
Voltes 5
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Topic
Enabling Digital Government Through E-Services:
Second-Wave Re-engineering in the Inland Revenue Authority of Singapore (IRAS)
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Introduction

- The Inland Revenue Authority of Singapore (IRAS)
- Responsible for administering, assessing and collecting taxes in Singapore.
- Former Inland Revenue Department (IRD).

Introduction

- IRD was negatively perceived
- Failed to effectively collect taxes
- Backlog amounted of S$1.14 billion
- Suffered from severe lack of resources
- Low staff morale
- Turnover rate in was high (11%)

Introduction

- Operated in different geographical locations, each focusing on a specific tax type.
- Highly compartmentalized
- “Divide-and-rule” management structure
- There had been cases when income tax returns were sent to deceased taxpayers.

Introduction

IRD to IRAS

Introduction

Phase 1

(1993-1998)

Comm. Koh Yong Guan

Massive re-engineering through cross tax type integration

Implementation of a $69M computer system (IRIS)

Phase 2

(1998-2005)

Comm. Koh Cher Siang

Challenged to sustain the early success

Introduction of e-services


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Objectives

Described the process of enabling digital government through e-services.

- Identified the problems
- Analyzed IRAS case:
  - *Typical vs. ideal government service*
  - *Business process re-engineering*
  - *Visions of e-government*
  - *Key success factors*
  - *Risks involved*
- Listed recommendations


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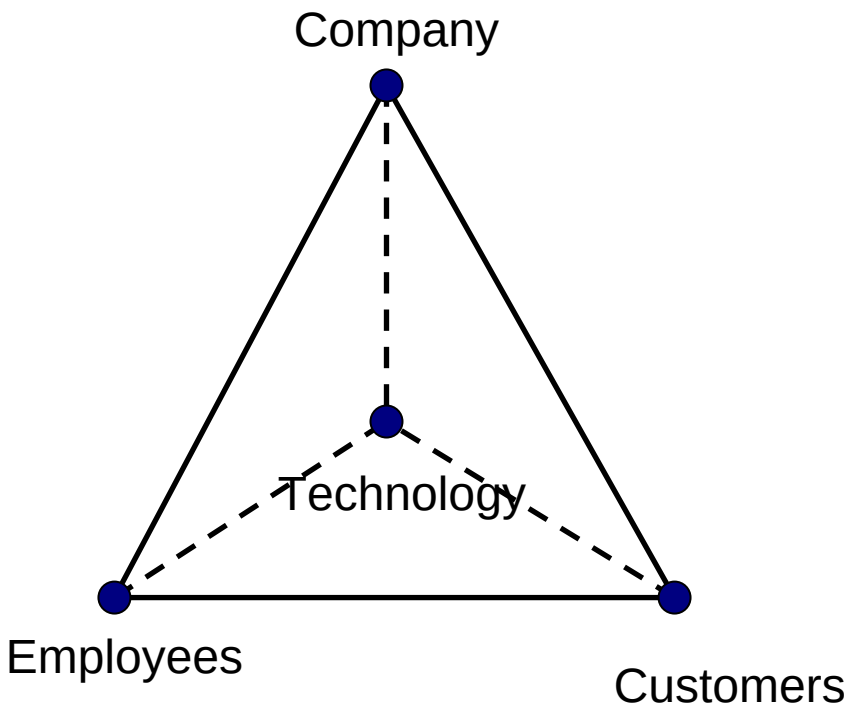
Problems Encountered

Service Pyramid Model *(Parasuraman, 2000)*



Emphasizes the importance of technology in building lasting relationships between the company, employees and customers

Problems Encountered

1. Company Problems

- Should IRAS continue to integrate the cross tax services?
- Should it revert back to tax specialization structure?

Problems Encountered

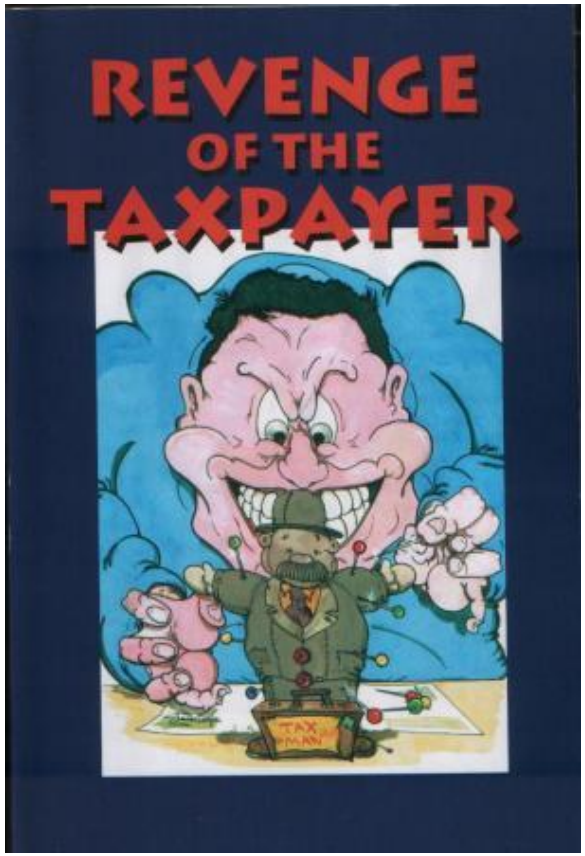
2. Employee Problems

- Loss of specialized tax knowledge.
- Difficult to train officers beyond one tax type.

"It is impossible to create a tax superman given the depth of knowledge required."

- *frustrated manager*

Problems Encountered



3. Customer Problems

- Negative perception towards IRAS
- Not all customers are technologically ready and competent

Problems Encountered

4. Technology Problems

- Inflexible software architecture
- Do the e-services of Phase 2 “cannibalize” IRAS’ heavy investment on the imaging technology (IRIS)?

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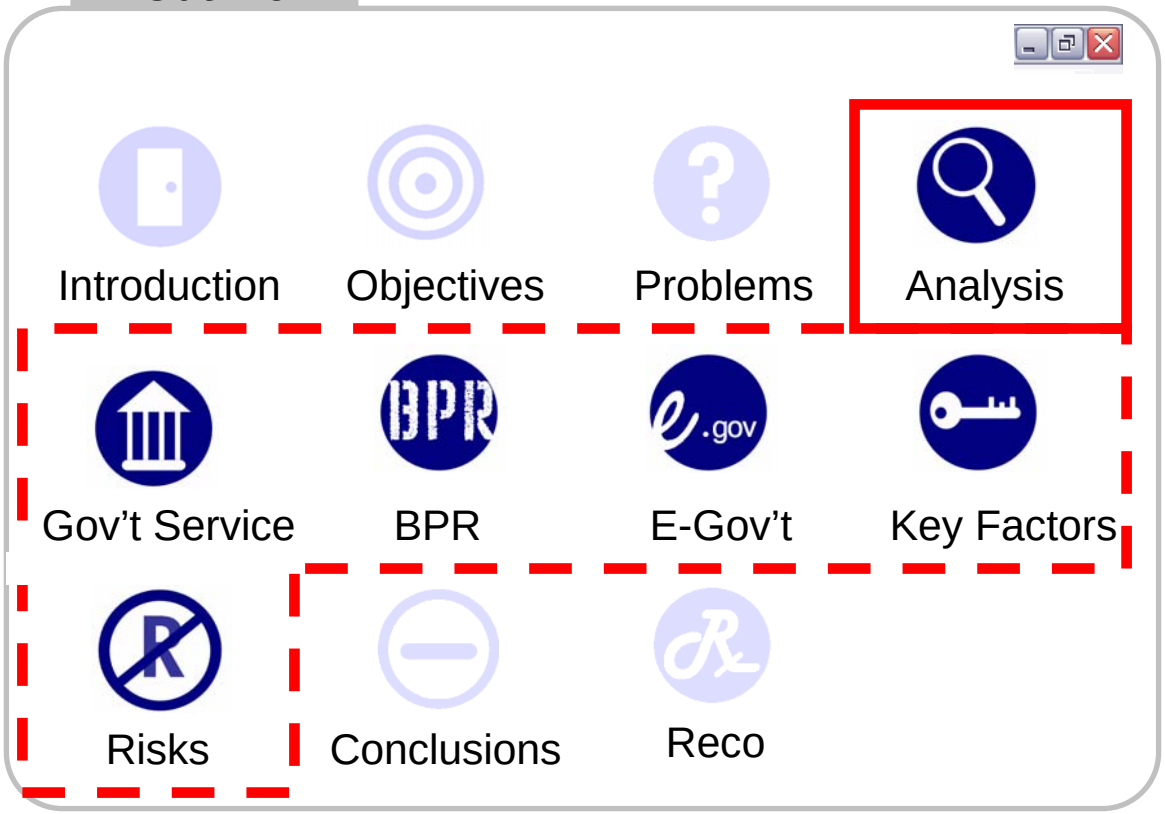
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Typical vs. Ideal Government Service

Typical Gov't Services:	Ideal Gov't Services:
Slow	Fast and convenient
Bureaucratic/ complicated	Simple
Duplication of steps	Integrated service procedures
Many paper works	Less paper work
Unfriendly staff	Friendly staff
Not effective, inconsistent	Reliable and accurate

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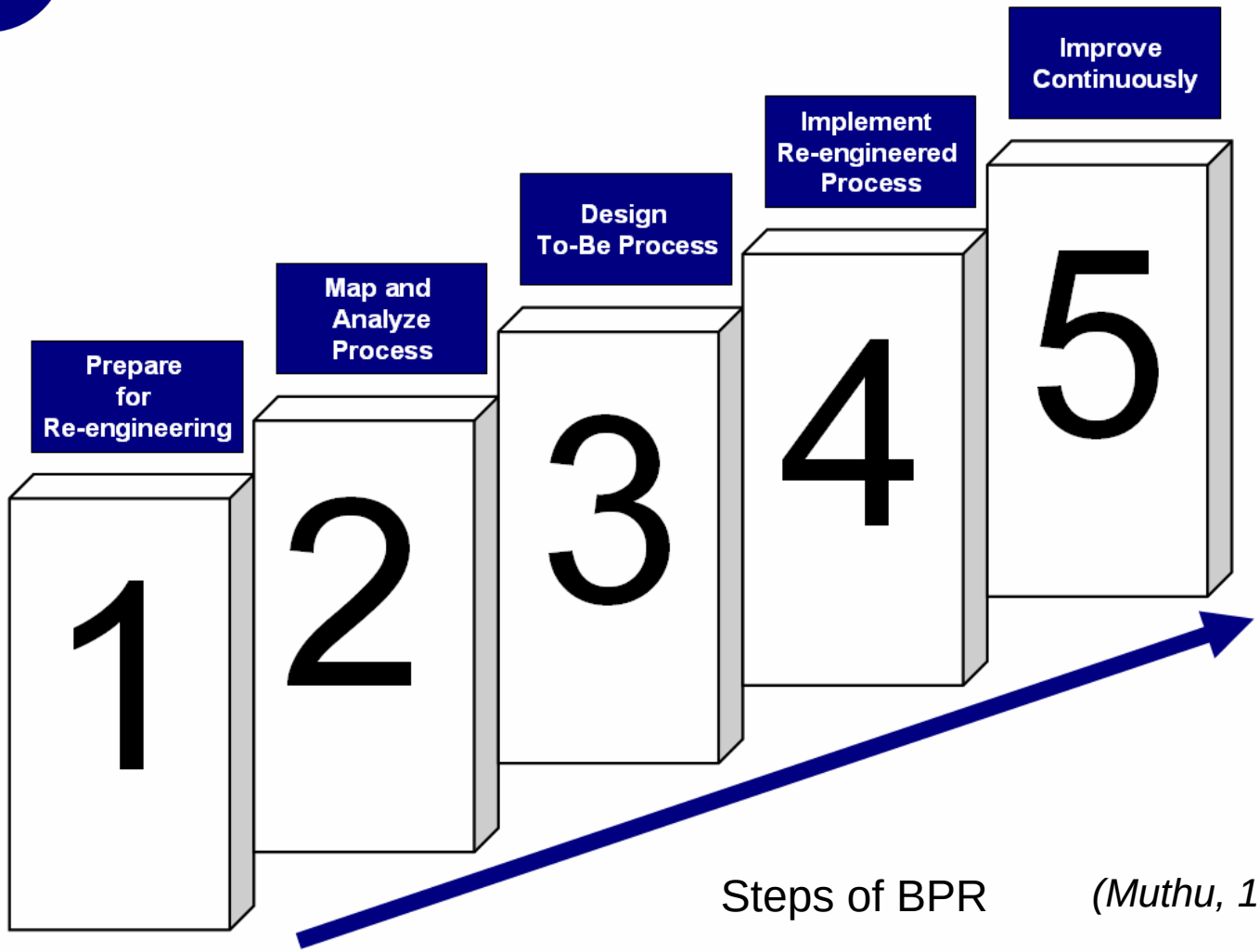
Business Process Re-engineering

"The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed."

