

**ASSESSMENT REPORT**

**BOOSTING THAILAND'S E-PERFORMANCE --  
ASSESSMENT OF CURRENT POSITION AND  
PRIORITY AREAS**

Bangkok  
29 April 2002

*This document is confidential and is intended solely for the use and  
information of the client to whom it is addressed.*

# Contents

## I. Project and Report Context

## II. Strategic Priorities for E-Government -- Lessons Learned from Leading Adopters

## III. Assessing Thailand's Comparative E-Performance

- Overview
- Leadership
- Country readiness
- Government readiness

## IV. Assessing Priorities for the Thai Government

## Appendices

### I. Sources

### II. Assessment Findings - Backup Information

### III. Focus Group Research in Provincial Towns and Rural Areas

### IV. Government Web Site Review

### V. Survey of Government IT Officials

# Project and Report Context

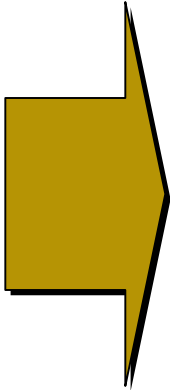
# Numerous initiatives point to Thailand's desire to greatly accelerate E-government and ICT development

- ▶ **A Strategic 5-year ICT Master Plan is being developed based on the recently-completed IT 2010 policy framework**
- ▶ **As part of the broader government restructuring program, a Ministry of ICT is planned. Organizational and functional design efforts are on-going.**
- ▶ **Multiple agencies and committees are working on a broad E-government strategy to guide the development of ICT in the public sector**
- ▶ **The legal infrastructure required to support the national development of ICT is being established**
- ▶ **A variety of more sector- and function-specific activities are being undertaken including efforts to increase rural access and narrow the digital divide**

# This Booz Allen project is intended to support the e-government and ICT development initiative

**PROJECT OBJECTIVES/FOCUS**

- ▶ Conduct an assessment of the current status of the enabling environment, ICT resources, degree of access of citizens and communities, leadership, and skills/capabilities to leverage ICT.
- ▶ Maintain a primary focus on E-government (70%), but include wider e-business and e-society development (30%)



**THAILAND'S E-GOVERNMENT/ICT INITIATIVES**

- ▶ Policy Framework
  - E-society
  - E-government
  - E-commerce
  - E-industry
  - E-education
- ▶ Master plan development
- ▶ Organizational restructuring
- ▶ E-government Strategy
- ▶ Legal infrastructure
- ▶ Rural access

# The project team is comprised of Booz Allen/Sasin Institute, the Thai E-government committee and the World Bank

	<b>ROLES &amp; RESPONSIBILITIES</b>	<b>TEAM MEMBERS</b>
<b>E-Government Committee</b>	<ul style="list-style-type: none"> <li>▶ Primary client</li> <li>▶ Royal Thai Government counterpart</li> <li>▶ Assessment management and guidance</li> <li>▶ Data collection and analysis support</li> </ul>	<ul style="list-style-type: none"> <li>▶ Dr. Wuttipong Pongsuwan</li> <li>▶ Dr. Rathian Srimongkol</li> <li>▶ Khun Maneerat Phipat</li> <li>▶ Dr. Prasong Praneetpolgrang</li> <li>▶ Lt. Manruth Srisook</li> <li>▶ Khun Nattha Lertpitayakun</li> <li>▶ Pol.Lt.Co. Pongpitsanu Pakdeenarong</li> <li>▶ Khun Chatchai Pongmala</li> <li>▶ 1st Lt. Kittisak Suwannarak</li> </ul>
<b>World Bank</b>	<ul style="list-style-type: none"> <li>▶ Funding agency and client</li> <li>▶ Assessment management and guidance</li> </ul>	<ul style="list-style-type: none"> <li>▶ Mr. Magdi M. Amin</li> <li>▶ Khun Asda Chintakananda</li> </ul>
<b>Booz Allen Hamilton</b>	<ul style="list-style-type: none"> <li>▶ Prime consulting contractor</li> <li>▶ Data collection and analysis</li> <li>▶ International best practice comparisons</li> <li>▶ Report and presentation production</li> </ul>	<ul style="list-style-type: none"> <li>▶ Mr. Steven M. Furst</li> <li>▶ Dr. Llewellyn Toulmin</li> <li>▶ Mr. Tariq Hussain</li> <li>▶ Khun Kanokthip Tirasretsema</li> </ul>
<b>Sasin Institute</b>	<ul style="list-style-type: none"> <li>▶ Sub-contractor</li> <li>▶ Data collection and analysis</li> <li>▶ Input to reports and presentations</li> </ul>	<ul style="list-style-type: none"> <li>▶ Dr. Siriyupa Roongrerngsuke</li> <li>▶ Dr. Adith Cheosakul</li> </ul>

# This report concludes the data collection/diagnostic/ assessment phase and serves as the basis for strategy development

	MONTH				STATUS
	JAN	FEB	MAR	APR	
1.0 Project Launch 1.1 Mobilize Project Team 1.2 Prepare and conduct Launch Workshop	[Gantt bars for 1.0-1.2: 1.1 in Jan, 1.2 in Jan/Feb]				✓✓
2.0 ICT Assessment 2.1 Develop data collection plan 2.2 Conduct document and on line research 2.3 Conduct interviews and surveys 2.4 Prepare assessment findings 2.5 Prepare and conduct Assessment Workshop	[Gantt bars for 2.0-2.5: 2.1 in Jan, 2.2 in Jan/Feb, 2.3 in Feb/Mar, 2.4 in Mar, 2.5 in Mar/Apr]				✓✓✓✓
3.0 Diagnostic 3.1 Identify and compile relevant international best practices 3.2 Identify gaps between Thailand and international best practice 3.3 Determine capacity building requirements	[Gantt bars for 3.0-3.3: 3.1 in Mar, 3.2 in Mar/Apr, 3.3 in Apr]				✓✓
4.0 Strategic Planning 4.1 Develop strategy components and action plans 4.2 Prepare and conduct Strategic Action Planning Workshop	[Gantt bars for 4.0-4.2: 4.1 in Mar/Apr, 4.2 in Apr]				
5.0 Project Reporting and Information Dissemination 5.1 Prepare and Submit Inception Report 5.2 Prepare and Submit Assessment (Draft) Report 5.3 Prepare and Submit Final Report and presentation materials	[Gantt bars for 5.0-5.3: 5.1 in Feb, 5.2 in Mar, 5.3 in Apr]				✓✓

# **This document presents the assessment findings and is focused on clarifying priorities**

- ▶ **This document was presented to a key group of clients and stakeholders during the Assessment Workshop**
- ▶ **The body of the document provides the salient findings and results of the assessment in an analytical framework along with key comparisons to international experience.**
- ▶ **The appendices provide supporting information and more detailed descriptions of the assessment activities and findings.**
- ▶ **The ultimate purpose of this report is to help identify priority ICT activity areas for the Thai government**



## **II. Strategic Priorities for E-Government -- Lessons Learned from Leading Adopters**

# Countries worldwide have embraced e-government to achieve three types of objectives

## E-GOVERNMENT BENEFITS

### IMPROVED CITIZEN SERVICE

- ▶ Convenience: improved access; less time-consuming interaction
- ▶ Customization: service offerings tailored to citizens' specific needs
- ▶ Improvement of transparency and building trust
- ▶ More active citizen interaction and democratic participation in decision-making

### GOVERNMENT EFFICIENCY

- ▶ Improved productivity & skills for government employees
- ▶ Improved collaboration and knowledge sharing within government at all levels
- ▶ Redefinition of operating model and process improvements

### ECONOMIC GROWTH

- ▶ Stimulation of e-commerce adoption
- ▶ Building of societal IT skills and capabilities
- ▶ Creation of attractive environment for investment in IT and other industries

# Successful e-government adopters have typically focused on one or two of these objectives

## PRIORITIES OF LEADING E-GOVERNMENT ADOPTERS

	OVERALL VISION/GOAL	OBJECTIVES			KEY PRIORITIES
		CITIZEN SERVICE	GOVERNMENT EFFICIENCY	ECONOMIC GROWTH	
CANADA	<ul style="list-style-type: none"> <li>▶ “Citizen-centered government”</li> </ul>	<ul style="list-style-type: none"> <li>▶ #1</li> </ul>			<ul style="list-style-type: none"> <li>▶ “By 2004, we will be the government most connected to its citizens”</li> <li>▶ “All key citizen services will be on-line by 2004”</li> </ul>
UK	<ul style="list-style-type: none"> <li>▶ “The UK will be the best place in the world for e-commerce by 2001”</li> </ul>		<ul style="list-style-type: none"> <li>▶ #2</li> </ul>	<ul style="list-style-type: none"> <li>▶ #1</li> </ul>	<ul style="list-style-type: none"> <li>▶ Government will be “alive to the latest developments in e-business”</li> <li>▶ “100% of government services will be carried out electronically by 2005”</li> </ul>
SINGAPORE	<ul style="list-style-type: none"> <li>▶ “Transform into a vibrant &amp; dynamic global ICT capital with a thriving &amp; prosperous Net economy by 2010”</li> </ul>		<ul style="list-style-type: none"> <li>▶ #2</li> </ul>	<ul style="list-style-type: none"> <li>▶ #1</li> </ul>	<ul style="list-style-type: none"> <li>▶ Position nation for future</li> <li>▶ “Radically re-engineer and transform the way we do things in government”</li> </ul>
AUSTRALIA	<ul style="list-style-type: none"> <li>▶ “Deliver all appropriate citizen services on-line by 2001”</li> </ul>	<ul style="list-style-type: none"> <li>▶ #1</li> </ul>		<ul style="list-style-type: none"> <li>▶ #2</li> </ul>	<ul style="list-style-type: none"> <li>▶ “Have virtually all government services available around the clock to everybody”</li> <li>▶ Government use of on-line services will be a key driver for the rest of the economy</li> </ul>

**For example, some countries have focused on G2C as a means to bring government closer to the people (e.g. Australia) . . .**

**AUSTRALIA: RATIONALE AND ACHIEVEMENTS TO DATE**

**RATIONALE FOR FOCUS**

- ▶ **Taxpayers expect value and results**
- ▶ **Citizen clients expect the same or better quality and access to services from government as they are getting from business**
- ▶ **Citizens want to participate more in the democratic process**
- ▶ **Government acknowledges the role it has to play in driving ICT development through e-government**

**KEY ACHIEVEMENTS TO DATE**

- ▶ **Launched integrated portal; a number of services are now routinely conducted through the internet by large part of population (e.g. tax filing, business registration)**
- ▶ **Fulfilled commitment to move all relevant services online by end 2001**
- ▶ **Integrated backoffice across federal agencies, as well as regional/local departments**
- ▶ **Made some organizational changes within the government to ensure successful implementation/follow-thru**

**...while some countries have used e-government as a key driver for economic growth (e.g. Singapore)**

**SINGAPORE: RATIONALE AND ACHIEVEMENTS TO DATE**

**RATIONALE FOR FOCUS**

- ▶ **To stay competitive in the region and world, Singapore feels it must transform itself into a knowledge-based economy**

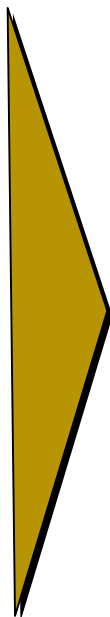
**KEY ACHIEVEMENTS TO DATE**

- ▶ **Allocated massive funds -- \$800M over 3 years – to e-government transformation to gain efficiency and reduce govt burden on business**
- ▶ **Established POWER (“public officials working on eliminating red tape”)**
- ▶ **Established distinct portals**
  - **One stop portal for G2B**
  - **One stop portal for business to bid on government procurements**
  - **E-citizen central portal logically based on life events, with clear ministerial responsibility for each portion of the portal content**
- ▶ **Implemented program to upgrade all government employees IT skills, to catch up with private sector**

# Our experience suggests that strategic priorities should be agreed early and be in line with a country's specific circumstances

## LIKELY PITFALLS

- ▶ “Everyone else is doing e-government/ICT – we’ve got to do something!”
- ▶ “Build a fancy system and people will come ...”
- ▶ “Let’s build a govt-wide system—getting agreement won’t be that hard”
- ▶ “The private sector should take a stronger role in promoting e-government ... we don’t have the money”
- ▶ “Let’s decentralize govt quickly...”



