and applications. ITES often require native-language fluency, cultural understanding and specific industry understanding. A software engineer may need to understand finance to develop programs and products for the banking sector. A corresponding ITES agent may need to answer bank customers' service calls, adjust billing or explain financing and credit options. From an educational standpoint, software engineers need to study mathematics, computer science and process methodology, while ITES require language and accent training, people management skills and

knowledge of specific industries and their processes.

The business models for outsourced services also differ between software development and ITES. Outsourcing software development requires collaborative partnerships where client and developer work closely to develop and understand detailed specifications documents. Often the client co-locates a manager to ensure adequate project and risk management. Commonly, there are intermediate stages that require user input, feedback and re-work. There are also testing and validation phases. Software development is very process driven and requires strong working relationships with customers and end-users.

ITES often utilizes an iterative and repetitive process. For example, a simple call center process requires an introduction, assessment of the issue, issue resolution and closing of the call. While issues differ, the skills required to assess the issue are quite different than those required for software development. In the case of back-end processes, ITES is pure process, such as receiving a medical transcript and transcribing the information. The difficulty is in transferring the process for an internal function to an external function where each cutover varies in size, process, systems and skills.

Another important difference is the client base. Software development always includes IT software projects. Whether the project is for a telecommunications carrier, bank or hotel, there are common baselines. ITES includes activities in almost every industry, and may or may not include an IT component. In fact, many back office processes cross all industries, such as payroll services, billing, accounting and legal services. A breakdown of the differences between software development and BPO services is outlined in Table 1. However, the important message for policy makers is to focus on action and initiatives that target specific areas of software development and ITES⁸.

^{8.} Concepts outlined in "Obstacles to Developing an Offshore IT-Enabled Services Industry in Asia: The View from the US", by Chris Coward, August, 2002. This report was prepared under a grant from The Asia Foundation.

Table I: Comparison of Software and ITES Services

	Software Development	ITES/BPO
Technical Skills	 Computer software languages C++ Java Many other 	Computer Literacy
Functional Skills	 Limited (although sometimes required, e.g., creating HR software) 	 Often required, e.g., HR functions, payroll, bill processing, etc.
Education	Software trainingDiplomaGraduate	Varies by activityOften non-technical
Process	 R&D Design Development Testing Maintenance 	• Tied to industry process
Industry	Domain knowledge required	Domain knowledge required
Language	 Basic English (based on English dominance in IT and Internet Client interaction requires additional language skills 	 Varies Call centers require oral fluency and accent training Other activities require only reading/writing Some activities don't require language
Other	Software Quality and Process Training	People managementVaries by industry
Timing	 Usually not time of day dependent (although some client meetings are required) 	 Call centers tied to "host market" time, e.g., night shift in some offshore destinations Many services not time-of-day dependent

As a case in point, the National Academy of Employable Skills, a medical transcription training company located near Delhi, recently sought trainees (Figure 5). The position required only a high school diploma (US standard), or 10+2 graduate in India. Only written English skills were required. According to the job advertisement, India needs 50,000 medical transcribers by the end of 2005. The job training required five months, or 700 hours, some of which was spent on the job. Starting salaries are estimated at US\$2,000 per year.

Overview of Vietnam's IT Sector

The government of Vietnam strongly supports the development of the country's ICT industries, particularly the stimulation of the software industry. Building on initial reforms within the telecommunications sector, government policy is now targeting other convergence and IT industries. While government IT policy to date has focused on IT services and hardware manufacturing, there does not appear to be any specific strategy to encourage BPO or other non-software outsourcing services. This report includes information on hardware manufacturing and nascent BPO segment; however the analysis

of Vietnam's IT sector largely focuses on the software sector.

According to recent estimates by the HCMC IT Association (HCA), IT sector revenue grew 33% during 2004, reaching a total of US\$685 million. This figure highlights a net increase of US\$170 million compared with 2003 figures. Based on growth rates over the last three years, Vietnam's IT sector revenue would register an annual net increase of US\$800 million by 2010, reaching nearly US\$1.5 billion. Figure 6 highlights the trends in Vietnam's IT sector, including a three-year rolling average forecast for 2005-2010.

Figure 5: BPO Training for Medical Transcription



Source: National Academy of Employable Skills, Jobs Flier.

36

R

3

Signature of Candidate

Pin:

*

Photo

Figure 6: Growth in Vietnam's IT Market



Source: HCA and VNCI estimates

Of the US\$685 million in total revenue generated in 2004, there was a 75:25 mix between hardware and software, with hardware revenue generating US\$515 million and software the remaining US\$170M (Table 2). Software revenue from domestic sources totaled US125 million compared to US\$45 million exported.

According to the HCA, the primary domestic source of IT demand comes from state organizations and the large state-owned enterprises (SOEs), which were funded mainly by the state budget for software procurement. A few of the larger IT players do target foreign markets, but a major portion of IT revenue is derived from domestic services and products (Figure 7). In terms of international markets, Japan and Singapore were the leading purchasers of IT products during 2004, with Japan alone representing 40% of the total. When compared with other regional IT exporters in the region, the USA often accounts for 75% or so of the export market, followed by Europe and Japan (Figure 7). Accordingly, exports to Japan and other Asian countries from Vietnam are correspondingly higher. This highlights Vietnam's relative competitive advantage in collaborating with regional countries and corporations.

Business Process Outsourcing

The BPO market in Vietnam is truly in its infancy. This review did identify a few BPOs in Vietnam, but the scale and scope remains guite limited. FPT recently opened a small call center to support IBM technical calls, employing a handful of agents with plans to expand to one or two dozen. In other countries, it is not uncommon for BPO call centers to have 5.000+ agents. While BPO services have not widely developed in Vietnam, there is tremendous medium-term market potential, as the Dallasbased BPO consultancy Everest

(US\$M)	1996	1997	1998	1999	2000	2001	2002
Software					50	60	75
Hardware					250	280	325
IT Revenue	150	180	200	220	300	340	400
Net Increase		30	20	20	80	40	60
Growth		20%	11%	10%	36%	13%	18%

Table 2: IT Revenue: Hardware and Software

Source: HCA and VNCI estimates



Figure 7: Revenue from Domestic and Foreign Markets

Primary Foreign Markets



Source: HCA

Partners noted in an article on its OutsourcingCenter Web site:

"Asia's newest BPO tiger could be Vietnam. While the country's BPO industry appears to be a sleeping tiger at the moment, we believe that the treasure hunt may be starting soon. Industry observers claim that the cost of developing software in Vietnam is at least 90% cheaper than in the US and between one-third and one-seventh the cost of developing software in India. Vietnam's talent pool is also remarkably youthful. Almost 75% of the population is under the age of 35, and this youthful energy is apparent in the eagerness of high-school and university students flocking to learn computer science and enter the technology arena. Moreover, the workforce has historically been underemployed, due to an economy ravaged by three decades of war and a corrupt establishment thereafter. Therefore the eager workforce appears easy to train, offering the world an inexpensive, productive and skilled labor pool. Within Vietnam there

exists a familiarity with European and Western culture as a result of French rule in the early part of the century and the prevalence of Catholicism as the second largest religion in the country.

A final plug for Vietnam is declining bandwidth costs—a major prerequisite for outsourcing work. Telecom costs are falling, thanks to the liberalization of the telecom sector after Vietnam's bilateral trade agreement (BTA) with the US in 2001. The Vietnamese government's continued drive to turn the country into an offshore powerhouse is apparent in a slew of tax and fiscal incentives to boost FDI in Vietnam. With the deadline for the country to join the World Trade Organization (WTO) set for 2005, it could be a watershed year for the Vietnamese."9

Human Resources

Human resources are the fuel of the IT sector, providing the

appropriate skills to develop new products and IT services, whether for the domestic or international markets. To create a vibrant diversified IT industry, Vietnam needs to develop a workforce that has a variety of skills and expertise. Professions in the IT software and services segments require software engineering skills whereas BPO and IT hardware employees need to be more proficient at mechanical engineering skills. Many BPO positions are non-technical, requiring basic computer skills combined with a higher degree of industry knowledge. Of course there are crossover segments, such as embedded systems that require software development skills along with electrical engineering understanding of hardware platforms. In the BPO space, an IT helpdesk may require detailed understanding of software processes, networking and a variety of proprietary systems.

Some areas require specialized skills. In software development, specialized skill sets include coding, architecture and testing. Software

The full article, "New Offshore Hot Spots: 2005 and Beyond" is at http://www. outsourcing-asia.com/hotspots.html

development may require specific skill sets based on the type of software (e.g., application versus embedded system) that requires different computer programming languages. There is also a need for non-technical information such as industry domain knowledge, project management, change management, communications skills and languages. Figure 8, taken from a leading Vietnamese software company, illustrates the diversity of skills required and reinforces the need to increase industrial and corporate size and scale to provide broad product and service portfolios.

A continuum of knowledge and experience is required, where newly trained professionals are able to lead projects. As the size, scale and sophistication of projects increase, it is important to have professionals on hand who are sufficiently capable and experienced to handle larger engagements. As Vietnamese companies and professions gain more experience, they will be increasingly able to win and deliver larger deals.

It is important to note that about 90% of IT professionals do not work in the IT industry¹⁰. Many IT professionals provide internal IT support and services to companies not directly involved in high-tech industries. These people build and manage internal communications networks for government agencies, banks, retail outlets, schools and any other organization that requires internal networking, software development, digital security or other IT services. As a result, the human resource demand for software developers and IT professionals is significantly larger than the demands for Vietnam's software and IT companies. It broadly includes the IT employment needs of the entire economy.

Vietnam has about 60 universities and another 70 colleges with IT faculties. There are another 30 or so universities that provide



Source: FPT

Figure 8: Skill Inventory for Vietnamese Software Company

CompTIA, Knowledge Worker Development, Technology Neutrality and Growth of the IT Industry, Michael Mudd, Director of Public Policy Asia-Pacific, 14th Vietnam IT Week, September 29, 2005.

IT education as a supplement to other curricula. Vietnam's university system (not only within the IT faculties) is evolving as the country integrates with the global economy. There is a realization of the benefit of academic relationships with foreign institutions. Businessoriented courses and soft skills such as communications are increasingly included as part of the IT curriculum and, likewise, IT curriculum is increasingly included in non-IT degree programs. As part of official policy, the government has targeted increasing the capacity for IT education and training, including the establishment of the HCMC International University with the ambition of having hundreds of IT students graduating each year. The Ministry of Education also intends to introduce English language lectures and curriculum in 10 IT departments; specific implementation of these courses is forthcoming.

There are about 70 training centers, a number that has significantly increased in the last several years. Several dozen new centers and multi-media specific centers have recently been opened over a wider geographic area. The largest is Aptech, a US-based training institute franchised by Vietnam and based out of India. The second leading technical

InstituteCentersNotesAptech25Includes 2 Multimedia centersNIIT17India-based, strong in southTata Infotec1India-basedInfomatics1Singapore-based company

Table 3: IT Training Centers in Vietnam

institute is the National Indian Institute of Technology (NIIT), also an Indian-based training facility. Aptech also has two multimedia centers that focus on graphic arts and design, skills required for audio and visual services such as website development, animation and gaming development.

In this important area, namely educating skilled employees and creating jobs, Vietnam has made incremental positive progress, but the country lacks the internal capacity to produce the large numbers of IT professionals required for the high-tech sector and the broader requirement for IT skills within the economy. Estimates vary on the number of annual IT graduates, but there is a general consensus that in 2005 Vietnam will graduate 8,000-10,000 software engineers from four-year universities, and produce another 8,000-10,000 from

one- or two-year IT diplomas from vocational institutes. Some students obtain both qualifications. While firm figures are not available, Table 4 gives approximations of the number of IT graduates in Vietnam in the last six years.

Corporate Training

After employment, many companies provide additional training to meet their internal needs. In a Ministry of Trade (MoT) survey¹¹ on ICT skill training, more than 25% of companies say they provide no training. A much larger percentage – almost 50% – provides on-the-job training, while 30% utilize outside resources such as ICT training centers (Figure 9).

II. MoT, E-Commerce Development Status Report 2004, Hanoi, Spring 2005

	1999	2000	2001	2002	2003	2004	2005*
IT Grads	2,000	4,000	6,000	9,000	n/a	n/a	10,000
Informal	n/a	n/a	n/a	n/a	n/a	n/a	10,000
Total	2,000	4,000	6,000	9,000	-	-	20,000

Table 4: Degree and Diploma Graduates in Vietnam

* Estimates

Source: VINASA, VNCI



Figure 9: Modes of Corporate ICT Training in 2004



Online Training

Online training is the process where communication between teachers and students uses electronic devices, sometimes on site and sometimes remotely. As a recent innovation in training and long-distance education, online training is a relatively new training methodology with a promise of significant educational benefits, including the standardization of curriculum and testing, time and cost savings, and the eliminating of geographic proximity between students and teachers. In recent years, new training services have developed systems and modules for use in the software area (as well as ICT overall) for use by corporations, governments and schools. According to the MoT, there are some 300 websites in Vietnam providing consulting on education, online exam preparation, remote training, online pilot exams and enrollment services, including the following:12

- Aptech ICT training centers provide online training curriculums (www.onlinevarsity. com).
- VASC Software Development Company, in cooperation with TMC Investment Consultancy Company, provides online university entrance examination preparation programs (www. truongthi.com).
- Cisco Corporation and Intel have introduced an online certificate training model in Vietnam in 2003 and, with the Ministry of Education and Training (MoET), are developing new modules.
- VDC, in partnership with Netlearner (Singapore), provides ICT distance training services.
- FPT has an online English training program introduced (www. elearning.com.vn).
- Ha Thanh Company in association with Telecommunication Technology Academy provides focused ICT modules (www. khoabang.com).

• The Da Nang DPT offers online training services (www.danangpt. vnn.vn/tnghiem)¹³.

Several international projects supported by foreign financial and technical assistance utilize online training models; for example, the Vietnam-Japan online education center project of the Hoa Lac High Tech Zone, the HP Corporation remote training center and the Asian e-learning network project financed by the Japanese government. The online model provides valuable opportunities for Vietnamese government agencies, companies and schools to provide online and/or remote access to studies of all types and levels. Given the high rural density of Vietnam, these projects have the potential to promote and popularize new education models.

Regional Overview of Vietnam's Software Industry

A cluster analysis of Vietnamese software companies illustrates two principal geographic locations - HCMC and Hanoi - with a lower density of companies in the Da Nang region (Figure 10). According to information from Vietnam's two industry trade organizations – HCA and Vinasa – HCMC is home to roughly half of all software companies. HanoiHanoi represents more than 40%, with the other regions accounting for another 10%. While these figures only represent the number of companies, one could imply that

^{12.} Nguyen Minh Dan, Head of Science and Technology Industry Department – Ministry of Post and Telematics, at the training course on "Capacity building of making and implementing e-commerce policies and laws", held from July 4th to 7th, 2005.

Other examples include NetSoft (www. testonline.netcenter-vn.net) and the Vietnam International Education Consultancy Center (VINECO) (www.vinecovn.com).



Figure 10: Location of Vietnamese Software Companies

Source: HCA, Vinasa

the geographic breakout for employees and revenues roughly approximates the same proportion.

Ho Chi Minh City (HCMC)

As the leading hub in Vietnam's national economy, HCMC also plays a lead role in the country's ICT development. Supported by a strong economic base, the city government has pro-actively and aggressively targeted computerization of city

Table 5: ICT Development in HCMC

administration and ICT sector development. As part of these initiatives, the HCMC Department of Posts & Telematics (DPT) has conducted extensive surveys of city government agencies and local industry.

In terms of sector development, the city government is also participating in specific ICT projects such as the development of the ICT incubator in Quang Trung Software Park. As part of its overall economic development program, the city government specifically promotes HCMC software companies via IT trade and investment promotion. According to local government officials, the HCMT DPT closely cooperates with IT enterprises in order to better understand their performance and assist them in strengthening local businesses.

As an initial stage of its egovernance initiative, the HCMC DPT conducted an audit of local government agencies. The results showed that roughly half of local government agencies lack the ability to create and store information in databases, while some 20% of agencies do not have Internet access. These findings indicate the relative immaturity of IT usage within government institutions and point to areas of needed improvement. To address these shortcomings, the HCMC government has created an egovernment initiative including the following objectives:

Overall	Software	Hardware
 Revenue: 40% of the country ICT revenue Average growth: 22%/year Number of enterprises: Over 4,000 Employment: 1,500-2,000 laborers per year 	 2004 revenue: USD 66 million Annual growth: 30% Number of programmers: 6,000 Average productivity: USD 10,000/year/head¹⁴ Number of registered companies: 3026 	 Number of registered companies: 399 2004 revenue: USD 231 million Annual growth: 19%

Source: HCMC DPT

^{14.} Figure cited by Nguyen Na Tuan, DRAFT PROGRAM FOR SOFTWARE INDUSTRY DEVELOPMENT IN THE PERIOD 2006 - 2010 Ministry of Posts and Telecommunications, (Department of Information Technology, 18 Nguyen Du, Hanoi, Vietnam).of One-Door Mechanism and Main Tasks in 2005 (4 May 2005) by the Vinh Phuc PAR Steering Board.

- Consolidation of reported information.
- Web page for workflow management.
- E-news and District Government and Citizen Talk initiatives.
- "One-stop shop" model for document receiving and handling.
- Document management system, tracking via telephone and verification system.

- Management of administrative fines.
- Receiving and processing system for public claims.
- IMAS Accounting system for non-productive agencies.
- Budget Management System.
- Application for Civil Status Management.
- Business Licensing System (GIS application) for land ownership/user rights and construction permits.

In 2005, the city government has been pushing these initiatives at district level, including investment in infrastructure, development and installation of application software, training and connection. Specific initiatives at the city and district level include the implementation of the GIS application citywide and the development of a detailed, local e-government strategy and plan for 2006-2010.

Table 6: Objectives of the HCMC ICT Development in Vietnam Project

Objectives	Activity
Develop a strategy, roadmap and basic IT infrastructure for municipal e-government IT.	 Plans to build metropolitan area network (MAN) o 100-1000 Mbps bandwidth o 90 access nodes among the districts and city departments o FE and MPLS technology o VoIP/Video Conference.
E-enable and transform government services and operations.	 GIS Seeking opportunities for cooperation with other DPTs in the focus economic area of the South.
Support SMEs and promote ICT industry development.	 Research and collaboration Seeking international cooperation in ICT research and applications. Cooperation with universities, research institutes, academia in study and application of national and international study results Workshops and conferences on ICT National Forum for Vietnamese Overseas – August 2005.
Upgrade ICT skills amongst government, businesses and the general public.	 HR Plans Training for CIO in business and public administration Training for ICT expert Improvement of ICT and e-government knowledge and skills for public servant Training in Internet operation and management Organization of "Week for ICT human resource" in August Establishment of "Fund for ICT Training".

As an example of the role of national and provincial governments, the HCMC DPT is crafting a provincial strategy, "ICT Development in Vietnam – HCMC Sub-Project."The objectives of this project, implemented by the People's Committee of HCMC, are detailed in Table 6.

The five-year strategy, finalized in mid-2005, has a total budget of US\$12 million, of which the World Bank and other international development agencies would fund US\$9.5 million¹⁵.

Hanoi

As the national capitol and home base for many government ministries and large state-owned enterprises, Hanoi is a leading location for a large number of software companies. Many software companies therefore target government clients, focusing on efforts to computerize government ministries and develop an online presence, e.g., websites. Many of the large state-owned companies also have headquarters in Hanoi, including those with subsidiaries providing software services such as VNPT and FPT. There are also a large number of SMEs that target IT products and services for the government sector, with an initial focus on website development and web-enabling technology.

In late 2005, the WB and the VNPT announced an investment

plan to update IT infrastructure the Hanoi area. Estimated to cost VND 570B (US\$35.6M), the 5-year project aims to increase usage of IT through infrastructure development, e-government and e-commerce. The funds, including a US\$29.6 WB loan and US\$6M of reciprocal capital, will be used to deploy develop highquality information technology infrastructure and improve IT skills for the staff members at government agencies, enterprises and among their employees.

Da Nang

Da Nang and several other central provinces are aggressively targeting the IT sector. In a recent, positive announcement, the city government and the World Bank formalized a nearly US\$20M grant to support ICT in the region. One key aspect is the development of knowledge hubs, including five science parks located within two clusters, with several additional clusters planned for the future. According to the terms of the deal, the World Bank will grant US\$19. M to Da Nang City to develop SMEs in the ICT sector over the period 2006-2010. The project includes several phases to develop: ICT development strategies; IT infrastructure and computerize state administrative management; and IT application and training of human resources for the city's IT industry. The importance of human

l 6. Ibid

resources is clearly emphasized, as this phase alone received funding valued at US\$5M¹⁷.