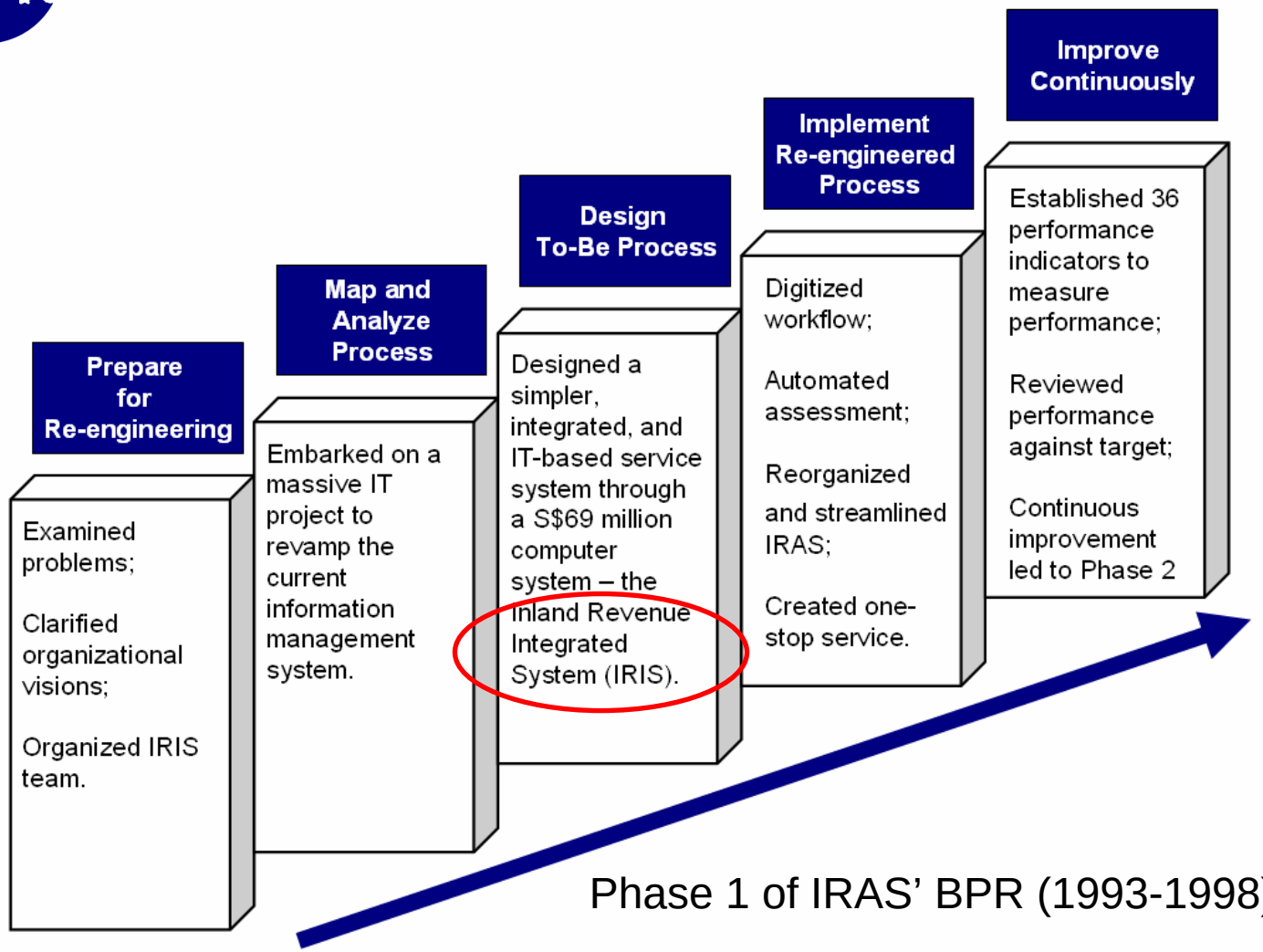
(Hammer and Chempy, 1993; Muthu, 1999)

Business Process Re-engineering



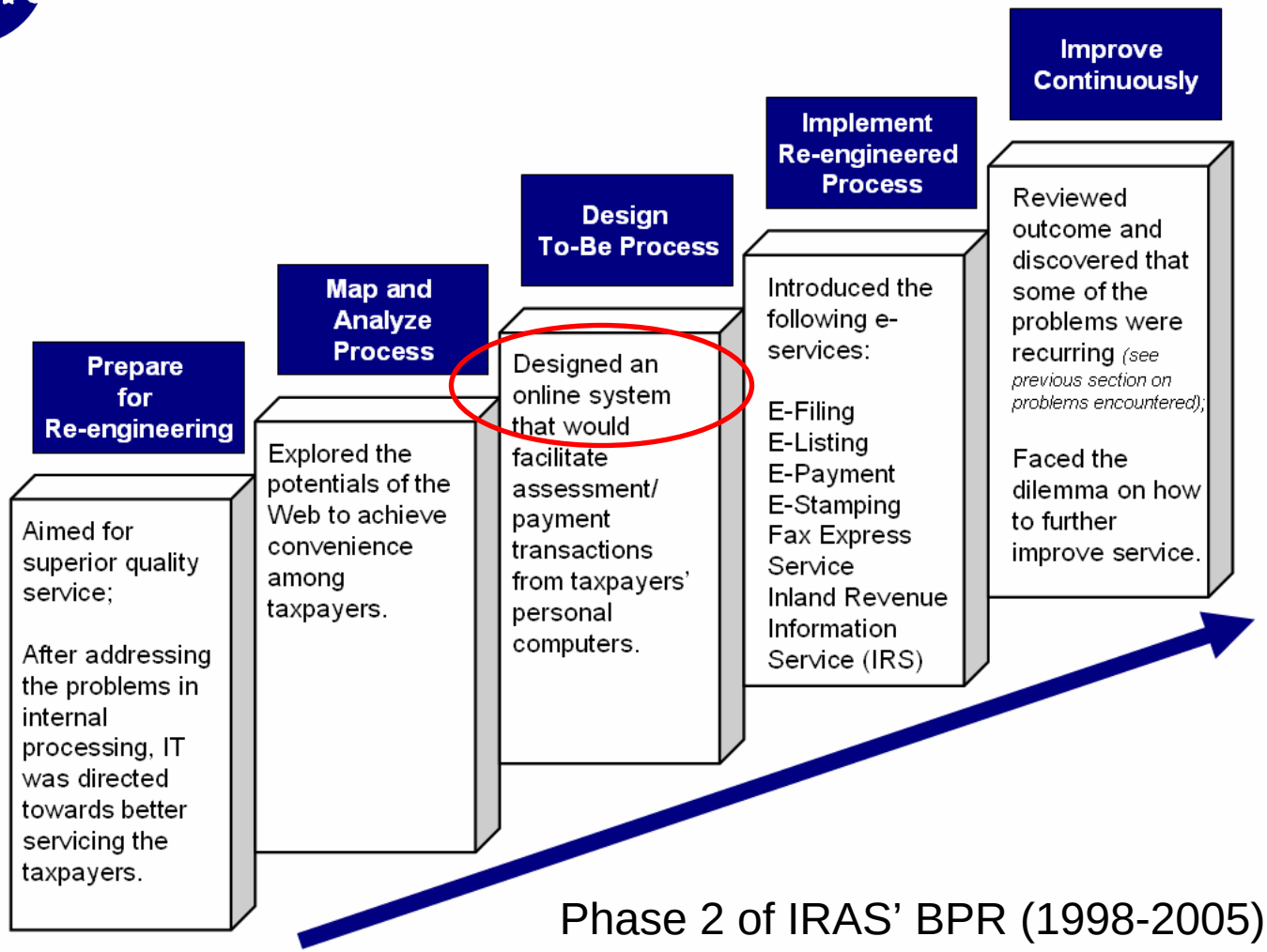
Steps of BPR *(Muthu, 1999)*

Business Process Re-engineering



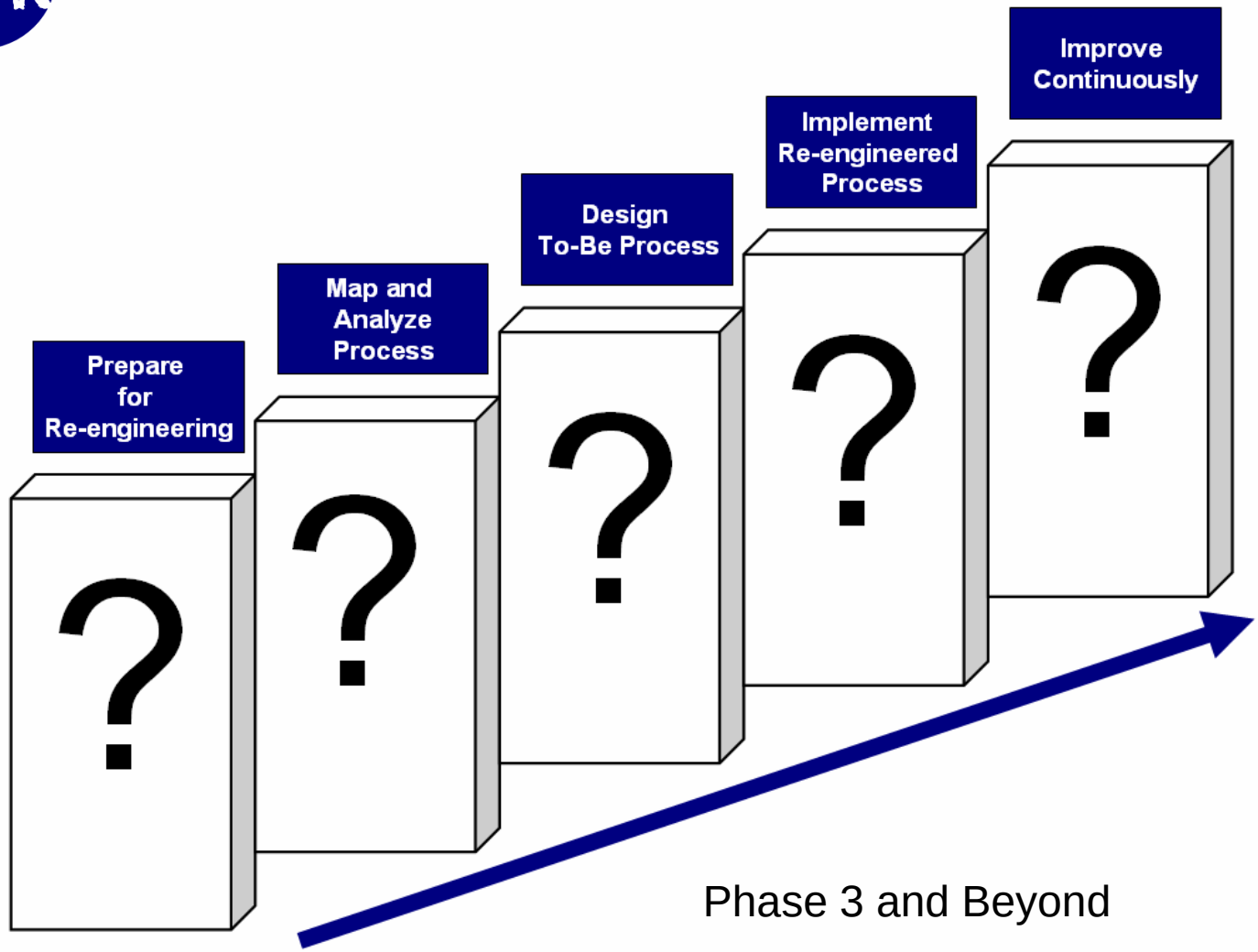
Phase 1 of IRAS' BPR (1993-1998)

Business Process Re-engineering



Phase 2 of IRAS' BPR (1998-2005)

Business Process Re-engineering



Phase 3 and Beyond

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Visions of E-government

"To be the leading tax administration in the world,

a partner of taxpayers in nation building and economic development,

an excellent team of competent and committed people."

(IRAS, 2007)

Visions of E-government

"To be the leading tax administration in the world,

"The IRAS site is the most effective and popular of the 'e-government interactive sites." *- Singapore Wave (2001)*

IRAS' website, is among the world's most sophisticated in the use of the internet for government and public functions. *- Accenture*

committed people."

(IRAS, 2007)

Visions of E-government

IRAS is Singapore's partner in nation building because the taxes are used to develop Singapore.

After Phase 1, tax revenue collected reached a record high of $16billion.

a partner of taxpayers in nation building and economic development,

95% satisfaction level

E-filers climbed from 112,897 to 694,000

(IRAS, 2007)

Visions of E-government

"To be the leading tax administration in the world,

a partn *on building and ec*

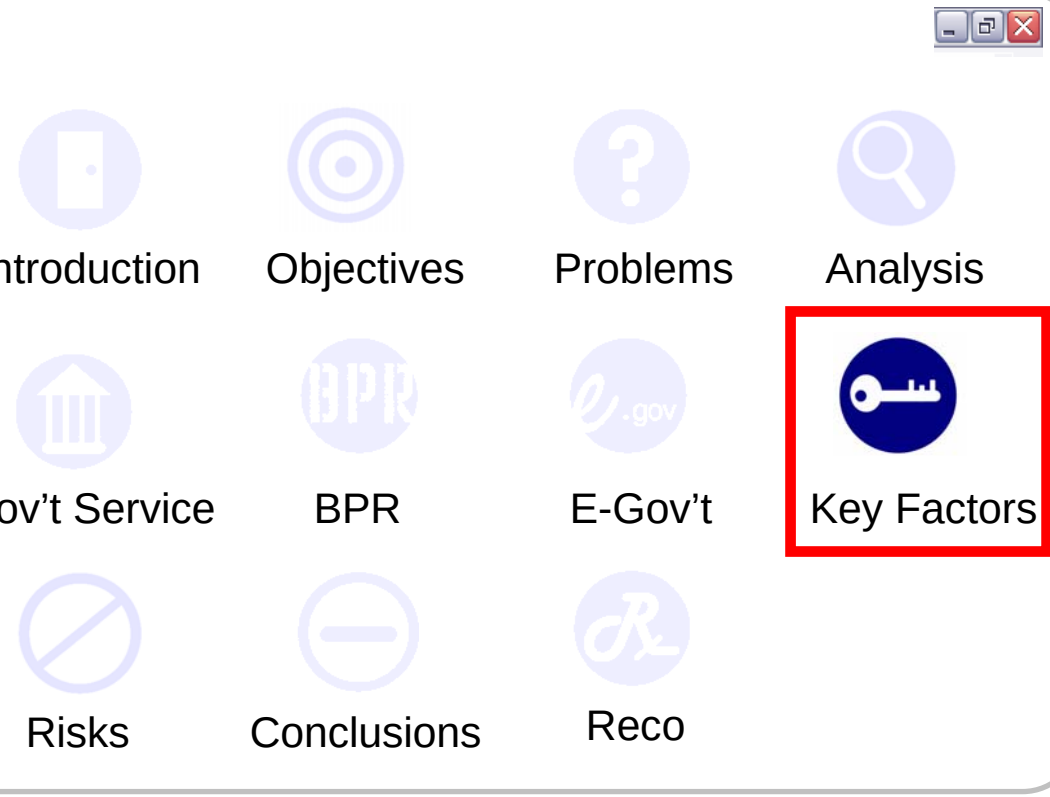
Smoothened the work flow

Increased employee satisfaction

an excellent team of competent and committed people."