## RESULTING LESSONS LEARNED

- ▶ To avoid wasting scarce resources and time, govts must agree on clear priorities for their programs
- ▶ Both government and the people have to be ready to ensure meaningful e-govt
- ▶ The politics of buy-in is very tough in most countries
- ▶ E-government efforts have to be aligned with a country's specific economic model and political context
- ▶ ICT can empower local govt and forge central-local links, but it takes time and appropriate coordination

# **Assessment Workshop discussions showed diverging views among stakeholders regarding Thailand's e-government priorities**

## **THAILAND'S PRIORITIES IN E-GOVERNMENT**

- ▶ **The participants were asked to discuss and determine, and describe the rationale for, Thailand's relative priority among the three types of objectives for e-government**
- ▶ **No clear priority emerged from the discussion**
  - **A few of the participants felt that government efficiency should be the primary objective; others indicated that the government appears to be focusing on citizen service; some stated that economic development was the key to moving Thailand forward and would have greater spillover effects in the other two areas**
  - **Still others suggested that the government should focus on all three objectives**
- ▶ **Some participants felt strongly that the government must decide which objectives are the highest priority and act accordingly -- The Booz Allen team supports this view and continues to work with the Thai government to ensure alignment of the e-government program with other ICT initiatives.**

### III. Assessing Thailand's Comparative E-Performance

- ▶ Overview

- ▶ Leadership

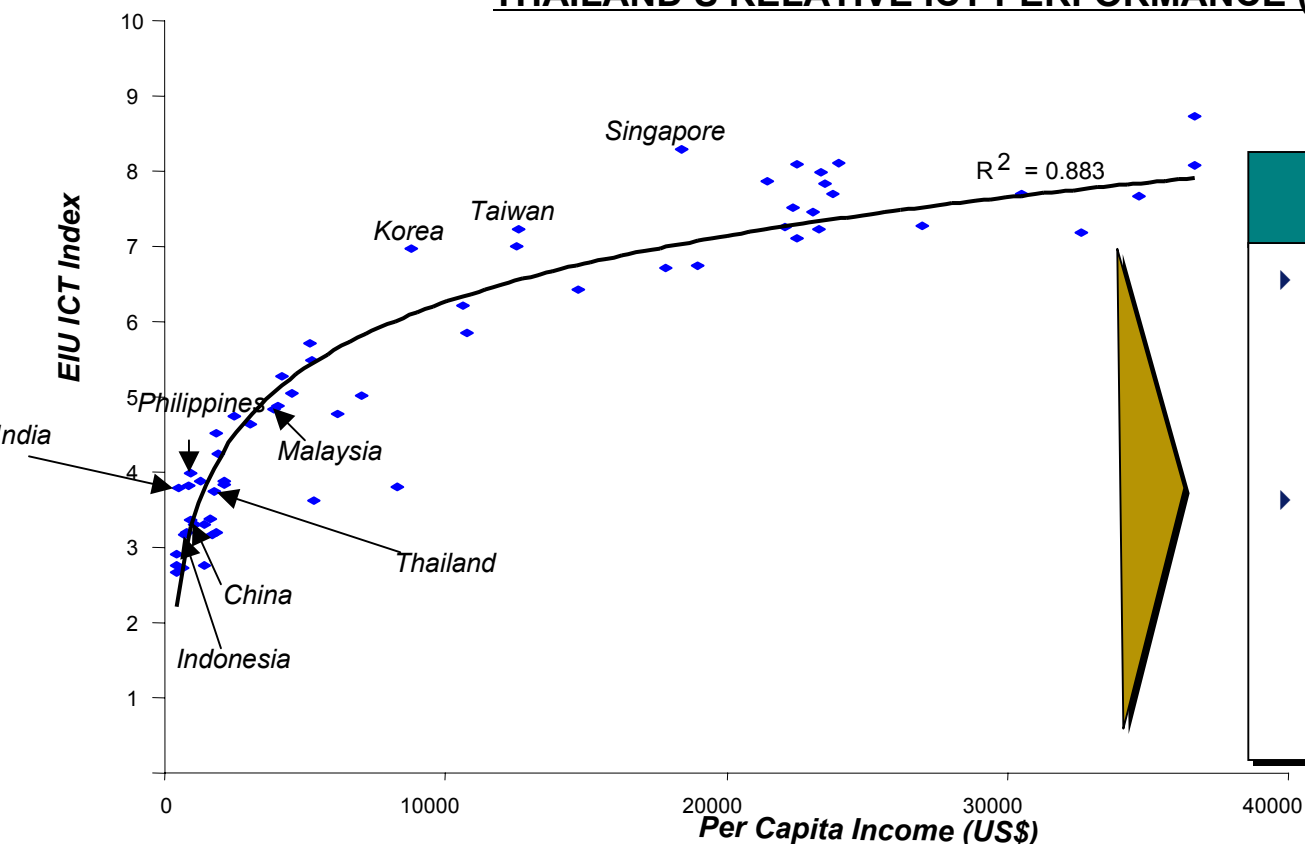
- ▶ Country readiness

- ▶ Government readiness



# Thailand is lagging behind other countries in the region in terms of ICT development

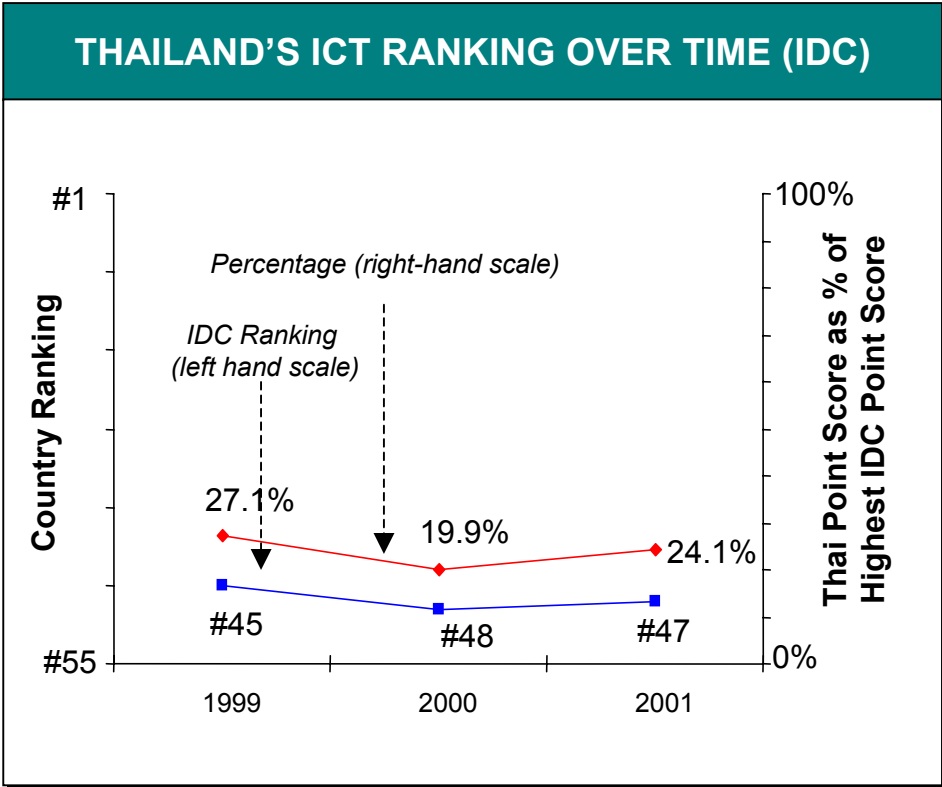
**THAILAND'S RELATIVE ICT PERFORMANCE (2001)**



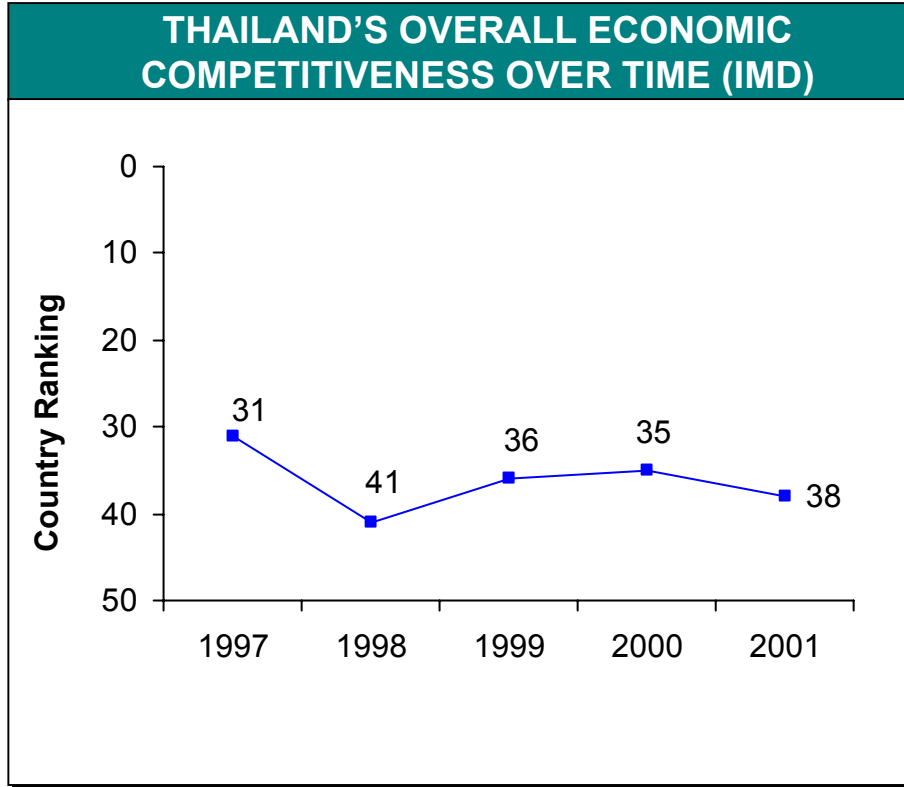
IMPLICATIONS
<ul style="list-style-type: none"> <li>▶ Korea, Taiwan, Singapore are the “superstars”, clearly outperforming their Asian peers, and relative to their economic development</li> <li>▶ Thailand is lagging behind even after taking into account its development status -- thus at a disadvantage vis a vis its regional “competitors”</li> </ul>

*Note: numerous ratings on Thailand's ICT development have been conducted; we chose EIU's because it appeared comprehensive, thorough and covered a large number of countries; Thailand's relative positioning on it is comparable to other studies*  
 Source: EIU, DRI, BAH analysis

# In addition, Thailand's ICT and overall competitiveness have stagnated/deteriorated relative to other countries



Source: IDC/World Times Information Society Index



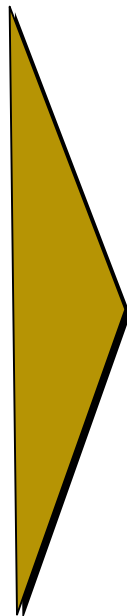
Source: IMD/WT, 2002



# The government has recognized this issue, but has yet to deliver against its promises

## AMBITIOUS PLANS AND BOLD STATEMENTS...

- ▶ ***“Not only will IT be instrumental in enhancing our competitiveness in business, industry, and international trades, but also in the hitherto much overlooked role as a cost-effective means for social development”***  
IT2000 - 1995
- ▶ ***“... greater value added in the value chain will be based on...unique local strength and know-how combined with cutting edge capital IT... This new development paradigm requires a change in the mindset of Thai people, Thai businessmen and Thai officials.”*** Prime Minister - 5/2001

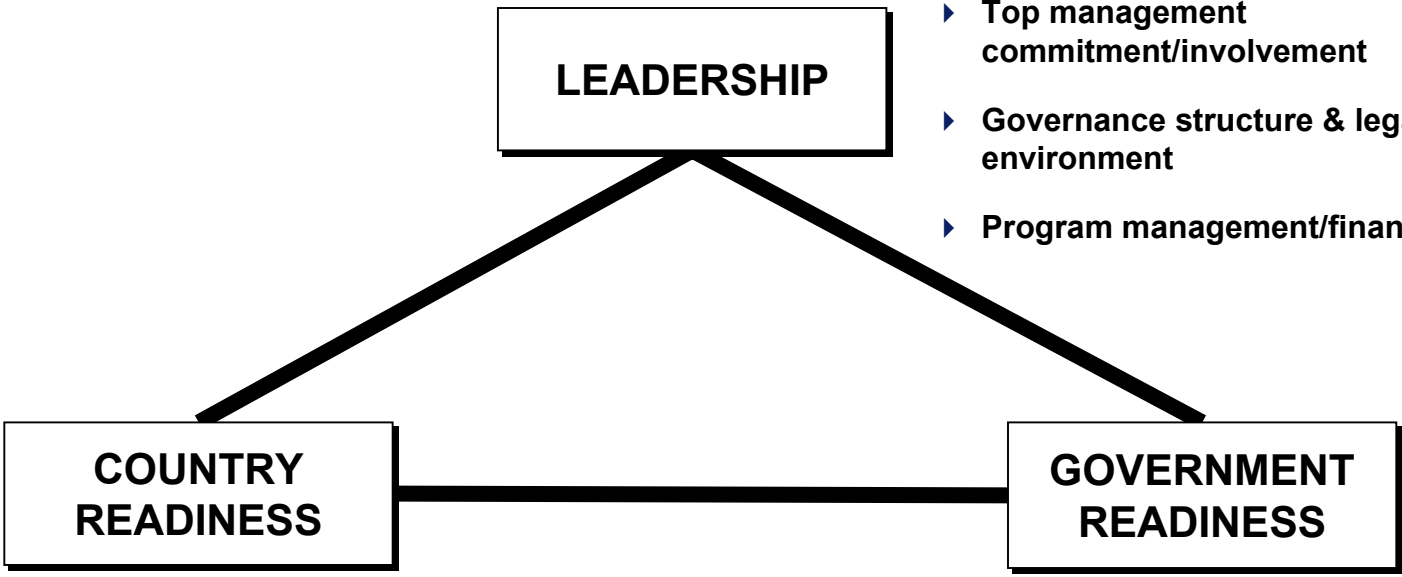


## ... BUT LITTLE DELIVERY TO DATE

- ▶ ***“Things are definitely better in ICT than they were four years ago, largely due to the IT focus of the current government. But we still have a long way to go...”*** Senior NECTEC official - 3/2002
- ▶ ***“A strong program on information technology is overdue in the face of a growing national gap.”*** Bangkok Post - 2/2002
- ▶ ***“The Prime Minister noted that ICT administration in Thailand is dispersed...”*** Bangkok Post - 2/2002
- ▶ ***“There’s been a lot of talk [about IT] but not much action...”*** Member of the Senate - 3/2002

# Booz Allen international experience suggests three building blocks of successful e-government implementation

## BUILDING BLOCKS OF SUCCESSFUL E-GOVERNMENT



- ▶ Top management commitment/involvement
- ▶ Governance structure & legal environment
- ▶ Program management/financing