Corporate IT Spending Patterns¹⁸

In an interesting survey on IT enterprise spending, the MoT reviewed ICT investment structures in order to evaluate the overall use of ICT applications in Vietnamese companies (Figure 11). The results suggest that ICT spending as a percent of annual operating costs is still at a relatively low level. Some 63% of surveyed enterprises spend less than 5% on ICT applications for their business activities, including telecommunications, investments in software, system maintenance and ICT training in application costs. Enterprises invest heavily in hardware, accounting for twothirds of the total ICT spend (Table 7). Software accounts for just less than one-third, with the remainder spent on services and training. A year-on-year review of this data shows a limited change of software spending from 22% to 29% – low by international comparisons. The world average software spending was 49% in 2003¹⁹. Two possible explanations are: Vietnamese enterprises don't value (and hence don't invest in) software and technical training for workers and/or copyright violation in Vietnam is high, which drives down software costs.

^{15.} The World Bank has allocated nearly US\$107M to enhance Vietnam's IT sector by funding technical studies and providing government loans and grants. For additional detail, visit the WB's Vietnam ICT project website located at http://web.worldbank. org/external/projects/main?pagePK=6428362 7&piPK=64290415&theSitePK=40941&menu PK=228424&Projectid=P079344

^{17.} Ibid.

^{18.} MoT, E-Commerce Development Status Report 2004, Hanoi, Spring 2005

^{19.} MoT, E-Commerce Development Status Report 2004, Hanoi, Spring 2005 report which cites the Status Report on ICT Application in Vietnam and Issues Related to e-transactions Law, by Dr. Mai Anh, a member of e-transactions Draft Law Committee under the National Assembly.

Figure 11: IT Expenses in Company Costs



Table 7: Corporate ICT Investment Structure

Investment items	Average density	Minimum	Maximum
Hardware	61.6%	35%	100%
Software	29.2%	4%	55%
Training	12.3%	0%	40%

Source: MoT, E-Commerce Development Status Report 2004, Hanoi, Spring 2005

Table 8: Country Evaluations for IT Outsourcing

Global Attractiveness

When making decisions about outsourcing services – whether onshore, near-shore or offshore - business leaders look at a wide range of issues, from cost to political risk. International consultants A.T. Kearney has developed a methodology of global attractiveness for offshore locations, and the most recent publications have important implications for Vietnam²⁰. The report reviews 39 categories across three major criteria - financial structure, people skills and availability, and business environment. The review identified the top 25 destinations based on a 40:30:30 weighted breakout using a 10-point scale of the three major criteria (Table 8).

20. Report in Appendix

Country Evaluations by category				
Category	Sub-Categories	Metrics		
Financial Structure (40%)	Compensation costs	 Average wages Median compensation costs for relevant positions (such as call center representatives, IT programmers and local operations managers) 		
	Infrastructure costs	Includes occupancy, electricity and telecommunications systemsTravel to major customer destinations		
	Tax and regulatory costs	• Relative tax burden, costs of corruption and fl uctuating exchange rates		
People skills and availability (30%)	Commulative business process experience and skills	 Existing IT and BPO market size Contact center and IT-quality rankings Quality ranking of management and IT training 		
	Labor force availability	Total workforceUniversity-educated workforce		
	Education and language	Scores on standardized education and languge tests		
	Attrition rates	Relative BPO growth and unemployment rates		
	Country Evaluations by category			
----------------------------------	---	--	--	--
Category	Sub-Categories	Metrics		
Business Environment (30%)	Country environment (includes economic and political aspects)	 Investor and analyst rating of overall business and political environment A.T. Kearney's Foreign Direct Investment Confi dence IndexTM Goverment support for the information and communications technology (ICT) sector 		
	Country infractruture	Blended metric of infractructure quality (telecommunications, IT services)		
	Cultural adaptability	Personal interaction score from A.T. Kearney's Globalization Index		
	Security of intellectual property (IP)	Investor rating of IP protection and ICT LawsSoftware piracy rates		

Source: A.T.Kearney

Figure 12: Offshore Location Attractiveness Index 2004



Source: A.T. Kearney



Source: A.T. Kearney

The report highlights and reinforces key trends in outsourcing: namely India's overall leadership as a destination of choice based on its strong position in the financial, human resource and business environment. However, there are several other interesting findings. First and foremost is that Vietnam is at 19th position, which seems low but after India's front-runner status, the variation between the next 24 destinations is relatively low. The difference between China (ranked 2nd) and Turkey (ranked 25th) was a total of 1.7 points out of a total of 10. This implies that substantive changes in the metrics used could dramatically alter a country's position, and significantly improve its relative standing. For example, if Vietnam implements major rather than incremental changes in a few areas such as IPR or private and foreign investment, the country

could rise from its current ranking to within the top 10. Government policy should target this survey as an internal metric for improvement and set a goal to place the country in the top 10 global destinations. This would require Vietnam to gain only 0.63 points on Hungary on a 10-point scale. The overall results of the survey are shown in Figures 12 and 13.

Vietnam remains less attractive as an off-shore destination than some of its regional neighbors, of which six Asian countries ranked in the top 25. The difference between Vietnam and its Asian competitors is relatively small but Vietnam remains last among its geographic peers (Figure 13).

Where the A.T. Kearney report provides insight into Vietnam's position is in the relative breakdown by three criteria – Financial, People and Business. There is a dramatic gap in Vietnam's relative scores: Vietnam is ranked 2nd in financial metrics and dead last in people, and 24th in the business environment. Vietnam's strong position in financial metrics is based on the low cost of labor, conducive tax regime and low cost of utilities. The weaknesses highlighted in the report in the people environment are based on low-level language skills and education levels, size of the labor pool and limited outsourcing experience. In the case of the business environment, poor metrics were registered for protecting intellectual property, outsourcing infrastructure and cultural adaptability.

This report is important because it influences global decision-making. While the report highlights Indian leadership and Vietnam's relevantly low current standing, it is important to note that key actions could dramatically improve Vietnam's standing, and hence improve the country's prospects for attracting new outsourcing business. These include:

- IPR laws and enforcement;
- focus on HR quality and availability, e.g., number of graduates; and
- enhancing telecom infrastructure for the BPO sector, e.g., data networks and pricing.

However, other major reports on outsourcing do not include Vietnam. In the Global Outsourcing 2005, Vietnam is not mentioned in the top 20 outsourcing destinations. The report does mention the country as a future destination, ranking Vietnam 17 out of 30 in its future opportunity ranking for 2015. India is ranked 1 st for current and 2nd for future opportunities. Specifically, the report says of Vietnam:

"It's a relatively young country

with half the population under 30 years old. They are relatively energetic and intelligent. Quality human resources is key to Vietnam. The country's education system is excellent, with the focus on mathematics and logic that creates a ready supply of raw talent for the IT industry. Professional skills are taught by Western training companies, which are training thousands of Vietnamese programmers in dedicated centers across Vietnam. The country has a vast pool of intellectual resources that remains largely untapped..."21

There are other international studies that evaluate global ICT competitiveness highlighted in Table 9.

Given India's clear leadership in the global IT and ITES outsourcing market (as validated in multiple reports on the subject), an evaluation of its success could provide valuable insight for Vietnamese decision makers. Over the past several decades, the country has experienced a wholesale revolution in its IT sector. Both domestic and international companies drive this growth. Several Indian companies have emerged not only as major players in the domestic market, but as global players as well. Many international companies – perhaps representing 30% of the Indian IT market – have set up "captive" operations in India to support their global operations. Leading global companies – including Samsung, Texas Instruments, Delphi, Honeywell, HP, Motorola and Nokia just to name a few - have set up R&D, design and BPO centers.²²

India plays a dominant role in offshore outsourcing and the underlying factors driving this sector suggest a multi-faceted explanation

22. For the detailed case study, review Appendix 2: Analysis of India's IT Success and Limits.



Figure 13: Offshore Location Attractiveness

^{21.} Global Outsourcing Report 2005, compiled by Mark Minevich of US consultancy Going Global Ventures and Frank-Jürgen Richter of Swiss consultancy Horasis for US-based publisher Ziff-Davis Media's CIO Insight magazine, March 2005.

for its success. There are a large number of reasons that can explain India's value proposition within the global delivery model, with a particular focus on a handful of overlapping and self-reinforcing competitive advantages:

- English language capabilities (and western cultural affinity).
- Low labor costs.
- Scale and depth of the labor pool.
- Economies of scale of Indian industry and significant IT and ITES business experience.
- India's ethnic diaspora facilitates globalization and international business relationships.

India's accomplishment in developing a thriving IT and BPO sector is significant, but there are limits to its success. India represents only 2% of global IT revenues with estimates suggesting this market share will increase to

4% by 2008. India will therefore continue to be a junior partner on a global scale. Moreover, about 30% of the market comes from captive multinational corporations (MNCs). While the country benefits from this type of activity - investment, employment, and experience – much of the benefit from utilizing IT with the economy accrues to foreign companies. The rapid industry growth is driving wage inflation, unofficially estimated at 10%-20% per annum, and BPO staff attrition has reached 45-50% per year with entry-level salaries reaching nearly US\$3,000. A mid-level software engineer can anticipate a salary of US\$12,000. For highly specific in-demand skills, such as embedded systems with a Japanese-Janguage interface, wages are somewhat higher than average. While these wages remain around one-fifth of comparable European or North American salaries, the very success of the industry undermines its cost

competitiveness, forcing companies to move up the value chain to provide increasingly sophisticated work, such as higher-value-added outsourcing like offshore development centers, solution selling and proprietary technology. This in turns creates opportunities for other lower cost companies (and countries) to provide services.

It is also important to put India's employment gains in perspective. While employment in IT software and BPOs recently crossed the I million jobs mark – a major milestone in its own right – this figure represents a minimal fraction of employment when compared to its more than billion people: onetenth of a percent. If the industry grows 10 times in employment terms, the sector would still represent less than 1% employment on a per capita basis. So while India's emergence as an IT powerhouse is real, its impact on overall employment is moderate.

Index	Description	Ranking	Organization	Date	Improvement from prior year
Information Society Index	ICT	52/53	IDC	November 2004	Better
E-Readiness Index	ess Index Internet readiness 61/65 Economist Intelligence Unit (EIU)		April 2005	Same	
Networked Readiness Index	ICT development	68/1004	World Economic Forum (WEF)	March 2005	Same
E-Government Index	Level of e-governance	2/ 9	United Nation Development Program (UNDP)	February 2005	Worse
Software piracy	Software piracy rate	89/89	BSA – IDC	May 2004	Same
Global Outsourcing Report	Capability for software outsourcing	17/30 in 2015	Going Global Ventures	March 2005	Unknown
Offshore Location Attractiveness	Corporate attractiveness	20/25	A.T. Kearney		Unknown

Figure A: Process for Granting Business Registration in Ha Noi

INSTITUTIONAL AND LEGAL FRAMEWORK

fter several years of development and internal prioritization, the Vietnamese Government recently approved a new IT policy. According to the new policy objectives, Vietnam's ICT sector is expected to be worth US\$6-7 billion by 2010 and US\$15 billion by 2015. The plan, recently approved by Prime Minister Phan Van Khai, targets advanced IT applications and technologies, and anticipates them to be widely utilized throughout major economic sectors as early as 2010, stimulated in part by government initiatives and strategies. Continued IT and telecommunications industry growth will include continuing programs on e-government and e-business, with a particular focus on transaction processing and retailing. Further, the policy targets ICT growth between 20-25% by 2010, increasing to 20% by 2015. The Government's strategy for developing the sector covers eight areas, with five major programs designed to carry out four main missions. These include: improving IT and telecommunications infrastructure; developing new applications and technologies; expanding IT competency; and increasing human resource utilization.

MPT has been tasked to coordinate implementation of the project with relevant ministries, such as the Interior, Planning and Investment, Finance, Trade, Education and Training, and Science and Technology. Ministries, public agencies, and provincial and city people's committees across the country have been requested to develop overall plans for 2005-10 in response to IT and telecommunications issues.

Shortly after approving the new IT policy, the government approved a US\$93.72 million credit agreement with the World Bank for ICT development. The new line of credit will likely be used to support the initiatives outlined in its recently approved policy. The Prime Minister signed the decision to borrow the development credits to finance ICT projects in Hanoi, HCMC and Da Nang. The project will focus on the disbursement for and realization of sub-projects to be carried out by the Vietnam Posts and Telecommunications Corporation (VNPT), and the People's Committees of Da Nang, Hanoi and HCM City. The programs outlined by the credit include an overall e-Vietnam project with several sub-projects: "e-citizens", "e-government", "e-business", "e-transaction" and "e-commerce"²³.

While Vietnam has made important and fundamental changes to its legal environment with the objective of creating a robust and competitive ICT sector, the reform process remains incomplete. There are legitimate concerns that the government's ability to proactively create policy and effectively implement it within a reasonably time frame is limited. Issues related to coordination across ministries and the ability within government agencies to effectively implement and enforce policy and decisions have not been resolved. Other issues include policies on stateownership and limits on foreign investment and venture capital.

The recent success and limits of Vietnam's ICT and software policy are succinctly described in the Vietnam Ministry of Trade, E-Commerce Development Status Report 2004, published in (northern) Spring 2005:

"In contrast to the rapid changes in the Internet and telecommunication infrastructure, the year 2004 saw a slow-down in most law and policy making agencies in establishing a favorable legal environment for e-commerce to develop. This is an evident illustration of the fact that the business sector is more dynamic than the public sector, which is not a particular exception for Vietnam. The United Nations Conference on Trade and Development (UNCTAD) has pointed out that while in the early phase of ecommerce evolution in developing countries, a poor Internet and

^{23.} VNPT Website, October 15, 2005

telecommunication infrastructure was the biggest obstacle to ecommerce application. Later on it will be the inappropriate legal environment that formed a major countervailing force to the development of e-commerce.

The year 2004 has witnessed state agencies actively creating legal drafts towards the establishment of a favorable and consistent legislative environment, in compliance with international regulations. These are the Draft of the Electronic Transaction Act by the National Assembly's Committee for Science, Technology and Environment; Draft of the revised Trade Law by the Ministry of Trade; Draft of the revised Civil Code by the Ministry of Justice; and Draft of the Decree on Digital Signature and Electronic Certification service, among others. Despite substantial efforts by the state agencies, no legislative document has yet to be issued and implemented.

Not only failing to introduce new legal documents to make a path for e-commerce to progress, especially those acknowledging the legality of electronic transactions, the year 2004 also witnessed the discontinuation of the Ecommerce Ordinance, which disappointed a lot of enterprises wishing to extensively invest into e-commerce. Also in 2004. it could be seen that a number of policy-making agencies slowly took into account public feedback to amend the inappropriate and infeasible regulations promulgated in the previous years. Two typical instances were Decision No. 27/2002/OD-BVHTT on the regulation of websites, effective since 2002; and Decision No.

92/2003/QD-BBCVT on the regulation of domain names, which came into force in 2003."

Expanding Vietnam's IT sector, however, is not a short-term proposition; rather the process requires a long-term approach that impacts on three primary government activities: developing a strategy and policy; providing the legal foundation for action, for example, through laws and regulations; and ensuring efficient implementation of a consistent and transparent regulatory environment that will ensure effective policy implementation and compliance. This chapter deals only with the policy aspects of government strategy, legislation, policy, regulation, regional comparisons and international commitments.

Vietnam ICT Policy Overview

In the early 1990s Vietnam's leadership began to realize the importance of information technology and its role in economic development. Its early efforts to redefine national IT policy began in August 1993 with the Government's Resolution No 49/CP, which identified the sector as an important driver of national economic development. The Resolution focused on the importance of creating and using advanced technology. Government IT policy ran concurrently with its efforts to improve IT and telecommunications infrastructure. Laying the foundation for reform and IT development, government objectives during this period mainly targeted hardware procurement; software development was only

mentioned as a potential future development. In this period, the development of the IT sector under Government programs was slow. It was only in April 1995 that the Prime Minister approved a program called Governments 2000 that outlined the national program on information technology and provided actionable details to Resolution No 49/CP.

The Government's Resolution No 07/2000/NQ-CP dated 5 June 2000 on the development of the software industry issued many measures to promote the development of this industry. Firstly, software was recognized as one of the new economic industrial sector with high value, and the Government committed to apply the most favorable conditions for encouraging this development. Key measures implied under such regulation were:

- human resource development, with the aim to have 25,000 IT experts equipped with foreignlanguage skills in 2005;
- investment incentives for encouraging software producers in terms of tax, governmental subsidies and credit with the aim to gain production value of US\$500 million in 2005;
- legal enforcement on the IT sector to be taken into account to create the legal framework for software development and protection; and
- market expansion to be the responsibility of relevant state bodies.

To guide the implementation of this Resolution, the Prime Minister issued Decision No 128/2000/QD-TTg dated 20 November 2000 on measures to encourage software investment and development. Under this regulation, specific investment incentives were introduced including tax, landuse right, IP protection, human resources and IT infrastructure.

The highest-level policy statement of IT and software is Directive No 58-CT/TW of the Politburo of the Communist Party dated 17 October 2000 that considered the application and development of IT, especially software development, as one of the preferential strategic tasks of specialeconomic development. Under this Directive, relevant organization were to implement:

- widespread use and application of IT, firstly and especially in particular sectors such as finance, banking, customs, e-commerce and public services;
- create a favorable environment for application and development of IT by: (a) revising and consolidating the legal and organizational framework;
 (b) standardizing IT systems;
 (c) encouraging the use and application of IT; and (d) creating investment incentives;
- develop human resources in the IT sector; and
- accelerate the development of a national IT system.

To implement Directive 58, the Prime Minister issued Decision 81/2001-QD-TTg approving the action plan for implementation during the 2001-2005 period. According to this action plan, four priority programs will be implemented, one of which is the program on strengthening and development of the software industry, coordinated by the Ministry of Science and Technology (MoST)²⁴

Separately, there were efforts to develop ad hoc IT programs, the implementation of which would have a considerable impact on the software industry. One notable example is the Plan for Computerization of State Administrative Management of the period 2001-2005, approved by the Prime Minister under Decision No 112/2001/QD-TTg dated 25 July 2001, and thus known as Project 112. This plan was issued in the framework of Directive No 58-CT/TW of the Ministry of Politics dated 17 October 2000, including five component plans for:

- computerizing state administrative management of ministries, ministry-level organs, Governmental organizations;
- computerizing state management of the People's Committees, metropolitan cities;
- establishing the National Database and other functional databases supporting for the management and organization;
- training of State officers; and
- upgrading the general IT network of the Government (CPNET).

This plan was financed by the central state budget with a total value of at least VND IB, and budgets of the Ministries, Ministry-level bodies, People's Committees and metropolitan cities. Shortly after Decision 81, the Government issued a broader framework under Decision No 95/2002/QD-TTg of the Prime Minister dated 17 July 2002, which approved the Master Plan for IT Application and Development to 2005.The main content of the plan was to:

- speed up the use and application of IT in priority sectors, e.g. essential social-economic fields, industrialization, modernization and rural development; national security; State management; ecommerce, etc;
- develop national telecoms and Internet;
- build-up the IT industry with a focus on software;
- develop human resources with a focus on training systems;
- accelerate IT study and application activities;
- create a consistent legal framework for the IT sector;
- consolidate the State management system over the IT sector; and
- upgrade IT knowledge of social and public servants, especially state leaders and officers.

Decision 95 reiterated the four programs mentioned in Decision 81 and Project 112, and approved 13 priority projects, including those for information systems for the Communist Party, banking system, financial information, customs, statistics, e-commerce, agriculture and rural development, and urban planning and management.

Regarding Education and Training, the Program to develop IT human

^{24.} MoST could barely start the program when the administration of software and IT was moved to MPT, for which software is only a marginal business. Only now MPT is preparing a Strategy for Software Development, but only for the 2006-2010 period.

resources up to 2010 approved under Decision No 331/QD-TTg of the Prime Minister dated 06 April 2004 set out six projects, including the objectives of:

- upgrading the quality of university education and post-university education on IT;
- supporting the implementation of IT training programs that are linked with cooperating international universities;
- increasing IT training and supplementary training for the industries;
- upgrading the quality of education in technical secondary schools and training schools;
- introducing training on IT management and introduction of IT for State officials; and
- introducing IT training and IT application in schools.