(IRAS, 2007)

Outline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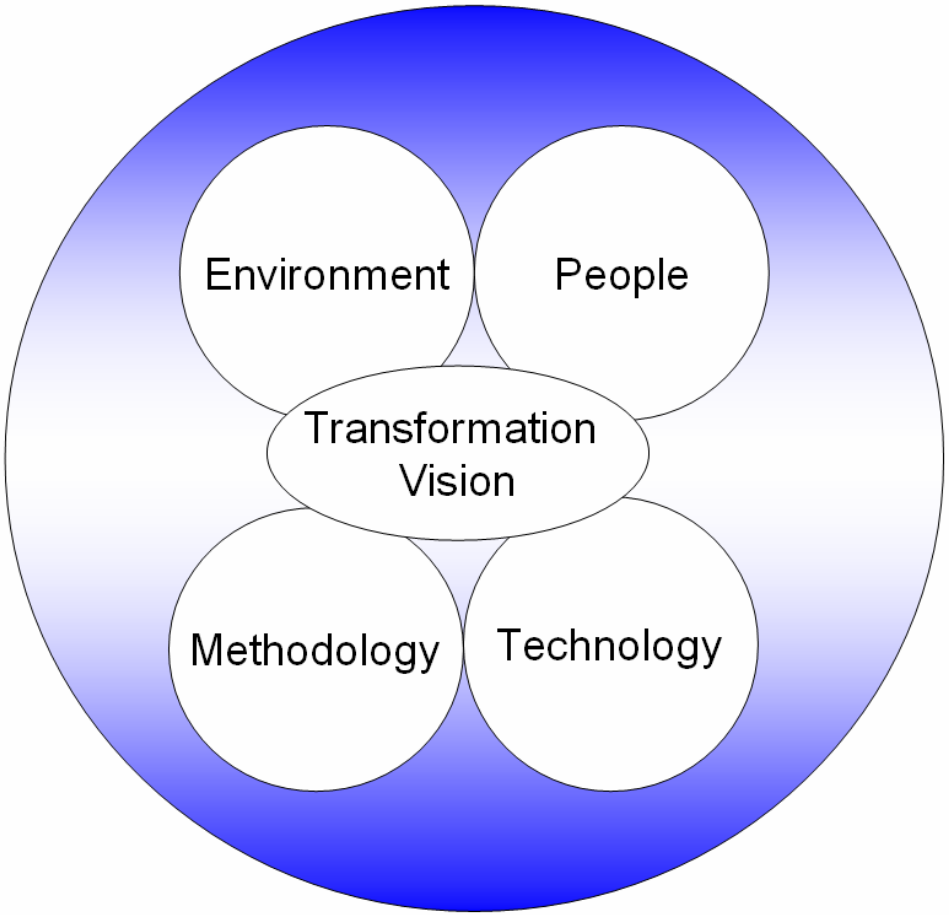
Key Success Factors in Enabling E-services



(Paper & Chang, 2005)

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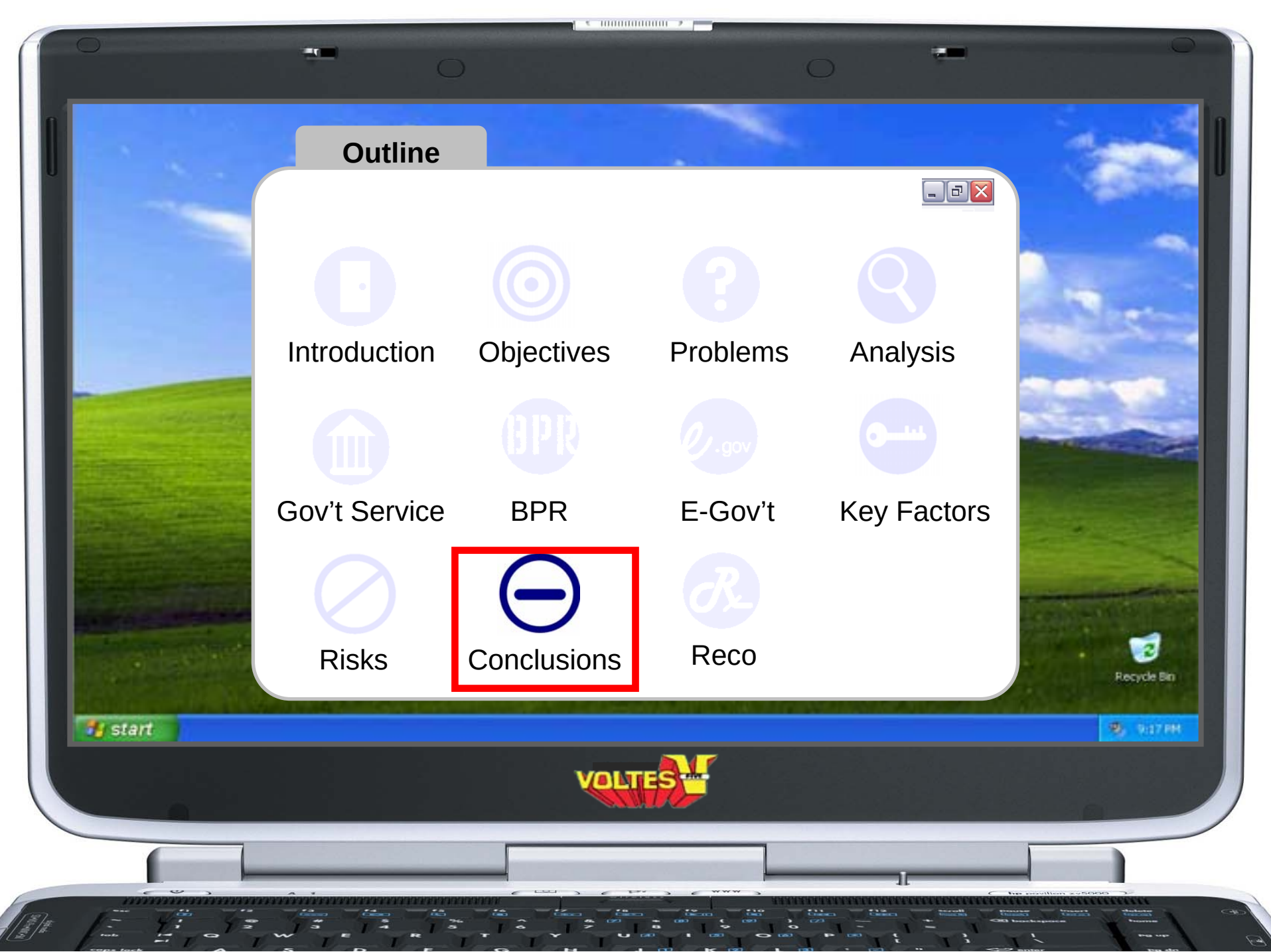
Risks Involved

Risks Involved	IRAS' Solution
Customer's Perspective	
Skepticism	IRIS ensured security and reliability Self-developed data entry and verification program
Information Security Risk	
Monetary Security Risk	
Reliability	
Technological Adaptation	Streamlining and simplification 8 page-form to 1 page Promoted convenience

Risks Involved

Risks Involved	IRAS' Solution
Organization's Perspective	
Investment Risk	A Project Implementation team ensured effectiveness of the system.
Job Redundancy	Stopped hiring university graduates as document evaluators.
Technological/ Service Failure Risk	36 performance indicators Work improvement teams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Conclusions

In enabling digital government through e-services…

Know what the customers' demand and expect

BPR = continuous improvement through radical changes

E-government ≠ technology

KSF: Mix of Environment, People, Methodology, Technology, and Transformation vision

Risks are inevitable, but can be reduced


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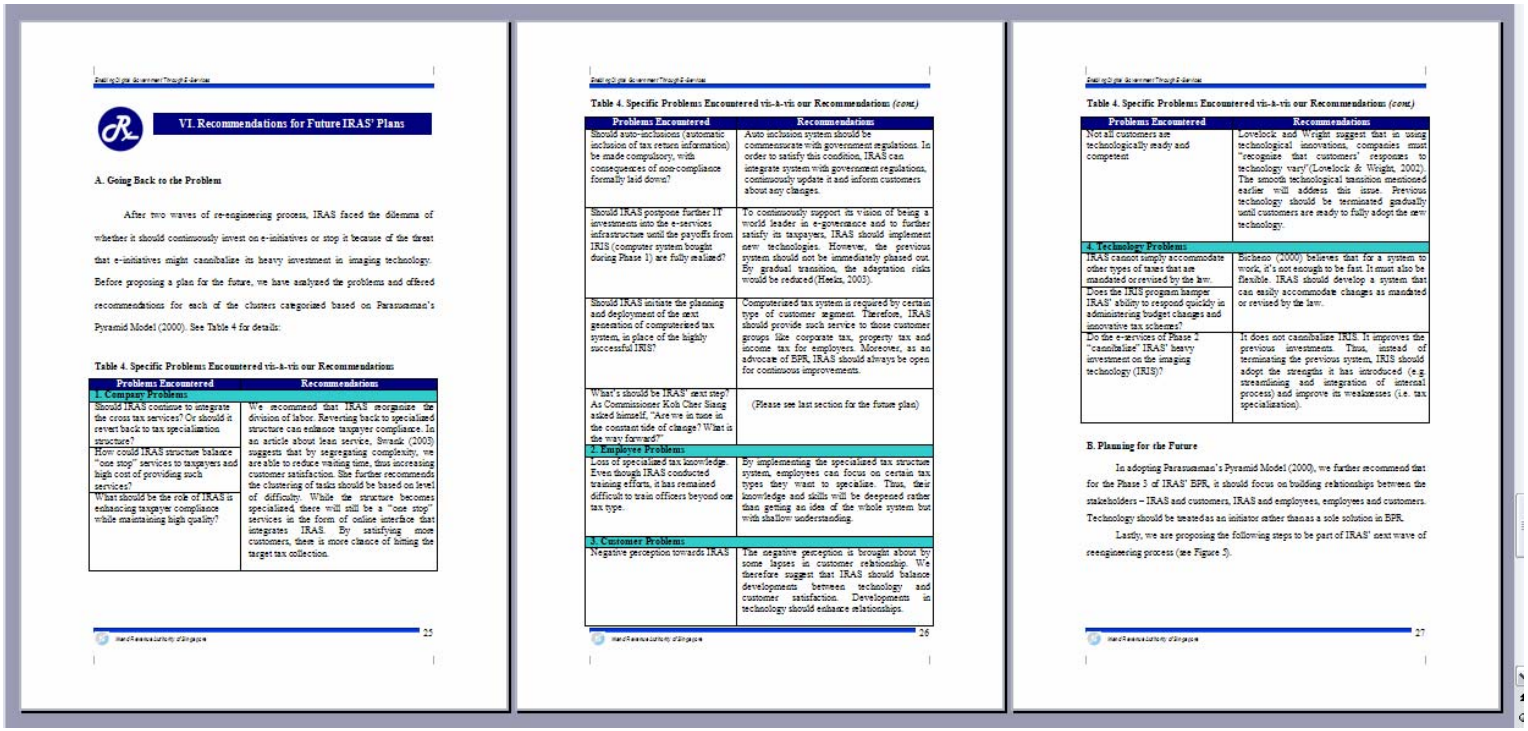
Recommendations

Out of our long list of recommendations….



VI. Recommendations for Future IRAS' Plans

A. Going Back to the Problem

After two waves of re-engineering process, IRAS faced the dilemma of whether it should continuously invest on e-initiatives or stop it because of the threat that e-initiatives might cannibalise its heavy investment in imaging technology. Before proposing a plan for the future, we have analyzed the problems and offered recommendations for each of the clusters categorized based on Parasuraman's Pyramid Model (2000). See Table 4 for details:

Table 4. Specific Problems Encountered vis-à-vis our Recommendation:

Problems Encountered	Recommendation
1. Company Problems	
Should IRAS continue to integrate the cross tax services? Or should it revert back to tax specialization structure?	We recommend that IRAS reorganize the division of labor. Reverting back to specialized structure can enhance taxpayer compliance. In an article about lean service, Swank (2003) suggests that by segregating complexity, we are able to reduce waiting time, thus increasing customer satisfaction. She further recommends the clustering of tasks should be based on level of difficulty. While the structure becomes specialized, there will still be a "one stop" services in the form of online interface that integrates IRAS. By satisfying more customers, there is more chance of hitting the target tax collection.
How could IRAS structure balance "one stop" services to taxpayers and high cost of providing such services?	
What should be the role of IRAS in enhancing taxpayer compliance while maintaining high quality?	