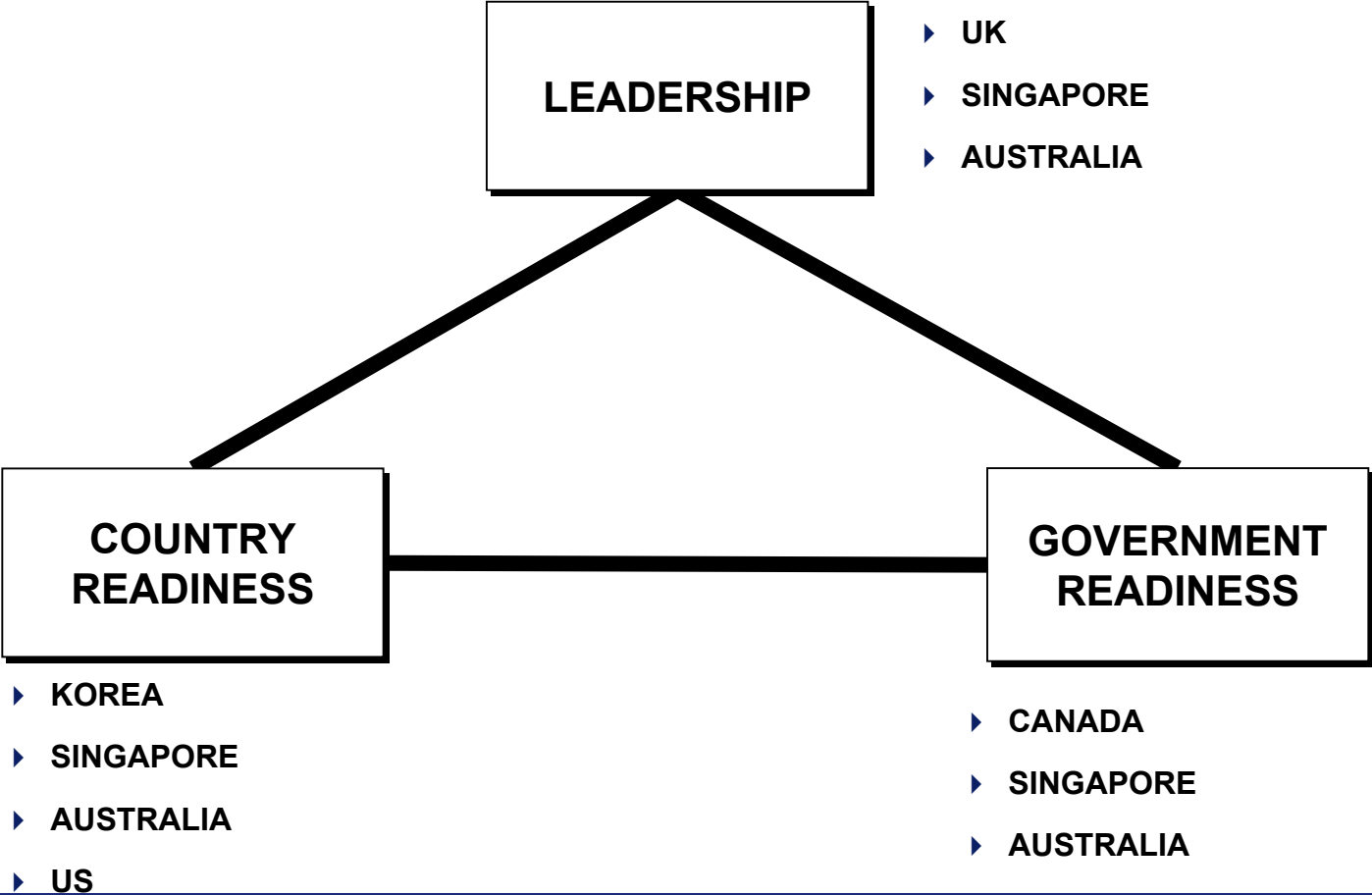
- ▶ Basic infrastructure, access and usage
- Distribution and basic skills
- Telecommunications market
- Content

- ▶ IT industry position
- Human resources
- Business environment

- ▶ Content/services
- ▶ Processes
- ▶ Capabilities/culture/human resources
- ▶ IT infrastructure

# We have assessed Thailand's positioning in these dimensions against leading/relevant international benchmarks

## INTERNATIONAL BENCHMARKS FOR EACH DIMENSION



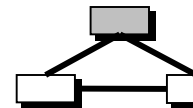
# Assessing Thailand's Comparative E-Performance

- ▶ Overview

- ▶ Leadership

- ▶ Country readiness

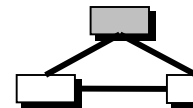
- ▶ Government readiness



# We have assessed Thailand's positioning in terms of leadership in three components

## LEADERSHIP: RATIONALE AND DESCRIPTION

	RATIONALE	DESCRIPTION
<b>TOP MANAGEMENT COMMITMENT/ INVOLVEMENT</b>	<ul style="list-style-type: none"> <li>▶ Major initiatives and change always have to be driven from the top -- esp. in governments</li> </ul>	<ul style="list-style-type: none"> <li>▶ Public commitment by Prime Minister and government</li> <li>▶ Ongoing PM involvement to monitor progress and remove obstacles</li> </ul>
<b>GOVERNANCE STRUCTURE</b>	<ul style="list-style-type: none"> <li>▶ Initiatives have to be supported by a clearly defined organization structure, roles and responsibilities and underlying laws</li> </ul>	<ul style="list-style-type: none"> <li>▶ High-level organization dedicated to ICT/e-government</li> <li>▶ Clear reporting relationships, accountabilities and responsibilities, including all levels of government (local administration, other agencies)</li> <li>▶ Clear and comprehensive legal framework</li> </ul>
<b>PROGRAM STRUCTURE</b>	<ul style="list-style-type: none"> <li>▶ Organization structure needs to be supported by appropriate processes and mechanisms to support effective decision making</li> </ul>	<ul style="list-style-type: none"> <li>▶ Priority/target setting to focus on high impact areas</li> <li>▶ Finance/budgeting</li> <li>▶ Progress monitoring/tracking</li> <li>▶ Ongoing improvement</li> </ul>

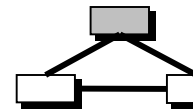


# Thailand's Prime Minister has demonstrated interest in ICT, but forceful leadership has been lacking

## TOP MANAGEMENT COMMITMENT/INVOLVEMENT: THAILAND VS. OTHER COUNTRIES

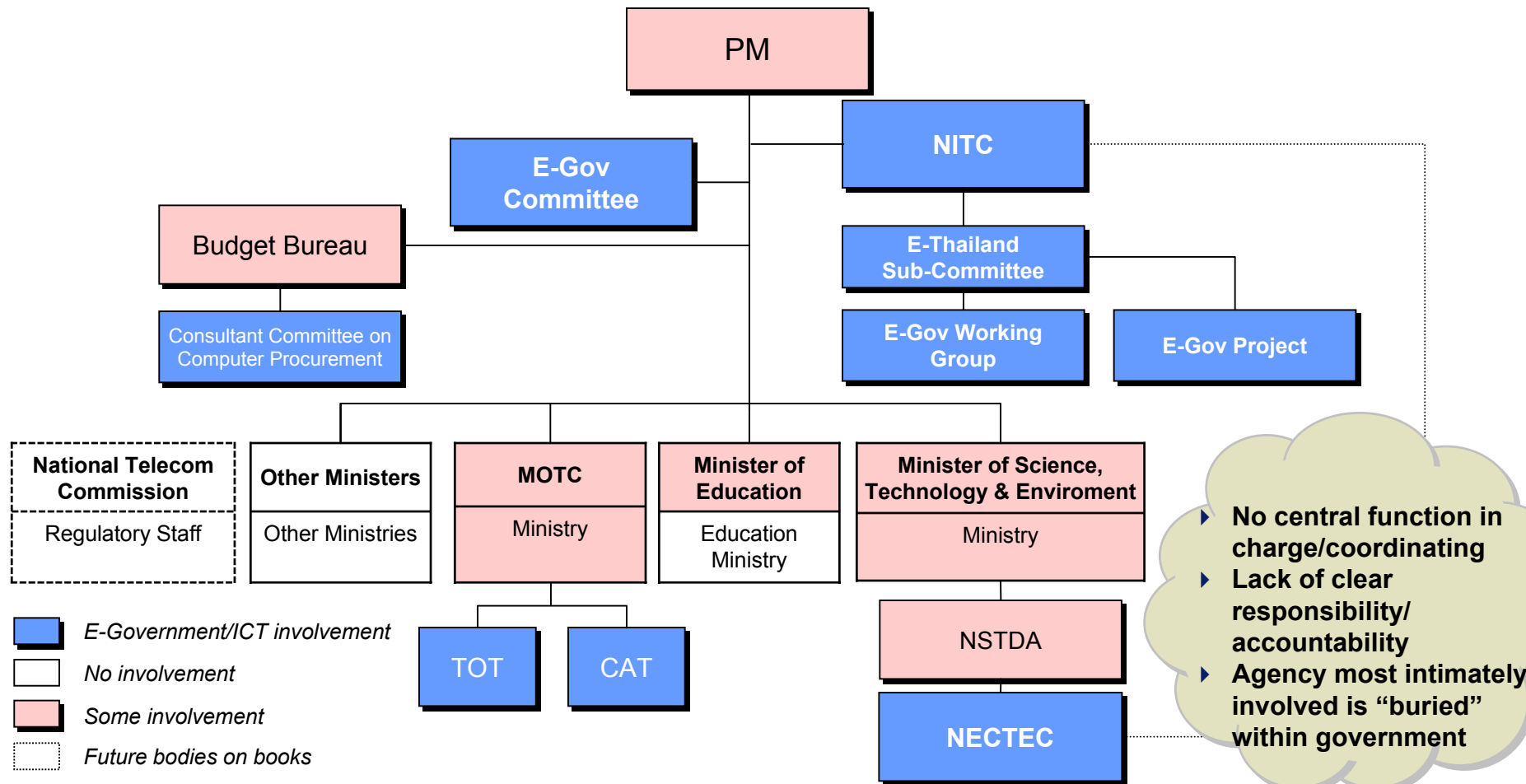
	THAILAND	AUSTRALIA	SINGAPORE
<b>PM/GOVERNMENT COMMITMENT</b>	<ul style="list-style-type: none"> <li>▶ To date, a number of statements of intent, setting high level policy direction</li> </ul>	<ul style="list-style-type: none"> <li>▶ April 2000: public commitment by Prime Minister to specific targets as part of "Government Online Strategy"</li> <li>▶ Ministries and agencies also took responsibility to deliver against targets</li> </ul>	<ul style="list-style-type: none"> <li>▶ E-government/ICT is a clear PM item since it is regarded as an integral part of the country's overall vision</li> <li>▶ Ministries/agencies fully understand their respective roles and are committing to achieving targets</li> </ul>
<b>ONGOING INVOLVEMENT TO DELIVER AGAINST COMMITMENT</b>	<ul style="list-style-type: none"> <li>▶ Involved in approving appropriate plans and programs</li> <li>▶ Chairing relevant National Information Technology Committee meetings</li> </ul>	<ul style="list-style-type: none"> <li>▶ Since then Prime Minister's involvement has largely focused on resolving cross-government issues and ensuring delivery of overall commitment</li> </ul>	<ul style="list-style-type: none"> <li>▶ Prime Minister takes active interest in promoting ICT agenda</li> <li>▶ In addition, powerful agencies (Ministry of Finance, IDA) drive implementation</li> </ul>



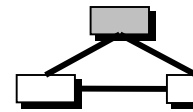


# The Thai E-Government/ICT Organization is fragmented and complex

## THAILAND: GOVERNANCE STRUCTURE FOR E-GOVERNMENT/ICT



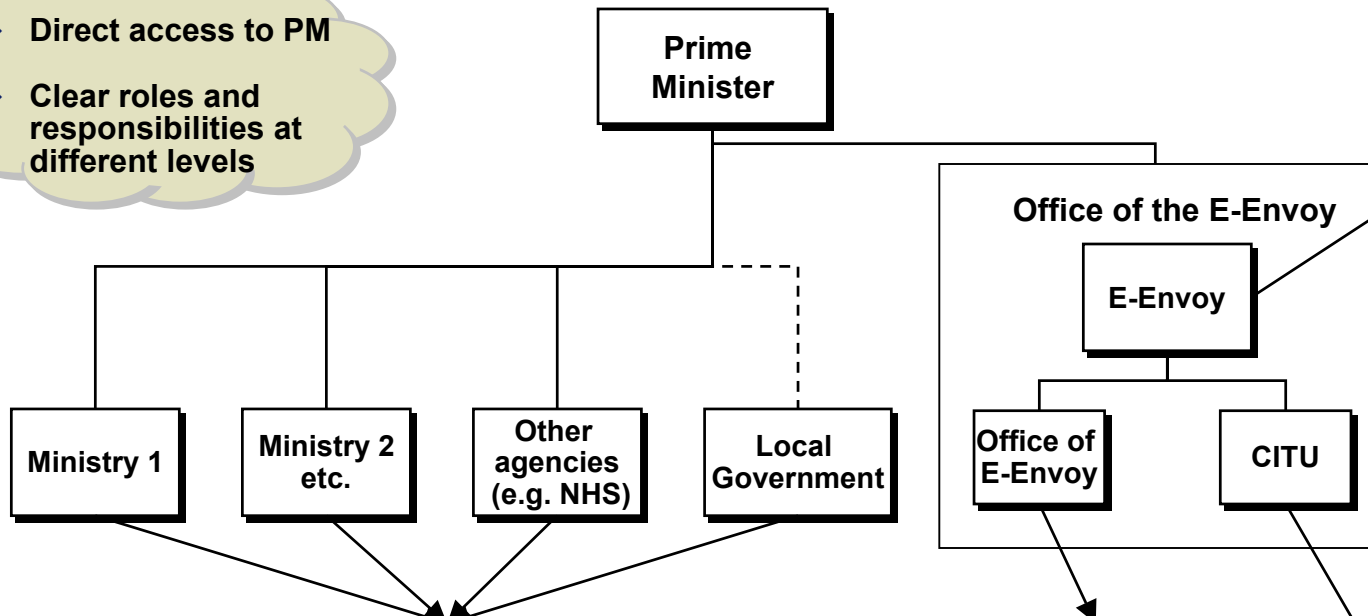
Source: BAH Research, 20002



By contrast, the UK has established a dedicated, powerful function focusing on e-government and related IT issues