In addition to documents on IT and software development, there have been other policies and programs which directly or indirectly promote the software industry, notably Decision No 53/2004/QD-TTg of the Prime Minister dated 5 April 2004 encouraging investment in High-Technology Zones; and Circular No 123/2004/TT-BTC of the Ministry of Finance dated 22 December 2004 providing for implementation of the tax incentives applied to the software enterprises.

The Prime Minister issued Decision No 235/Qd-TTg dated 2 March 2004 on approval of the Overall Plan of Application and Development of the Open-source Software for the period 2004-2008. Under this regulation, the Government has recognized that open-source software is one of the most important components of the software industry. The main contents of this plan are to (i) build encouraging policies for the application and development of open-source software; (ii) deploy the application of open-source software; and (iii) provide training to develop human resources.

In practice, the results obtained in the implementation of such policies and programs are not satisfactory. In most cases, the programs and priority projects mentioned could not obtain proper funding or create institutional set-ups in order for the project to start on time. Of the 14 priority projects under Decision 95, only three projects - 112, IT application in the military and modernization of the banking system – had achieved considerable progress by the end of 2004²⁵. Almost all other projects had only completed either a feasibility or pre-feasibility study.

A complete list of ICT policy and specific regulations is included in Appendix 3.

Institutional Structure for ICT Policy Making

In its Government Action Plan for 2005-2010, the Government highlights six areas of focus for research and development: ICT, biotech, automation, material sciences, nanotechnology and "mechatronics," a term used to describe the combination of mechanical, electronic and software engineering. It is important to note, in terms of the plan, the separation of power between the national and local governments, where the governmental ministerial structure at the national level is replicated at the local level (Figure 14). For example, MPT has a "departmental" counterpart, e.g., the HCMC Department of Post and Telematics and the Hanoi Departments of Post and Telematics. There are similar departments for each of Vietnam's provinces. Therefore in the case of ICT, as the issue crosses numerous ministries and agencies at the national and local level, setting relevant policy for a complex sector like IT requires action from multiple ministries and agencies.

While there is representation from all industries in the National Steering Committee on ICT, clearly the role of several ministries is critical to the development of Vietnam's software industry. For example, the Ministry of Agriculture and Rural Development (MARD) may target specific activities to utilize ICT and software in agricultural production and export. MARD may provide policy guidance, technical assistance and financing for the project, but this application remains a focused solution. Whether the solution is used in agriculture or the courts to track cases, the inputs are the same - technology, human capital and software development capabilities. While software applications require specific industry and process understanding, the objective of developing a broad-based software industry falls under a few key ministries. Table 10 explains the primary policy-making organizations within Vietnam, and their roles and responsibilities in creating strategy, setting policy and implementing key initiatives.

^{25.} The 112 and the IT application projects obtained substantial funding from the State budget, while the Banking system project obtained substantial loans from the World Bank.

Figure 14: Allocation of Major Responsibilities in IT Policy



Table 10: Key IT Decision-Making Agencies

Agency	Responsibilities
Politburo	Sets national policy and priorities through issuance of directives to be reviewed and amended by the National Assembly.
National Assembly	The National Assembly is the national legislature. It drafts and approves laws. Organized into committees, there are a number of specific committees that work on technology, IT and telecommunications issues.
Office of Government (OOG)	This office serves as the PM's and Deputy PM's secretariat and clearing house, and also coordinates inter-departmental policy and institutional initiatives. OOG runs the in-house e-government program, which focuses on building intra-departmental and provincial networks.
Deputy Prime Ministers (DPMs)	Of the four DPMs, one holds the portfolio for telecom, one holds the portfolio for ICT, and one holds the e-government portfolio.

Agency	Responsibilities
National Steering Committee on ICT	Monitors implementation of the national IT plan (which covers telecom, ICT, and the ICT projects, functions and responsibilities of all ministries and agencies).
Ministry of Post and Telematics (MPT)	Leads NSC on ICT. Sets policy for and regulates the telecom sector; representative of the State's capital interests in facility-based operators, including the dominant VNPT.
Ministry of Science and Technology (MoST)	Develops R&D programs for telecom and ICT; sets ICT standards. Was formerly the chief policy actor in ICT, but this role was changed with the creation of MPT.
Ministry of Culture and Information	Monitors and approves information, including media content, Internet cafes (validation) and a variety of information products and services.
Ministry of Finance	Manages financial aspects of the state, including budgets, taxes and customers. Several IT companies fall under its control, e.g., VNPT.
Ministry of Trade (MoT)	Sets policy and develops legislation and programs for e-commerce and trade. Also is principle ministry involved in negotiating international trade treaties. Takes the lead on issues of e-commerce.
Ministry of Education and Training	Sets national policy on education and training, managing universities, colleges and other institutions.
Ministry of Planning and Investment (MPI)	Ensures sufficient and timely investment is available for approved development in IT (defined broadly to include telecom).
Ministry of Industry	Sets Vietnam's industrial policy, including issues related manufacturing
Ministry of Public Security	Controls and approves information and content in the information sectors, including issues related to information on the Internet

Source: VNCI

Ministry of Posts and Telematics (MPT)

Based on recent changes in telecom law, MPT is the primary driver of ICT strategy, policy and regulation. Unlike many countries that have created an independent, autonomous regulatory body, the MPT is the state administration in charge of policy-making and regulatory matters in post, telecom, IT, electronics, the Internet, radio transmission and emission techniques, radio-frequency management, and national information infrastructure. The MPT manages public services as well as having control over state capital (for example, investment) on behalf of government and as stipulated by laws and regulations in post, telecommunication and IT enterprises. Its main functions include the following:

- Policy-making functions:
 - Submit to government drafts of laws, ordinances, regulations, strategies and development plans on posts, telecom and IT.
 - Give guidance in implementation of laws, ordinances and regulations, as well as development strategies and plans,

related to posts, telecom and IT.

- Conduct international cooperation activities in posts, telecom and IT.
- Regulatory functions:
 - Regulate access to and interconnection between public switched telephone networks, and specialized and private networks.
 - Regulate the electronics and IT industry development plan.
 - Regulate charges and tariffs in the fields of post, telecom and IT.
 - Plan, assign and allocate radio frequency spectrum.

- Control and monitor radio frequency spectrum and radio equipment; organize radio-frequency, satellite orbit registration and coordination.
- Grant licenses in post, telecom, radio frequency and the Internet.
- Regulate the quality of post, telecom and IT networks, plants, products and services.
- Regulate numbering resources, codes and domain names.
- Inspect all activities and settle all regulatory breaches in the fields of post, telecom and IT²⁶.

The MPT is organized into 10 consultative boards, or departments, that focus on specific mandates, under the leadership of five vice $\overline{26. \text{Source: MPT website.}}$

ministers (Table 11). In addition to consultative boards, the MPT operates functional units that provide technical information and support to the organization. There are also a number of Member Units, semiautonomous agencies that have clearly defined objects. Lastly, the MPT regulates and operates VTC, the state-owned television company.

Organization	Responsibilities			
Consultative Boards				
Department of Posts	Providing strategic advice to the Minister on implementing state administration in Post as stipulated by current legal frameworks.			
Department of Telecommunications	Providing strategic advice to the Minister on implementing state administration in Telecommunications and the Internet as stipulated by current legal frameworks.			
Department of Information Technology Industry	Providing strategic advice to the Minister on implementing state administration in the hardware and software industry in the fields of electronics, posts, telecommunications and information technology as stipulated by current legal frameworks.			
Department of Science & Technology	Providing strategic advice to the Minister on implementing state administration in researching, developing and applying science technology, environment protection in the fields of post, telecommunications, information technology, electronics, the Internet, broadcasting, radio frequency and information infrastructure; applying information technology in state administration and socio-economic development.			
Department of Planning & Finance	Providing strategic advice to the Minister on implementing state administration in planning, finance, statistics accounting, billing, fee, establishing and managing specialized economic mechanism in the fields of posts, telecommunications, information technology, electronics, the Internet, broadcasting, radio frequency and information infrastructure.			
Department of International Cooperation	Providing strategic advice to the Minister on implementing state administration in international cooperation in the fields of posts, telecommunications, information technology, electronics, the Internet, radio frequency and information infrastructure as stipulated by current legal frameworks.			
Department of Legal Affair	Providing strategic advice to the Minister on implementing state administration in legal affairs in the fields of posts, telecommunications and information technology. The department also has a duty to compile legal documents, disseminate legal documents, inspect the enforcement of legal documents in posts, telecommunications, and information technology as stipulated by current legal frameworks.			
Department of Organisation and Personnel	Providing strategic advice to the Minister on implementing state administration in organization, personnel, training, human resources development, salaries in posts, telecommunications, information technology, electronics, the Internet, radio frequency, information infrastructure and internal political protection as stipulated by current legal frameworks.			

Table 11: Organizational Management of MPT

Organization	Responsibilities
Department of Inspection	Helping the Minister implement the inspection functions in the fields of posts, telecommunications, information technology, electronics, the Internet, radio frequency, national information infrastructure nationwide as stipulated by current legal frameworks.
Ministry Office	Helping the Minister with administration, coordination with other departments, acting as a bridge with other ministries and sectors under the leadership of the Minister.
Functional Units	
Radio Frequency Department	Executing its role of state administration in radio frequency, satellite orbit and transmission nationwide.
Posts and Telematics Quality Control Directorate	Executing its role of state administration in testing, assessing and certifying the quality of network, posts, telecommunications, information technology products and services.
Member Units	
National Institute of Posts and Telematics Strategy	Conducting research, forecasts, assessment of impacts on socio-economic issues, science and technology, organization and management in posts, telecommunications, information technology, electronics, the Internet, transmission, radio frequency, national information infrastructure; recommending to the Minister on implementing vision, strategy, short-term and long-term plans, policies, models and solutions on development and application in posts and telecommunications.
Vietnam Internet Network Information Center	The Center manages, allocates, promotes the usage of domain name, address, number of Internet network in Vietnam; guiding information, statistics in Internet network, participates in international activities on the Internet.
Posts and Telematics Information Center:	Administering the information and records on posts, telecommunications, electronics, the Internet, transmission, radio frequency, national information infrastructure; managing computer network and implementing applications of information technology in the state administration of the Ministry.
Posts and Telecommunications Journal:	Disseminating specialized scientific, technological information on posts, telecommunications, information technology, electronics, the Internet, transmission, radio frequency and national information infrastructure.
Vietnam Posts and Telematics Newspaper	Acting as a forum for post and telecommunications staff and enterprises as well as customers. It is the voice of the Ministry; disseminating the Party's policies, the State's law, MPT's policies, sci-tech achievements in the fields of posts, telecommunications, information technology, electronics, the Internet, transmission, radio frequency and national information infrastructure.
Posts and Telematics Publishing House:	Publishing books and other publications in the fields of posts, telecommunications, information technology, electronics, the Internet, transmission, radio frequency and national information infrastructure.
Vietnam Public-utility Telecommunication service Fund	Managing Vietnam's new universal service fund.

Organization	Responsibilities
National Steering Committee on ICT Standing Office	Assisting the National Steering Committee on Information and Communication Technologies on implementing tasks defined by Regulations on organization and activities of the Committee enacted by the 03/QDBCD 58 Decision dated April, 18th, 2003 by Chairman of the Committee.
Enterprises	
VTV	Regulation and management of state-owned television company.

Ministry of Science and Technology (MoST)²⁷

MoST is the lead organization for basic and applied research of science and technology. MoST has outlined its strategy for science and technology (S&T) through 2010 by focusing on six technologies:

- ICT
- biotechnology
- automation
- advanced material sciences
- new energy
- mechanical engineering
- environmental technologies.

A key MoST issue with relevance to software is the Ministry's management of Vietnam's Open Source Software (OSS) initiative. OSS first emerged in Vietnam in the 1990s for academic purposes and was supported by the Ministry of Science, Technology and Environment (now MoST). The ministry organized the First National Conference on OSS in 2000, followed by another in 2002 and a third in 2004. In March 2004, the ministry hosted the 3rd Asian Forum on OSS, which received delegations from 17 Asian countries. On 2 March 2004, the Prime Minister issued Decision No. 235/QD-TTg ratifying the Master Project on the "Application and development of Open-source software in Vietnam during the 2004-2008 period" with the goal of accelerating the application and development of OSS, to contribute to copyright protection, to reduce software expenses, and to foster IT development and the Vietnamese software industry, in particular. MoST coordinates OSS activities across multiple ministries and created a web site http://www.oss.gov.vn to provide more information on OSS.

To facilitate it objectives MoST has developed two high-tech parks, Hoa Lac, located in northern Vietnam close to Hanoi, and another near HCMC in the south. Several other MoST agencies and initiatives impact on Vietnam's software policy, including the following:

- The National Office of Intellectual Property of Vietnam (NOIP): IPR protection is key to software products.
- The National Institute for Science and Technology Policy and Strategy

Studies (NISTPASS): A research organization established in 1996 combining the National Institute for Science and Technology Forecasting and Strategy Studies, and the Institute for Science Management. With 42 researchers and 70+ staff, NISTPASS's functions include the following:

- Forecast regional and global S&T development trends.
- Assist in the formulation of S&T strategies, policies and management mechanisms.
- Provide scientific arguments for the formulation of national policies on R&D and technological innovation.
- Provide postgraduate programs (Masters and PhD) in the field of S&T policy.
- Provide consultancy and advisory services to government agencies, donor agencies, businesses and other institutions in matters related to S&T development.
- Develop international cooperation with foreign S&T organizations and R&D institutions²⁸.

Ministry of Culture and Information (MCI)

The role of the MCI in ICT has been confrontational, according

^{27.} Source includes MoST website and Dr. Tran Ngoc Ca, National Institute for Science and Technology Policy & Strategic Studies (NISTPASS), UNESCO Symposium "Hightech Development in Vietnam: some policy options", October 2005

^{28.} NISTPAS website, http://www.nistpass.gov.vn

to the MoT E-Commerce Development Status Report 2004. A particular issue relates to a MCI regulation, Decision No. 27/2002/ QD-BVHTT dated 10 October 2002 is an obstacle to further development of e-commerce and Vietnamese websites. According to the MoT e-commerce report:

"... [a] prior decision [Ministry of Cultural regulation, Decision No. 27/2002/QD-BVHTT] which considerably obstructed the development of websites and was almost infeasible and didn't show the renovation in state management methods, is still in effect. Moreover, until the end of 2004, the issuing body of this decision and other concerned state regulating bodies had not had any announcement for a change. That was Decision No. 27/2002/QD-BVHTT dated 10 October 2002 by the Ministry of Culture and Information on the Regulation to manage and license information provision and establishment of electronic information websites. A number of regulations that did not receive popular support from the Internet user community, especially the enterprises, were:

Article I.

The Ministry of Culture and Information is the agency performing the function of state management of, and granting license for, the provision of information on Internet (for Internet Content Providers (ICP) and establishment of websites on the Internet.

Article 2.

I. Internet content providers (ICP) are agencies, organizations and enterprises licensed by the Ministry of Culture and Information to provide information on the Internet through Internet Service Providers (ISP).

2. A Website is a form of bulletin published on the Internet.

Article 3.

I. Domestic and foreign agencies, organizations and enterprises as well as legal persons involving foreign elements in Vietnam, that provide information and/or establish websites on the Internet, shall all be governed by this Regulation.

Article 4.

4. Publishing information on the Internet or establishing websites is not allowed without a license issued by the Ministry of Culture and Information.

Article 8.

All Vietnam-based agencies, organizations and enterprises that wish to provide information and/or establish websites on the Internet in Vietnam must take the licensing procedure and send their dossiers to the Ministry of Culture and Information (the Press Department).

Comments:

The Regulation was vague about "providing information on the Internet" and "websites". Naturally, the establishment of websites is to provide information. Therefore, all legal entities, including enterprises involved in production and trading, that wish to establish and maintain websites, were under regulation of the Decision. Hence, they were required to be licensed by the Ministry of Culture and Information.

While the Enterprise Law and a system of other legal documents had created a clear management method, towards the creation of unambiguous definitions for the business activities which are prohibited, or could be allowed with certain conditions, otherwise enterprises are permitted to do, and also moved the management style from licensing to registering, this Decision still persisted with the old style which caused difficulties for enterprises.

Article 6. Eligibility conditions for licensing

I. The agencies applying for a license: must clearly indicate the type of information to be provided, contents, columns and frequency of updating; must own adequate technical means for information provision; and must own valid Internet domain addresses.

Article 7. Application forms:

I. Agencies applying for a license must present: an operation scheme and a detailed plan on the provision of information on the Internet (types of information to be provided, contents and columns); as well as curricula vitae of the principal person responsible for the contents and the people in charge of providing the information provision, with certification by the managing agency.

Comments:

These regulations were far too strict for any enterprise to comply

with. Because the regulations were impractical, and the issuing body paid little attention to public feedback, Decision No. 27/2002/ QD-BVHTT was a typical example of a law that simply promotes defiance: most websites do exist and prosper without any licenses granted by the Ministry of Culture and Information. However, all enterprises and individuals would like to see new regulations enacted that avoid them having to infringe the existing law."²⁹

Ministry of Finance (MoF)

The MoF implements state management in the areas of finance: the state budget, taxes, fees and other revenues, the national reserves, the state financial funds, financial investments, corporate finance and financial services and other issues within the financial and budgetary realms, as well as customs, accounting, independent auditing, pricing and other related public services. It also manages the ownership rights to the state's investment capital in enterprises. The ministry's main tasks and duties pertaining to ICT are as follows:

- Managing the state budget, including issues relating to the financing of ICT projects and initiatives.
- Managing the collection of taxes, customs fees and other revenues, including suggesting and implementing ICT-related taxes.
- Managing corporate finances and state capital at enterprises, which

include a number of enterprises in the ICT domain.

• Organizing and guiding implementation of scientific research, scientific and technology application.

Ministry of Trade (MoT)

The MoT is the official body of the Government in charge of state management over trade and public services. Many of its activities impact on the ICT and software industries, in particular its focus on e-commerce issues. The following list includes MoT functions with particular interest for the ICT and software industry³⁰:

- Submitting strategies, development schemes, long-term plans (five-year and annual), and significant programs and projects in the fields of the Ministry's state management, in particular an ecommerce strategy.
- Unified state management on e-commerce.
- Unified state management on competition, anti-monopoly, and anti-dumping, including presiding over settlements of anti-dumping issues.
- Trade promotion, including management of trade advertising activities, fairs, trade exhibitions, sales promotions, and overseas presentations.
- Collecting, analyzing, processing and providing information on economic, trade, market, domestic and foreign enterprises

for bodies under the Communist Party, Government and economic organizations; compiling and publishing publications providing trade and market information.

- Organizing and guiding implementation of science research plans and application of science and technological progress in the Ministry's State management.
- Exercising specific tasks and powers as representatives of state ownership in state-owned enterprises under the Ministry's management in accordance with current laws.
- State management of activities in the organization of economic collectives, private businesses, associations and NGOs in fields under the Ministry's management in accordance with current law.

In 2001, the MoT prepared the Project for E-Commerce Development for the 2001-2005 period and submitted it to the government in June 2001. However, this policy has not been ratified and there has been no efforts to create a master plan or development project for e-commerce³¹.

The E-commerce Department is a MoT department focused on stimulating the growth of e-commerce and applying IT applications within the areas of trade and commerce. The Ecommerce Department's specific tasks and powers related to ICT are categorized into three principle tasks (Table 12).

^{29.} Source MoT, E-Commerce Development Status Report 2004, Hanoi, Spring 2005

^{30.} Ministry of Trade performs tasks, powers as prescribed in Governmental Decree No. 86/2002/ND-CP dated November 5th, 2002 on defining functions, tasks, powers and organizing structure of ministries and bodies equivalent to ministries.

Vietnam Ministry of Trade, E-Commerce Development Status Report 2004, Spring 2005.