Table 4. Specific Problems Encountered vis-à-vis our Recommendation *(cont.)*

Problems Encountered	Recommendation
Should auto-inclusions (automatic inclusion of tax return information) be made compulsory, with consequences of non-compliance formally laid down?	Auto inclusion system should be commensurate with government regulations. In order to satisfy this condition, IRAS can integrate system with government regulations, continuously update it and inform customers about any changes.
Should IRAS postpone further IT investments into the e-services infrastructure until the payoffs from IRIS (computer system bought during Phase 1) are fully realized?	To continuously support its vision of being a world leader in e-governance and to further satisfy its taxpayers, IRAS should implement new technologies. However, the previous system should not be immediately phased out. By gradual transition, the adaptation risks would be reduced (Heeks, 2003).
Should IRAS initiate the planning and deployment of the next generation of computerized tax system, in place of the highly successful IRIS?	Computerized tax system is required by certain type of customer segment. Therefore, IRAS should provide such service to those customer groups like corporate tax, property tax and income tax for employers. Moreover, as an advocate of EPR, IRAS should always be open for continuous improvements.
What's should be IRAS' next step? As Commissioner Koh Cher Siang asked himself, "Are we in tune in the constant tide of change? What is the way forward?"	(Please see last section for the future plan)
2. Employee Problems	
Loss of specialized tax knowledge. Even though IRAS conducted training efforts, it has remained difficult to train officers beyond one tax type.	By implementing the specialised tax structure system, employees can focus on certain tax types they want to specialize. Thus, their knowledge and skills will be deepened rather than getting an idea of the whole system but with shallow understanding.
3. Customer Problems	
Negative perception towards IRAS	The negative perception is brought about by some lapses in customer relationship. We therefore suggest that IRAS should balance developments between technology and customer satisfaction. Developments in technology should enhance relationships.

Table 4. Specific Problems Encountered vis-à-vis our Recommendation *(cont.)*

Problems Encountered	Recommendation
Not all customers are technologically ready and competent	Lovelock and Wright suggest that in using technological innovations, companies must "recognize that customers' responses to technology vary" (Lovelock & Wright, 2002). The smooth technological transition mentioned earlier will address this issue. Previous technology should be terminated gradually until customers are ready to fully adopt the new technology.
4. Technology Problems	
IRAS cannot simply accommodate other types of taxes that are mandated or revised by the law.	Sicheno (2000) believes that for a system to work, it's not enough to be fast. It must also be flexible. IRAS should develop a system that can easily accommodate changes as mandated or revised by the law.
Does the IRIS program hamper IRAS' ability to respond quickly in administering budget changes and innovative tax schemes?	
Do the e-services of Phase 2 "cannibalise" IRAS' heavy investment on the imaging technology (IRIS)?	It does not cannibalise IRIS. It improves the previous investments. Thus, instead of terminating the previous system, IRIS should adopt the strengths it has introduced (e.g. streamlining and integration of internal process) and improve its weaknesses (i.e. tax specialization).

B. Planning for the Future

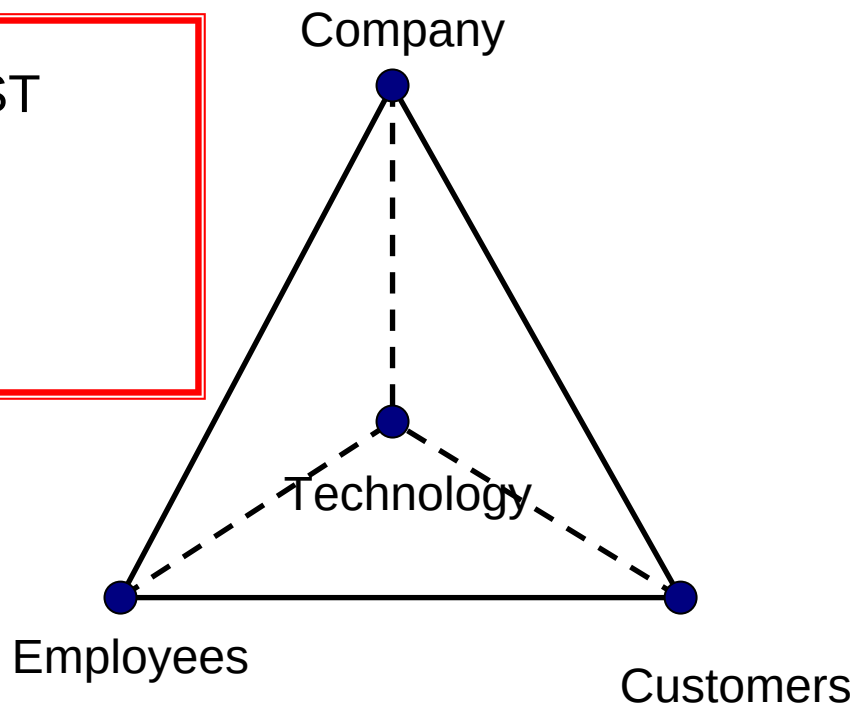
In adopting Parasuraman's Pyramid Model (2000), we further recommend that for the Phase 3 of IRAS' EPR, it should focus on building relationships between the stakeholders – IRAS and customers, IRAS and employees, employees and customers. Technology should be treated as an initiator rather than as a sole solution in EPR.

Lastly, we are proposing the following steps to be part of IRAS' next wave of reengineering process (see Figure 5).

We just want to recommend…

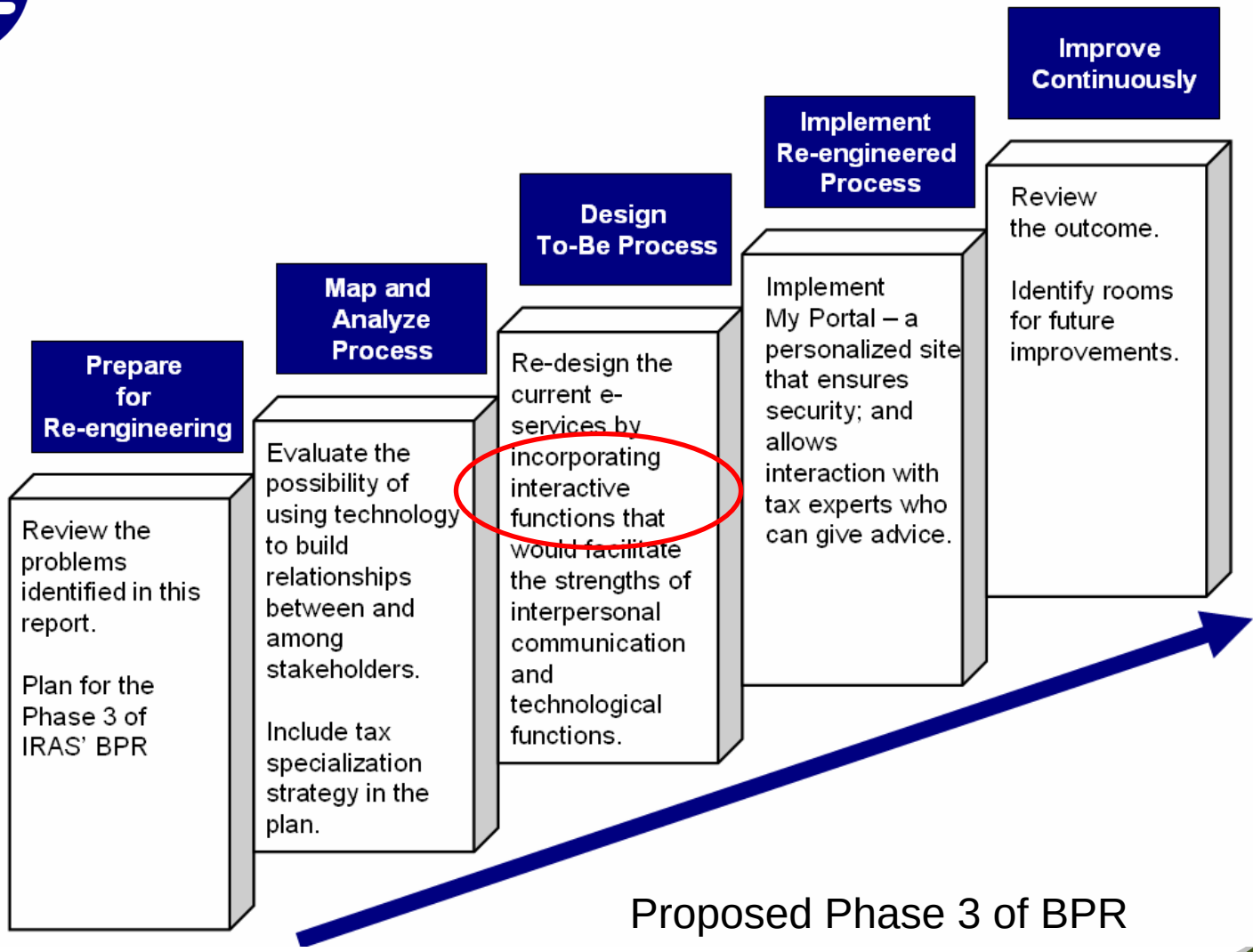
Recommendations

- Fast and Flexible SST
- Build Relationships
- BPR + TPS concept



(Parasuraman, 2000)

Recommendations



Proposed Phase 3 of BPR


THANK YOU!
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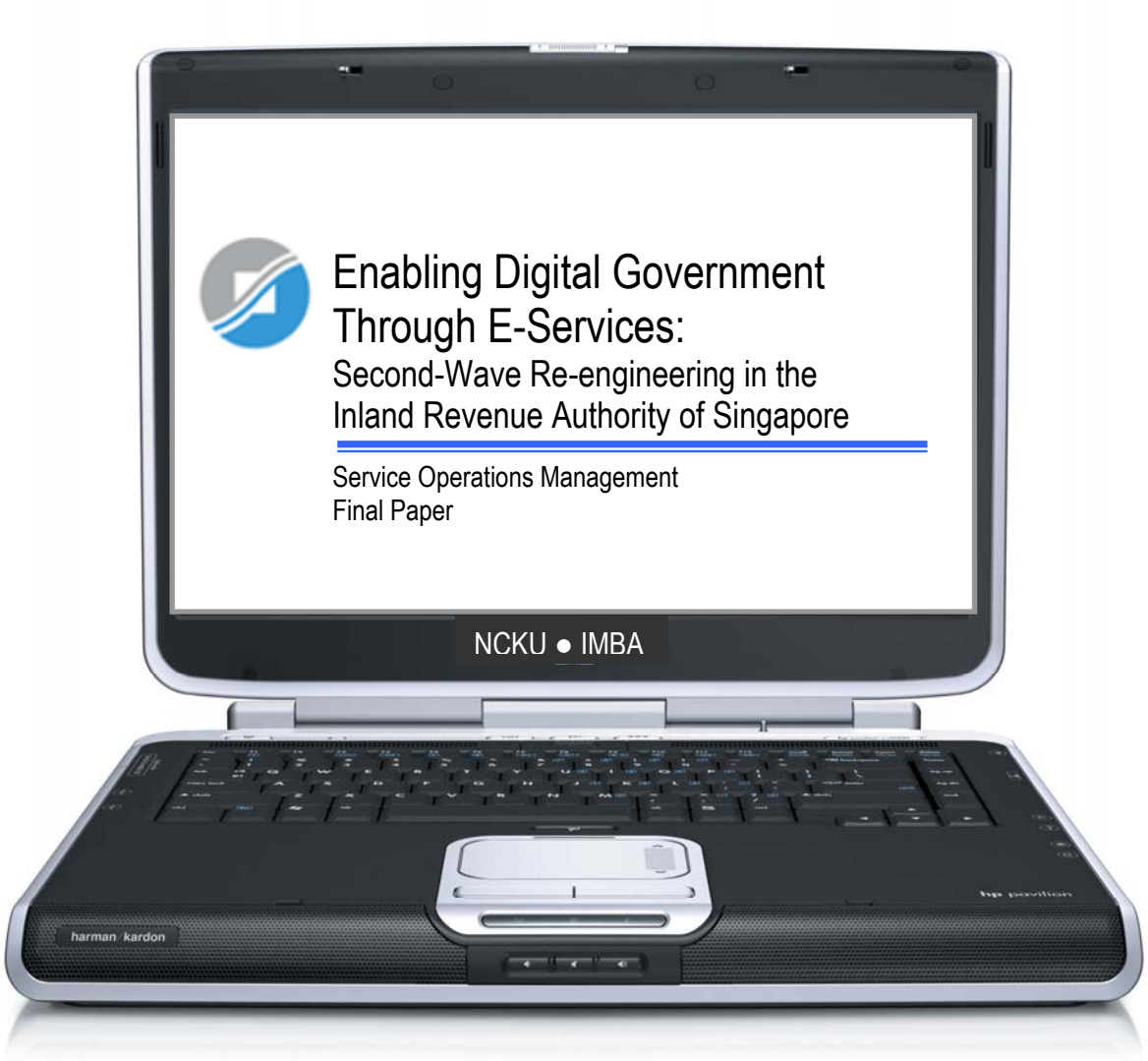

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April 28, 2007

Executive Summary

Even though the Inland Revenue Authority of Singapore (IRAS) is known to be one of the world's e-government innovators (IRAS, 2007), it is not free of problems brought by its e-services. This report aimed to address these issues by describing the process of enabling digital government.