### UK: GOVERNANCE STRUCTURE

- ▶ Direct access to PM
- ▶ Clear roles and responsibilities at different levels

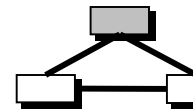


- ROLES AND RESPONSIBILITIES**
- ▶ E-champions within agencies in both central and local government
  - ▶ Role includes
    - Support e-envoy in developing and implementing strategy
    - Help in winning and sustaining commitment to programs

- ROLES AND RESPONSIBILITIES**
- ▶ Develop Policies to support government transformation
  - ▶ Focus on operational and infrastructure strategies
  - ▶ Ensure best use of enabling technologies

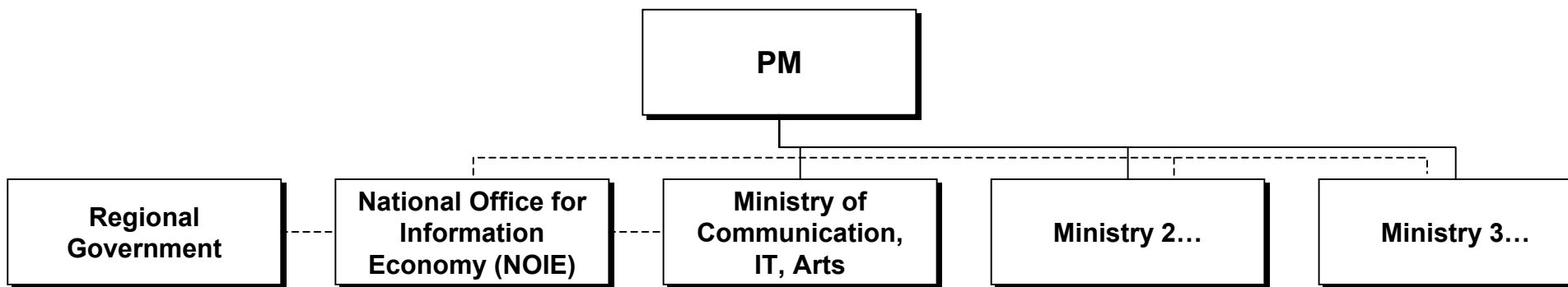
- ROLES AND RESPONSIBILITIES**
- ▶ Owns strategy
  - ▶ Articulates detailed change program and leads its implementation
  - ▶ Identifies and supports cross-cutting initiatives
  - ▶ Reports regularly on progress to ministers

- ROLES AND RESPONSIBILITIES**
- ▶ Develop and monitor implementation of policies, standards and guidelines
  - ▶ Support departments in development of their strategies
  - ▶ Establish and promote common IT policies
  - ▶ Promote shared infrastructure and applications



# The Australian government has created the National Office for Information Economy (NOIE) as an ‘Executive Agency’”

## AUSTRALIA: GOVERNANCE STRUCTURE



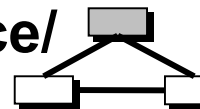
### GOVERNANCE STRUCTURE

- ▶ Within Ministry of Communication, but as an “Executive Agency”, in order to:
  - Coordinate and drive e-government/ICT efforts across government (central and regional) as well as other relevant stakeholders (e.g., Business community)
  - Independently engage with business and government agencies
  - Capture synergies across the government
- ▶ NOIE is managed like a business
  - Run by CEO
  - Publish audited financial statements
  - Has to meet clearly identified performance priorities and targets

### ROLES AND RESPONSIBILITIES

- ▶ Develop and follow up on overall ICT strategy
- ▶ Conduct research and develop appropriate policy response regarding access to internet
- ▶ Develop and follow up on e-government policy and direction and provide coordination support as needed (e.g., Government portal, public infrastructure)
- ▶ Provide policy advice on enhancing the role of IT related industries on the economy

# Thailand has made a good start on establishing an e-commerce/e-society framework -- however, telecom liberalization and e-government legislation are lagging



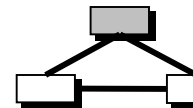
## THAILAND: LEGAL ENVIRONMENT/Framework

FRAMEWORK COMPONENT	ELEMENTS	THAILAND'S PROGRESS
E-Commerce	<ul style="list-style-type: none"> <li>▶ Electronic commercial transactions (payments, currency)</li> <li>▶ Telecom Regulation</li> <li>▶ Digital signature</li> <li>▶ Contract law</li> <li>▶ Intellectual Property Rights</li> </ul>	2
E-Society	<ul style="list-style-type: none"> <li>▶ Data privacy</li> <li>▶ Computer crimes</li> <li>▶ Consumer rights</li> <li>▶ Equity and access</li> </ul>	2
E-Government	<ul style="list-style-type: none"> <li>▶ Electronic government transactions</li> <li>▶ Legislation/executive orders requiring government to achieve explicit goals</li> <li>▶ Regulations on data sharing</li> <li>▶ Regulations on modifications to government administrative and operational procedures</li> </ul>	1

▶ MAJOR ISSUE - Telecom Legal framework is established, but implementation is lagging -- sector not liberalized/privatized, and regulator not in place

0	1	2	3	4
No plans for appropriate regulations/ legislation	Plans for legislation, some drafted	Substantial legislation drafted, some passed	Legislation passed in many areas	<ul style="list-style-type: none"> <li>▶ Comprehensive legal framework in place</li> <li>▶ Legal/regulatory constraints do not limit and do encourage e-society</li> <li>▶ Enforcement/ implementation in place</li> </ul>

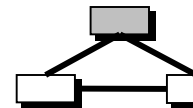
Source: BAH



# Compared to global best practice, Thailand is significantly lagging in terms of program management

## PROGRAM MANAGEMENT: THAILAND VS. SINGAPORE

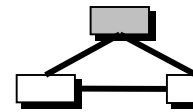
	THAILAND	SINGAPORE
<b>PRIORITY/TARGET SETTING</b>	<ul style="list-style-type: none"> <li>▶ Broad policy and strategy statements covering all aspects without realistic, feasible or practical action plans</li> <li>▶ Some general goals defined for connectivity and access (e.g. villages, schools), but no realistic or measurable goals for e-government</li> </ul>	<ul style="list-style-type: none"> <li>▶ Overall, clear priorities and targets are identified, both for e-government and ICT development</li> <li>▶ These are then broken down into specific goals and objectives for the relevant ministries and agencies involved</li> </ul>
<b>FINANCE/BUDGETING PROCESS</b>	<ul style="list-style-type: none"> <li>▶ No global analysis or planning for ICT investments</li> <li>▶ No formal guidance to agencies on levels of ICT spending</li> <li>▶ Agency investment plans and budgets developed independently</li> <li>▶ Ineffective review and allocation process driven by short-term outlook and applied influence</li> </ul>	<ul style="list-style-type: none"> <li>▶ Similar to private sector, finance and budgeting process ensures that:               <ul style="list-style-type: none"> <li>– Capital allocation decisions are based on reasonable analysis and assumptions</li> <li>– Cross-government initiatives are evaluated from an overall viewpoint (e.g. IT plans)</li> </ul> </li> <li>▶ Money available for initiatives that promise positive return</li> </ul>



# Compared to global best practice, Thailand is significantly lagging in terms of program management (cont'd)

## PROGRAM MANAGEMENT: THAILAND VS. SINGAPORE

	THAILAND	SINGAPORE
<b>PROGRESS MONITORING/ TRACKING</b>	<ul style="list-style-type: none"> <li>▶ Some strategic review of multi-year progress</li> <li>▶ No performance or results based evaluation of ICT initiatives</li> <li>▶ Few incentives to perform well &amp; ensure implementation</li> <li>▶ No sanction for failed efforts or missed targets</li> </ul>	<ul style="list-style-type: none"> <li>▶ Small taskforce consisting of ministers and senior officials regularly meets to review performance against targets</li> <li>▶ Officials at all levels have specific, quantifiable targets aligned with overall strategy and are evaluated and remunerated based on their achievement (bonus up to 70% of salary)</li> </ul>
<b>ONGOING IMPROVEMENT</b>	<ul style="list-style-type: none"> <li>▶ Only few initiatives in place, e.g. “performance budgeting process”</li> </ul>	<ul style="list-style-type: none"> <li>▶ Government constantly looking for improvement opportunities</li> <li>▶ Not shying away from making fundamental changes to key agencies</li> </ul>



# In summary, Thailand's ICT leadership is significantly impaired under the current setup -- with potentially serious consequences

## SUMMARY RATING: THAILAND'S ICT LEADERSHIP

	RATING	RATIONALE
TOP MANAGEMENT COMMITMENT/ INVOLVEMENT	2	<ul style="list-style-type: none"> <li>▶ Top management says all or most of the right things</li> <li>▶ ... yet clear focus and commitment have been lacking to date</li> </ul>
GOVERNANCE STRUCTURE	1	<ul style="list-style-type: none"> <li>▶ Some relevant organizations/units have been set up -- yet clear lack of clear responsibility to drive initiatives across all levels of government</li> </ul>
PROGRAM STRUCTURE	0	<ul style="list-style-type: none"> <li>▶ Absence of follow through               <ul style="list-style-type: none"> <li>– Planning</li> <li>– Funding</li> <li>– Implementation</li> <li>– Performance evaluation</li> </ul> </li> </ul>



### POTENTIAL IMPLICATIONS

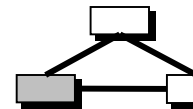
- ▶ Waste of time, money, resources
- ▶ Infighting & loss of focus on goals
- ▶ Loss of government credibility

*Note: Full Harvey ball represents global best practice as benchmark; there is no a priori reason why Thailand should be lagging*

# Assessing Thailand's Comparative E-Performance

- ▶ Overview
- ▶ Leadership
- ▶ Country readiness
- ▶ Government readiness

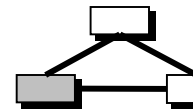




# Our assessment of country readiness is based on two components

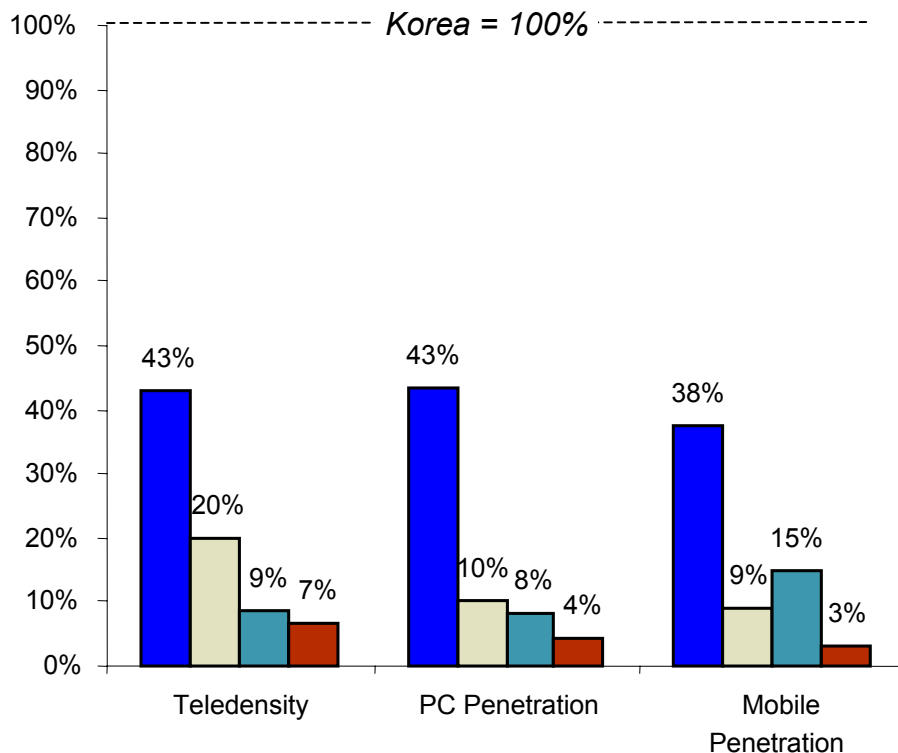
## COUNTRY READINESS: RATIONALE AND DESCRIPTION

	<b>RATIONALE</b>	<b>DESCRIPTION</b>
<b>INFRASTRUCTURE, ACCESS AND USAGE</b>	<ul style="list-style-type: none"><li>▶ Access and basic IT skills are the basic prerequisite for using the internet</li></ul>	<ul style="list-style-type: none"><li>▶ Clear analysis of status of “digital divide”</li><li>▶ Internet access/usage driven by three main factors<ul style="list-style-type: none"><li>– Programs for different levels (education, disadvantaged segments of population)</li><li>– Competitive telecom market</li><li>– Local content</li></ul></li></ul>
<b>IT INDUSTRY POSITION</b>	<ul style="list-style-type: none"><li>▶ A vibrant IT industry is a key driver for overall ICT development</li><li>▶ ICT is a major driver of economic growth</li></ul>	<ul style="list-style-type: none"><li>▶ Large pool of trained IT professionals</li><li>▶ High-value added IT manufacturing/service industry</li><li>▶ Favorable business environment for start-ups and FDI</li></ul>