Focus	Responsibility
e-commerce	 Analyzing e-commerce; submit strategies, plans, projects, policies, legal documents and criteria related to e- commerce for submission to competent bodies for their notification.
	 Supervising implementation of legal documents and policies on e-commerce after they are passed.
	 Providing guidance on and supervise implementation of policies, laws and regulations on e-commerce by organizations and individuals nationwide.
	• Settling disputes in e-commerce field.
	 Managing international cooperation in the field of e-commerce.
	 Coordinating e-commerce issues relative to Governmental Councils, Steering Committees and play the standing role of Steering Committees on e-commerce.
Applying IT	 Management of the IT system within MoT, and develop plans and programs for future IT application. Managing MoT's website at <u>www.mot.gov.vn.</u>

Table 12: Specific Tasks of the E-commerce Department of the MoT

Ministry of Industry

The Ministry of Industry is responsible to the Government for state management of the industrial sector, which includes mechanical engineering, metallurgy, energy, mining, chemicals (including the pharmaceutical industry), industrial explosives, consumer goods, and food and other processing industries. Of key importance to the high-tech sector is the ministry's role in stimulating industries such as the production of electronics used in telecommunications, computer and information technologies. Key roles that impact on ICT and the software sector include the following:

• Implementing state management of public services and represent

State ownership in State-shared enterprises in the industries managed by the Ministry under the law.Coordinating policies with other ministries and agencies.

- Directing the implementation of strategies, master plans and policies.
- Monitoring development of markets..
- Coordinating with the Ministry of Home Affairs to make plans for the arrangement of existing research institutes, colleges, technical secondary schools, vocational schools and other professional units.

A key organization within the Ministry is the Electronics, Informatics and Automation Research Institute (VIELINA). VIELINA is an important R&D initiative that has outlined clear objectives to develop modern and advanced industries including manufacturing, with a 2005 production target of 25% locally manufactured equipment and 50% local content in accessories and spare parts in assembling vehicles and motorbikes.VIELINA has laid out specific objectives for the electronics and informatics sector during 2005.

- Raising the efficiency of investment, accelerating the rate of technological renovation and modernization of existing production units; setting up new units to meet domestic demand and gradually reduce dependence on import and increase export capacity in tandem.
- Achieving about 60% of local content for high-tech products.
- Devising proper policies and creating every condition favorable for attracting investment in the software industry, gradually meeting domestic demand and establishing a firm foothold in export markets.

Ministry of Public Security

On I January 2004, the Ministry of Public Security promulgated Decision No. 71/2004/QD-BCA on the Regulation for ensuring safety and security in activities of managing, providing and using Internet services in Vietnam. This Decision provides requirements for the licensing, equipment, personnel, operating mechanism, security issues, reporting responsibility of ISPs (including Internet access providers, application service providers and ICPs) and Internet service agents. Internet users and organizations involved in Internet activities are also required to report to the public security agency about content which might be harmful to national security or public order and safety. Violations of the regulation are subject to fines and penalties. The Directorate General of Security under the Ministry of Public Security is responsible for supervising the implementation of this regulation.

Provincial Departments

In each province there is a department structure that mirrors the national ministerial structure. These departments coordinate activities and implement policies locally. For example, the HCMC DPT has been active in implementing the national computerization initiative within the local government of HCMC. In addition, the HCMC DPT has aggressively targeted ICT development, including several initiatives to support software development. As the software industry grows, the importance of strong, supportive local government is an important aspect of policy as local government agencies are responsible for critical infrastructure, human capital development, trade promotion, and other activities. It is also common elsewhere in the world for local governments to provide incentives to companies interested in opening offices, manufacturing facilities, call centers, and other enterprises. Currently, however, much of Vietnam's policy-making occurs from the top down. Local agencies implement policies with limited upward feedback

or horizontal coordination across provinces.

Government Initiatives

Government policy-making activities culminate in specific initiatives to implement policy. One of the largest and best-known initiatives is the Administrative Management Computerization Project, enabled through legislation Decision 112 announced in 2001. This egovernment initiative focuses on integrating ICT into government agencies at all levels. Outlining objectives as part of its 2001-2010 state administrative program, this e-government project is designed to improve the performance and efficiency of State administrative bodies, as well as increase the availability of online transactions. The targeted sectors for online transaction access, in the first five years, were licensing, business registration, property finance and health care.

In August 2003, the government published some initial, specific goals, namely to increase efficiency of central and local governments, provide the public with easy access to government information and provide online access of public administrative services, e.g., websites. For example, the MoF developed a state budget national database to enable taxation transactions to be handled online. In another example, the government announced plans to improve information systems at the National Assembly (NA) as part of a specific e-NA initiative.

The initial targets met with mixed success. With sponsorship from

the International Development Assistance Fund of Denmark, the NA's e-library was inaugurated in December 2004. The e-library provides access for searching and consulting NA data. Late in 2004, the General Department of Taxation (GDT) announced an initiative to launch an e-taxation system. Information relating to tax policies would be published on a website; however few online applications and services are available. By the end of 2004, nearly half the government ministries and 80% of provinces and cities had developed websites to publicize policies. However, according to an October 2004 report by the National Assembly's Committee of Science Technology and Environment, most of these websites did not meet the information needs of local people.

The MPT realized the project did not have any concrete goals or commitments beyond 2005. It also noted a lack of awareness and lack of information about the project in Vietnam. To continue with the initiative, in late 2004, the MPT set several additional goals for 2010: (a) 50% of businesses in Hanoi and HCMC would have online access to state agencies; (b) 50% of government agency documents would be available online; (c) eidentity cards would be made available to residents of four major cities; and (d) customs procedures would be available online to 40% of enterprises. Table 13 outlines current government initiatives designed (in part) to stimulate software development, and/or significantly impact on the industry in Vietnam.

Table 13: Government Initiatives t	o Stimulate the	Software Industry
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Regulation Source	Owner	Date Began	Initiative Name	Summary Activities and Results
Decision No 112/2001/QD- TTg	Multiple Owners	25/07/2001	Administrative Management Computerization Project, (Project 112)	 Computerization of the State administrative management. IT training for the public servants. Increased access of individuals to public services through computerized network. Transition to e-government. Most funds come from the state budget, estimated at VND trillion.
Decision 54	MoST		Techno-Economic Program	 One of four high-tech oriented programs initiated in late 1990s (others are automation, new materials and biotech). Aims at commercializing R&D. Provides both grant and non-interest loan for pilot projects, e.g., completed experimental development. Funded from state budget.
Decree 119	MoST		R&D	Public funding of R&D
	MoT		Trade Promotion	 National Priority Trade Promotion Program.
	MoF		Export Credits	
Decision No. 331/QD-TTg	MoET	April 2004	HR Initiatives	• Funding comes from state budget, but so far no money has been made available.
BTA	MoET		Scholarship for Overseas Study	Government scholarships for overseas graduate programs.

Tax Incentives

Regulations on tax incentives applied for the software industry are set forth in Circular 123/2004/ TT-BTC on the preferences for software enterprises, and Decision No 53/2004/QD-TTg of the Prime Minister on some investment encouragement policies in the high-tech zones. Corporate income tax (CIT) outlines a progressive tax structure for newly established software enterprises where the enterprise are subject to 10% of the CIT rate within 15 years³² of establishment; a four-year exemption from CIT commencing from the year the enterprise creates taxable income; and a reduction of 50% of CIT in the following nine consecutive years. For enterprises which are eligible for investment incentives according to the Investment License, or Confirmation

^{32.} For enterprises established in the High-tech Zones, this rate shall be applied for the whole investment period.

Figure 15: Example of IPR Violation in Vietnam

Tuesday October 4, 2005

Advert



Source: Viet Nam News, 4 October 2005

of Eligibility for Investment Incentives.³³ For software enterprises that have diverse businesses, only revenue from the software segment is eligible for tax incentives.

Value-added Tax (VAT) for software products and software services domestically consumed are not subject to VAT. Software products and software services for export purposes are applied a VAT rate of 0%. In order to apply the regulation, enterprises must separately account for any software activities from other business operations. Exemptions from import tax are applied to materials directly imported for software production which are not domestically produced. Software products for export also enjoy export-tax exemption. For Vietnamese professionals directly participating in software production and services, personal High Income Tax will be set the same as for foreigners, including initial taxable income as well as progressive tax rates. Enterprises which employ these professionals are liable to declare and pay High Income Tax for High Income Earners according to the relevant regulations of current law³⁴.

IPR Policy

Current legislation in Vietnam on IPR includes the Civil Code 1995

(Part 6) and two decrees directing the Civil Code, i.e. Decree 76 dated 29 November 1996 on Copyright and Decree 63/CP dated 24 October 1996 with detailed stipulations on industrial property (amended and changed pursuant to Decree 06/2001/ND-CP dated 01 December, 2001). IPR objects under the scope of governance of the Civil Code already include IT products. Nevertheless, this is only a general regulation and is not concrete enough to effectively protect IPR in the areas of IT applications and e-commerce.

Along with the amendment and supplementation to the Civil Code, MoST is drafting the Law on IP, which specifies each field of IPR, including IT products and e-commerce. The Law on IP aims to create a basis for enhancing management mechanisms and to help reduce the current rate of IPR violations. The National Assembly plans to consider and pass the Law on IP by the end of 2005. It is noteworthy that in the BTA, and negotiations on Vietnam's accession to WTO.Vietnam must commit to conform to the WTO trade-related aspects of intellectual property rights (TRIPS) agreement. This is both a challenge and an opportunity for Vietnam in its efforts to build a knowledge economy in general and a software industry and e-commerce development in particular.

Despite strong international commitments. Vietnam is rated one of the worst violators of intellectual property in regard to illegal piracy. A recent report on global software piracy published in May 2005 by

the Business Software Alliance (BSA) and IDC gave Vietnam a piracy rate of 92% during 2004 - the same rate as the previous year. More importantly, the study ranked Vietnam as the world's worst offender, literally at the top of the list. The same report calculated that software piracy cost US\$55M in illegal copies. This represents a significant increase of US\$14M compared to the US\$ 41M figure of the previous year. These figures imply a 34% loss in value from software piracy. Figure 15 provides a recent example of copyright violations where a software company announces its effort to reduce copyright infringements. Table 14 compares software piracy in Vietnam to global benchmarks.

International **Commitment and** Assistance

The regulatory framework just described is generally consistent with the requirements for avoiding anti-competitive actions provided in the international agreements that Vietnam has signed to date. In particular, Vietnam has signed a number of treaties regarding IPR, including the BTA between the United States and Vietnam, which Vietnam signed in July, 2000. The BTA incorporates key provisions on competition from WTO, the General Agreement on Trade in Services (GATS), the GATS Annex on Telecommunications and the WTO Reference Paper on Basic Telecommunications (the Reference Paper). While this report does not include Vietnam's GATS and WTO telecom commitments, continued convergence means that

^{33.} Enterprises established under the Law on Foreign Investment in Vietnam or Law on Encouraging Domestic Investment, shall enjoy added investment incentives, e.g.: incentives on investment in the special difficulty-condition areas, number of staff, etc. As a result, tax incentives applied for these enterprises would be considerably higher than those applied to a normal enterprise.

Table 14: Piracy Rates in Vietnam

Region	2004 Piracy Rate (%)	2003 Piracy Rate (%)	Lost Value 2004 (US\$M)	Lost Value 2003 (US\$M))	Per capita value 2004 (US\$)
World	35	36	32,695	28,794	5.12
Asia	53	53	7,897	7, 553	2.19
Vietnam	92	92	55	41	0.67

Source: BSA

Table 15: Vietnam - US BTA for Foreign Investment in IT

Phase	Market Segment	US Investment	Timing	Deadline
0	All market segments	0%	Upon BTA	Dec 2001
I	Value-added telecom services	Up to 50%	2 years after agreement	Year end 2003
II	Value-added Internet services	Up to 50%	3 years after agreement	Year end 2004
	Mobile, leased lines and satellite services	Up to 49%	4 years after agreement	Year end 2005
IV	Fixed line services (including long-distance)	Up to 45%	6 years after agreement	Year end 2007

computer and content issues will increasingly interact with the policy and regulation of the country's telecommunications sector.

While the BTA includes, by reference, required actions with regard to international telecom accords, the agreement has specific objectives related to permitting US foreign investment in the Vietnamese telecommunications sector, include valued-added Internet services. As more applications move online into a web-based environment, this investment commitment will have important (if unforeseen) implications on Vietnam's software industry. Table 15 outlines the level of US investment during the course of the BTA's implementation.

The BTA also has specific requirements for IPR protection, which follow up a series of international treaties on the subject, including:

- Patent Cooperation Treaty (1970)
- Paris Convention on industrial property protection (1883)
- Madrid Agreement on international trademark registration (1989)
- Berne Convention on protection of literature and art works (1896)

• Chapter II Vietnam-US Bilateral Trade Agreement on IP (2000).

The World Bank

The World Bank plays an important role in supporting Vietnam's IT policy development as well as financial assistance for infrastructure improvements. With relevance to Vietnam, the World Bank has initiated the Information and Communication Technology Development Project. This project supports two key pillars of the World Bank's overall Country Assistance Strategy for the 2003-2006 fiscal years, which is based on the Comprehensive Poverty Reduction and Growth Strategy:

- High growth through transition to a market economy by developing policies for ICT sector; and
- 2) Adoption of a modern public administration, legal and governance system by enhancing the efficiency and transparency of government operations, through the implementation of government portals, online applications such as business and land registration, eprocurement (online registration and notification/publication of tender awards), improvement of online statistics collection and dissemination and, in general, expanding the web presence of government services, will improve government decisionmaking processes, lower transaction costs, improve the quality of documentation and standardization, and limit discretionary actions and the scope for corruption.

The project comprises five sub-projects:

I) ICT Leadership and

Modernization will strengthen the capacity of the MPT in the development, implementation and oversight of the government's national ICT strategy and policies; strengthen its capacity to formulate telecommunications and ICT policy; and improve its operating efficiency and effectiveness.

2) General Statistical Office (GSO) Modernization will support the implementation of the strategic plan for the modernization and capacity-building of GSO. This entails improving the quality, transparency and timeliness of socioeconomic and povertyrelated data and information. 3, 4 and 5): E-Government in Hanoi, Da Nang and HCMC. Activities under these components will support the enhancement of the ICT environment in those cities, provide the basic foundation for deployment of e-government in their district offices and departments, and, facilitate development of various types of e-government services, eapplications for businesses, and development of ICT skills.

Case Study of IT Development Strategy and Policy:Thailand

Thailand's development of ICT policy provides several interesting options for the government of Vietnam, and a few innovations in the strategic policy planning process. Firstly, the Thai strategy and policy includes the concept of programs – key objectives that cross multiple levels of government, business and society. Secondly, Thai policy rationalizes convergence and the blurring of traditional technology by focusing on broad ICT issues. Strategy and planning for these wide-ranging issues come together under the umbrella of their "National ICT Master Plan". Thai policy also includes aspects of the "knowledge economy" focusing on knowledge-based economic activities. Lastly, the Thai policy includes a specific strategy of "clusters" to bring together the pieces – R&D, business, workers, etc. - into geographic proximity, where each technology component reinforces the other. The following case study provides a brief overview of Thailand's unfolding ICT development program, and

provides possible policy actions for the government of Vietnam³⁵.

To drive its ITC sector, the government of Thailand has created a secretariat office within the National Information Technology Committee (NITC), the National Electronics and Computer Technology Center (NECTEC), to formulate national IT policies and planning. NECTEC has taken a major role in initiating and devising policies and measures related to IT that benefit national development. NECTEC also coordinates with NITC and its sub-committees, carries out policy research related to NITC's missions, and disseminates information and knowledge on IT.

IT policy development began in earnest in 1996 when the cabinet approved IT 2000, the country's first national information technology policy. The IT 2000 Policy provided the framework and guidelines for IT development of the country from 1996 to 2000, and targeted three key objectives: a national information infrastructure (NII), human capital development and e-governance.

More recently, NITC has developed a policy framework to the year 2010: IT 2010. A key aspect of this policy is to create a "knowledge-based economy (KBE)" and knowledgebased society (KBS). Approved in early 2002, the new policy focuses on five strategic initiatives:

^{35.} Key details for this case study were obtained during a presentation by Dr. Chatri Sripaipan, vice-president of Thailand's National Science and Technology Development Agency at a UNESCO Symposium, "High-Tech Policy Development: International Experience and Implications for Vietnam", in October 2005, and from the NITC and NECTEC websites.

- E-society: bridging the digital divide, quality of life, culture, health and public participation.
- E-education: developing human resources, life-long learning, computer literacy and virtual education.
- E-industry: focusing on emanufacturing and IT-related industries, plus issues such as standardization.
- E-commerce: specially focusing on e-services including not only finance, tourism and IT services, but also other industries.
- E-government: including public services via electronic service delivery, employment and legal infrastructure.

As an example of how a strategy links into a program, the government launched the SchoolNetThailand program as part of the government's e-education strategy. Led by the Ministry of Education, the project

objectives include bringing Internet connections to all schools. The SchoolNet program also coordinates long-distance learning, online learning and the introduction of innovative ICT technologies in Thailand's educational system. Likewise, to improve the educational capacity for ICT, the government dedicates specific funding to promote IT R&D within Thailand's educational system. Specific emphasis (and funding) was placed on "training the trainers", namely improving the number of professors – e.g., support to doctorate programs – and improving teaching skills. Table 16 shows the programs linked to the government's commitment to improve the educational capacity for IT and its linked budgets.

To effectively implement this fivetier program, Thailand created a "National ICT Master Plan". Approved in late 2002, the plan was jointly developed by NECTEC and the Office of the National Economic and Social Development Board (NESDB) in close consultation with representatives of all stakeholders.

- Strategy I:The development of the ICT industry into a regional leader.
- Strategy 2: The utilization of ICT to enhance the quality of life and society.
- Strategy 3: The reform and enhancement of the capability on ICT research and development.
- Strategy 4: The reinforcement of social capacity for future competition.
- Strategy 5: The development of entrepreneurs' capacity for the expansion of international markets.
- Strategy 6: The utilization of ICT in SMEs.
- Strategy 7: The utilization of ICT in government administration and services.

Table 16: Thai Government Education Programs to Improve the IT Sector

	Expected	Investment		
Program	R&D Personnel	Ph.D	(US\$M)	
I. Promote and support talented students, e.g., educational grants	6,800	5,700	950	
2. Enhance educational opportunities			70	
3. Develop and upgrade teaching personnel	7,700	7,400	600	
4. Provide mid-career training	3,800	3,000	400	
5. Promote Thailand abroad			300	
6. Develop permanent body responsible for S&T HRD policy			2	
Total	18,300	6, 00	2,325	

VIETNAMESE MARKET PLAYERS

Introduction

Vietnam's IT industry is growing rapidly, albeit from a small baseline, but due to the nature of technology it is important not to look at IT development in a vacuum. In fact, both software development and ITES require access to telecommunications, the Internet. IT hardware and information -- three elements of convergence technologies. Infrastructure, and in particular telecommunications infrastructure, is a critical important component to develop a software and BPO industry. Likewise, information - content and products - are key inputs in information technology.

Key Telecommunications Services³⁶

IT is highly dependent on international data communications to carry Internet, voice, data and video communications between multiple offshore facilities and/or transmit very high volumes of data to and from customer sites. During the software development process, for example, it is common to transfer multiple software iterations (for example, graphics) to and from customer sites, provide remote testing services, and communicate on a regular basis. In the BPO industry, call centers drive a high volume of voice traffic, and non-voice services often include transmission of images, graphics and video clips. Internet access is also key to obtaining information, and increasingly to transit voice communications, e.g., Skype, text messaging via messenger services and, in the future, video communications. Therefore, adequate data communications services are quite important to developing an IT industry, and their pricing is key to competitiveness.

This connectivity is particularly important when multinationals set up a captive offshore facility and require high levels of interconnectivity with other offices. Availability and price of international leased lines acts as a disincentive to locate offshore facilities in Vietnam and hinder client communications for Vietnamese outsourcers. As the ICT industry matures, there will be increased need for dedicated (point-to-point) private lines, both within Vietnam to connect multiple offices, but also internationally to support capture MNCs and BPOs such as call centers. Leased lines are offered by three of the six facility-based operators in Vietnam: the state-owned Vietnam Posts and **Telecommunications** Corporation (VNPT), the Defense Ministryowned Vietnam Military Electronics and Telecommunications Company (Viettel) and Vietnam Electronic

Telecommunications Company (ETC). There is significantly less

competition in the leased line market, and the MPT should review its policies, including pricing, for this telecom segment in regard to the required ICT infrastructure.

Two telecommunications segments, in particular, are pivotal to provide these services – international data communications and Internet access. The data communications service most commonly used by software houses and BPOs includes dedicated international private line (IPL) services. This service often provides multi-protocol technology used over this dedicated channel, such as ISDN, IP, Frame Relay or ATM. Technology use is influenced by the make-up of internal corporate networks, technology availability and services provided over the channel. IPL services can separate channels for voice, data. Internet and video services. These services are usually provided directly from a telecommunications operator to the customer, in this case an IT software house or BPO. The technology used includes satellite, microwave and fiber optic submarine cables.