Specifically, this report was prepared by identifying the problems that IRAS faced after undergoing two phases of business process re-engineering. This report also analyzed IRAS' case by looking into the following aspects: Ideal government service; Business process re-engineering; Visions of e-government; Key success factors in enabling e-services; and Risks involved.

Research findings show that in enabling the process of enabling digital government through e-services is not a simple task. It involves internal and external issues that have to be addressed. It calls for continuous effort for improvement (Muthu, Whitman, & Cheraghi, 1999). Although it is commonly equated to technology, it should not solely depend on it. The key success factors in enabling e-services include environment, people, methodology, technology, and transformation vision (Paper & Chang, 2005). Furthermore, risks are inevitable in enabling e-services (Heeks, 2003).

By applying the concepts of Service Marketing, particularly Lean Service and Self-Service Technology (SST), a list of recommendations on how to address IRAS' problems was drafted. Moreover, a proposed Phase 3 for the future business process reengineering was included in this report.

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I. Introduction

(Sia & Neo, 2003)

The Inland Revenue Authority of Singapore (IRAS), the tax agent of the Singapore government, is responsible for administering, assessing and collecting taxes in the country.

Prior to be named as IRAS, this department was known as the Inland Revenue Department (IRD). IRD was negatively perceived due to many internal and external factors. During the late 1980's, Singapore's economy grew by 9-10% per year. However, IRD failed to effectively collect taxes. It had a backlog of 35,000 cases of corporate tax, 52,000 cases of small businesses tax, and 380,000 cases of individual taxpayers. All in all, these backlog amounted to S$1.14 billion unpaid taxes. IRD was also suffering from severe lack of resources and low staff morale. It was noted that the turnover rate in 1991 was 11%, a very large figure compared to the average 3.8% for the civil service.

Furthermore, IRD's operations were fragmented. It had operated in different geographical locations, each focusing on a specific tax type. Because of this physical separation, the department was characterized as highly compartmentalized with a "divide-and-rule" management structure. There had been cases when income tax returns were sent to deceased taxpayers. Due to separate processing of tax refunds and tax assessments, many taxpayers were not pleased by IRD's service.

These problems prompted its leader, Commissioner Koh Yong Guan, to introduce radical changes through IT-enabled transformation that helped the department in achieving dramatic improvements in tax collection, increased taxpayer

satisfaction, and enhanced effectiveness of taxpayer compliance. Along with these developments, Mr. Koh Yong Guan also proposed to change the name of IRD to IRAS (Inland Revenue Authority of Singapore)

The digitization of IRAS is divided into two phases, each of which was headed by different commissioners. Phase 1 (1993-1998), headed by Mr. Koh Yong Guan, was marked by massive re-engineering through cross tax type integration and the implementation of a $69m mass-production Inland Revenue Integrated System (IRIS). During the Phase 2 (1998-2005), the new commissioner, Mr. Koh Cher Siang, was challenged to sustain the early success. The exponential growth in the use of the internet paved the way for the development of IRAS' e-services like e-filing, e-listing, e-payment, e-stamping, fax express service and Inland Revenue Information System (IRS)

Mr. Koh Cher Siang
Commisioner, IRAS
(1998-2005)

However, even though dramatic improvement in tax collection was observed, problems resulting from compromises made during the implementation stage recurred in year 2000. Problems with the company strategy, employees, customers, and technology faced Mr. Koh Cher Siang (see details in the "Problems Encountered" section). Therefore, this paper tried to address these problems and develop a service strategy that would continuously improve IRAS e-services.

II. Objectives

In general, this management report aimed to describe the process of enabling digital government through e-services. This was done using the case of Inland Revenue Authority of Singapore (IRAS).

Specifically, this report was prepared by accomplishing the following objectives:

1. Identified the problems that IRAS faced after undergoing two phases of business process re-engineering.
2. Analyzed IRAS case by looking at the following aspects:
    a. *Typical vs. ideal government service*
    b. *Business process re-engineering*
    c. *Visions of e-government*
    d. *Key success factors in enabling e-services*
    e. *Risks involved*
3. Listed recommendations on how to address IRAS' problems and further improve its service operations.

III. Problems Encountered

In identifying the problems encountered by IRAS, we decided to classify them into four clusters – company, employees, customers and technology. These components are the same with the elements of "pyramid model" of service marketing proposed by Parasuraman (2000). We chose to present it this way because this model emphasizes the importance of technology in building lasting relationships between the company, employees and customers.

1. Company Problems

IRAS's management is in a dilemma in addressing these questions:

a. Should IRAS continue to integrate the cross tax services? Or should it revert back to tax specialization structure?

b. How could IRAS structure balance "one stop" services to taxpayers and high cost of providing such services?

c. What should be the role of IRAS is enhancing taxpayer compliance while maintaining high quality?

d. Should auto-inclusions (automatic inclusion of tax return information) be made compulsory, with consequences of non-compliance formally laid down?

e. Should IRAS postpone further IT investments into the e-services infrastructure until the payoffs from IRIS (computer system bought during Phase 1) are fully realized?

f. Should IRAS initiate the planning and deployment of the next generation of computerized tax system, in place of the highly successful IRIS?

g. What's should be IRAS' next step? As Commissioner Koh Cher Siang asked himself, "Are we in tune in the constant tide of change? What is the way forward?"

2. Employee Problems

a. Loss of specialized tax knowledge. Even though IRAS conducted training efforts, it has remained difficult to train officers beyond one tax type. As a frustrated manager claims, "It is impossible to create a tax superman given the depth of knowledge required."

3. Customer Problems

a. Negative perception towards IRAS

b. Not all customers are technologically ready and competent

4. Technology Problems

a. Inflexible software architecture. During the Phase 1, The IRIS program integrated different services. However, during the Phase 2, IRAS encountered problems because it cannot simply accommodate other types of taxes that are mandated or revised by the law.

b. Does the IRIS program hamper IRAS' ability to respond quickly in administering budget changes and innovative tax schemes?

c. Do the e-services of Phase 2 "cannibalize" IRAS' heavy investment on the imaging technology (IRIS)?

IV. Analyzing IRAS' Case:

A. Typical vs. Ideal Government Service

Table 1 summarizes how typical government services are characterized as opposed to how customers' expect it to be.

Table 1. Typical vs. Ideal Government Service

Typical Government Services:	Customers' Ideal Government Services:
• Slow	• Fast and convenient
• Bureaucratic and complicated procedures	• Simple procedure
• Duplication of steps	• Integrated service procedures
• Many paper works	• Less paper work
• Unfriendly staff	• Friendly staff
• Not effective, inconsistent	• Reliable and accurate

Typical Government Services

Before the re-engineering process, IRAS was characterized as typical of government services – slow, bureaucratic and complicated, repetitive steps, many paper works, unfriendly staff, and inconsistent. In fact, there were cases when one tax division was processing tax refund for a tax payer while another tax division was chasing the same tax payer for payment. Different types of taxes were also serviced by different offices located in different locations. The uncertainties and delays in assessments irritated many taxpayers. And since the staff morale was low, they tend to be unfriendly. No wonder, only about 20% of the taxpayers duly pay their taxes (Sia & Neo, 2003).

Ideal Government Services

Because of this poor image, Commissioner Koh Yong Guan was challenged to bring radical change by breaking the typical perception towards government services and introduce a new IRAS. His mission was very clear. He said, "We have to cope with the backlog of both assessment and collection. At the same time, we want taxpayers to see as fair and responsive. We want tax evaders to know that we are efficient and effective. We want tax practitioners to regard us as professional and decisive" (Sia & Neo, 2003).

In summary, the dramatic improvements in IRAS' services were achieved through integration, simplification, and reduction of wastes. These are the same principles covered by the Lean Service (Bicheno, 2000). Through the concept of lean, IRAS' was able to uplift its image and meet the following characteristics of an ideal government service (Sia & Neo, 2003):

a. Fast and convenient

The introduction of the Inland Revenue Integrated System (IRIS) made IRAS' services fast and convenient. Before, tax payer services were limited to some non-standardized FAQ databases. But due to the re-engineering process, taxpayers can conveniently avail of the following services: Taxpayer Services Application (TPS) Assist, case management, and correspondence management (see Appendix, Exhibit 1 for details).

b. Simple procedure

Taxpaying system was simplified through the one-stop taxpayer services. Before, manual assessment is necessary. But through IRIS, there was a straight-through processing wherein automated assessment, payment/ refund processing, and taxpayer accounting can be done. Moreover, the former 8-page form was cut to 1 pager, thus avoiding unnecessary procedures.

c. Integrated service procedures

By streamlining the procedures the following services were integrated: unique tax reference, tax form simplification, fixed filing deadline, pipeline processing, instalment payment, annualized tax billing, etc. More importantly, the different departments located in different buildings were integrated through a functional reorganization that allowed processing across tax types.

d. Less paper work

Paper works were minimized through the digital imaging and workflow management procedures like data capture, document management, and workflow routing.

e. Friendly staff

The IRIS provided employees with tools and systems that eased their work and pleased the customers. Thus, the staff had higher morale which resulted to a friendly workforce.

g. Reliable and accurate

The filer assessment and mass property appraisal system contributed to a more reliable and accurate scheme.

Through applying the concepts of Lean Service, IRAS achieved significant improvements. Taxpayers' satisfaction level reached as high as 95% (Sia & Neo, 2003). However, even IRAS did a major leap from a typical to an ideal government department, it was challenged on how it can sustain and/or further improve its services. This leads us then to the next section of this management report which talks about the Business Process Re-engineering (BPR).

B. Business Process Re-engineering (BPR)

What is BPR?

Business Process Re-engineering is "the **fundamental** rethinking and **radical** redesign of business **processes** to achieve **dramatic** improvements in critical, contemporary measures of performance such as cost, quality, service and speed" (Hammer & Chapppy in Muthu, Whitman, & Cheraghi, 1999).

As emphasized in the definition above, there are four key words that comprise the definition of BPR:

a. Fundamental

In conducting BPR, a company must go back to the basics and reexamine the fundamental issues that it needs to address (Muthu, Whitman, & Cheraghi, 1999).

b. Radical

BPR is not about small improvements. As opposed to the constant incremental or gradual changes promoted by the Toyota Production System (Bicheno, 2000), BPR aims for total reinvention (Muthu, Whitman, & Cheraghi, 1999).

c. Dramatic

BPR is definitely not for companies who want a 10% improvement. It is for those that need a complete revolution (Muthu, Whitman, & Cheraghi, 1999) and substantial developments through the aid of technology (Paper & Chang, 2005).

d. Process

The last but the most important of the four key words is the word "process." BPR is interested with the processes, not on tasks, jobs or people. It aims to redesign the strategic and value added processes within and between organizational boundaries

(Muthu, Whitman, & Cheraghi, 1999). However, Delvin Grant (2002) argues that this description is limiting. He suggests that some BPR fail because it focuses too much on the process and ignores other important aspects of institutions such as organizational structure, people, communication, and technology.

Steps of BPR

In their research entitled "Business Process Re-engineering: A consolidated Methodology," Muthu, Whitman, & Cheragh (1999) studied on the different BPR methodologies and summarized them into five steps - Prepare for reengineering; Map and analyze; Design to-be process; Implement reengineered process; and Improve continuously.

IRAS' BPR Process

By adopting the steps of BPR proposed by Muthu, Whitman, & Cheraghi (1999), we have analyzed IRAS' BPR processes – both Phase 1 and 2. Details of which are shown in Figures 1 and 2. The timeline of events are shown in the Appendix, Exhibit 2.

a. Phase 1

Phase 1 was conducted during the leadership of Commissioner Koh Yong Guan (1993-1998). It was characterized as the period of transition from typical government service to an ideal one. To begin with the reengineering, IRAS identified the problems and reviewed the organizational vision. With the aim of uplifting the image of the department, a massive IT project was initiated. It was known as the Inland Revenue Integrated System or IRIS . Since then, the work process were digitized, automated and streamlined by creative a one-stop service. However, to continuously improve its services, IRAS' next commissioner brought this improvement to a higher level through the Phase 2 of its BPR (see Figure 1).