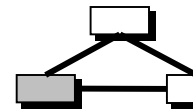
# Thailand's basic infrastructure is lagging behind advanced, but largely in line with comparable countries in the region

## INFRASTRUCTURE INDICATORS: BENCHMARKING AGAINST KOREA (2000)

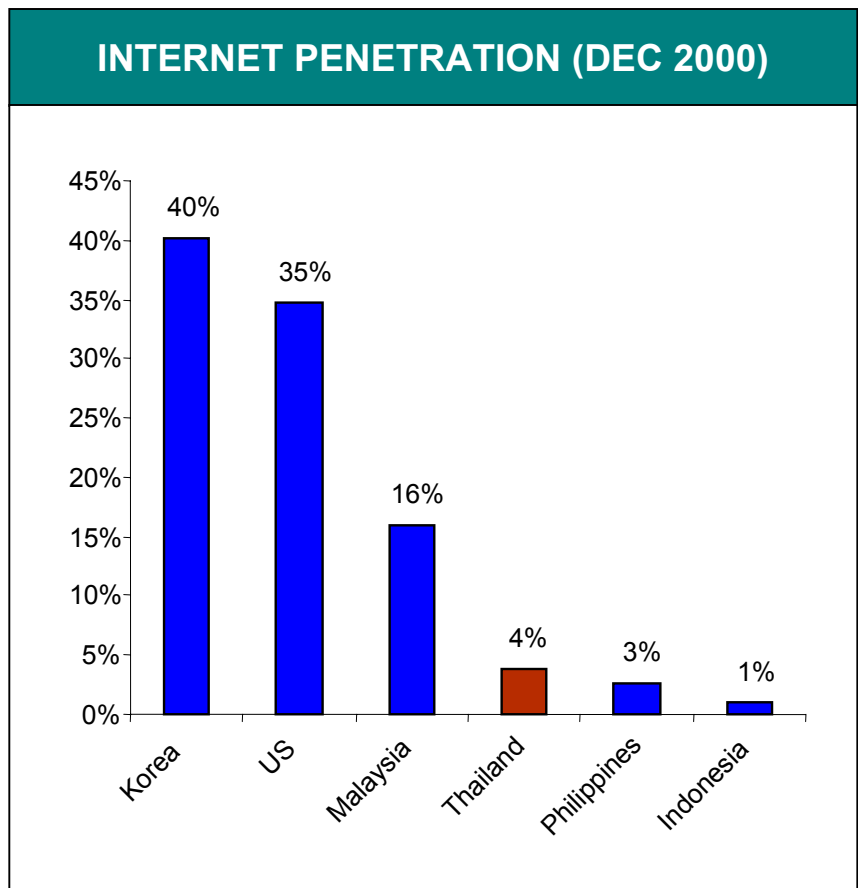


▶ Malaysia is closest to Korea in all dimensions  
 ▶ Thailand's position in line with its overall development status/relative position

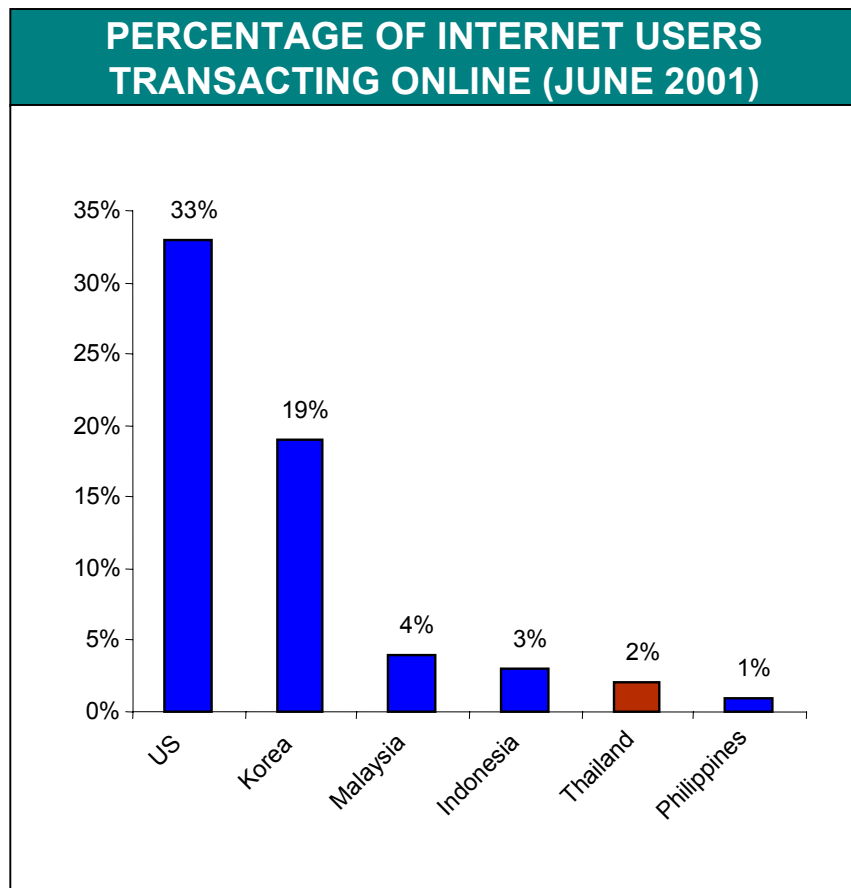
Note: Korea is generally perceived as "best practice" among Asia's emerging economies  
 Source: ITU, BAH analysis



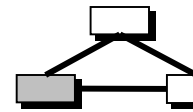
Similarly, internet usage and transactions are low by global standards, but in line with regional peers



Source: ITU



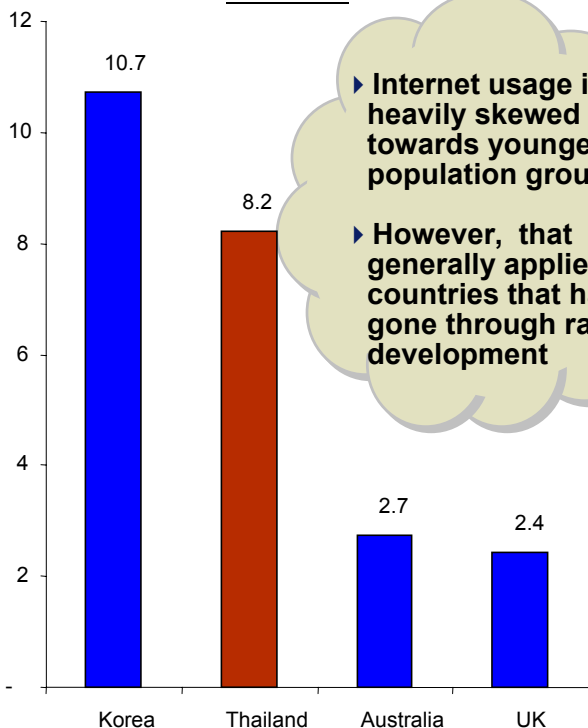
Source: Taylor Nelson Sofres



# A closer, cross-country analysis of the digital divide indicates that Thailand's main challenge lies in ensuring access to rural areas

## DIGITAL DIVIDE: THAILAND VS. OTHER COUNTRIES

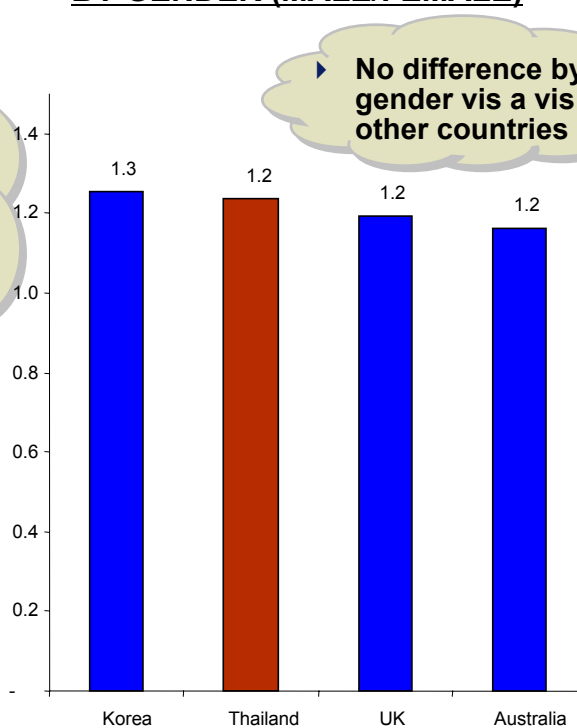
### BY AGE



▶ Internet usage is heavily skewed towards younger population groups

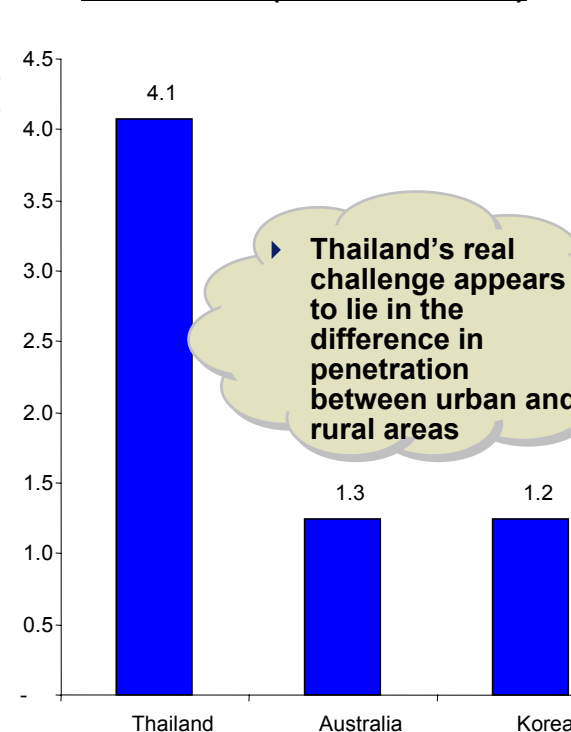
▶ However, that generally applies to countries that have gone through rapid development

### BY GENDER (MALE/FEMALE)



▶ No difference by gender vis a vis other countries

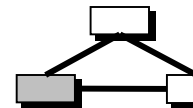
### BY REGION (URBAN/RURAL)



▶ Thailand's real challenge appears to lie in the difference in penetration between urban and rural areas

Note: Digital divide is defined by the penetration of the highest user group over the lowest user group; quality of data on internet usage in Thailand is poor and makes meaningful comparisons difficult

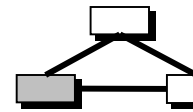
Source: NCA, Australian Statistics Bureau, NECTEC, TNS, UK National Statistics, BAH analysis



# Addressing the digital divide requires a targeted program on two different levels

## LEVEL 1: PROVIDING ACCESS/TRAINING TO PRIMARY/SECONDARY SCHOOLS

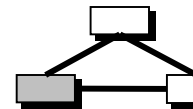
	THAILAND	SINGAPORE	AUSTRALIA	US
ACCESS AND USAGE IN SCHOOLS	<ul style="list-style-type: none"> <li>▶ Basic access delivered to most schools under “Schoolnet” program -- however, usage is limited due to restricted access <i>within</i> the schools and absence of relevant content</li> <li>▶ Digital Library - Impact limited by student access</li> <li>▶ EdNet - Integration of education networks in the planning stage</li> </ul>	<ul style="list-style-type: none"> <li>▶ Masterplan for “IT in Education”</li> <li>▶ Established FastTrack@School, an industry/ government effort to provide access to 40 pilot schools</li> <li>▶ Established 3-phase program to achieve broadband LAN or laboratories at all schools</li> </ul>	<ul style="list-style-type: none"> <li>▶ Education network Australia - EdNA Central role-based education portal               <ul style="list-style-type: none"> <li>– Complete support for ICT in the curriculum</li> <li>– Online thematic pages for schools</li> </ul> </li> <li>▶ Strategic plan for ICT education with primary focus on online content, professional development, and increased bandwidth</li> </ul>	<ul style="list-style-type: none"> <li>▶ Office of Educational Technology has launched plan covering               <ul style="list-style-type: none"> <li>– Access to internet</li> <li>– Use of ICT in education</li> <li>– Digital content and applications</li> </ul> </li> <li>▶ Federal funding to encourage state, local, and private sector investment in ICT in education (\$2bn over 5 years)</li> </ul>



# Addressing the digital divide requires a targeted program on two different levels (cont'd)

## LEVEL 2: PROVIDING ACCESS/TRAINING TO "DISADVANTAGED" POPULATION SEGMENTS

	THAILAND	SINGAPORE	AUSTRALIA	US
OTHER RELEVANT POPULATION SEGMENTS	<ul style="list-style-type: none"> <li>▶ One Product, One Tambon - E-marketplace application for village-based micro-enterprise - Includes Tambon Internet Project - providing access to villages</li> <li>▶ Programs of HRH Princess Maha Chakri Sirindhorn aimed at rural youth, underprivileged, and disabled</li> </ul>	<ul style="list-style-type: none"> <li>▶ Government systematically assesses IT skills of population based on 5 level rating -- goal is to get everyone to level 5</li> <li>▶ Specific initiatives include:               <ul style="list-style-type: none"> <li>– Free internet lessons for disabled, old, unemployed</li> <li>– Free broadband access through internet kiosks</li> <li>– Used computers/free internet access to targeted households</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▶ Systematic assessment of internet access/IT skills of different population segments</li> <li>▶ Focus on two groups:               <ul style="list-style-type: none"> <li>– Remote communities (through "Networking the Nation")</li> <li>– Unemployed</li> </ul> </li> <li>▶ IT Skills Hub - Education and training E-marketplace</li> </ul>	<ul style="list-style-type: none"> <li>▶ Regular comprehensive assessments of digital divide driving policy and programs</li> <li>▶ Community Technology Centers - Established to provide access to economically distressed communities</li> <li>▶ Focus on two population groups               <ul style="list-style-type: none"> <li>– Disabled</li> <li>– Minorities</li> </ul> </li> </ul>