For high-speed Internet access, the key services for IT have a wholesale and retail component. Many end-users purchase access via an ISP, who in turn purchases access to the Internet via dedicated bandwidth often though an international Internet access point, e.g. Internet exchange provider (IXP). From the end-user to the ISP, transmission technologies vary

^{36.} An overview of Vietnam's telecommunications, broadcast and pay TV market is located in Appendix 4.

ranging from asynchronous digital subscriber line (ADSL) to coaxial cable via CATV companies, as well as wireless Internet access such as WiFi and WiMax. ISPs usually connect to an IXP and then interconnect to the Internet through leased lines using satellite or fiber optic submarine cables. Because software and ITES are dependent on other ICT segments – Internet access, data communications and information services – detailed summaries of these industries can be located in Appendix 4.

Information Technology

There has been a steady growth in the number of software companies in Vietnam (Figure 16). Approximately 2,500 companies are registered to develop software, but approximately 500-700 have ongoing operations, a significant rise from the approximately 230 in companies in 2000. The small size of Vietnamese companies is a defining factor in the market. According to recent VINASA data, only 10 companies registered revenue above US\$1M, including market leaders such as FPT, PSV, CDIT, TMA, CMC and Harmony. Only FPT has Software Engineering Institute Capability Maturity Model (SEI CMM) level 5 certification, with a few other companies obtaining lower certifications, and several in the process of certification. About one dozen companies have ISO 9000:2001 certification³⁷.



Figure 16: Growth in Vietnam's Software Companies

Source: Vinasa and VNCI estimates

Vietnamese software companies are small and relatively new (Figure 17). According to the HCA , more than half of the country's software houses are less than five years old, and only 3% have been in operation for more than 15 years. On the surface, this would suggest a positive trend: while domestic companies lack experience in the software sector, there has been a significant increase in the supply of software services. As these companies mature (and many will fold), the overall sector is growing. More than 80% of these companies have fewer than 50 employees, and only 1% have more than 500 employees. The newness and small size of Vietnamese companies limits the industry's ability to deliver larger scale projects and service international markets, but also suggests medium-term opportunities as these companies mature and grow in size.

According to the same report, Vietnam's software industry offers diverse services, ranging from telecommunications to software development (Figure



Figure 17: Size and Maturity of Vietnam's Software Companies

^{37.} SEI CMM certification is based on a software development method originally designed at Carnegie Mellon University. There are 5 levels of certification – 1 through 5 – verified by an independent audit company.

18). Interestingly, approximately one-third of Vietnam's companies provide outsourcing services, a relatively low-value added service. Nearly half provide IT consulting, considered to be a high-value added service. One out of four companies resell third party solutions, while three out of four offer IT solutions which combine hardware, software and implementation services.

Figure 19 incorporates consensus estimates and uses a three-year moving average to project future increases in software engineering employment.

Company Examples

FPT Software

A subsidiary of a large ISP, FPT Software was established in Hanoi in 1999. In 2000, the company set up one of the country's first offshore software development centers (OSDCs) with UK-based Harvey Nash. Since then the company has started a relationship with IBM Japan, Hitachi, Sanyo,

Figure 18: Product and Service Portfolios of Vietnamese Software Companies







Source: TBD and VNCI estimates

Nissan and other Japanese companies. In 2005 the company opened a Tokyo office.

FPT Software is one of a handful of companies in Vietnam with the quality certification CMM Level 5. The company has about 1,000 developers targeting Japan, USA, Europe and the domestic market. The company is focused on online gaming and embedded systems. The company's staff growth rates have rapidly increased since 2002 (Figure 20). The company does not supply separate financials for its software division.

The company only recently launched a website in English and Japanese. Its success is due in part to its close links with its parent company and access to corporate resources. Given FPT's diversified ICT assess – from ISP services, to computer training and software development – the company is one of a handful of Vietnamese companies poised for significant growth within an international context.

SSP

Founded in mid-2000, the company is a subsidiary of the state-owned Saigon Electronics Information Company. With more than 100 employees, SSP operates in a diversified IT space. The company owns a software park - the Saigon Software Park – and provides facilities to other IT companies. In addition, SSP participates in software development and outsourcing, graphic design, website development, systems integration and training. The company has also produced several products in the accounting, ERP and HR



Figure 20: FPT Software Staff Growth Levels

areas. Most recently, the company launched a Vietnamese e-card service enabling people to send electronic cards for birthdays and other special events.

BPOs

As previously mentioned, Vietnam has few examples of active ITES or BPOs. Our survey and interviews did identify a few anecdotal examples where companies are providing these types of services. However, the size, scale and revenue from these activities are quite small. The few examples of Vietnamese BPOs are summarized below.

SilkRoad

SilkRoad claims to be one of the largest ITES companies in Vietnam, with more than 420 employees providing software, content services and BPO services.The number of people directly involved in BPO services is significantly less than its overall employee base.The company's BPO services include the following:

• Human Resources and Payroll Management software.

- Outsourced HR/Payroll Administration services.
- Large scale Data Entry, Conversion and Formatting Services.
- Transactions Processing &
 Contracts Abstraction services.
- Call Center services for Telemarketing, Telesurvey, Data Validation and Customer Relationship Management.

SPI Technologies

A large Asian BPO provider, SPI Technologies has 20+ years experience in diversified outsourced operations. With eight production sites in the Philippines, India, China and Vietnam, the company offers multi-national, multi-skilled outsource activities. According to its promotional material, operating in multiple locations minimize the economic, geo-political and other risks of doing business within a single jurisdiction. Through a network of six wholly owned subsidiaries, the company offers the following **BPO** services:

- Content development and support.
- Litigation support and services.
- Data entry and management.
- Publishing services.
- Healthcare documentation management.
- IT services.

According to company executives, its operations in Vietnam are quite limited and they work through an undisclosed partner.

FPT

One of the largest IT companies in Vietnam, FPT recently open a small trial call centre for IBM. A handful of agents provide internal IT helpdesk support to IBM. If successful, the company plans to expand the size of the operation and would evaluate other BPO opportunities.

International Comparisons of ICT

A regional comparison of Vietnam to its neighbors suggest that the country has made significant progress, and at the same time remains behind some key competitors. In data that ranks countries by GDP per capital, Vietnam ranks 13th on the list (Table 17). However, Vietnam moves up to 8th place when ranked by mainline teledensity. The country is ranked 11th by mobile density, PC density and Internet users. This suggests the country spends a disproportionate amount on ICT services relative to its peers - read higher prices for comparable density levels.

		GDF Per Capita		ICT Spending		ICT Penetration per 1,000 Inhabitants			
Country	Population (million)	US\$	PPP\$*	US\$ Per Capita	As % of GD	Main Line Telephone	Mobile Phone	РС	Internet User**
Japan	128	46,108	23,858	2,489	7.4	472	679	408	609
Singapore	4.3	26,992	21,296	2,254	10.5	450	852	761	602
Hong Kong	6.8	26,247	23,833	1,921	8.4	559	1,079	461	707
South Korea	47.9	14,623	15,009	842	6.7	538	701	558	633
Malaysia	24.8	4,965	8,080	289	6.9	182	442	167	379
Thailand	62	3,184	6,208	82	3.5	105	394	48	128
Philippines	81.5	1,240	3,694	57	5.8	41	270	35	93
Indonesia	215	1,091	2,857	33	3.4	39	87	13	70
China	I ,290.00	1,028	4,054	58	5.3	209	215	40	79
Sri Lanka	19.2	940	3,160	54	5.7	49	73	19	13
India	I ,060.00	528	2,365	21	3.7	46	25	9	36
Vietnam	81.3	438	2,041	35	7.3	54	34		64
Bangladesh	138	410	1,501	10	2.7	5	10	8	2

Table 17: ICT Statistics by Countries in the Region

Sources: World Bank Development Indicator, 2004; WITSA Digital Planet (2004)

* Purchasing power parity (PPP) data from 2002

** from www.internetworldstats.com, latest data (June 2005)

Between 2000 and 2005, Vietnam saw an increase in Internet users from about 200,000 to 5.3 million, a 93% CAGR – the highest growth rate in the region (Figure 21/ Table 18). However, this statistic is somewhat misleading because Vietnam started at a relatively low level of penetration. So while Vietnam added slightly more than 5 million Internet users during the period, Japan added nearly 31 million, albeit from a higher base. Even accounting for population levels, Japan's online community grew nearly four times faster than Vietnam. Adding 5 million users is a significant achievement, but Vietnam needs to consolidate and ramp up its efforts to bring additional users into the online community.



The Government has recently increased in budget for scientific R&D, raising its 2005 budget by

Table 18: Internet Growth in Asia 2000-2005

21%, from VND620 billion to VND 750 billion (US\$47.1 million). As part of the initiative, MoST will create new provincial centers for scientific cooperation with specific programs for businesses and scientists. The initiative also includes provides to improve IPR as well as projects to commercialize new technology. The investment, while not solely focused on IT, will boost the countries capacity to engage in basic R&D. As figure 25, highlights however, the country's overall spending on R&D remains significantly lower than some regional players.

Countr	Internet Penetration (%)	Internet Population				
		2000	2005	CAGy		
Vietnam	6.4	200,000	5,342,000	93%		
India	3.6	5,000,000	39,200,000	51%		
Indonesia	7	2,000,000	15,300,000	50%		
Bangladesh	0.2	30,000	200,000	46%		
China	7.9	22,500,000	103,000,000	36%		
Philippines	9.3	2,000,000	7,820,000	31%		
China	12.8	2,300,000	8,420,000	30%		
Thailand	37.9	3,700,000	10,040,000	22%		
Malaysia	70.7	2,283,000	4,878,000	16%		
Hong Kong	1.3	121,500	250,000	16%		
Sri Lanka	60.2	1,200,000	2,135,000	12%		
South Korea	63.3	19,040,000	31,600,000	11%		
Japan	60.9	47,080,000	78,050,000	11%		
	•		•	·		

Figure 21: Internet Growth in Asia 2000-2005



Figure 22: R&D Spending in the Region (US\$K), 2002

Source: Dr. Chatri Sripaipan, vice-president of Thailand's National Science and Technology Development Agency, during UNESCO Symposium presentation, "High-Tech Policy Development: International Experience and Implications for Vietnam", October 2005

RESULTS AND FINDINGS

he Vietnamese government has focused a significant amount of time, energy and financial resources to develop the country's ICT sector, and in particular its nascent software industry. In order to evaluate the effectiveness of these efforts. this study uses both primary and secondary research. Our primary research includes a large number of interviews as well as a quantitative survey of IT software houses in Vietnam (the "Survey"). Another source of primary research includes a survey on telecommunications pricing, quality and availability conducted by VNCI for another working paper.

The objective and scope of the Survey was straightforward: assess the policies and support for Vietnam's software industry. The Survey used a standardize questionnaire followed by a person-to-person interview with a senior manager responsible for marketing and/or business development. The Survey results, available in Appendix 6, further validated by a series of interviews and secondary research sources such as reports, news analysis, presentations, and international studies. Collectively, our areas of review can be grouped in the following categories:

- Government programs and procurement
- Trade/Export Promotion
- Education and human resources
- Infrastructure
- Financing
- Copyright protection/IPR
- Tax incentives.

The Survey

In total, 160 firms participated, with 59% based in Hanoi, 15% from HCMC and 26% from Hue, Da Nang, Hai Phong and Can Tho. The survey group highlights the SMEoriented nature of the software industry. A large proportion (85%) of the surveyed companies have fewer than 50 employees. Of the remaining companies, 10% have 50-100 employees and only 5% have more than 100 employees. More than half are limited liability companies, with more than 30% being joint stock. Interestingly, 4% of the interviewed companies are state-owned enterprises.

Based on their small size, it is not surprising that, during 2004, more than 70% of the companies had revenue of less than VND5 billion (about US\$315,000), about 15% revenue of VND5-10 billion and 7% registered revenue of more than VND10 billion. In a positive sign for revenue growth, less than one-third of the companies surveyed had revenue growth of less than 15%, while some two-thirds reported revenue growth of more than 15%.

Ownership Type		Revenue (VND)		Locations		# of Employees		Revenue growth	
Limited Liability	55%	<5BVND	71%	Hanoi	59%	<50	85%	<15%	29%
Joint-stock	31%	5-10 B	15%	HCMC	15%	50-100	10%	15-20%	33%
SOE	4%	10+	7%	Other	26%	100 +	5%	20% +	26%
FDI	4%								
Other	6%								

Table 19: Summary of Surveyed Companies

The results presented in this section are not separated by geography, company size or revenue. In the case of geography, the differences between Hanoi, HCMC and other provinces are not statistically significant in most responses. When these differences do exist, the analysis highlights the fact. Likewise, the results indicate differences between large and small companies (in terms of both revenue and employees) for particular questions and responses and the analysis points out these variations. When a distinction is not made, the results represent all respondents. A full set of the results is compiled in Appendix 6.

Government Programs and Procurement

Program Awareness

Many of the firms interviewed were not aware of various government initiatives or government-funded projects (Figure 23). Project 112, the Administrative Management Computerization Project, was the best known (77% in Hanoi, 76% in other cities, 45% in HCMC). Most other programs were known by less than 50% of firms. Firms in HCMC knew the least about those programs (only about 20-30%). The percentage of firms that had participated in these projects is very small (virtually none from HCMC). Those firms that had participated however gave a positive assessment of the involvement (3.58 in Hanoi, 3.38 in general).

To identify the causes behind low participation in government support programs, the Survey sought specific reasons from

Figure 23: Awareness of and Participation in IT Projects



those companies that did not participate. The most commonly cited reason is that companies do not have close relationships with government organizations in charge of those programs.

Government Procurement

Under the framework of the ongoing Administrative Management Computerization Project, (Project 112), and the formation and development of e-government and e-commerce programs, Government procurement is mainly focused on software products/ services provided for the foundation of databases, systems operations and other functional application software. Application software used for government organizations, large corporations and organizations falls into two principal groups: (i) standardized software used for professional work/progress within the specific industry or organization; and (ii) supporting software for use by the whole operational system. Government organizations procure software products and services mainly from (i) functional departments/expert

groups internally established within the industry/organizations; and (ii) international software companies with legal copyright or free-ofcharge sources.

The regulations on the Government procurement of software products and services impose strict and difficult requirements on software providers, which make it difficult for local firms, most of which are small and recently established, to participate.³⁹ Many small companies lack experience, scale and sufficient manpower to provide government services.

The survey respondents highlighted the factors that limit their participation, including the lack of a single source for all government

^{39.} Reference are found in (i) the Decision No 90/2002/QD-BNN of the Ministry of Agriculture and Rural Development dated 9 October 2002 issuing "Temporary Regulations on the Selection, Transfer and Use of the Application Software in Calculation, Plan, Examination, Design, Construction and Operational Management of Irrigation Works"; (ii) Decision No 1630/2003/QD-NHNN of the State Bank of Vietnam dated 19 December 2003 issuing regulations on technical standards on outsourcing and procurement for banking-functional software.

tenders. Software vendors have to obtain bidding information from multiple sources and manage the process independently. The time and resource constraints inhibit small companies' ability to manage this process. Further, small companies suggest that the government does not provide small business incentives, a practice that is common in other countries such as the United States where small and minority-owned businesses are given preferences in some areas of government tendering. Lastly, there is a perception from the survey group that the tender process favors foreign companies.

Focusing on the processes behind Government procurement and tendering, most firms strongly favored a public, transparent source for procurement across all government organizations. This unified source of tendering would minimize dependence on individual buyers with agencies and increase the volume and value of sales leads. Companies also emphasized the need for transparency via public evaluation of the performance of government-funded projects. Another area of support favored by industry is incentives for partnerships and linkages between foreign and local firms. Interestingly, smaller firms and firms with less than 50% of revenue from software scored this incentive idea slightly higher.

Trade/Export Promotion

The survey reveals that Vietnamese software companies believe the government does not effectively promote Vietnam and its software industry. Of primary interest is a desire for the government to

support and fund image-building and branding of Vietnamese software. Another priority is to organize international software fairs and exhibitions in Vietnam, rather than attending overseas fairs and exhibitions. Other suggestions include joint marketing and promotion of clusters of software, where foreign software firms can visit Vietnam. Interestingly, companies in HCMC gave this idea substantially more importance than companies located elsewhere. Smaller firms and firms with less than 50% of revenue from software also gave more importance to these measures.

Education and Human Resources⁴⁰

Volume of Graduates

While Vietnam is currently graduating around 20,000 IT professionals a year, only half with a four-year university education, there is a gap between the supply of qualified graduates and the demands of high-tech industry, as well as the overall economy. Based on historical growth of its educational capacity, Vietnam is increasing the volume of graduates, but much of this capacity comes from vocational training institutions. Universities have expanded, and new universities have opened, but there are limits to their growth, with an estimated increase of only 1,000 graduates since 2003. One key limitation is the number of professors, and the limited

capacity of post-graduation IT centers, both in Master's Programs and PhDs. While incremental growth in educational capacity can alleviate increasing demand for IT personnel, the ability to dramatically increase educational capacity remains a critical bottleneck to the industry's growth, as well as limiting the capacity for non-IT industries to utilize information technology.

On a per capita basis (India has 13 times Vietnam's population)⁴¹ Vietnam is training a larger number of IT professionals than India⁴². But this comparison highlights two weaknesses in Vietnam's educational capacity. First is in scale, where India is producing a huge volume of IT professionals that in turn create a large and broad resource pool. For Vietnam to achieve this economy of scale, the country on a per capital basis would need to outperform its larger competitors. In return, IT would have a larger relative impact on the broader society.

The second important difference is that India has a higher proportion of four-year graduates. More that 60% of Indian graduates have a four-year degree compared to Vietnam's 50% (Table 20). When combined with the relatively slow increase of university slots and rapid expansion of training centers, the ratio between degree and diploma is likely to decline⁴³.

^{40.} Findings in this section lead heavily on interviews with industry, government officials and educational professionals

^{41.} CIA Fact Book 2005. Actual ratio is 12.9342. Weighted number of IT graduates for Vietnam is 13K 2005 increasing to 14K in 2006.

 ^{43.} Another issue not covered is India's educational capacity to produce master's degrees and doctorates relative to Vietnam. While VNCI lacks statistics, the authors believe that the same issues of scale apply.

Table 20: Degree and Diploma Graduates in India

	2001	2002	2003	2004	2005	2006
University Degrees	53	71	82	95	100	
Vocational Diplomas	41	44	45	46	65	70
Total IT Graduates	94	115	127	4	165	181
% University Graduates	56%	62%	65%	67%	61%	61%

Source: India's National Association of Software and Services Companies (Nasscom), Wipro Technologies, , VNCI analysis

This commentary is not meant to discount the value of vocational training. These institutes do play an important role in developing IT skills by rapidly adapting to new technologies and providing a more business-focused training curriculum. At the same time. due to being part-time and/or of shorter duration, these institutes also focus on basic skills and are unable to provide the more sophisticated and complex skill sets - e.g., mathematical algorithms, design and architectural skills - required for more complex software development.

Setting aside the issue of vocational versus university training, collectively there is an under-supply of IT professionals that inhibits sector growth and IT utilization. The rate of IT graduates limits the sector's ability to achieve economies of scale, and the educational capacity of universities to expand is limited. Vocational institutions are flexible enough to expand rapidly, but their student output cannot meet some of industry's needs. Simply put, vocational training is an important level of educational capacity, but it cannot replace the need for formal education. There is also concern among key leaders that this gap between demand and supply is growing, placing increased focus on the need to expand Vietnam's university system and where possible, enlarge its IT faculty.

Mismatch of Curriculum

There is also a consensus among industry, government and educational professionals that there is a mismatch between university curriculum and the needs of business, which impacts on the employment prospects of graduates and, in turn, the ability to quickly provide value in the private sector. There is a realization that Vietnam's universities need a more up-to-date curriculum and capacity to implement new technologies. As a result of this disparity, companies, on average, report that some university graduates require an additional six months of training

(either in-company or vocational training) following graduation. Some students take the initiative and take specific vocational courses outside university.There is a key role for industry to minimize this mismatch.

Although the gap between academic training and corporate needs will never be eliminated, there are ways to reduce it. One example is internships where students can learn relevant on-thejob skills while earning academic credits. Other options include additional seminars and workshops for students led and sponsored by Vietnam's IT industry and/or international corporations. Another option is to "formalize" vocational training as part of a degree process. Conversely, providing academic credit to diploma holders so that they can easily update their skills, either immediately or mid-career, is another solution.