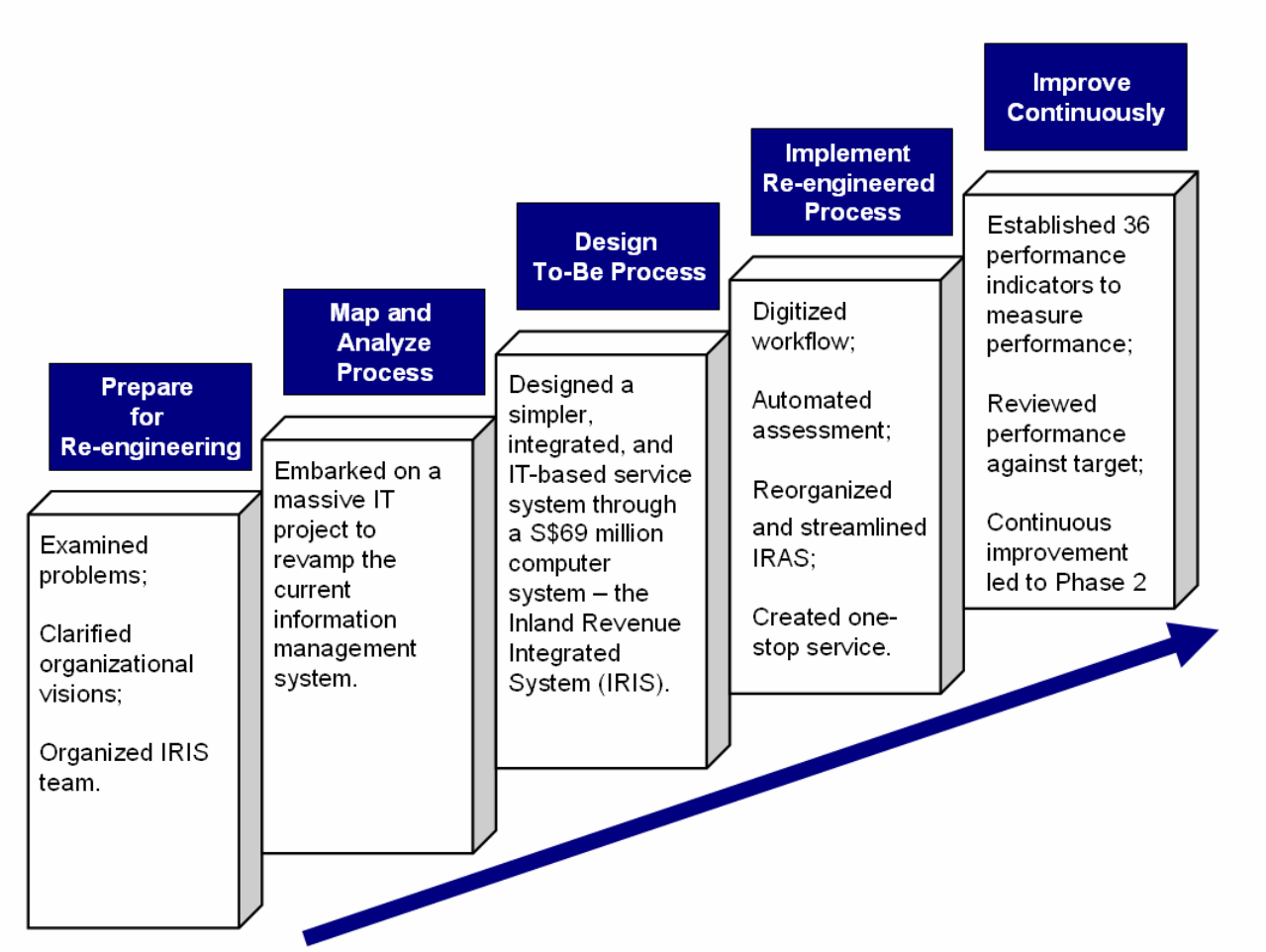

Figure 1. Phase 1 of IRAS's BPR: Going Back to Ground Zero

b. Phase 2

Figure 2 (see next page) shows the details of the Phase 2 of IRAS' BPR. It was conducted under the leadership of a new commissioner, Mr. Koh Cher Siang. (1998-2005). It was noted as a radical change from the use of offline digital equipments to getting online. Aiming for superior service quality, IRAS explore the potentials of the internal and introduced e-services such as e-filing, e-listing, e-payment, etc (see Appendix, Exhibit 3 for details).

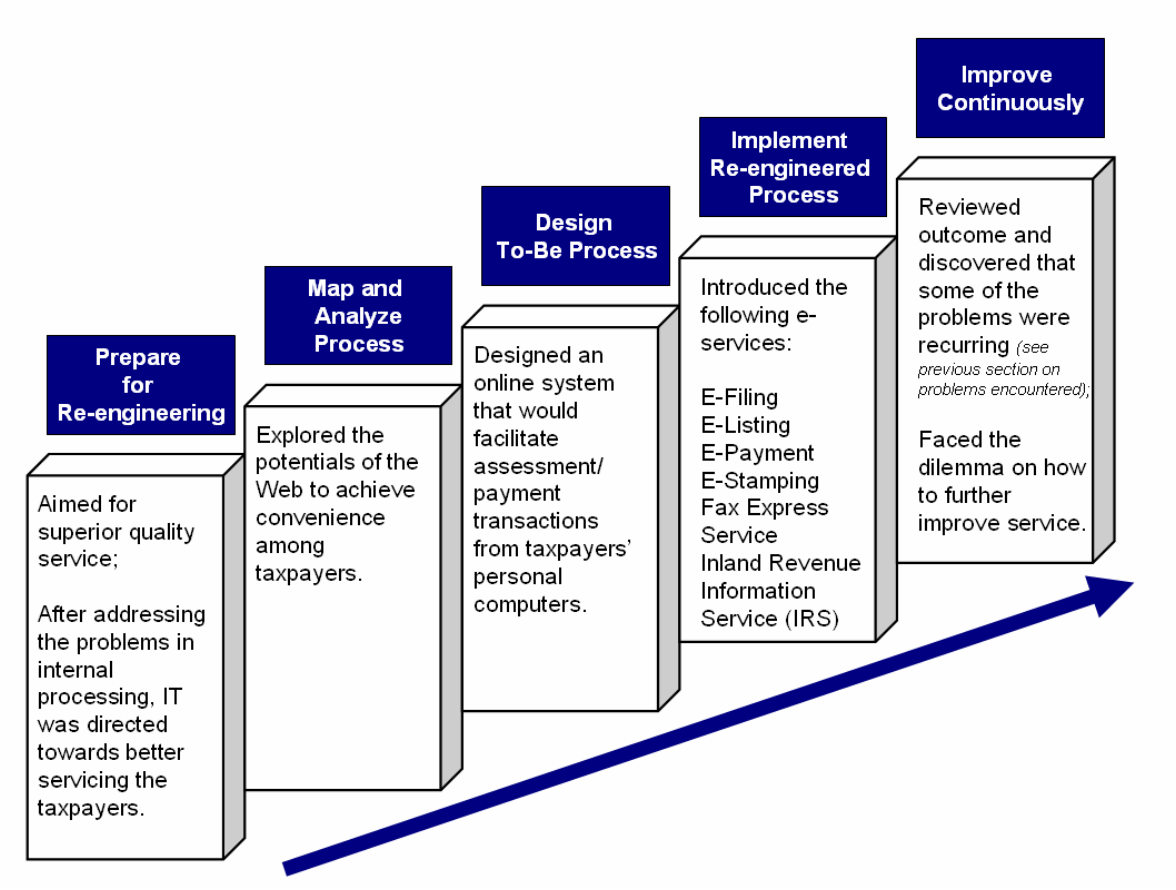

Figure 2. Phase 2 of IRAS's BPR: New Leadership, Innovating Beyond IRIS

c. Phase 3 and Beyond

After reviewing the outcome of Phase 2, IRAS' management was faced with a dilemma on what should it do next? As an advocate of BPR, Commissioner Koh Cher Siang believes that it should continuously improve its services. The question however is how. To address this, Figure 3 (see next page) is therefore be filled up at the end of this report (see Recommendations).

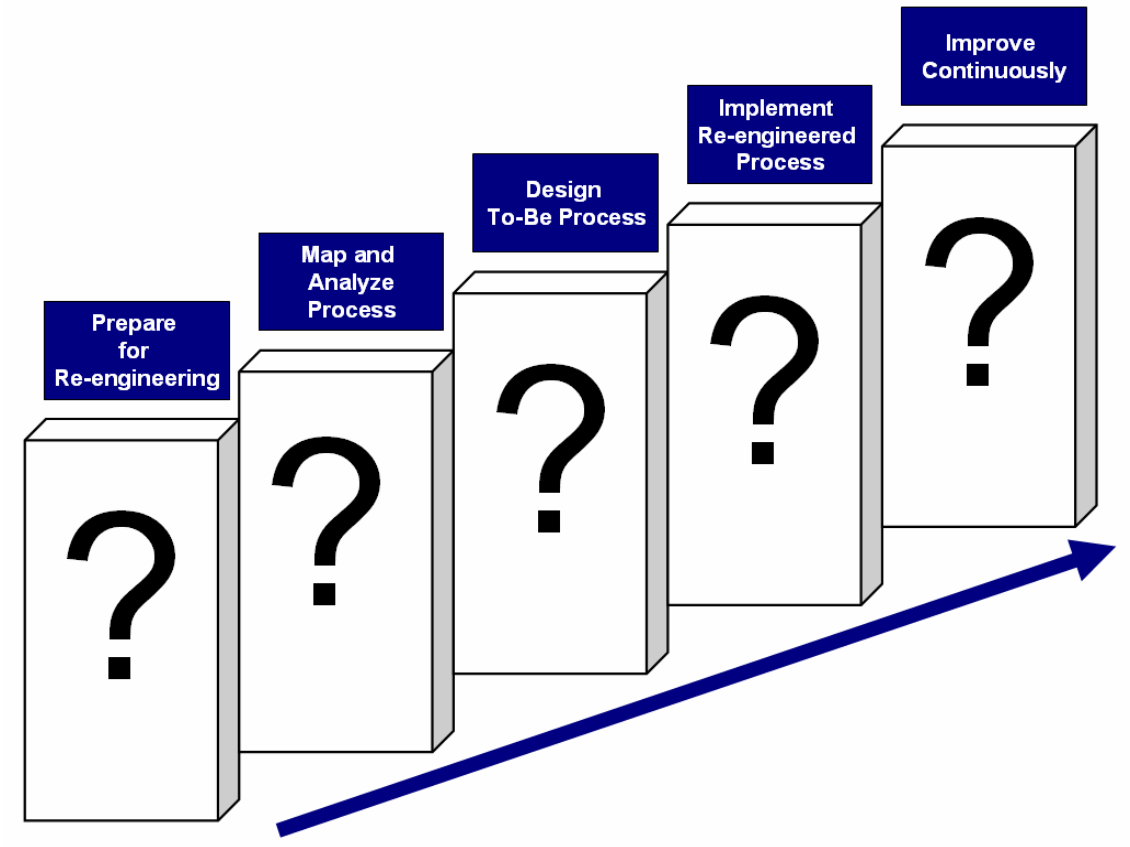

Figure 3. Phase 3 and Beyond: What should IRAS do next?

C. Visions of E-Government

IRAS is considered as one of the pioneers of e-government (Wei, 2004). It began its digitization in 1993. Its vision is:

> ***"To be the leading tax administration in the world, a partner of taxpayers in nation building and economic development, an excellent team of competent and committed people" (IRAS, 2007).***

Aside from these, IRAS believed that through the aid of technology, it would be able to reduce the administrative hierarchies, reform the modes of government affairs, optimize the government business process, clarify the administrative work, improve the quality of government service and management, enhance the cooperation of the internal departments and the interactions between the government and the public, and finally to construct an honest, diligent, transparent and efficient government using technology as a means to the end (IRAS, 2007).

The Link Between the E-services and the Visions of E-government

Through looking at the case of IRAS, we can see that the developments in e-services were linked to the attainment of the visions of e-government. Listed below are some of the developments in the e-services that were directed towards to its visions (see Table 2).

Table 2. IRAS' E-services Geared Towards its Visions ***(Sia & Neo, 2003)***

IRAS' E-services	Visions
Because of its innovative shift from traditional to electronic services, Singapore Wave (2001), a government Internet publication, cited that "the IRAS site is the most effective and popular of the 'e-government interactive sites." Moreover, Accenture, a leading technology services group, said that among 22 countries that initiated e-government, Singapore, through IRAS' website, is among the world's most sophisticated in the use of the internet for government and public functions.	*To be the leading tax administration in the world*
IRAS is Singapore's partner in nation building because the taxes are used to develop Singapore into a stronger community, a better environment and a more vibrant economy. The Social Development Sector takes up the largest share (44%) of total taxes that goes to the government. The second largest sector is Security and External Relations, taking up 37%, followed by Economic Development Sector at 13%. While the government Administration takes up the remaining 6% (IRAS, 2007). Through digitizing its services during the Phase 1, tax revenue collected was at a record high of $16billion. It was also noted that there was a 95% satisfaction level among taxpayers for professionalism and service quality. Furthermore, the introduction of e-services pleased the taxpayers. As shown in the figures, e-filers had climbed steadily from 112,897 to 694,000 in 2001.	*To be a partner of taxpayers in nation building and economic development*
Before, IRAS faced severe resource limitations and the staff morale was low. Thus, the turnover rate (11%) was high compared with the average rate (38%) for the civil service. However, after introducing the one-stop system, the work flow management system was smoothened, thus increasing the level of employee satisfaction.	*An excellent team of competent and committed people*

D. Key Success Factors in Enabling E-services

In a journal article on the key success factors of BPR, Paper and Chang (2005) suggests that BPR is an interplay between 5 major factors – environment, people, methodology, technology and transformation vision. They further argue that the vision for change is the central element in BPR. True enough, these elements are the same factors that had brought radical change to IRAS (see Figure 4).