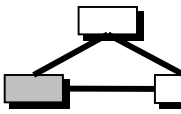


# In addition, the Thai government urgently needs to address telecom deregulation in order to drive usage

## TELECOM DEREGULATION: THAILAND VS. SELECT OTHER COUNTRIES

Key Levers	Stage I "Monopoly"	Stage II "Early Competition"	Stage III "Managed Competition"	Stage IV "Full Liberalization"
Market Openness		Thailand	UK US → EU	S.Korea Estonia
Pricing	Thailand		UK US Estonia → EU	S.Korea
Privatization, Commercialization	Lack of competition is keeping prices artificially high and service levels and reliability low -- a key inhibitor of internet usage		S.Korea → EU	UK US
Independent Regulator	Thailand	Estonia Thailand		UK USA EU S.Korea Estonia

Source: BAH Research, 2002

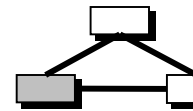


## Finally, local content is not sufficient in Thailand...

### Quotes

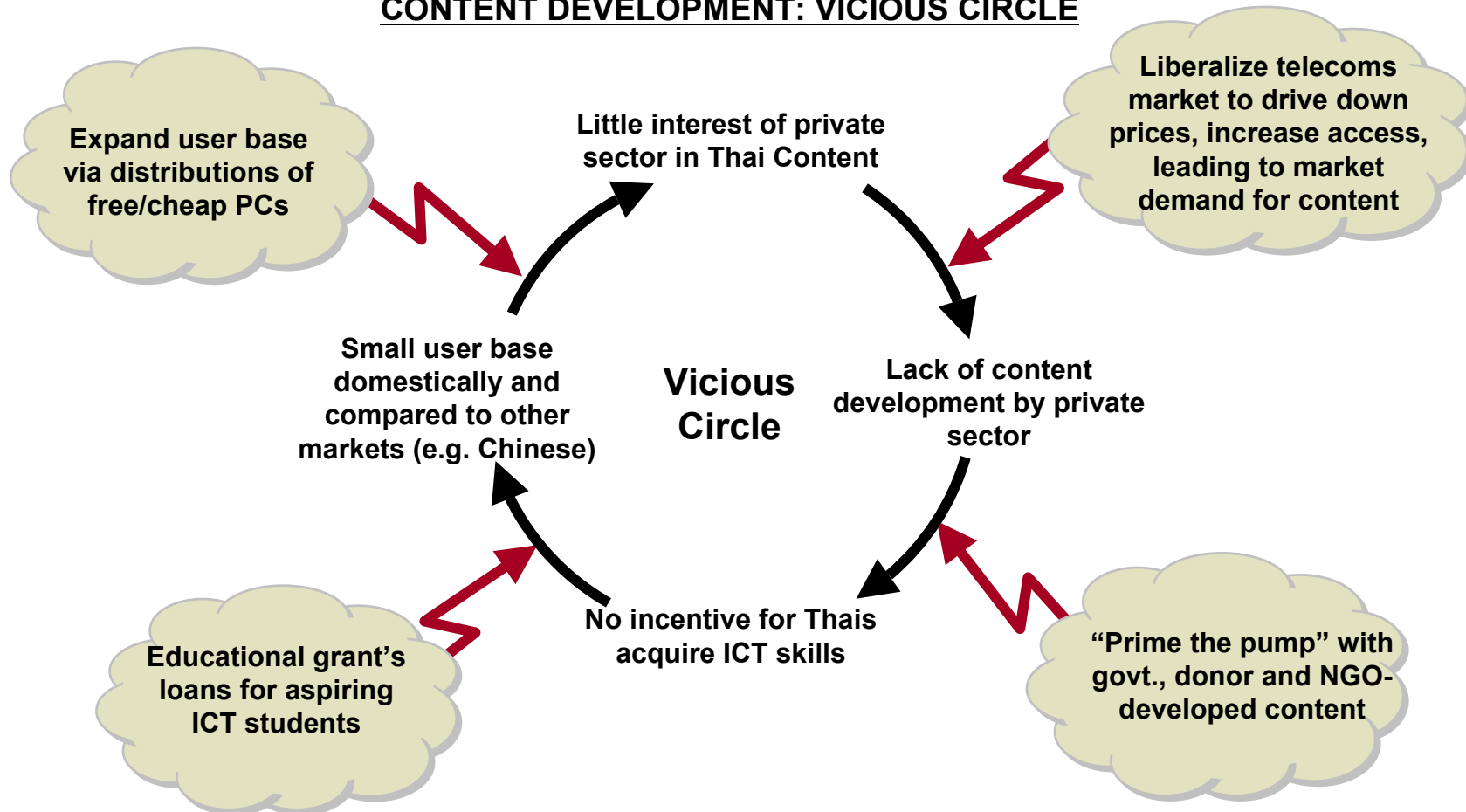
- ▶ ***“The key constraint.. In rural Thailand ... is (lack) of “soft” skills and availability of Thai language content...”*** World Bank Thailand Office, 2001
- ▶ ***“One of the main barriers to usage was a lack of relevant Thai content...”*** ITU, 2002
- ▶ ***“It is difficult to motivate students to use the internet because of the limited number of web sites and applications...”*** ITU, 2002
- ▶ ***“A major hindrance for schools in getting the benefit of global knowledge is ... lack of relevant content in Thai...”*** Dr. Thaweesak Koanantakool, 2000
- ▶ ***“Content must be geared to the level and needs of the user— not aimed at a Ph. D.”*** Senator Mechai Viravaidya, 2002
- ▶ ***“Content development must be genuinely locally driven, (but) with outside assistance...”*** World Bank Thailand Office, 2001



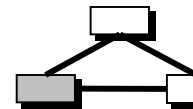


# ... requiring the government and private sector to break the “vicious circle” in local content development

## CONTENT DEVELOPMENT: VICIOUS CIRCLE

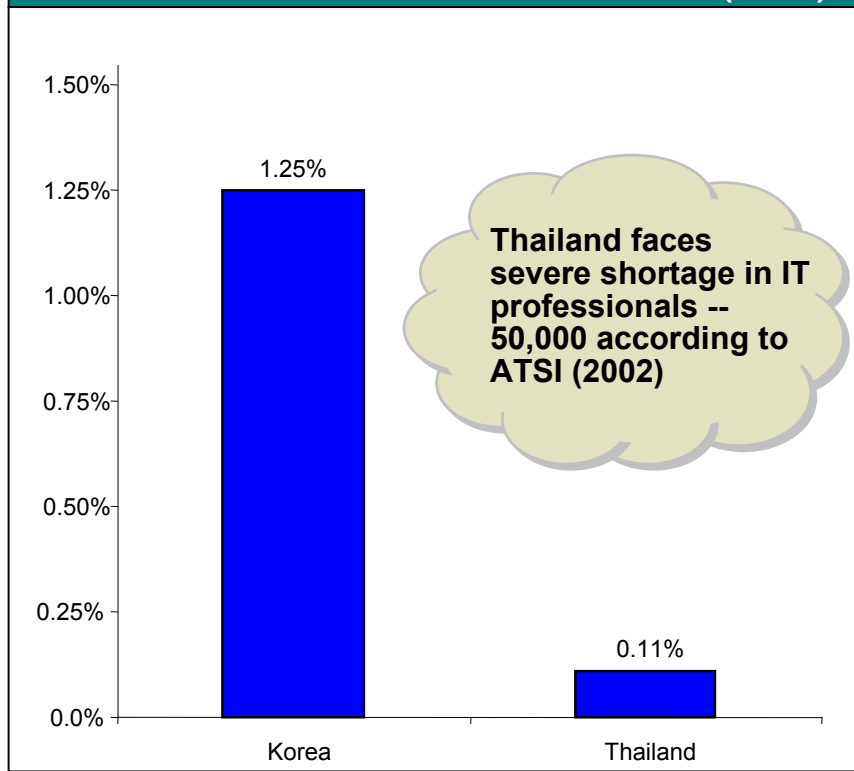


Source, World Bank, 2001; BA&H Research



# Thailand's IT industry is significantly underdeveloped in key indicators

## IT PERSONNEL AS PERCENTAGE OF POPULATION: THAILAND VS. KOREA (2001)



Source: KISDI, NECTEC, BAH analysis  
 IT personnel defined as management, technical, and administrative staff in the IT sector - excluding telecoms and manufacturing

## LEVEL OF SOFTWARE INDUSTRY: THAILAND VS. WORLDWIDE

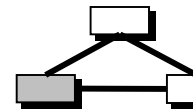
Worldwide CMM Assessments 2001		Thailand
CMM Level 5	53	0
4	63	0
3	290	0
2	488	2

Source: SEI, 2002

## LEVEL OF SOFTWARE INDUSTRY: THAILAND VS. ASIAN COUNTRIES

	India	China	Australia	Singapore	Thailand
CMM 5	43	2	0	0	0
CMM 4	28	0	2	2	0

Note: CMM refers to Capability Maturity Model; tables indicates the number of institutions that have achieved a certain level of software development  
 Source: K. Manzoor, "CMM in Pakistan", 2002



# Challenges remain in driving forward the IT industry in Thailand

## INITIATIVES TO DATE

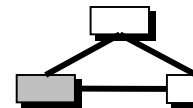
- ▶ Thailand Microelectronic Center (TMEC) -Foreign loans and local funding amounting to US\$36.7 million initial investment and US\$ 3.9/year operation for a wafer processing and R&D facility
- ▶ Software Park Thailand established: facilities and technology infrastructure business development, professional training, technology transfer-- 48 companies to date-- Providing CMM training
- ▶ Phuket Digital Paradise Project (PhD) – NECTEC Plans for a regional technology hub
- ▶ Software Industry development is a major component of the IT 2010 policy framework

Source, BA&H interviews, 2002  
ITU, 2002

## CHALLENGES GOING FORWARD

- ▶ Telecom costs handicapping competition with regional neighbors for IT industry DFI
- ▶ Government immigration and taxation regulations are a constraint to acquiring necessary foreign IT knowledge workers
- ▶ Limited IT literacy among the population and lack of awareness within the business community result in a limited market for IT products and services
- ▶ Certification authorities and processes not yet fully established
- ▶ Lack of incubators and underdeveloped business skills among technical IT personnel for developing business plans and accessing venture capital

Source, BA&H interviews, 2002

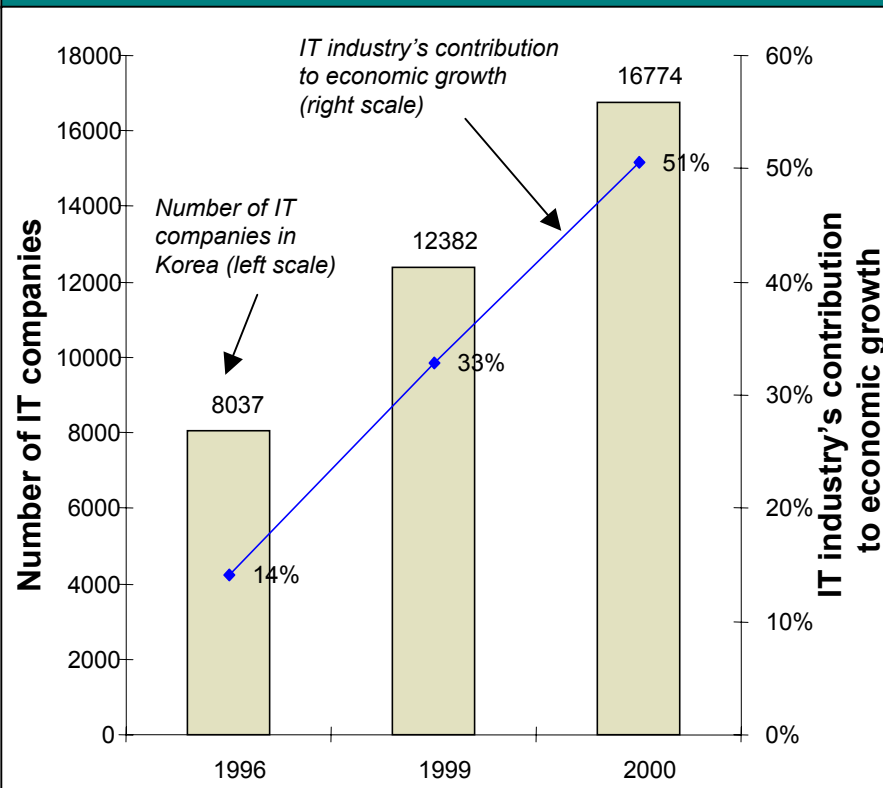


# The Korean example underlines the potential of the IT industry in driving overall economic growth

## KEY SUPPORT MEASURE FOR KOREAN IT INDUSTRY

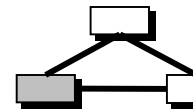
- ▶ **Direct support measures by government**
  - Ministry of Information/Communication currently implementing 5 year plan to support local IT industry (~\$1bn until 2004)
  - Additional programs to build IT skills, targeting both universities and businesses
- ▶ **Various additional measures in place to build favorable environment, including**
  - Special tax breaks
  - Venture funds
  - Numerous incentives to attract foreign investment
  - Establishment of advanced fiber optic network
  - Rapid telecom liberalization

## GROWTH OF KOREAN IT INDUSTRY



Note: IT industry includes IT services, manufacturing and software/computer related services