The gap between education and industry requirements impacts on the productivity, and hence value, of Vietnam's software resources. According to one evaluation, Vietnam's productivity per person is calculated around US\$10,000 per person per year for domestic projects. For international outsourcing, productivity is measured at US\$17,000 to US\$20,000 per person per year. Vietnam's levels of productivity are relatively low by regional standards, where Indian software productively is around US\$50,000⁴⁴.

The gap creates an important role

^{44.} Based on billed revenue per resource using industry pricing benchmarks know to the authors of this report.
for international institutions, either with independent campuses or joint programs located in Vietnam or abroad. In fact, there have been several examples of this educational collaboration where local universities have set up joint programs. In one example, the Japanese Grant Aid for Human Resource Development Scholarship (IDS) provides Vietnamese opportunities to study in Japan. The MoET and the Japan International Cooperation Center (IICE) sponsor the program. The Government operates similar programs with other countries.

While these collaborations represent important milestones, the government of Vietnam needs to facilitate additional cooperation and other initiatives. The Ministry of Education, for example, could set up a Working Committee, including representatives from industry, to redesign curricula on an annual or biannual basis. Some potential curriculum developments in the short-tem might include the following:

- Addition of foreign languages, e.g., Japanese, English and Korean.
- Software development processes and quality reviews.
- Embedded systems software development.
- Security systems and protocols.
- Research and development processes.

Business needs change rapidly, but education and training react more slowly. If government and industry identify new skills gaps, training potential IT employees will take time to implement and to gain results. Therefore, a curriculum working committee needs to "forecast" or predict required skill sets and special one-off programs. Corporate Vietnam also must play a role to introduce continuous, life-long learning for its employees, and provide resources to keep current employees up-to-date with recent technology, skills and market conditions.

Lack of Business Administration, Project Management and High-end Expertise

Participants in Vietnam's software industry often cite the skill quality of new employees and available levels of experience as key HR requirements. Some of this gap is a natural byproduct of the limited size of the industry and lack of long-term experience - in short, the growing pains of an emerging sector. However, there are certain skill sets that do not fall into the category of "growing pains" such as management skills, software development processes, advanced technology degrees and R&D capabilities. In the case of management skills, there is a lack of training and experience that combines IT with business strategy, marketing, sales and a variety of other business skills. These skill sets are usually developed through combining technical skills with management training. To address this skill gap, Vietnam needs to develop its management capacity and a mechanism for "life-long" training.

Industry and Government officials also highlight a lack of understanding and skills within government agencies to address the specific needs of IT within government. In this case, government and industry need trained technical resources that understand the needs of public agencies. The specific gap here lies in "training up" government officials on IT strategy and implementation, as well as providing industry with cross-over resources, namely IT and public administration. To address this skill gap, Vietnam needs to develop its public administration capacity and a mechanism to train existing government IT professionals, as well as the bureaucracy as a whole.

Lastly, Vietnam lacks resources in the high-end research and development arena. Vietnamese universities lack the capacity to conduct advanced basic and applied ICT activities. In this case, China provides an important model where the government has focused expanded R&D funding and specific targets leading scientific professionals to manage these programs. In 2004, China invested US\$22.3B in R&D, accounting for 1.35% gross domestic product – an increase of 19.7 percent year-onyear. According to a report by the National Bureau of Statistics, basic scientific research reached US\$1.2B and the number of professionals engaging in scientific research in state-owned research institutions and enterprises is up to 27.2M. The same report showed that in the past year China launched 824 key scientific projects, 1,071 state high-tech projects and 333 high-tech industrialization projects. China has also set up 10 new state engineering research centers and rebuilt 40 state key labs in 2004⁴⁵. Many of

^{45.} People's Daily Online, March 1 2005, http://english.people.com.cn/200503/01/ eng20050301%5F175076.html

these labs draw Chinese researchers currently working abroad.

Addressing this skill gap requires an aggressive policy – and funding - to build up Vietnam's masters and doctorate programs, as well as provide a mechanism for government supported R&D programs. One way to address this skill gap is to remove the rigid labor regulations that cap at 3% the use of foreign labor in the total workforce. By importing valuable skills, companies can train up staff, better service their customers and add more value to their business. Given the nature of IT and its global interconnectedness, there should be a provision to remove these outdated regulations.

Lack of focus on BPO training

Vietnam has no educational strategy that targets the development of skills for the BPO sector. Since BPOs require different training to that of software development, it is important that the educational system begins appropriate training for the anticipated demand for BPO employees. The skills needed require a combination of basic computer skills with industry, domain, language and other soft skills. Given the time needed to initiate BPO training, the government needs to start early to ensure adequate supply once demand picks up.

Lack of Corporate Training by Industry

A MoT 2005 e-commerce survey reviewing the development of ICT and e-commerce labor forces in enterprises found that companies invest about 12% of IT spending on training. However this average does not portray an accurate picture as training costs vary significantly among enterprises. For example, more than 28% of the companies surveyed by MoT did not provide any structured training programs to their employees. More than 40% reported that predominant training for ICT is on-the-job via self-study or help from others in the company.

As a result, overall ICT skills among the MoT surveyed enterprises' staff remained low, with an average computer literacy among the 300+ surveyed enterprises of just over 50%. There remains an insufficient level of coordination in state management on IT education by overlapping state agencies, such as MoET, MPT and the Ministry of Labor, Invalids and Social Affairs.

Infrastructure

Due to rapid growth in the software sector, many companies have an increased demand for office space. According to the survey, some 30% of companies anticipate a 30% increase in their office space requirements. Some 40% expect a 30%-50% increase, and 30% anticipate more than a 50% increase in demand for office space. In terms of type of office space, 27% prefer space in a regular office building while 44% prefer space in a software park/ center. Services desired in software park/centers are better technical/ telecom infrastructure and manageable rental costs, followed by proximity to R&D institutes, universities and incubator services.

According to a MoT survey, enterprises with websites and which have already applied ecommerce at different levels show greatly varied ICT investment proportions, with 38.1% of enterprises sparing less than 5% of their total business expenses for ICT application. Spending in 39.3% of these enterprises ranged from 5% to 15%, and only 22.6% spend more than 15%. Since ICT applications require particular infrastructure at a fixed minimum

Proportion			Enterprise ³	's labor scale		
of ICT expences	less than 30 employees	30-50 employees	50-100 employees	100-300 employees	Over 300 employees	Average
Below 5%	30.36%	33.3%	50.0%	37.50%	45.24%	38.10%
From 5%-15%	42.86%	33.33%	25.0%	46.88%	37.1%	39.29%
Over 15%	26.79%	33.33%	25.0%	15.63%	16.67%	22.62%

Table 21: Proportion of ICT Expenses in Total Operating Costs

cost regardless of the enterprise's size, investment in ICT will make up a greater proportion of the operating costs for SMEs in terms of the balance between investments. The Survey results partly reflect the current situation. About 30% of enterprises with less than 50 workers annually spend more than 15% on IT-related items compared to 16% in larger enterprises with over 100 staff.

In a previous working paper on competition in the telecommunications sector VNCI conducted a Survey about telecommunications issues. Given the importance of telecommunications infrastructure on the software and ITES industries, some of the findings of that survey

highlight key ICT development issues, with particular focus on availability, affordability and quality. The survey asked enterprise users to rank the importance of particular telecom services and products. The overall result indicates a low level of utilization of telecom services in the surveyed enterprises, even those from the ICT sector. It appears that "traditional" telecom services such as fixed line telephony, cellular telephony and Internet were the most important services across all sectors (in particular to manufacturers), with the least important/least used being the WiFi access, frame relay and tollfree services. Not surprisingly, IT companies rank Internet access and data services higher than the

overall sample. Table 22 ranks the importance of various services for IT enterprises.

The survey asked for the reasons for not using new telecom services/products, such as toll free and data services. Respondents had the choice of one of three answers:

I) The service is not yet available.

2) There is no perceived commercial use for the service.

3) The high price of the service.

The overriding response was 2), suggesting a number of advanced features and services are not perceived to add value to the corporation. This interesting finding may suggest that companies lack product

Service	All enterprise	ІТ	Banking	Services	Manufacturing
Fixed telephone	1.19	1.24	1.10	1.22	1.08
ADSL Internet access	1.87	1.38	2.00	1.86	3.09
Internet access	1.48	1.40	1.67	1.50	1.50
Mobile telephone	1.52	1.64	1.78	1.45	1.23
Dial-up Internet access	2.96	3.58	2.6	2.94	1.89
Leased line	3.39	3.59	2.75	3.20	3.78
Data transfer	3.44	3.93	2.22	3.05	4.00
VoIP	3.95	3.93	3.89	3.84	4.33
WiFi Internet access	4.15	3.95	4.71	4.31	4.00
Frame relay	4.14	4.24	3.25	4.56	3.90
1800 service	4.16	4.41	4.17	4.24	3.50

Table 22: Level of Importance of Telecom Services and Products

Where: I = very important/frequently used, 2 = important/generally used, 3 = normal importance and use,

4 = less important/less used, 5 = not at all important/never used

understanding or experience of their benefits. Better product education and marketing – and competition – should increase demand for these services.

Telecom-related services accounted for about 5% of the total operational expenses of surveyed enterprises in the survey sample. Enterprises in banking and the financial sector reported a higher telecom to total expense ratio of 5-10%, while for manufacturing this ratio was typically under 5%. Not surprisingly, banks and ICT companies had the highest IT spend. So while many software companies currently focus on government buys there may be untapped demand for solutions targeting financial institutions and ICT companies themselves (Figure 24).

Figure 24: Telecom Costs as a Percentage of Total Costs



Note the averages in the above graph are drawn from the following aggregate responses:

I = telecom costs / total costs are less than 5%.

2 = telecom costs / total costs are greater than 5% but less than 10%.

3 = telecom costs / total costs are greater than 10% but less than 15%.

4 = telecom costs / total costs are greater than 15%.

Service price levels were very high, according to the surveyed users. This perception was strong for international long distance (ILD), domestic long distance (DLD), Internet dial-up services, cellular telephone calls and leased line services. Fixed line

	All enterprises	IT	Banking	Other service	Manufacturing
Fixed line telephone	2.06	2.19	2.25	1.82	2.33
International call	1.48	1.47	1.60	1.35	1.69
Provincial call	1.77	1.87	1.73	1.81	1.45
Local loop call	2.38	2.63	2.50	2.11	2.25
Cellular phone	1.62	1.71	1.91	1.48	1.46
Internet Dial up access	1.98	2.05	1.70	2.08	2.00
ADSL Access	2.37	2.29	2.00	2.39	2.89
WIFI	2.54	2.15	1.33	3.20	4.33
VOIP	2.84	2.62	3.00	2.77	4.00
Leased Line	1.63	1.43	1.22	1.88	2.38
Data transfer	2.03	1.76	1.57	2.40	3.50

Table 23: Assessing Telecom Service Prices

Where: I = too high; 2 = high; 3 = normal; and 4 = low.

local telephone calls, ADSL and VoIP were perceived as more reasonably priced. These findings were consistent across all industry groups (Table 23).

Firms were also asked how they would respond to 10%, 20%, 30% and 40% reductions in service prices. To varying degrees, firms were sensitive to changes in telecom prices (that is, a reduction of telecom prices that would lead to a significant increase in the demand for telecom services). This is what economists refer to as "price elasticity". The calculated price elasticity of demand ranged from -0.57 to -0.66, with an average for the entire sample of -0.63 (manufacturing having the lowest elasticity). This means that for every 10% reduction in price, demand for telecom services should expand by around 6%. In this way a price cut of about one-third will lead to an expanded market for telecom of 25-30%.

Firms were also surveyed about their views on service quality based on four criteria: connection times, transmission speed, reliability of services (frequency of breakdown) and technology deployed. Average responses are summarized in Figure 25.

Most respondents reported satisfactory connection times, with the possible exception of local connections. The overall assessment of transmission speed for the various telecom services is "normal to slow". Respondents perceived the Internet to be particularly slow. Responses on breakdown frequency suggest reliable network connections. As expected, the most problematic areas in terms of breakdowns are mobile, dialup and ADSL services,

Figure 25: Connection Service Quality Measures



Where: 1 = very fast; 2 = fast; 3 = normal; 4 = slow; and, 5 = very slow.





Where: I = never; 2 = sometimes; 3 = normal; 4 = often; and 5 = very often.

Transmission Speed







Where: I = cutting edge technology; 2 = relatively new; 3 = neutral; 4 = old; and, 5 = very backward.

but even these only happen occasionally. Figure 26 outlines the survey results on breakdown frequency and technology used.

The general assessment of the level of technology used is that it is relatively new and up-to-date, although not state of the art. A preliminary assessment of the quality of telecom services, using the above figures, is essentially positive. Telecom users perceive that they have access to a relatively modern telecom system that provides reliable and fast connections, but with relatively low transmission speeds.

Firms were asked what would be the likely impact upon their businesses if telecom services were substantially improved (i.e. delivered in a best practice manner in terms of quality, price and services available). The results, as summarized in Table 24. showed that there would be a significant increase in revenue, labor productivity, profitability

and the rate of innovation. Unsurprisingly, the strongest impacts would be in the IT and banking industries.

Financing

According to our survey respondents, 75% of firms replied that their companies have difficulty in obtaining bank loans. The most common issue is a lack of collateral, since banks do not accept future cash flow as security. Firms did not identify government credit policy (or lack of a policy) as a key issue. Rather, the respondents placed higher importance on collective and pro-active actions within the software community. One key area of interest is to increase collaboration between IT and software associations with banking associations to arrange credit programs for IT and software business. As a secondary option, this collaboration by the IT sector could extend to relevant agencies that could arrange credit ratings for software firms.

A large majority of firms highly favor the idea that fully foreignowned venture capital (VC) funds in Vietnam should be allowed. These companies also do not favor foreign ownership caps for VC firms. In fact, more than 50% of firms interviewed intend to sell shares to employees and/orVC investors. To compare, less than 30% intend to go for an initial public offer.

Copyright Protection/IPR

IPR violations in the software industry in Vietnam have been serious. Vietnam has one of the highest rates of IPR violation of software in the world. The figures show that, during the years 1994-2003, the violation rate was more than 90%.⁴⁷ This is a key constraint that holds back the development of the software industry.

Survey respondents cited the following reasons for Vietnam's high rate of violation:

- The high price of software applications compared to the low income of Vietnamese users.
- A lack of any specific regulation and sanction on the obligation to use copyright software.
- The lack of management skill in IP protection and lack of guidance on procedures for IP protection.
- Indifference from software producers in terms of IP protection.

Awareness of IP rights on software is so low that many software producers and software professionals have been directly engaged in the violation.

Table 24: Impact of Improved Services on Enterprises

	enterprises	IT	Banking	service	Manufacturing
Increased turnover	6%	8.5%	6.5%	4%	5.5%
Increased labor productivity	7.5%	8.5%	6%	7%	7%
Cost reduction	4%	5%	4%	4%	4%
Increased profits	6%	7.5%	6%	5%	4%
Increased technology innovation	7.5%	8.5%	8.5%	5.5%	6.5%

^{47.} Based on BSA estimates of software piracy

The effectiveness of campaigns enforcing the implementation of IP rights on software has not yet been satisfactory, partly due to the incomplete legal and organizational framework for enforcement. Not only enterprises and software producers, but also consumers themselves are also faced with a loss due to the high rate of violation. As software producers do not want to invest too much in R&D, consumers lack choices of good usable software. The lack of education software in Vietnam is an obvious example. The use of contraband software also brings inconvenience to users due to the internal faults of such products, such as security and virus risks.

The organizational structure of the state bodies concerning IPR on software is in the process of being restructured. There are currently three functioning bodies managing the IPR issues: the Department of IP under MoST, Department of Copyright under the Ministry of Culture and Information, and the Office of Trademark Control under MoT. This structure is neither consistent nor effective and leads to overlapping applications and complications in practical implementation.

In additional to legal and issues of coordination, there are a number causes for poor IPR protection in Vietnam. The survey asked the IT industry – many of whom develop IT products and software – to identify the primary reasons for IPR violations. These findings are outlined in Figure 27.

Figure 27: Reasons for IPR Violations



Tax incentives

More than half of the firms surveyed (55%), reported that their companies have received corporate income tax incentives. However, 60% of the firms that had received tax incentives reported that they would have made the same investment decisions without the incentive.

There were also comments that the current regulations seemed to be favorable on paper, but that there are complications in practice. Software professionals may have incomes from many sources, even when they are working in just one company, including income from software-related work and other activities. There is yet no regulation to set out criteria as to which professionals in the software industry are eligible for tax preferences on their personal income tax. This may lead to (i) complications in taxation processes incurred by both the tax authorities and the enterprises; and (ii) a gap in tax laws. There are not yet personal income tax incentives for foreign experts in this field.

Tax regimes currently applied

for this sector have been more favorable than for many other sectors, in fact, probably the most favorable of any sector. However, many of the surveyed companies are of the view that they are difficult to implement and not effective.

Conclusion

A number of interesting points can be drawn from this survey of business users and the resulting issues which impact on ICT development in general and the software sector in particular. Based on review of key areas of interest to the ICT sector, the following are the key conclusions:

- Government programs and procurement: Companies have difficulty accessing programs and participating in governmentsponsored projects. For smaller companies, participating in the tender process is time-consuming and costly.
- **Trade/Export Promotion:** Industry executives believe the Government does not sufficiently promote the industry or develop a "branded" strategy for the sector.

- Education and human resources: There is a widespread consensus among all stakeholders that there is insufficient human resources in terms of both the quantity of personnel and the quality of educational training and skills.
- **Infrastructure:** There have been important improvements in infrastructure, but serious gaps remain in terms of price, availability and quality.
- **Financing:** SME access to financing is limited and inhibits ability to invest in new products and services.
- Copyright protection/ Intellectual property rights:

There is a serious problem in Vietnam with respect to IPR and this remains a key obstacle to innovation and product development. The obstacles include a wide range of issues, from a insufficient legal insufficient, poor enforcement (even within the government itself), lack of remedial actions, and understanding of compliance issues by users.

• **Tax incentives:** The effectiveness of tax policy on stimulating the sector is mixed, and sometimes confusing.

THE WAY FORWARD

lietnam has made important strides in the ICT sector, but the government needs to take bold and aggressive actions to not only consolidate gains already made but to accelerate the overall implementation of ICT in order to catch up with other countries in the region. The rapid changes in the ICT sector in general, and software development in particular, do not occur within a vacuum. Vietnam's regional and global competitors are very focused on ICT policy, planning and implementation. Foreign companies, both regionally and globally, also have significantly more experience and capabilities relative to Vietnam's domestic industry. The combination of focused government action and competitive industries reinforces the need for Vietnam to be aggressive and innovative in its policies. While there has been considerable activity to increase availability, quality, affordability, efficiency and adoption of ICT technology within Vietnam, there is a strong argument that the country is falling farther behind regional competitors and global partners rather than catching up. It's time for bold action and swift implementation.

The path for Vietnam to move forward to develop its software/

IT industry requires a complex understanding of current trends in the IT sector, the evolution of the global delivery model and changes in the international economic system. In a recent report, "E-**Development: From Excitement** to Effectiveness", the World Bank evaluated the capacity of countries to exploit ICT technology as a preparation for the United Nations World Summit on Information Society held in November 2005. The World Bank created an index based on availability, quality, affordability, efficiency and adoption of ICT. Interestingly, the rankings correlated with a country's per capital GDP. Upward deviations included Hong Kong, Singapore, South Korea and Estonia, while downward deviations included Kuwait, Saudi Arabia and Oman. Vietnam ranked 94th, below its regional competitors of India (86th), the Philippines (63rd), China (56th) and Malaysia (35th). So while there is a widespread recognition that there have been economic and social payoffs from investments and the use of ICT technology, Vietnam remains behind the curve within a regional and global perspective.

The role of technology is tied to the overall liberalization process,

and its importance should not be underestimated. Vietnam's success or failure with ICT and software development will influence the country's ability to compete economically in regional and global markets. The inability to build up its network infrastructure, for example, directly impacts on all export-related business as well as the IT and ITES sector. Only with ubiquitous access, both urban and rural, to cutting edge technologies at competitive prices can Vietnam's doi moi policy succeed in bringing prosperity to all segments of the population.

But change requires long-term focus and commitments as well as choices that negatively impact on powerful and vested interests. Therefore, building societal consensus is key to implementing and sustaining change. Indeed, even when consensus is reached, individuals and organizations have honest differences on how to achieve common goals. Therefore, public discussion and fact-based decision-making are primary in ensuring success.