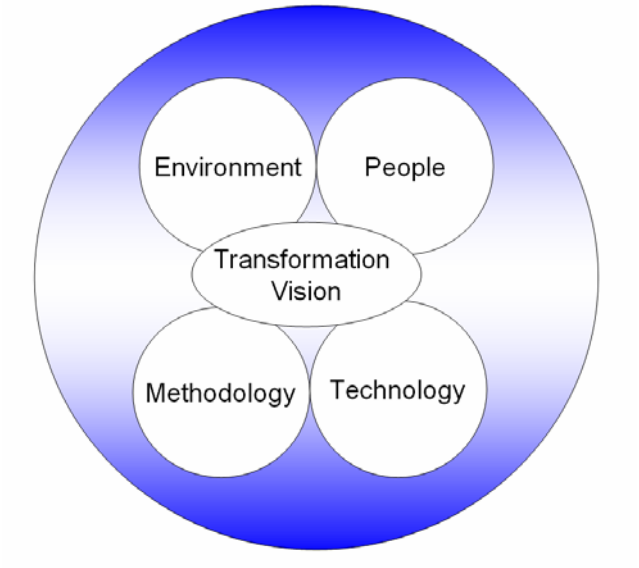

Figure 4. The Key Success Factors of BPR (Paper & Chang, 2005)

a. Environment

Among the environmental factors, the support of other government units had been essential for managing IRAS' transformation. In June 2000, Infocomm Development Authority of Singapore (IDA) had launched a government support plan that aligned the e-government visions of various agencies of Singapore.

b. People

b.1 Customers

Customer complaints pressured IRAS to speed up its reengineering process. Their complains about the uncertainties and delays in assessments that irked many taxpayers, low staff morale, segregated geographical locations of different tax units were among those that were immediately addressed.

Another factor that facilitated change was customer's high computer literacy. Because most of the customers already know how to use computers, IRAS was able to easily penetrate the market through its IRIS and e-services programs.

b.2 Employees

IRAS recognized that its human resources are the heart of change. Without their support, the whole BPR will be wasted. On the frontline were 200 full time staff who comprised the Project Implementation Team.

c. Methodology

Under the methodology, IRAS imposed a management policy that reorganized the whole department. Because of this move, highly compartmentalized, divide-and-rule management structure was dumped. Thus, facilitating a new organizational blue print based on cross division and common source of information.

d. Technology

A S$69-million computer program, the Inland Revenue Integrated Systems (IRIS), was introduced to handle all tax types to be dealt with in an integrated one-stop service system. Along with this, the application of various technologies (e.g. workflow management, intelligent character recognition, three-tier client-server, local area networks) made IRAS one of the world's most technologically advanced tax administrators.

e. Transformation Vision

All of the key success factors mentioned earlier revolved around the core of BPR – the vision for change. Both the commissioners of Phase 1 and 2 were committed to bring radical change to IRAS. Mr. Koh Yong Guan dreamed of uplifting IRAS' image to increase the percentage of tax filers. Mr. Koh Cher Siang envisioned for a higher quality of service. Their perseverance helped in achieving the quantum leaps for IRAS.

E. Risks Involved in E-Government

Research says that there is a very high risk involved in venturing into e-government. Only 15% of the attempts succeed (Heeks, 2003). Thus, even those governments that previously do well in installing e-government are not freed of risks when they undergo BPR.

In the case of IRAS, we classified the risks into two major categories – customer's perspective and organization's perspective.

a. Risks Based on Customer's Perspective

Skepticism about e-government is inevitable. Before IRIS was implemented, there were doubts of whether the new IT system would ensure information and monetary security. Questions on reliability were also raised. Thus, there was an adaptation risk among the taxpayers. Furthermore, there were a number of technologically incapable customers who did not easily adhere to the digitization of IRAS (Wei, 2004).

b. Risks Based on Organization's Perspective

Investment risk is the number one concern of governments when engaging in e-government projects because this effort entails longer time and huge amount of money (Heeks, 2003). By employing technologies in the system, there is a risk of job redundancy, because some jobs are replaced by self-service technologies. Moreover, there is a potential risk of failure in the system. Computers are not free of errors, and their failure means failure to serve the customers (Meuter, Ostrom, Roundtree, & Bitner, 2000).

How did IRAS Overcome These Risks?

These risks were unavoidable, yet IRAS was able to reduce it through the following schemes listed in Table 3.

Table 3. IRAS' Solutions to Reduce Risks

Risks Involved	IRAS' Solution
Risks Based on Customer's Perspective	
Skepticism	IRAS invested on a S$69-million secured program called IRIS to ensure security and reliability. It also installed a self-developed data entry and verification program to reduce security risks.
Information Security Risk	
Monetary Security Risk	
Reliability	
Technological Adaptation Risk	Procedures were streamlined and simplified. The eight-page tax form was compressed into a single page. One stop-taxpayer service was also introduced. By promoting convenience (especially in Phase 2) in the use of IRAS' services, it was able to attract more users, thus speeding up the technological adaptation.
Risks Based on Organization's Perspective	
Investment Risk	A Project Implementation team composed of 200 full-time experts was organized to ensure effectiveness of the system.
Job Redundancy	Stopped hiring university graduates as document evaluators.
Technological/ Service Failure Risk	36 performance indicators were established to make sure that the system was running smoothly. All officers were involved in work improvement teams.

V. Conclusions

After thoroughly reviewing the case of IRAS, we conclude that the process of enabling digital government through e-services is not a simple task. It involves internal and external issues that have to be addressed. Specifically, government units should look deeply into the following aspects:

a. The Ideal Government Service. Know what the customers' demand and expect. This is useful in building a vision, the initial stage of BPR.
b. Business Process Re-engineering (BPR). It is a process of going back to the basics in able to bring dramatic improvements through a radical redesign. As a process, it is needs continuous improvement just like what IRAS underwent – Phase 1, Phase 2, yet it still needs further developments.
c. Visions of E-government. E-government is not just about being technologically advanced. It is installed to be a partner of the government in its nation building and economic development. Therefore as a partnership, it should serve the people – both customers and employees.
d. Key Success Factors in Enabling E-services. During the Phase 1 of IRAS' BPR, it focused on technology to improve its internal operations. The concept of Lean Service was helpful in streamlining processes. However, it was not enough. Self-service technologies, when not handled properly, could be a dissatisfying factor (Meuter, Ostrom, Roundtree, & Bitner, 2000). Thus, during the Phase 2, IRAS improved its service quality and refocused its efforts from technology to people. Yet, some problems recurred. This tells us that in enabling e-services, a balance between the key success factors (environment, people, methodology, technology, and transformation vision) is needed.
e. Risks Involved. Risks are inevitable in doing BPR. Part of enabling digital government is overseeing these risks to develop schemes that would reduce it.

After the two phases of BPR, IRAS' faces another set of problems. Yet, these problems should not discourage the management to continuously look for solutions. In the last section of this paper, a set of recommendations is listed to address these problems.

VI. Recommendations for Future IRAS' Plans

A. Going Back to the Problem

After two waves of re-engineering process, IRAS faced the dilemma of whether it should continuously invest on e-initiatives or stop it because of the threat that e-initiatives might cannibalize its heavy investment in imaging technology. Before proposing a plan for the future, we have analyzed the problems and offered recommendations for each of the clusters categorized based on Parasuraman's Pyramid Model (2000). See Table 4 for details:

Table 4. Specific Problems Encountered vis-à-vis our Recommendations

Problems Encountered	Recommendations
1. Company Problems	
Should IRAS continue to integrate the cross tax services? Or should it revert back to tax specialization structure?	We recommend that IRAS reorganize the division of labor. Reverting back to specialized structure can enhance taxpayer compliance. In an article about lean service, Swank (2003) suggests that by segregating complexity, we are able to reduce waiting time, thus increasing customer satisfaction. She further recommends the clustering of tasks should be based on level of difficulty. While the structure becomes specialized, there will still be a "one stop" services in the form of online interface that integrates IRAS. By satisfying more customers, there is more chance of hitting the target tax collection.
How could IRAS structure balance "one stop" services to taxpayers and high cost of providing such services?	
What should be the role of IRAS is enhancing taxpayer compliance while maintaining high quality?	

Table 4. Specific Problems Encountered vis-à-vis our Recommendations *(cont.)*

Problems Encountered	Recommendations
Should auto-inclusions (automatic inclusion of tax return information) be made compulsory, with consequences of non-compliance formally laid down?	Auto inclusion system should be commensurate with government regulations. In order to satisfy this condition, IRAS can integrate system with government regulations, continuously update it and inform customers about any changes.
Should IRAS postpone further IT investments into the e-services infrastructure until the payoffs from IRIS (computer system bought during Phase 1) are fully realized?	To continuously support its vision of being a world leader in e-governance and to further satisfy its taxpayers, IRAS should implement new technologies. However, the previous system should not be immediately phased out. By gradual transition, the adaptation risks would be reduced (Heeks, 2003).
Should IRAS initiate the planning and deployment of the next generation of computerized tax system, in place of the highly successful IRIS?	Computerized tax system is required by certain type of customer segment. Therefore, IRAS should provide such service to those customer groups like corporate tax, property tax and income tax for employers. Moreover, as an advocate of BPR, IRAS should always be open for continuous improvements.
What's should be IRAS' next step? As Commissioner Koh Cher Siang asked himself, "Are we in tune in the constant tide of change? What is the way forward?"	(Please see last section for the future plan)
2. Employee Problems	
Loss of specialized tax knowledge. Even though IRAS conducted training efforts, it has remained difficult to train officers beyond one tax type.	By implementing the specialized tax structure system, employees can focus on certain tax types they want to specialize. Thus, their knowledge and skills will be deepened rather than getting an idea of the whole system but with shallow understanding.
3. Customer Problems	
Negative perception towards IRAS	The negative perception is brought about by some lapses in customer relationship. We therefore suggest that IRAS should balance developments between technology and customer satisfaction. Developments in technology should enhance relationships and add values.

Table 4. Specific Problems Encountered vis-à-vis our Recommendations *(cont.)*

Problems Encountered	Recommendations
Not all customers are technologically ready and competent	Lovelock and Wright suggest that in using technological innovations, companies must "recognize that customers' responses to technology vary"(Lovelock & Wright, 2002). The smooth technological transition mentioned earlier will address this issue. Previous technology should be terminated gradually until customers are ready to fully adopt the new technology.
4. Technology Problems	
IRAS cannot simply accommodate other types of taxes that are mandated or revised by the law.	Bicheno (2000) believes that for a system to work, it's not enough to be fast. It must also be flexible. IRAS should develop a system that can easily accommodate changes as mandated or revised by the law.
Does the IRIS program hamper IRAS' ability to respond quickly in administering budget changes and innovative tax schemes?	
Do the e-services of Phase 2 "cannibalize" IRAS' heavy investment on the imaging technology (IRIS)?	Provided that the new system introduces innovative services, it will not cannibalize IRIS. It improves the previous investments. Thus, instead of terminating the previous system, IRIS should adopt the strengths it has introduced (e.g. streamlining and integration of internal process) and improve its weaknesses (i.e. tax specialization).

B. Planning for the Future

In adopting Parasuraman's Pyramid Model (2000), we further recommend that for the Phase 3 of IRAS' BPR, it should focus on building relationships between the stakeholders – IRAS and customers, IRAS and employees, employees and customers. Technology should be treated as an initiator rather than as a sole solution in BPR.

Lastly, we are proposing the following steps to be part of IRAS' next wave of reengineering process (see Figure 5).

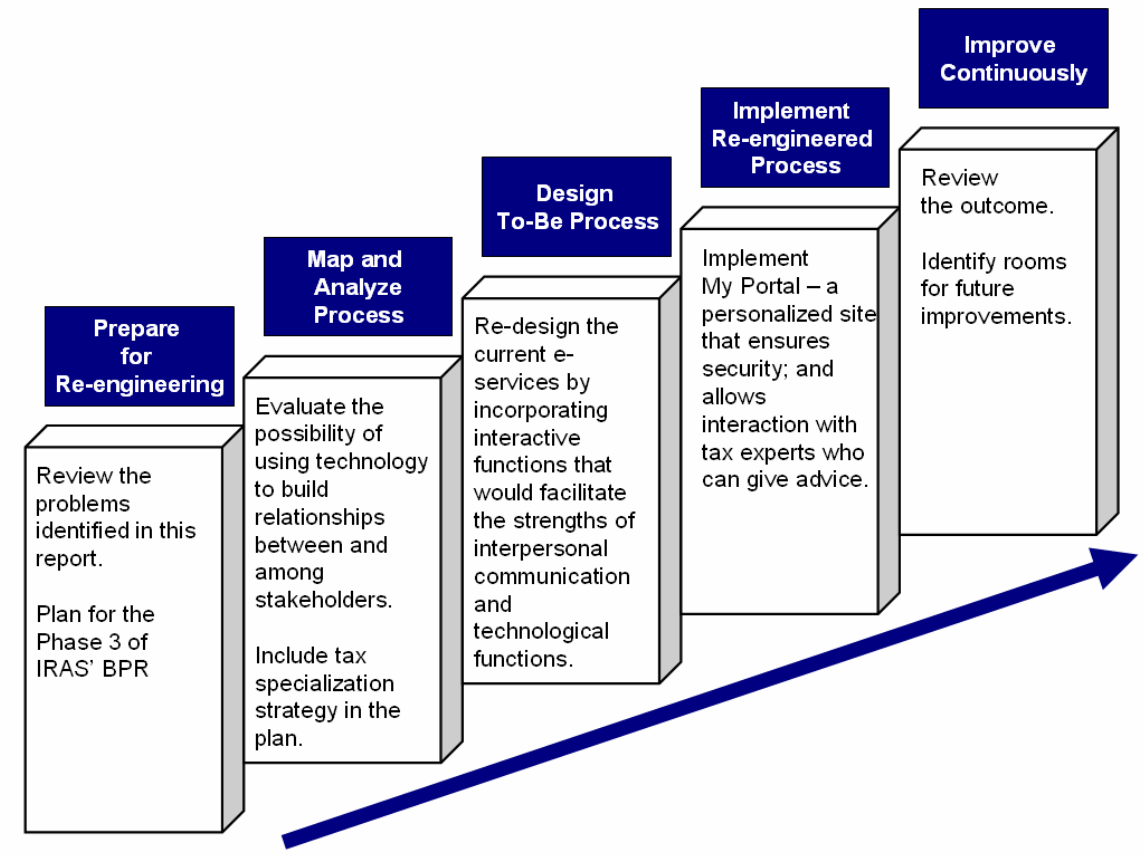

Figure 5: Proposed Phase 3 of IRAS' BPR

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APPENDIX

Exhibit 1
Before and After IRIS Implementation

Pre-IRIS

BEFORE operating scenario:

Technology

- Paper-based tax returns and correspondences: "papers, papers everywhere!"
- Taxpayer services limited to some non-standardised FAQ databases (maintained manually or on PCs).
- Manual assessment of all tax returns by tax officers.
- Mainframe IMS for taxpayer accounting.
- Audit and investigation support restricted and only through formal requests of information from IMA.
- Stand-alone time reporting system on Lotus Notes.