Source: Bank of Korea, Ministry of Industry and Trade



# In summary, Thailand can only unlock the power of ICT if it ensures broadbased infrastructure and internet usage

## SUMMARY RATING: THAILAND'S COUNTRY READINESS

	RATING	RATIONALE
INFRASTRUCTURE, ACCESS AND USAGE	1	<ul style="list-style-type: none"> <li>▶ Only initial efforts have been made with some select programs</li> <li>▶ Lack of systematic research and analysis to assess "digital divide" and implications -- effect of any initiative diminished</li> <li>▶ No true competition in telecoms sector</li> <li>▶ Local content remains significantly underdeveloped</li> </ul>
IT INDUSTRY POSITION	1	<ul style="list-style-type: none"> <li>▶ IT skills and industry in its infancy</li> <li>▶ Programs to date have had virtually no impact</li> </ul>



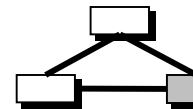
POTENTIAL IMPLICATIONS
<ul style="list-style-type: none"> <li>▶ Waste of money since initiatives cannot be targeted properly</li> <li>▶ Ultimately, lower economic growth due to persistent digital divide and significant IT industry shortfall</li> </ul>

*Note: Ratings incorporate Thailand's relative income/development status*

# Assessing Thailand's Comparative E-Performance

- ▶ Overview
- ▶ Leadership
- ▶ Country readiness

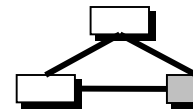
▶ Government readiness



# Government readiness consists of four components

## GOVERNMENT READINESS: RATIONALE AND DESCRIPTION

	<b>RATIONALE</b>	<b>DESCRIPTION</b>
<b>CONTENT/SERVICE DELIVERY</b>	<ul style="list-style-type: none"><li>▶ Services need to be moved to the internet based on citizen needs, ultimately leading to the establishment of one-stop portal(s)</li></ul>	<ul style="list-style-type: none"><li>▶ Full range of services offered seamlessly through branded one-stop portal(s); site(s) customized to user needs and interests from diverse areas</li><li>▶ Multichannel citizen feedback used to drive priorities and monitor performance</li></ul>
<b>PROCESSES</b>	<ul style="list-style-type: none"><li>▶ In order to fully realize benefits from transformation of service delivery, underlying processes need to be fundamentally redesigned</li></ul>	<ul style="list-style-type: none"><li>▶ Process redesign has led to the transformation of the basic operating model of ministries</li><li>▶ Comprehensive change program integrated with BPR to ensure success</li></ul>
<b>CAPABILITIES/ CULTURE</b>	<ul style="list-style-type: none"><li>▶ Implementing e-government requires fundamental renewal of capabilities and culture</li></ul>	<ul style="list-style-type: none"><li>▶ Government employees are “fully wired” in terms of both skills and mindset</li><li>▶ Innovation is considered essential quality in employees and rewarded</li></ul>
<b>IT SYSTEM</b>	<ul style="list-style-type: none"><li>▶ E-government requires entirely new level of interoperability, safety/security and capacity across government agencies</li></ul>	<ul style="list-style-type: none"><li>▶ Seamless back-office integration across all government levels and agencies (i.e. consistent standard architecture, full data sharing and access while maintaining high security standards, full scalability)</li></ul>



# After initial progress in offering content online, the Thai government's enthusiasm appears to have tapered off

## THAILAND: GOVERNMENT ON-LINE SERVICES/CONTENT

<p><b>The Good News...</b></p>	<ul style="list-style-type: none"> <li>▶ All ministries and major departments have websites with content</li> <li>▶ Total pages of content per site ranged from 100 to 4,400</li> <li>▶ Total of 14,500 pages of content in 29 major sites</li> <li>▶ 48% of sites have “extensive” laws and regulations on the web</li> <li>▶ 50% of sites have procurement notices posted</li> <li>▶ Visitors/month ranged from 6,000-44,000</li> </ul>
<p><b>... and the Bad News</b></p>	<ul style="list-style-type: none"> <li>▶ Two (or three?) “competing” portals, no central branding</li> <li>▶ Only 2 sites offer “role-based” content</li> <li>▶ Only 1-2 agencies seem to have a goal of publishing all agency content on the web; no government-wide policy on this</li> <li>▶ 2/3 of sites are adding only 1-20 pages of content per month</li> <li>▶ No government sites allow purchase or payment, ¼ allow downloading forms or filling e-forms</li> <li>▶ No systematic user evaluation/feedback mechanisms</li> </ul>

Source: BAH website review, 2002



# Most advanced countries such as Canada have created an integrated, customer friendly central portal

## CANADA: INTEGRATED, CUSTOMER FOCUSED SERVICE DELIVERY

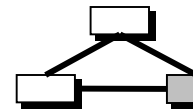
Easy navigation from central portal to tax site (two clicks)

The screenshot shows the 'Welcome | Canadians - Netscape' page. It features a navigation menu with options like 'What's New', 'Contact Us', 'Help', 'Search', and 'Publications'. Below the menu, there are sections for 'Information and Service Gateways for:' with sub-sections for 'Canadians' (Health, Jobs, Taxes...) and 'Non-Canadians' (Start-up, Taxation, Exporting...). A search bar is visible at the bottom left.

Differentiation of services by segment ("role-based")

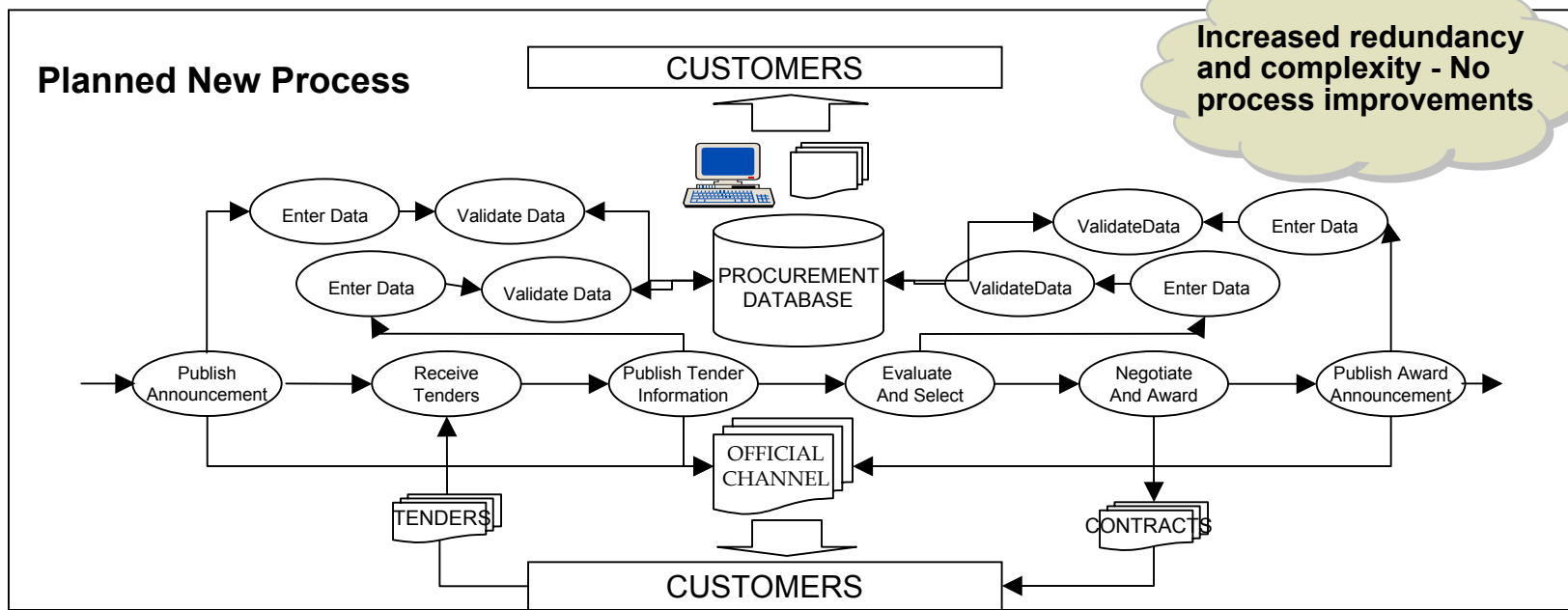
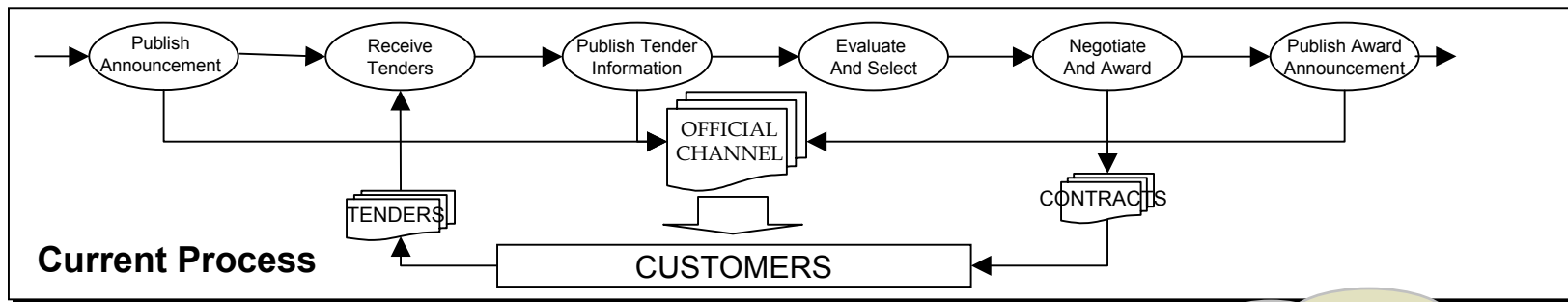
The screenshot shows the 'Tax - Individuals - Netscape' page. It features a 'Main menu' with options like 'What's new', 'Newsroom', 'Careers', 'Electronic services', and 'Forms and publications'. Below the menu, there is a section for 'Individuals' with a 'Tax' sub-section. This section lists various services and filing methods, including 'Frequently asked questions', '2000 income tax package', 'Resource kit', 'Selected topics', 'Online requests', 'T.I.P.S. Online', 'GST/HST credit', 'Pay equity', 'People with disabilities', 'Seniors', 'Volunteer Program', 'Tax on Income (TONI)', 'Income Statistics', 'Previous-year guides and schedules', 'Tax credits', 'Tax clinics', 'Canadian Consumer Information Gateway', 'Related Web sites', and 'Tax survey'. It also mentions 'More ways to file... more ways to serve you!' with options like 'NETFILE', 'EFILE', and 'TELEFILE'.

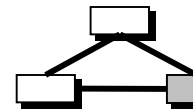
Integrated brand creates seamless interface across all sites



# The Thai government's initial efforts and plans have not yet leveraged e-government to transform its internal organization

## THAILAND: IMPACT OF INTERNET ON INTERNAL PROCESSES

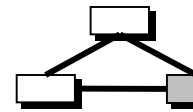




# Despite some recent programs, the Thai government's capabilities/culture are lagging behind

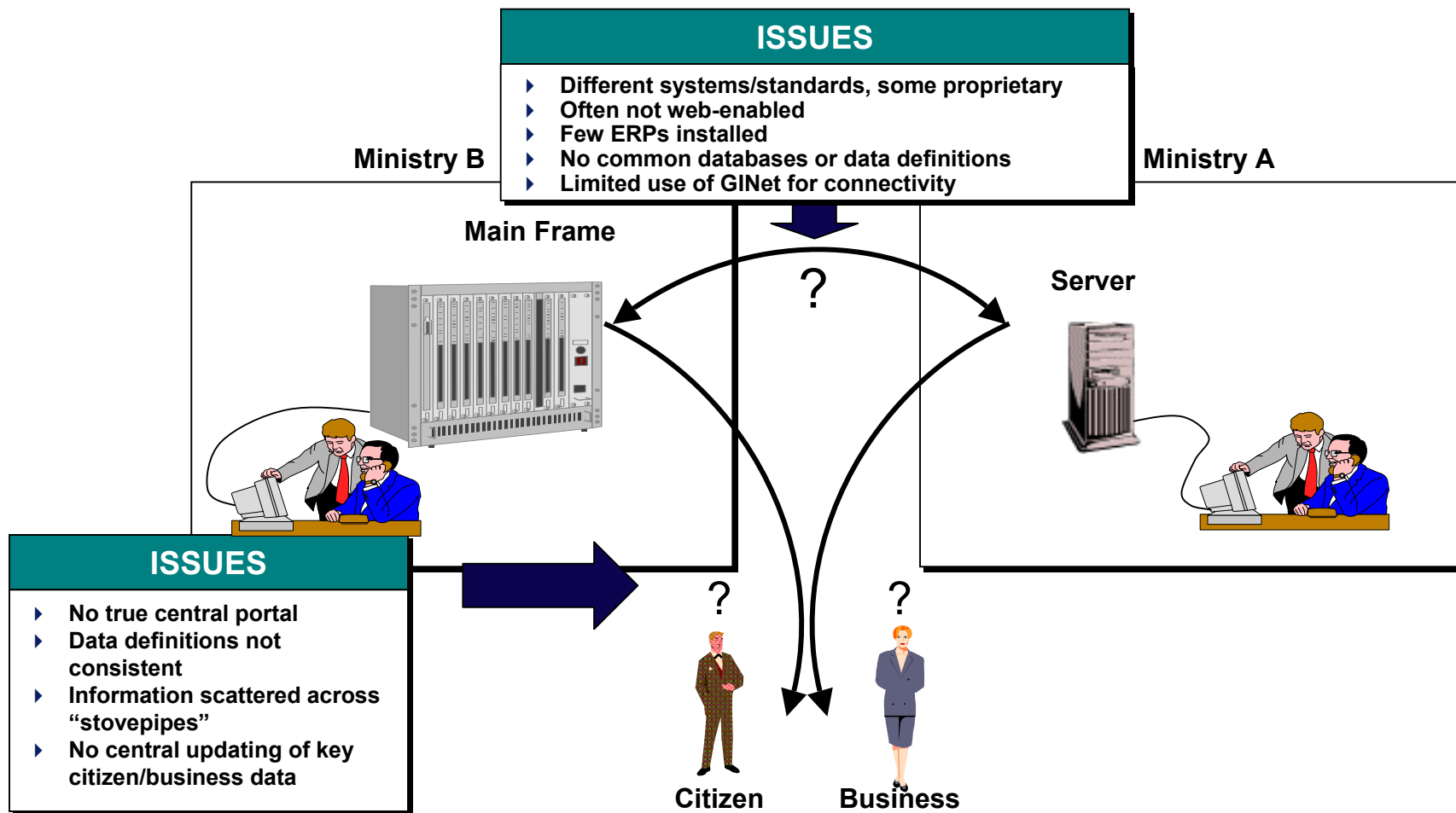
## CAPABILITIES/CULTURE: THAILAND VS. SINGAPORE