This chapter summarizes key issues identified during the course of the survey and discusses specific recommendations to support the software sector (Table 25).

Table 25: Key Issues and Recommendations for the Software Industry

#		Recommendations & Actions
Competition	and Government Owners	hip of Software Companies
Comp I	Survey and audit of SOEs	 Conduct survey of State-owned enterprises in the ICT sector. Include in survey SOEs in the telecom, computer, and media sectors.
Comp 2	Equitize (privatize) government ownership in IT SOEs	 Set clear policy to remove government ownership of software companies. Conduct financial audit of SOEs. Identify timeline for equitization. Divest government ownership from these companies. Reinvest funds in other IT initiatives, e.g., innovation grants, human capital.
Strengthen In	stitutional Capacity for I	CT Policy Development and Implementation
ICT Policy I	Strengthen the policy- making process	 Create a Master Plan for all high tech (led by National Steering Committee), based on convergence programs. Clear policy-making guidelines, e.g., roles and responsibilities, timelines, metrics and public participation. Institute programmatic management of ICT initiatives and provide TA for within Steering Committee and lead ministry. Include industry, educational, and other non-government stakeholders. Issue an annual report on initiatives, results and updated strategy.
ICT Policy 2	Institute ''clustering'' of ICT initiatives	Tie into educational, industrial and rural development.Clearly incorporate concept of "clusters" in policy initiatives.
ICT Policy 3	Facilitate horizontal coordination at the regional and local level	• Develop mechanisms for horizontal coordination between local government, e.g., departments (perhaps the NARUC model).
ICT Policy 4	Stimulate civil society organizations and interest groups.	 Facilitate development of quasi-government and/or non-government associations to develop, coordinate, and implement policy Telecommunications associations ISP associations Media associations Create high technology export board similar to ESC and PSEB.
ICT Policy 5	Improve industry statistics	 Undertake a specific and dedicated imitative to collect information. Potentially supported by quasi-government industry board (ICT Policy 4).

#		Recommendations & Actions
Revamp Tele	com Policy with Specific F	ocus to Enhance IT and ITES sectors
Telecoms I	Convergence Infrastructure Initiative	 Develop high-technology infrastructure policy for next-generation ICT Target BPO strategy and required infrastructure, e.g., IPL prices Define policy for emerging technologies, e.g., online applications, IPTV (cable TV), etc.
Telecoms 2	Stimulate competition within data communications segment	 Introduce Universal Licensing to allow ISPs to provide facility-based and resale data services. Review options to license specialty data communications service providers.
Telecoms 3	Target reductions in international private line prices	Review IPL pricing under Decision 54.Introduce market-based pricing mechanisms.
Create Inform	mation Communications I	Policy
Infocomm I	Set policy for opening new "information" sectors such as radio, television and CATV	 Stimulate "content development" by licensing radio and TV broadcasters. Initiate policy for increased cable TV infrastructure and content. License radio stations in AM and FM bands (using digital technology).
Infocomm 2	Migrate ICT content regulation to MPT	 Create role for MPT to set content guidelines (like US Federal Communications Commission (FCC). Set guidelines for cable TV and satellite content.
Dramatically	Increase Vietnam's ICT E	ducational Capacity
HR I	Establish a Human Capital Fund	 Similar to Vietnam's Universal Service Fund, the government could establishment an HR fund for IT training and capital development. Provide financing for underprivileged individuals to receive IT training through grants, loans and other financial assistance. There is international precedent, for example, in South Africa there is Human Capital fund to provide education to disadvantaged people. Funding could come from multiple sources including a surcharge on telecommunication services, online gaming, cable TV franchise fees, etc.
HR 2	Create Vietnam Institutes of Technology (VIT) & Vietnam Institutes of Management (VIM) ¹	 Pass enabling legislation. Visit India and study their IITs. Identify sponsor nations, e.g., India, China, USA, EU, Japan Korea, Taiwan, Singapore, and Australia Sponsors include ODA from governments, e.g., financial resources, technical assistance, technology transfer, etc. Corporate Sponsorship for that country, e.g., technology, training, internships, business contacts Academic assistance, e.g., professors, curriculum, study abroad, research, etc.

#		R ecommendations & Actions
HR 3	Remove caps on foreign workers	
Financing and	Taxation	
Fin I	Change VC rules	Update investment rules for VCs
		Eliminate taxation barriers for VCs
		Clarify issues related to disparate local interpretation
Fin 2	Evaluate non- conventional options for	• Authorize MoF to conduct evaluation and report for alternatives for SME financing
	SME financing	D Review options for non-collateralized loans
		Evaluate options for small business loans
Intellectual P	roperty Rights	
IPR I	Ensure compliance within government institutions	• Develop policy and implement action to ensure the use of copyrighted software within the government and state-owned enterprises.
IPR 2	Increase point of sale compliance	 Regulate computer sales to ensure that installed software is copyrighted at the point of sale.
IPR 3	Enhance IPR laws	Develop and complete the legal framework for the IP protection
		Include ability to quickly address new technologies such as online applications, blog content, open source software, etc.
		Particular focus on definition, function, task, the cooperation and coordination of the state organs
		D Quickly develop relevant regulations
		Develop enforcement region.
IPR 4	Improve enforcement	 Establishing a specialized agency on software to coordinate and monitor the enforcement of software copyrights.
		• Revise and consolidate the roles of the software cluster and associations.
		• Finance public awareness campaigns to discourage piracy and violations.
Facilitate Cul	ture of Innovation and En	trepreneurship
Innovation I	Provide ''seed'' money and support for Viet Kieu entrepreneurial organization	 Form charter and initial chapters in California, France and Vietnam. Launch entrepreneurial program in Vietnam network ideas with capital such as VC and angel investors. Modeled on TIE with global chapters.
	organization	 Modeled on TIE with global chapters.

It is important to note that many of the ideas summarized in Table 26 overlap and reinforce each other. For example, the creation of VITs and VIMs should coincide with a policy for clustering. Likewise, the VIT/VIM could develop a curriculum for broadcast IT and management whereby students could learn the technical and management skills required to operate TV and radio stations. Similarly, changing rules for VCs would improve SMEs' ability to obtain financing and enhance innovation by providing money to start-up ideas and companies.

Competition and Government Ownership of Software Companies

One of the unique factors in Vietnam's software sector is the fairly widespread role of stateowned companies involved in software development and services. For example, various state companies and ministries owned several of the companies surveyed as part of this study. Examples of these companies include FPT, one of the largest software companies in Vietnam as well as SPT, a small software company owned by the Mol. Whether real or perceived, the relatively widespread role of SOEs, both small and large, acts as a disincentive to a thriving software sector. When companies perceive that personal relationships are key to receiving government business, combined with state ownership of some software houses, there is a distinct negative impact on competition, participation and innovation. While there are instances of state ownership of IT

companies in India and elsewhere, there is a general consensus that these companies in Vietnam have unfair access to government institutions and procurement benefits from other SOEs.

Divesting government ownership from these companies would stimulate the IT industry as well as facilitate the emergence of financial markets. By creating a "listed" class of equity IT stocks, this move could mature Vietnam's financial institutions and create a market for further financing of currently private companies. Moreover the divestiture process could generate significant funds that could be immediately reinvested in HR capital development, innovation grants and R&D.

As a first step in this effort, the MoF could conduct a survey of all state-owned ICT companies and create an annual study to evaluate the benefit and cost of continue state ownership. The survey should include all ICT companies in the telecom, electronics, software, computer and media sectors. As part of this evaluation, the MoF could identify potential models for divestiture, equitization, et al, and initiate the stakeholder consensus-building required for any future action. Once companies are identified for disinvestment, the MoF would take the lead in this process by identifying timelines, processes and other issues. A clear government policy that specifically places the software industry in private sector hands as a means to drive innovation and financing would be greatly helpful in identification and consensusbuilding processes.

Strengthen Institutional Capacity for ICT Policy Development and Implementation

It is clear that the government of Vietnam is serious about developing its ICT policymaking capacity and stimulating the country's ICT industry. Unfortunately, government vision and policy lacks the institutional capacity to implement this strategy and measure results. One area of concern is coordination - vertical coordination across ministries, as well as horizontal coordination between the national, provincial and local governments. While the government has a National Steering Committee for ICT, there are legitimate issues about this committee's ability to develop and implement strategy. For example, the recent IT policy approved by the government took more than two years to develop and approve - the rapid pace of the ICT sector will quickly overtake this policymaking document. Governments and decision-makers need to be proactive within a rapidly changing technology sector.

In another example, government and industry are currently reacting to demand for Japanese language skills in the IT and outsourcing space. Learning another language takes several years so there will continue to remain a gap between supply and demand for this critical resource. In essence, Vietnam is missing a critical business opportunity, not only in actual lost business, but in strategic opportunities to increase its national competitive advantage vis-à-vis India, China, Thailand and other regional competitors. Therefore, if the government perceives that Korean or Chinese language skills will become an important differentiator for Vietnam, the government needs to act now to develop the language skills that will benefit Vietnamese companies in 5-10 years.

As an alternative, Vietnam may seek to develop a specific strategy for ITES and BPO. Understanding the international market and business needs for these types of services is critical to developing a successful policy. Giving the unique nature of this ICT segment, government strategy would need to understand the differences in skill sets, business needs, and other factors. In addition, implementing such a BPO strategy may require different mechanisms than those required for developing a strategy for software development or hardware production.

In order to develop this type of strategic thinking, the government needs flexible and timely strategy development updated at a minimum on an annual basis, but more effectively every six months. There needs to be a determined effort to improve the policy-making structure within the national ICT steering committee. Some suggestions include program-based objectives where different ministries "take the lead" on different initiatives, supported by other ministries, departments, industry and other non-government stakeholders. To facilitate this program-based initiative, the Steering Committee should set out clear operational

guidelines for policy-making, roles and responsibilities, timelines and management procedures. The Steering Committee should conduct training on Program Management, Project Management and Change Management, and other key management issues.

One missing component of Vietnam's strategy seems to be an official policy to "cluster" ICT initiatives to create a critical mass within the industry. There are clear benefits to having appropriatelytrained staff located near multiple software companies, as well as universities and training institutions. By defining specific geographic locations – and limiting the overall number of sites – the government could implement multiple programs in the same area. For example, a new university could provide interns to local industry, and in turn industry benefits from the resource and recruiting opportunities. If the university conducts R&D, innovations would be commercialized quickly using a pool of local resources. Venture capitalists and other financing institutions might locate offices or branches in such clusters order to tap new opportunities. Location also facilitates coordination and business networking, important factors in the IT sector. These clusters become knowledge hubs that combine the necessary components for innovation and commercialization. Clusters could include existing and new high-tech parks as well as focused "centers of excellence". Collectively, geographic proximity reinforces each initiative and adds to the individual value of

each component to a greater extent than when initiatives are disparate⁴⁹.

Strategy is most effective when there is consensus from key stakeholder groups. Therefore it is critical for the Steering Committee to include horizontal coordination with departments and local governments. In addition, there should be clear mechanisms for private sector participation on the Steering Committee, including industry representatives, association, unions, etc. through official participation, unofficial participation, e.g., observer status and comments, and public comments.

The steering committee also needs to track implementation via reporting, metrics and updates. This information is best when it is made available for public use and comments. This type of reporting and tracking of metrics provides feedback to update strategy based on facts, figures and stakeholder input.

The complexity of coordination within the ICT sector in general, and software specifically, may require horizontal coordination between provisional and local governments. Mechanisms must be developed for horizontal coordination between local governments, such as between departments and district governments. In the simplest example, neighboring provinces will need to coordinate activities that cross boundaries, such as

^{49.} Concept of clustering is broader than ICT, and the government may also create cluster around other technology, e.g., biotechnology, nanotechnology, etc.

infrastructure, facilities, educational curriculum, and other factors. In a more complex example, one department can learn from the success and failures of others through the sharing of experiences. In one model, each state government within the United States has significant legal and regulatory authority for local activities within the telecommunications sector. To help manage these issues, share experience and coordinate with the Federal Communications Commission (FCC), the paramount national regulator, these state agencies created the National Association of Regulatory Utility Commissioners (NARUC), a nonprofit organization. Its members include government agencies that are engaged in the regulation of telecom utilities and carriers. The NARUC model may provide an option for Vietnam to develop an organization that will promote institutional capacity between and within provincial departments and district governments⁵⁰.

It is also noticeable that Vietnam lacks the participation of multiple civic associations so common in other developing and developed economies. In India, there are separate non-state trade associations for telecoms, mobile services, ISPs, software and call centers. This type of industry representation facilitates policy development by tapping private sector expertise and resource, as well as facilitates consensus building. These organizations are also vital in policy implementation as an important means to drive

50. For more information see www.naruc.org.

awareness, self-regulation and feedback on the effectiveness of policy and regulation.

In some regional countries, such as India and Pakistan, there are quasi-governmental organizations linking public/private organizations focused on IT and ITES sector development (unlike Vietnam where a single trade promotion agency promotes all sectors). For example, India's Electronics and Computer Software Export Promotion Council (ESC), an autonomous organization under the Department of Information Technology, Ministry of Communications & Information Technology, has emerged as the premier nodal agency to promote trade of Information Technology and Electronics between India and the rest of the world. In Pakistan. the Export Promotion Bureau has been a key facilitator in developing government policy for call centers and BPOs, and is active in promoting the country, supporting business and proving important networking opportunities. Given the growth of the ICT sector and the size of Vietnam there is considerable room for new trade associations, both private and quasi-governmental, which could considerably enhance trade promotion of Vietnamese companies.

Another issue for government policy-making is the lack of industry statistics, and as a result it is difficult to obtain reliable figures from the state agencies about all ICT-related indicators, including e-commerce. The lack of accurate information impacts on the quality and success of ICT policies. The shortage and unreliability of statistical figures is also a barrier to enterprises' business planning. Decisions No. 81/2001/QD-TTg and Decision No. 95/2002/QD-TTg of the Prime Minister clearly indicated that ICT statistical activities needed strengthening, but as of yet Vietnam has had made limited progress in implementing this indication.

Revamp Telecom Policy with Specific Focus to Enhance IT and ITES Sectors

Vietnam has clearly made important progress in introducing competition into the telecommunications sector, reducing prices and introducing new services. The government needs to build on these gains by introduction a policy to drive convergences technologies and target specific segments utilized by software and ICT companies. With regard to convergences infrastructure, Vietnamese operators are rapidly building advanced, digital, multiservice networks, but regulatory constraints limit investment and cross-industry competitive. The clearest example of limiting regulation is cable and satellite TV. In the United States, near ubiquitous cable TV networks act as a major stimulation and competitive force in convergent networking and new service rollouts such as cable telephony and IPTV. Likewise, satellite TV offers innovative Internet access options to rural America. In Vietnam, government policy and regulation does not stimulate network expansion as this segment has significant limitations. While there are a few instances of ADSL services using cable infrastructure, the overall regulatory framework for cable TV is not conducive to rapid network expansion and rollout of innovative services. The government should review the role of convergence technologies and develop a strategy to optimize competition and alternative technologies.

A second area of concern is data communications, a key infrastructure for IT and ITES companies. Currently, relatively few companies provide data communications services, and these companies are end-toend telecommunications service providers. In many markets worldwide, there are specific provisions to enhance competition in data communications though universal licensing (where ISPs can provide data links) or specialized licenses for data communications. Government licensing policy should target increased competition in this segment by permitting ISPs to provide facility-based or resale data services, and/or licensing specialized data or communications companies.

Pricing for international private lines is based on Decision 2003/ QD-BBCVT dated 20 March 2003 of the Minister of Posts and Telecommunications, which came into effect on I April 2003. The MPT should review its current price levels, as the IPL market's increasingly competitive new technology is dramatically increasing available bandwidth, and hence rapidly lowering prices globally. In additional to reviewing its price levels, the MPT should evaluate moving toward marketbased price regulation of VNPT and other providers. By stimulating competition and regulating anticompetitive pricing, the MPT can ensure globally competitive pricing within this key telecom segment.

Create Information Communications Policy

VNCI understands the importance that the government of Vietnam places on culture, information and content distribution, and realize that dramatic changes to the country's policies are controversial. However, it is unrealistic for government policy-makers to target rapid development of IT while maintaining outdated controls on information, its creation and distribution. For the record, many countries place limits and controls on information. For example, Canada places significant importance on locally created content, places limits on magazine editions, and requires TV and radio stations to broadcast locally created content. In the United States, the FCC regulates content and levies fines to companies that distribute indecent material. Broadcasters are also required to provide public service content and announcements. Of course new technology – notably pay TV and the Internet – represent particular challenges that require new regulations, oversight and enforcement mechanisms. While these issues generate constant debate by society and government regulators, it is important to note that an open "information" sector doesn't necessarily limit

government control over content and its distribution.

With only a handful of TV and radio stations there is limited activity in this ICT segment, which in turn creates tremendous opportunity for the government to re-evaluate its current IT and communications policy. In essence, there is a huge untapped industry that has benefits to both the private as well as public sectors. By creating a new regulatory mechanism to regulate and oversee ICT content, the government could create tremendous economic benefits from new local production of radio and TV content. The private sector opportunities are straightforward. More TV and radio stations create jobs, revenue and stimulate economic activity via advertising. There is a multiplier effect as secondary companies emerge, such as production studios, advertising agencies, equipment manufacturers and content resellers.. Opening the sector, however, does not necessarily reduce government influence over content and its distribution, assuming that there are clear guidelines, rules and procedures.

There are distinct public benefits as well, such as an increased tax base and improved information distribution. In India, for example, the non-profit BBC Foundation produces TV content that provides information about HIV and family issues. Using a drama format, this public-private cooperation provides important public service messages. There are other examples of United Nations agencies creating radio content to assist rural households with issues ranging from hygiene to family planning. Private stations can also be required to provide public services announcements and content.

Given the radio frequency issues associated with TV and broadcast, the MPT is well positioned to manage a policy of expanding the TV and radio segment. If the government so chooses, there is international precedent for content regulations occurring within the telecom or IT regulatory body. Of course this would represent an important change in Vietnam's information policy, but given the government's ICT focus there is a natural logic to include TV, radio and content issues within the MPT.

Online content issues also require a clear set of regulations, guidelines and enforcement procedures. Given the convergence of media, computers and telecommunications in the online environment, Internet content increasingly falls under the purview of ICT. The government may, therefore, include online content as part of a broad set of information and content controls. So while the distribution medium is somewhat different – and the role of international sites and online applications must be addresses - there are some commonalities between online content controls and those in the broadcast industries.

While the government needs to determine its strategy for

Vietnam's ICT sector – including software development and BPO services – the authors of this survey suggest a branded policy focuses on Vietnam's strengths and its competitive position within the emerging global delivery network: vStrong, or Vietnam's Strategy for Technology and Regional Outsourcing in the Next Generation.

The vStrong idea has four incremental steps:

- 1. **Service local market** to develop baseline skills, experience and corporate experience with collaborative agencies.
- 2. **Participate in "extended" global delivery** by providing Indian and Chinese outsourcers low-end services exported to customers in USA, Europe and Australia (current purchasers).
- 3. Target next generation services and emerging Asia economies as value provider for future purchasers.
- 4. **Move up value chain** to compete as a destination/ provider of end-users in advanced economics (USA, Europe, Australia).

The global delivery model is solidifying as a fundamental principle of business. Tied to globalization, the issue of outsourcing has moved from an operational issue based on costs to a strategic issue of competitiveness and market access. The model is gaining in Europe and Japan, and starting to emerge in other Asian economies. Over time, the supply chain for these services will elongate the global deliver chain, where India and China will move up the value chain. In turn, outsourcers will outsource low-end components. So while Vietnam can't directly compete with India or China currently, there is a key role for the country to play as a regional outsourcer to Asian countries.

The general and specific actions required to successfully implement vStrong are listed in Table 27.

Of course, implementing this and other similar strategies requires a multi-faceted approach that includes significant change and action across multiple areas of the government, economy and society. Yet the important issue is for government policy to develop a strategy based on positioning the country within the global economy and targeting areas to optimize its competitive advantage. While setting numeric targets is important – along with tracking these metrics and taking remedial action - objectives should be tied to strategic thinking and policies that capture the imagination and innovation of the Vietnamese people.