Process

- Organization by a tax type structure with little cross tax type communication.
- Separate taxpayer services for different tax type.
- Passive, desk audits with an all-encompassing strategy to catch all.
- Substantive checking of all supporting documents.
- Respective audit and investigation teams for different tax types.

Post-IRIS

AFTER operating scenario:

Technology

- Digital imaging and workflow management: data capture, document management, workflow routing.
- Taxpayer services applications: TPS_Assist, case management, correspondence management.
- Straight-through processing: automated assessment, payment/refund processing, taxpayer accounting.
- Audit and investigation applications: pre-audit risk assessment, data warehousing/mining, CAATs with external database linkages.
- Executive information system that integrates with time-reporting application on Lotus Notes.

Process

- Functional reorganization along processes across tax type.
- One stop taxpayer services.
- Streamlined procedures: unique tax reference, tax form simplification, fixed filing deadline, pipeline processing, instalment payment, annualized tax billing, etc.
- Filer assessment and mass property appraisal.
- Integrated audit process with extended field audits, regular audit conferences/experience-sharing seminars, and joint investigation teams.

Exhibit 2
Critical Events and Timeline of IT Initiatives

Year	IRIS Project Implementation
1993	• 12 months instalment payment scheme
1994	• GST implementation • Introduction of tele-file • Functional reorganization
1995	• Roll out of individual income tax • Move to Revenue House
1996	• Auto-inclusion of national servicemen's pay • Roll out of corporate tax • Roll out of property tax • National IT award • Roll out of GST
1997	• Auto-computation of reliefs • New Commissioner Mr Koh Cher Siang • Auto-inclusion of dividends • IRAS-SBA (Singapore Broadcasting Authority) link up for TV licence
1998	• Auto-inclusion of civil services incomes • E-filing (individuals) • E-filing (GST)
1999	• Electronic property valuation list • Singapore Quality Class Achievement • Auto-inclusion of private organizations incomes
2000	• Electronic listing of GST registered businesses • E-stamping • Integrated legal requisition system (InteReg) • IRAS service pledge • ISO 9000 Certification
2001	• E-Notice of transfer • E-filing companies • Auto-inclusion of donations
2002	• Taxpayer complaint management software implementation • E-Pay payment system • E-Tax clearance, e-Service authorization system (EASY)
2003	• E-Auto inclusion scheme for employment income

Exhibit 3
IRAS E-Services

E-Filing	E-Filing for Individual
	E-Filing for Companies E-Application for Certification of Residence (For tax resident companies only) E-Filing for Employers – E-Tax Clearance – E-Services Authorization System (EASY) – Auto-Inclusion Scheme for Employment Income E-Filing for GST Traders E-Notice of Transfer
E-Listing	Directory of Buildings/Estate Names
	Integrated Legal Requisition System (InteReq) List of GST Registered Businesses List of Licensed Appraisers & House Agents Electronic Valuation List
E-Payment	E-Nets
E-Stamping	E-Stamping
Fax Express Service	Fax Express Service
Inland Revenue Information Service (IRS)	Inland Revenue Information Service (IRS)

Source: IRAS. Retrieved August 15, 2003, from http://www.iras.gov.sg.

PROJECT FEEDBACK	
GROUP:	**VOLTAS**

Chivas	*Ai Ling*	*Enkhbold*	*Shan*	*Ellen*	*Time*
Good	**Good**	**Good**	**Good**	**Good**	**Good**

Comments on the presentation

- Typical Gov services – this really helps to focus the mind on how far the Singapore service has moved.
- Useful to add defn. of re-engineering
- Overall risk is that those who should pay tax don't or that they don't charge correctly. A key issue here is whether relaxation of the older checking process will increase this risk. In fact here they have replaced a checking/monitoring approach with a risk management approach.
- Effective management of time – good pace. Chivas – don't rush you still have 3 minutes!

Other comments

- Please don't protect your PDF file for comments. It is much faster to include them direct there. Leave it open and un protected.

Comments on the report

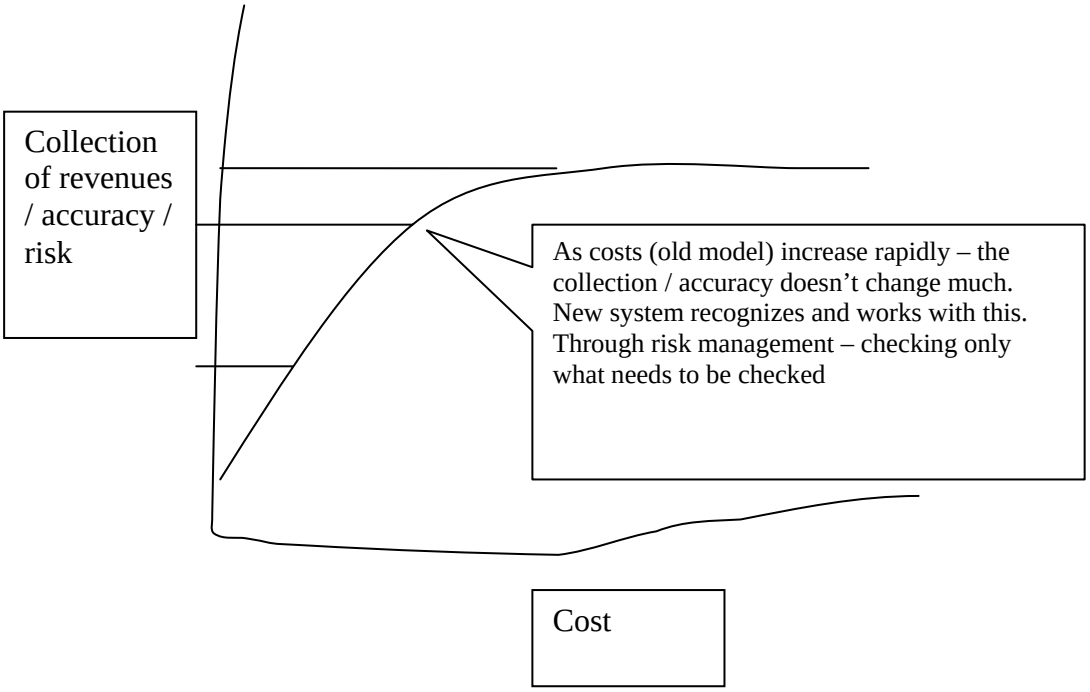
- Your exec. Summary is very unbalanced. See the second paragraph. The objective of the report is not to see the problems post-re-engineering but to learn what made it a success and consider how the current issues (need identifying) can be most appropriately addressed. This is an important point. If you were the manager receiving this it would be an *immediate* turn-off i.e., "why are you exploring failure?" the rest of the world has given us awards for the quality of this work – would be a natural reaction.

    - Throughout the PPT/graphics in the report have worked well – to create powerful and interesting support for the presentation / communication. However they could be (see class feedback comment) more 'business serious' – poor expression on my part – ask if the message isn't clear.
    - Good introduction – use bullets thought to highlight problems and *achievements* (balance). See previous point on objectives.
    - Useful integration of Parasuraman's model. It would read more easily to bring this later. Since at an early stage the reader doesn't know what is happening. It would fit better post the analysis section to summarize the ideas.

- Note – format of tables in Word. You have to make them smaller than the margins to fit (some error in MS word). Note for thesiss.
- Good link to Lean – much of what they have done is linked to Lean principles. Note the idea of risk management rather than risk control. Typically layers of bureaucracy have been added to reduce risk (to check that people pay the correct tax). The result is costly and inefficient. A key part of the process here is to challenge what is really need to evaluate an individual/business tax position. It reflects the fact that the margin cost of adding bureaucratic layers of checking brings little marginal benefit in terms of success collecting the correct tax. See crude pic below.
- Good intro. To BPR
- Section on risk. The biggest on is the lack of experience in Government organization in undertaking these type of projects and a deep sense of risk avoidance (it kind of works now so let's not change it mentaility – there is no pay-off for Gov. workers to change anything). The former can often get in the way of the latter if there is willingess to try to improve. Their partnering with Anderson – an aggressive, focused and task centric consultancy – is likely to have been critical in bringing about change. The vision of the leadership, too and willingness to *risk his job and reputation* for the sake of the project was critical to success. Goes wrong = a massive mess and he'll leave the job in disgrace / goes right = a national hero and the world is his proverbial oyster.
- Key issue in recommendations:
  - Division or labour. Reverting to the old system is risky. It will send a message the project has failed. However the limitations of the current approach are apparent. So a limited amount of separation could be brought in for the complex or business cases.
  - Auto-inclusion – no! Don't create systems to comply with regulation (your first sentence) – make them comply with needs of the service. See your 4 as well. One reason for success has been challenges rules and *having laws changed* to fit the needs of the service delivery system.
  - On technology. They *may* be paying a price fo being at the bleeding edge. They may want to slow down so they are not paying the price for being early adopters (il.e., world leaders). Anderson, their consultants, are not impartial in advising on this, since very very valuable contracts are linked to the continuation of this work (100s of millions of USD)

Overall a good report that would have benefited from a greater sense of balance – to highlight the huge achievements whilst showing current dilemmas and challenges.

Grade: 92%


Collection of revenues / accuracy / risk
As costs (old model) increase rapidly – the collection / accuracy doesn't change much. New system recognizes and works with this. Through risk management – checking only what needs to be checked
Cost

VOLTES5 **DRAGON BALL**		**In the left box write (1) the group you are assessing (2) make a space (3) write your group name (3) Use the same name for the file. *E.g., Voltes5 TIV.doc***	
A Are ideas presented connected with the aim of the presentation? 40%	B Are the ideas presented clearly supported with evidence and logical argument? 30%	C Is it easy to follow & to understand? (Are the slides clear and easy to follow e.g. use of new pictures, words, graphs) 20%	D Overall impression (is it a group presentation etc.?) 10%

37	28	18	8
Comments - Good to use table to compare before and after, easier to understand.			
Grade (91%)			

PRESENTATION FEEDBACK			
GROUP:	**MRJ-VOLTAS5**		
A Are ideas presented connected with the aim of the presentation? 40%	B Are the ideas presented clearly supported with evidence and logical argument? 30%	C Is it easy to follow & to understand? (Are the slides clear and easy to follow e.g. use of new pictures, words, graphs) 20%	D Overall impression (is it a group presentation etc.?) 10%

36	27	17	8
Comments: Interesting topic Well prepared			
Grade: 88			

TIV VOLTAS5 CASE – INLAND REVENUE AUTHORITY OF SINGAPORE		**In the left box write (1) your group name (2) make a space (3) write the group you are assessing, Use the same name for the file. *E.g., Voltes5 TIV.doc***	
A Are ideas presented connected with the aim of the presentation? 40%	B Are the ideas presented clearly supported with evidence and logical argument? 30%	C Is it easy to follow & to understand? (Are the slides clear and easy to follow e.g. use of new pictures, words, graphs) 20%	D Overall impression (is it a group presentation etc.?) 10%

Comments ● Point out very clearly the features of typical government service ● Identify clearly the process of change of before-change, changing phases ● Good time control ● Good at presentation file making – using different software other than powerpoint			
Grade (%) 90			

OHIO→VOLTAS		**In the left box write (1) the group you are assessing (2) make a space (3) write your group name (3) Use the same name for the file. *E.g., Voltes5 TIV.doc***	
A Are ideas presented connected with the aim of the presentation? 40%	B Are the ideas presented clearly supported with evidence and logical argument? 30%	C Is it easy to follow & to understand? (Are the slides clear and easy to follow e.g. use of new pictures, words, graphs) 20%	D Overall impression (is it a group presentation etc.?) 10%

Comments 1. Cute and funny photos make the slides look less serious. How elegant the ppt is! 2. Organized and smooth 3. Good time control 4. Respond to Prof.'s questions clearly			
Grade (89)			

YANGBANLO – VOLTES5		**In the left box write (1) the group you are assessing (2) make a space (3) write your group name (3) Use the same name for the file. *E.g., Voltes5 TIV.doc***	
A Are ideas presented connected with the aim of the presentation? 40%	B Are the ideas presented clearly supported with evidence and logical argument? 30%	C Is it easy to follow & to understand? (Are the slides clear and easy to follow e.g. use of new pictures, words, graphs) 20%	D Overall impression (is it a group presentation etc.?) 10%

38	26	18	8
Comments - Creative graphics - don't forget to have eye contact with audience, not only stare at screen			
Grade (%): 90 %			