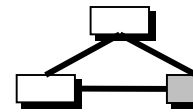
	THAILAND	SINGAPORE
CAPABILITIES	<ul style="list-style-type: none"> <li>▶ Very basic ICT literacy--Only basic ICT training course required for promotion between two mid-management levels</li> <li>▶ Agency CIOs are not ICT professionals--roughly two thirds are not very proficient in ICT knowledge and skills; few are full-time; 1/3 annual turnover</li> </ul>	<ul style="list-style-type: none"> <li>▶ Extensive program in place to ensure that all government employees are fully IT literate</li> <li>▶ Strong IT organization with large pool of dedicated resources -- government attracts some of the most talented IT professionals</li> </ul>
CULTURE	<ul style="list-style-type: none"> <li>▶ Little awareness of broader e-gov/ICT value/implications</li> <li>▶ Absence of senior level ICT civil service classifications inhibits motivation and incentive</li> <li>▶ Government ICT salaries substantially lower than private sector</li> </ul>	<ul style="list-style-type: none"> <li>▶ Government is run much like a private company, including               <ul style="list-style-type: none"> <li>– Performance based management system</li> <li>– Remuneration which is competitive with private sector</li> </ul> </li> <li>▶ Government benchmarks itself against private sector and actively recruits from private sector companies ("Singapore's brightest people work in the government")</li> </ul>



# The Thai government's IT system is inadequate to support broad based e-government

## THAI GOVERNMENT'S IT SYSTEM: STATUS AND ISSUES

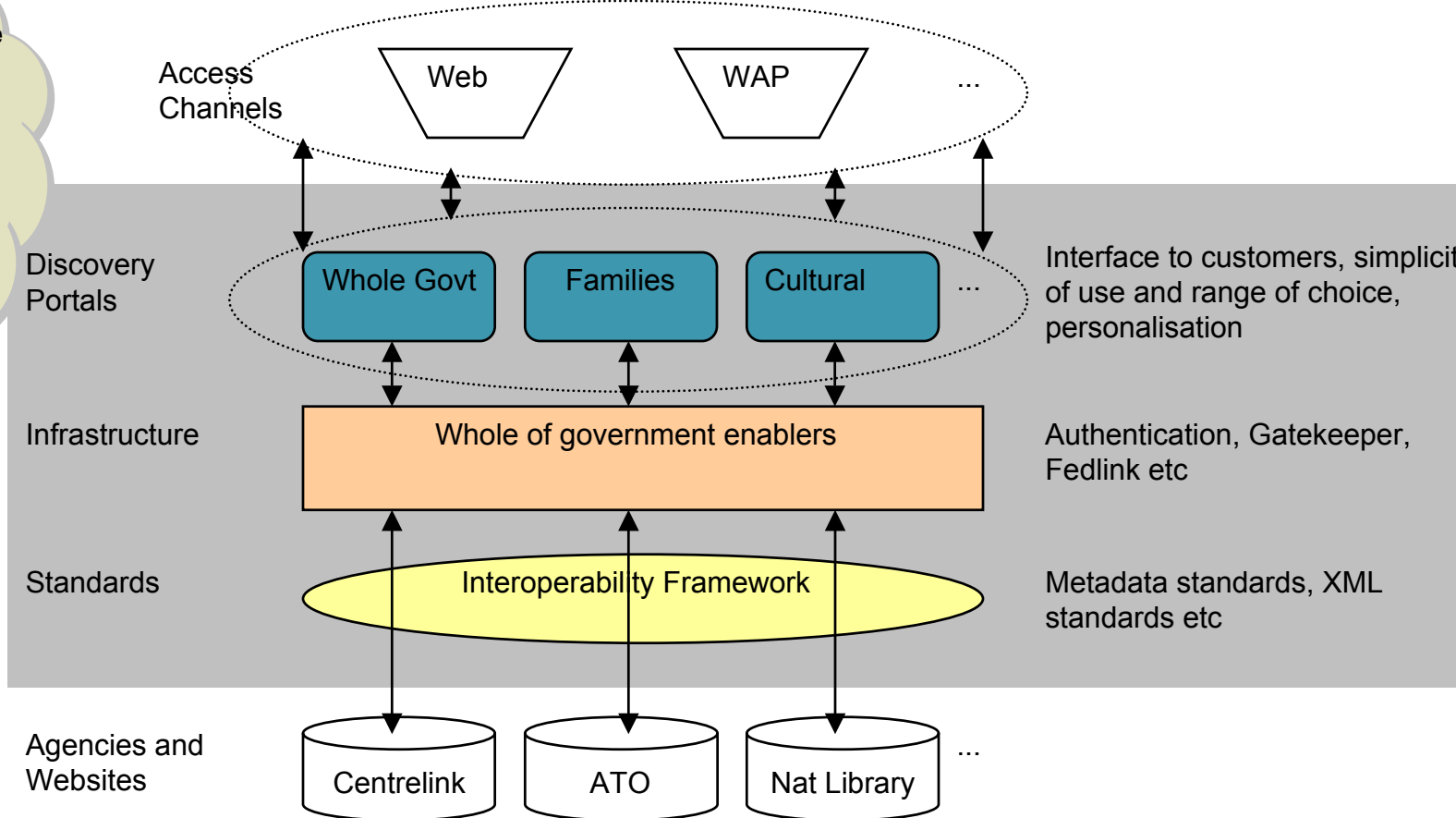


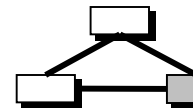


# Some countries have completely integrated their backoffices to enable seamless e-government offerings across departments

## AUSTRALIA: GOVERNMENT IT SYSTEM

- Unified infrastructure and standards
  - Across ministries
  - Across other central agencies
  - Coordinated with local/regional government

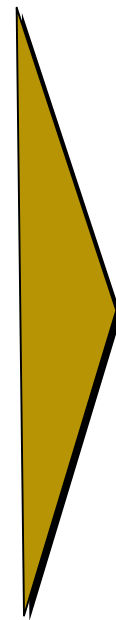




# In summary, Thailand's initial progress on government readiness has been in line with its overall development status

## SUMMARY RATING: THAILAND'S GOVERNMENT READINESS

	RATING	RATIONALE
CONTENT/SERVICE DELIVERY	2	<ul style="list-style-type: none"> <li>▶ Content greater than anticipated, but initial push appears to have slowed</li> </ul>
PROCESSES	1	<ul style="list-style-type: none"> <li>▶ No plans to address Business Process Reform (BPR)</li> </ul>
CAPABILITIES/CULTURE	1	<ul style="list-style-type: none"> <li>▶ CIO program good concept and with some positive effects, but lacking in terms of implementation; need for stronger and more visible roles</li> </ul>
IT SYSTEMS	2	<ul style="list-style-type: none"> <li>▶ IT systems in line with Thailand's overall development status</li> </ul>



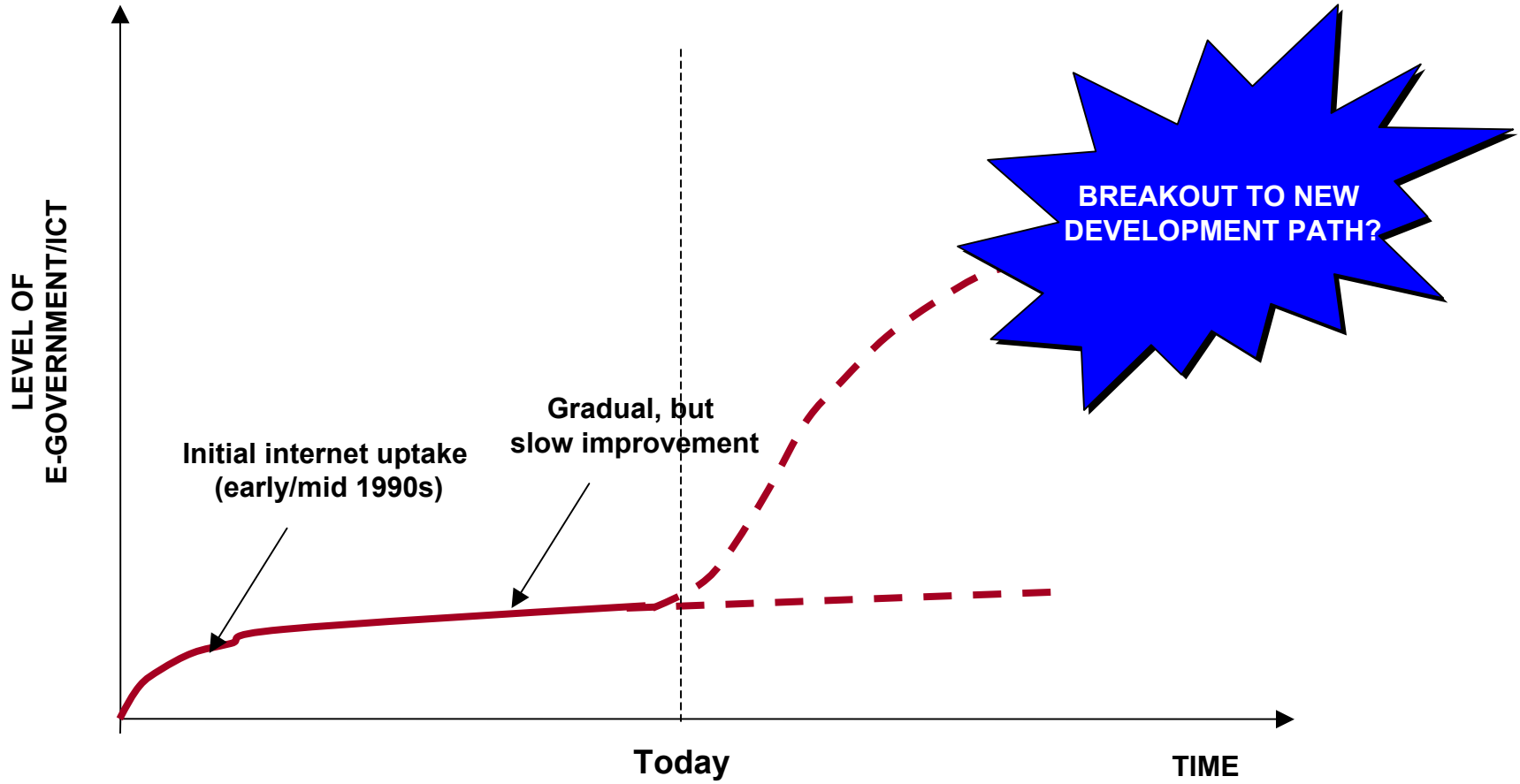
POTENTIAL IMPLICATIONS
<ul style="list-style-type: none"> <li>▶ Waning interest in on-line information and services</li> <li>▶ Missed opportunity to improve processes</li> <li>▶ Continued absence of direction in agency IT programs</li> </ul>

*Note: Ratings incorporate Thailand's relative income/development status*

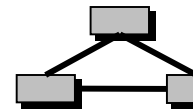
## **IV. Assessing Priorities for the Thai Government**

# Thailand's government needs to break out of its current stalemate to reach a new level of e-performance

## THAILAND'S BREAKOUT OPPORTUNITY

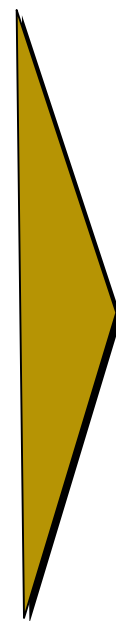






**The assessment findings indicate that the ICT leadership issues must be addressed in order to drive the country's performance...**

	IMPORTANCE	RATIONALE
LEADERSHIP	4	<ul style="list-style-type: none"> <li>▶ Clearly defined leadership is starting point of any major program/initiative</li> <li>▶ Failure to address leadership will lead to waste of resources and time -- which Thailand cannot afford</li> </ul>
COUNTRY READINESS	3	<ul style="list-style-type: none"> <li>▶ Need to enhance national IT/ICT skills in order to               <ul style="list-style-type: none"> <li>– Bridge digital divide</li> <li>– Get citizens online (also to use e-government services)</li> <li>– Drive economic growth</li> </ul> </li> </ul>
GOVERNMENT READINESS	2	<ul style="list-style-type: none"> <li>▶ Needed to support other objectives, but real transformation remains a formidable and costly challenge</li> </ul>



IMPLICATIONS FOR NEXT STEPS
<ul style="list-style-type: none"> <li>▶ Clearly define leadership, including structure and program</li> </ul>
<ul style="list-style-type: none"> <li>▶ Detailed analysis of specific country readiness gaps and priorities</li> <li>▶ Launch/reinforcement of high impact initiatives</li> </ul>
<ul style="list-style-type: none"> <li>▶ Identify and launch high impact initiatives</li> </ul>

**...with continued attention to the other two dimensions**