Table 27: vStrong Strategies

Strategy	Actions	Specifics
 Service current and local market to develop baseline skills, experience and corporation experience with collaborative agencies. 	 Develop baseline skills, corporate experience and R&D capacity. 	 Establish Vietnam Institutes of Technology as means to: Invest in engineering, IT and management skills Provide funds for basic and applied IT R&D Create "seed" for high-clusters Drive technology transfer from sponsor government and international institutions Attract public/private investment for sponsor's companies, e.g., IBM, MS.
2. Participate in "extended" global delivery by providing Indian/Chinese outsourcers low end services exported to customers in USA, Europe and Australia (current purchasers).	 Develop hard and soft skill, and business relationships to support current IT and outsourcing leaders. 	 Set up Vietnam offices in key source markets, such as Bangalore. Add "IT" to non-IT programs, e.g., agriculture, finance, etc. Utilize global experience of Viet Kieu (people and companies) and/or provide "seed" money and organizational capacity for Viet Kieu organization.
 Target next generation services and emerging Asia economies as value provider for future purchasers. 	 Identify next generation geography and services and to create competitive advantage in India, Japan, China, Hong Kong, Taiwan, Singapore and South Korea. 	 Start language programs for "next generation outsourcers in Taiwan, South Korea, and China and develop strategies for BPO, KPO and new non-technical outsourcing segments. (Replicate "Japanfocused" activities on other markets). Use VC to identify and commercialize new products and innovation. Encourage microfinance and VC.
I. Move up value chain to compete as a destination/ provider of end-users in advanced economics (USA, Europe, Australia).	 Combine value to compete as primary designation/provider of services. 	 Support efforts for Vietnamese companies to move up the value change. Tap Viet Kieu resources and contacts. Drive export promotion and image building.

Human Resource and Educational Capacity

During discussions on human resources with experts in the government, industry and academia, there is a general consensus on three general issues regarding Vietnam's IT university programs – insufficient number of graduates, a mismatch between curricula and business needs (quality and skill sets), and a lack of high-end expertise. As is always the case, some of these graduates will work in the IT sector, others in IT departments of non-IT companies, and some will pursue other careers altogether. Educational reform is neither simple nor quick but some solutions are within the realms of possibility for Vietnam.

One possibility to increase investment in human capital and IT training is to establish a HR fund for IT training and capital human development. Similar to Vietnam's Universal Service Fund, the fund could provide financing for underprivileged individuals to receive IT training through grants, loans and other financial assistance. There is an international precedent for similar action. For example, South Africa has a human capital fund to provide education to disadvantaged people. Funding could come from multiple sources, such as a surcharge on telecommunication services, online gaming, or cable TV franchise fees. This program could act as a mechanism for economic stimulation to ethnic and/or disadvantaged groups that could significantly improve their socioeconomic situation. At the same time, increased financial support for IT education would boost institutions and increase the overall volume of IT graduates.

In a bolder move to address the gap in "elite" education in the IT and management area, the government should consider the creation of the Vietnam Institute of Technology (VIT) and Vietnam Institute of Management (VIM). In additional to its elite status, these institutions could offer foreign language instruction such as English, Japanese and Mandarin. Based in part on the Indian IITs, as a first step, officials could visit and evaluate India's IIT campuses.

If appropriate the Ministry of Education could table legislation while other key stakeholders could identify sponsoring organizations, nations and companies, such as the United Nations, India, China, USA, European Union, Japan, South Korea, Taiwan, Singapore, Australia and global corporations. By linking these new campuses to clusters and sponsors, these universities could rally support from multiple sources. These sponsors could provide financial resources, professions, technical assistance, technology transfer, etc. Further, corporate sponsorship from the "sponsoring country" could provide additional access to financing, technology, training, internships, business contacts etc. There is no doubt that creating a VIT and VIM would be a major task taking several years, but the effort would yield long-term benefits. Vietnam's best and brightest would receive world-class high technology and management training in an internationally collaborative environment. These graduates would be well positioned to lead the country's emerging corporate sector, government agencies and international organizations.

A practical example may be useful here. Possibly, the government would charter five VITs and five VIMs campuses tied to specific high-technology clusters, e.g., VIT Da Nang, VIT Hanoi, VIT HCMC, etc. Each campus would have a foreign language focus tied to the "sponsoring" country, institutions and companies.

• USAID, several US-based universities, and US corporations such as IBM, Motorola, Cisco

and Microsoft could sponsor VIT HCMC. The language of instruction would be English, and its "technology focus" would be on software applications and services. Students would be provided with opportunities for study abroad in the US and internships with US companies in Vietnam and/ or abroad.VIM HCMC – albeit in a separate nearby campus - would follow a similar model, with a management focus on outsourcing, BPOs and KPOs. The sponsoring companies might be PricewaterhouseCoopers, GE, Wall Mart, etc.

• VIT Hanoi and VIM Hanoi might be "sponsored" by Japan. The campuses might receive ODA from Japan and Japanese universities.VIT Hanoi could receive support from lapanese corporations such as Panasonic, Sony, Canon and Fujitsu – as well as Vietnamese companies working in Japan. The technology competency might be embedded systems. The language of instruction would be Japanese. Students could study abroad in Japan, and participate in internships with Japanese companies in Vietnam or abroad.

While this concept is based on the Indian IIT model, there are several important innovations which could be considered. First, all Indian IITs use English as the language of instruction. The VIT/VIM model could diversify the languages of instruction to include English, Chinese (Mandarin and Cantonese), Japanese, Korean and French. This would collectively create a cadre of elite IT professionals fluent in multiple languages, a clear competitive advantage in a global economy.

The second innovation in the IITs is a focus on a "specific technology". This creates a core competency tied to a specific area of research and study. The US is a clear leader in applications and services, while other markets are clearly competitive in hardware manufacturing. By "clustering" R&D resources (tied to export markets), Vietnam would be "bundling" education, language and "knowhow" targeted to a specific partner nation. That is not to say that other VITs/VIMs do not include courses in this area of study, but rather that there is a primary focus followed by other technology areas. There is no doubt that this is a bold and innovative strategy that could take a decade to fully implement, but given Vietnam's desire to develop its IT and ICT sector, this bold action could fundamentally reposition the country and create a unique competitive edge within the region.

Another way to address this skill gaps is to remove the rigid labor regulations that cap the use of foreign labor in the total workforce to 3%. By importing valuable skills, companies can train up staff, better service their customers and add more value to their business. These individuals could also enhance Vietnam's technological capability and possibly provide cultural and linguistic training. Given the nature of IT and its global interconnectedness, there should be a provision to remove these outdated regulations.

Intellectual Property Rights

Reducing the rate of IPR violations on software is now urgent for Vietnam.The legislation of a sound legal framework for IPR protection on the software industry is recognized as a tough and difficult task for Vietnam.Vietnam also has a low level of innovation as measured by the low number of patent applications (Figure 28/ Table 28). It is logical to assume that the low level of enforcement of IPR acts as a disincentive to obtain patents, as there is a limited expectation that a patent infers actual protection or remediation.

On the positive side, there are actions underway to improve Vietnam's IPR with a specific focus on IT and software issues. It is the view of VNCI that IPR issues are particularly important to software SMEs interested in developing and selling software. One Vietnamese software company developed a geographical information system (GIS) product that is widely used and available in Vietnam. However the vast majority of GIS products are illegal and pirated. The company has exhausted its legal options and has given up attempting to recoup its investment. Most importantly, the company does not intend to update the product, so new innovations and information will not enter the market. There are

several such areas in the software industry that require remedial action from a new IPR policy.

First, it is important for the government to set a good example by ensure protection of copyrighted software within the government and state-owned enterprises. Another direct way to improve compliance is to regulate computer sales to ensure that installed software is copyrighted at the point of sale. The government and industry could also finance a public awareness campaign to discourage piracy and violations. And of course, the government can also look to trade associations to assist in its initiatives.

There is also a critical need to improve the region – laws, regulations and enforcement – of IPR. By updating the legal framework for IP protection, the government could clarify the functions, tasks and mechanisms for coordination among state agencies. A new legal framework could also assist new technologies such as online applications, blog content and open source software. Lastly, a new law could establish specialized agencies on software to coordinate





	Vietn	amese	Foreign		Total
	Applications	Approvals	Applications	Approvals	Applications
1981-1988	453	74	7	7	
1989	53		18		
1990	62	11	17	3	79
1991	39	14	25	13	64
1992	34	19	49	16	83
1993	33	3	194	13	227
1994	22	5	270	14	292
1995	23	3	659	53	682
1996	37	4	971	58	I,008
1997	30	0	1,234	111	1,264
1998	25	5	I,080	343	1,105
1999	35	13	1,107	322	1,142
2000	34	10	1,205	620	1,239
2001	52	7	1,234	776	1,286
2002	69	9	1,142	734	1,211
CAGR 90-2002	0.8%	-1.5%	38.2%	52.7%	23.4%
Average	38	8	707	237	745

Table 28: Vietnam's Patent Applications, 1990-2002

and monitor the enforcement of software copyrights. Of course any new law needs to be quickly followed by regulations and implementation mechanisms.

Financing & Taxation

The Prime Minister's recent decision to raise the foreign equity cap on local firms, from 30% to 49%, lessens one of the more generic obstacles to VC investment in software and other local firms. However, this decision falls below international norms where foreign equity partners can own a majority – and in many cases 100% foreign ownership. Mekong Capital, a Vietnamese VC firm, highlighted a series of issues inhibiting VC in the country relating to taxation, foreign investment restrictions, enterprise law, and legal interpretation at the local level. A summary of these issues is located in Appendix 1.

Another option to improve financing for SMEs is to look at less traditional options for financing such as non-collateralized loans. There may be some utility in evaluating options in this area to review loans based on working capital, as opposed to fixed capital. Using this methodology, banks and lending institutions would factor in a software companies' cash flow rates, although only for those serving major overseas clients. Other financing options include revolving overdraft facilities, leasing (for computer machinery), or some form of hybrid mezzanine financing. Other non-traditional options include financial insurance schemes that pool investment and risk. The Government, the International Finance Corporation – or some other quasi-governmental entity such as the Quang Trung Software Park - could also provide collateral, small business loans or financial guarantees. To pull together these non-conventional financing options within Vietnam it may make sense for the MoF to publish a working paper to outline these options within the local context and evaluate and/or prioritize mechanisms to increase finance to SMEs.

Facilitate Culture of Innovation and Entrepreneurship

Creativity drives innovation and entrepreneurship, and in turn fuels organic growth in the ICT and software sectors. New ideas do not simple increase economic value; they create new value, new industries and new social benefits. Creating a culture of innovation leans heavily on a number of areas – research and development, education and access to financing, to name a few. Yet there are a few innovative ways that government policies can tap into networks that drive innovation and entrepreneurship.

One idea is to provide "seed" money and organization support for Viet Kieu entrepreneurial organizations with chapters in California, France and Vietnam. As a model, The Indus Entrepreneurs (TiE) engages South Asians abroad and sponsors a wide variety of activities to stimulate creative and small businesses in the ICT sector. In one such event, TiE targets participate by promoting a wide range of opportunities such as:

- Meeting VC firms, "angel" investors, service providers, overseas investors, government representatives and academia.
- Making new contacts in the business card exchange sessions and benefit from the interest specific networking lounges.
- Learning from successful SME enterprises from India in the experience sharing sessions by founders of young South Asian companies.
- Informing through topical panel discussions:
 - Can India produce the next big thing?
 - Where are the investment opportunities in India?
 - · Overview of existing strategies.
 - Policy makers and government mindset – understand where government and policy makers/influencers stand on how to foster entrepreneurship in India.
 - Sector opportunities overview

 where and what kind of opportunities are available IT/ BPO/KPO, retail, manufacturing and education.

- Geography in focus learn about opportunities of doing business with and in different countries.
- Bootstrapping and early-stage funding what it means and what does it take.
- Participating in mentoring clinics to sharpen business plans and business models through one-onone interactions with appropriate mentors who will help you address challenges in your enterprise.
- Showcasing ideas via display stalls.

More than a dozen companies,VCs and government agencies sponsor the one-week event. Participation fees start at US\$50 for students with general public participation at

US\$100.These types of events are valuable in bringing together ideas and capital, as well as learning the "process" to start and grow a new company.

Other possibilities are programs to support innovation through financial grants. Vietnam has initiated some activities in this area but awareness is guite low. One possible way to increase participation and effectiveness would be to provide grants or content for innovation ideas and products. As a case in point, the Indian Ministry of Science and Technology started a Technopreneur Promotion Programme (TePP) to extend financial support to individual innovators for working ideas and/or prototypes (Figure 29). TePP covers a wide range of technology areas and is coordinated across the government. While this program covers individuals,

Vietnam could expand its "trial" program to include multiple classes of innovators, e.g., individuals, university teams, SMEs, associations, etc. In this way, the program could broaden its reach to target multiple groups of potential entrepreneurs – and facilitate a culture of innovation.

Conclusions

This report seeks to provide valuable background and insight into Vietnam's software sector, and stimulate active discussions about improvements in government policy and actions. While the government has undertaken a broad range of government policy in procurement, HR development, taxation, and other fields, there remain significant areas that need to be strengthened in order to facilitate the development of the software sector. It is questionable, however, how effective such policy and initiatives are in practice. Some policies (such as tax incentives) may have very insignificant impacts on the operation and profitability of software firms. Other policies, such as priority programs and projects under Decision 95, may have impacted only those few firms that have close connections to government agencies. One can debate about the relevance of some policies, e.g. the Techno-Economic Program for IT, in that it follows a "picking the winner" approach and therefore may not create a fair environment for the majority of firms in the sector. There is also the problem of the right policy, but the implementation is slow and delayed. Thus, the impacts of policies vary widely.

The authors of this study propose

that the best way to assess the impacts of such policies is to examine how they enable software firms to gain access to key factors for their growth and expansion, i.e. market access, access to human resource, access to finance, access to land/office, and access to technical and other infrastructure. In this way, the direct concerns of enterprises in the sector can be addressed, so as to obtain the highest response from surveyed firms, and this will indirectly evaluate the impact of selected government policies.

Figure 29: Advertisement for TePP Program



iii. Canvassing in any form will result in disqualification / rejection of the pplication.

Stakeholder	Role	Best Practices	Innovations
Government	Policy-making	 Multi-sector policy development, e.g., combine hightech policies that cover ICT segments such as telecom, IT, trade, media education, , to optimize policy and drive infrastructure development Create common, pro-business policies that apply across industry, e.g., basic business framework, to stimulate competition, convergence, and a overall business environment Create quasi-independent agencies targeting high-tech and exports to target specific policy objectives and tap business and civil society resources¹ Ensure strong protection of intellectual property rights, and adapt continuously to innovation Develop technology neutral standards and practices to access to innovative and new technologies Stimulate open source and open standards technology 	 Multinational policy frameworks, WTO, ASEAN Developing high-tech "clustering" that combine R&D, human capital development, infrastructure and businesses Flexible and innovated IPR that covers leading edge issues such as web-based applications and IPTV, and flexible enough to incorporate new technologies and services Expanded concept of Universal Service to include access to multiple ICT services
	Regulation and Enforcement	 Create an independent, unified regulatory agency that overseas ICT and convergence sectors, e.g., telecoms, IT, media and Internet services. Conduct internal IT audits within Ministries to ensure IP protection and IT spending efficiency Conduct robust data gathering and analysis to manage and monitor ICT industry 	 Multinational regulation Self regulation and multi-sector competition' commission⁵³ Quarterly government reports to monitor key government objectives⁵⁴ Use consultants to capture sector expertise
52. The Electronics and Computer analysis, organizes trade events	Software Promotion Council (ECS) s, supports Indian trade association) is a quasi-government agency of the Ministry of Communications including the tele as, and tracks results.	com, computer, ITES, BPO, electronics industry, The ECS sponsors research and

Commission, which is responsible for enforcing telecom related provisions of the Trade Practices Act. 54. In the United States, the Federal Communications Commission issues a quarterly report on broadband Internet development, including a review of technology infrastructure and trends

Stakeholder	Role	Best Practices	Innovations
	Initiatives	 Focused on areas market gaps, e.g., education, basis R&D, rural development Stimulate demand and government efficiency through IT investment in government, e.g., e-governance, e-education, e-society initiatives Clear separation between national government, provincial government and local government on the priorities and objectives of ICT policy Government sponsored R&D targeting innovation creation 	 Systematic evaluation of government policies, e.g., e.government audit Set internal benchmarks for use of IT within government Include process reengineering in all e-governance initiatives, e.g., improve backend processes and IT use combined with front-end portals, websites, etc.
	Jurisprudence (Judicial Review)	 Specialized court for ICT and convergence issues, including IT, telecom and Internet sector experience and expertise⁵⁵ 	 Required independent mechanism for biding arbitration or need for court action
Business	Software	 Equitize state ownership of high-tech companies to eliminate perception of unfair advantage, e.g., SSP Drive access to private/foreign investment to foster new investment Streamline business environment, e.g., licensing and tax policy to stimulate new business and lower the "cost of doing business" Develop "captive" MNC R&D centers to provide jobs, access to technology and experience 	 Extended global deliver model where the service "supply chain" (now largely a buyer and seller market) includes multiple players across multiple countries (many outsourcing contracts expressly preclude outsourcers from using subcontractors) Component based software development Partnerships between global majors, government, academia et al, for R&R, training
	ITES and BPOs	 Vertically oriented operations, e.g., telecom or banking vertical Specialized language, accent and cultural training to enhance customer understanding Develop "captive" MNC BPOs to provide jobs, access to technology and experience 	 Framework to target "next generation" services, e.g., knowledge-process outsourcing (KPO), and new markets, e.g., South Korea, Taiwan, Singapore, China, India

Stakeholder	Role	Best Practices	Innovations
	Hardware	 Flexible manufacturing models, e.g., captive, OEM, JVs, etc., to maximize opportunity 	
	Financial institutions	Access to multiple financiers, e.g., equity, corporate loans, bonds, etc.	 Framework for small business loans, VC, "angel" investment, etc. Develop "non-collateralized" loans to "value" software products and intellectual property
	Ancillary businesses	 Drive ancillary businesses, e.g., media, magazines, business intelligence, et al, to create a vibrant market 	
Civil Society	Consumers (business and residential)	 Ensure participation of consumers and businesses in the public debate 	 Online user groups and blogs that allow individuals to provide feedback and discuss issues Collaborative software and product development, e.g., Mozilla Foundation⁵⁶
	Employee organizations, groups and unions	 Ensure employees and workers groups proactively and positively impact ICT sector development 	 Stakeholder forums to educate unions and involve them in the policy process
	Associations	 Multiple trade groups for high-technology operators, e.g., software, telcos, ISPs, consumers, etc. 	 Initial government support for the creation of these associations, e.g., Indian ESC Support on entrepreneurs and VC⁵⁷

56. For more information visit www.mozilla.org 57. The Indus Entrepreneurs (TiE) is a U.S.-based organization focused on promoting entrepreneurism and providing capitol to new projects. TiE has international afflitates.

Stakeholder	Role	Best Practices	Innovations
	Academia	 Allocate government grants for academic research, i.e., White Papers, studies 	 Industry sponsored R&D and academia products, programs, and training
		 Allocate government funding for tech. training, R&D Push for public, private partnerships 	 Focus on "cluster" that combines academia, government and industry
		 Ensure mix between public universities and private institutions 	 Focused Education Zones (similar to Special Economic Zones) where the regulatory constraints hampering the education system are minimized, e.g.,
		 Target the development of "elite" facilities to graduate future ICT industry leaders⁵⁸ 	deregulatory higher education and removing limits for private and international educational funding

58. The Indian Institutes of Technology (IIT) is a system of seven elite universities focused on 25+ engineering technology and management programs. Graduating about 3,000 students per year, the IITs have produced some of India's leading business and government professions, many of whom have worked abroad. Created in the 1950s, each IIT received initial support from a foreign sponsor, which provided funding, professions, curriculum, technology, and access to foreign institutions and businesses. For example, IIT Kanpur received assistance from USAID, while IIT Benuby received support from the USSR IIT Delhi from the UK. IIT Madras from Germany.



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The Asia Foundation is a non-profit, non-governmental organization committed to the development of a peaceful, prosperous, and open Asia-Pacific region. The Foundation supports programs in Asia that help improve governance and law, economic reform and development, women's participation, and international relations. Drawing on 50 years of experience in Asia, the Foundation collaborates with private and public partners to support leadership and institutional development, exchanges, and policy research. With a network of 17 offices throughout Asia, an office in Washington, D.C., and its headquarters in San Francisco, the Foundation addresses these issues on both a country and regional level.



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