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ENABLING DIGITAL GOVERNMENT THROUGH E-SERVICES: SECOND-WAVE REENGINEERING IN THE INLAND REVENUE AUTHORITY OF SINGAPORE

Sia Siew Kien and Neo Boon Siong

This case provides a comprehensive account of how IRAS transformed its processes aimed at achieving dramatic improvements in tax collection, increased taxpayer satisfaction, and enhanced effectiveness of taxpayer compliance. It charts IRAS' ten-year transformational journey over two broad phases, each phase marked by the leadership of a new Commissioner. Phase One (1993-1998) involves the massive re-engineering of cross tax type integration and the implementation of a $69m mass-production Inland Revenue Integrated System (IRIS). Phase Two (1998 onwards) began with the imperative of sustaining the momentum of the gains achieved in Phase One. This involved managing the trade-offs that had arisen as a consequence of the Phase One gains. However, barely two years into stable operations, the trade-offs related to the earlier success resurfaced. Furthermore, the rapid adoption of the Internet as a platform for e-government services also threw up the need for another wave of radical change in IRAS' quest to be among the world's best tax administrators.
THE IMPETUS FOR CHANGE

The history of tax administration in Singapore began in 1947 when the Income Tax Ordinance was enacted.¹ Since then, the Inland Revenue Department (IRD) has evolved as the main vehicle through which the government collects tax revenue and implements its economic policies. During the late 1980s, the Singapore economy grew by 9-10 percent per year, generating more revenue collection tasks as the tax base expanded. The backlog in tax processing snowballed. At the end of 1990, the IRD had yet to settle accounts with 35,000 or 50 percent of corporate tax cases, 52,000 or 45 percent of small businesses, and 380,000 or 40 percent of individual taxpayers. All these amounted to $1.14 billion in arrears. The uncertainties and delays in assessments irked many taxpayers. Moreover, IRD faced severe resource limitations.

The IRD’s operations were fragmented. Tax divisions were distributed over several geographical locations, namely, Colombo Court (estate/stamp duty), International Plaza (GST - goods and services tax), Albert Complex (property tax), and Fullerton Building (income tax). There had been cases where income tax returns were sent to deceased taxpayers even though the estate duty had been settled. There were also cases where one tax division was processing tax refund for a taxpayer while another tax division was chasing the same taxpayer for payment. The narrow separation of efforts by tax types caused much unhappiness among the taxpayers.

Amidst the government approval of the budget to consolidate all IRD departments to a new Revenue House building, and the planned conversion of IRD to a statutory board with its name changed to the Inland Revenue Authority of Singapore (IRAS), Mr Koh Yong Guan, then the Second Permanent Secretary (Defence), assumed his role as the new Commissioner of IRAS. Charting the road map forward was challenging. He noted:

We have to cope with the changes around us simultaneously - the increasing demands of better-educated taxpayers, the move to the Revenue House, the introduction of the Elected President Bill.² We have to cope with the backlog of both assessment and collection. At the same time, we want taxpayers to see us 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. The challenge is that we will have to do all of them.³

PHASE ONE - GOING BACK TO GROUND ZERO

Mr Koh Yong Guan led the staff through a series of planning workshops to clarify the organisational vision and to examine the problems. The compartmentalised management structure of IRAS itself was an issue.

This place was not working as one. Everyone was strongly anchored in the depth of knowledge and there was hardly anyone who had the breadth of knowledge. With that kind of structure, you couldn’t produce good managers for running IRAS, only good specialists.⁴

Koh Yong Guan
Commissioner
IRAS

Weekly Commissioner’s meetings were instituted to bring all divisional heads together to identify problems, challenge ideas, and thrash out issues. One problem was the huge and fast growing taxpayer base. IRAS could only handle half the tax load each year. The backlog set off a vicious cycle that further stretched the tight resources available as the tax load continued to snowball. It became clear that IT solutions alone were not sufficient. IRAS had to re-examine fundamentally how the tax assessment could be better performed.

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¹ As a former British colony, Singapore inherited many fiscal features often considered complex and archaic, such as stamp duties and the official assessment rather than the self-assessment system. For example, unlike the ‘pay as you earn’ system in USA, Singapore relied on a ‘pay after you earn’ tax system. The motivation for voluntary compliance was generally low. The tax structure placed tremendous pressure on the efficient and effective running of revenue administration.

² The new bill designated the elected President as a safeguard to the usage of prior year reserves, thus putting pressure on IRAS to be more efficient in tax collection to balance government spending each year.

³ Mr Koh Yong Guan, former Commissioner, IRAS to Authors, September 19, 1995.

⁴ ibid.
Why was it necessary to employ a graduate to check on a tax form? Did it make sense spending all the efforts just to confirm that some taxpayers really were not taxable? We took the stand that all rules can be changed. If someone said, “It cannot be done; we have tried it many times,” my response was, “Let’s try it again.”

Koh Yong Guan
Commissioner

These questions led IRAS to consider different approaches to tax processing. IRAS began segmenting the taxpayers into simple and complex cases depending on the sources of income, taxpayer risks, and the knowledge required to process the cases. Instead of university graduates, polytechnic and A’ level students were recruited on a large scale and deployed to clear the simple tax cases. Even then, the process of checking each and every tax return manually remained slow, inconsistent, and error-prone. As IRAS began exploring the possibility of embedding tax rules in the computer and mass-assessing the tax returns, setbacks inevitably arose (for example, the need for checking against supporting documents). This led it to challenge its own assumptions about taxpayers:

Then, we regarded 80 percent of the taxpayers as potential evaders and 20 percent as okay. Consequently, IRAS’ work processes tended to have a tremendous bureaucratic load. An entire process was needed to take care of the exception cases, even if it was 0.1 percent of the total transactions. Perhaps we have to regard 90 percent of them as okay and 10 percent as potential evaders. We must believe that taxpayers will comply voluntarily if they are convinced that they are paying only their fair share, nothing more, nothing less, and we shall make it easy for them to comply.

Koh Yong Guan
Commissioner

This change in the assumption about taxpayers provided the operating framework for the subsequent development of pipeline processing, filer’s assessment, and broad-based property tax assessment. As reflected in the comments of the Chief Valuer:

We must shift from spending too much time on noting fine property differences which would not materially enhance the accuracy of valuations. Instead, we should follow how people think in the marketplace - making fast decisions and getting more done through confident broad-based approximations.

The other big stumbling block was the volume of paper-based tax documents handled. The tax base of 1.3 million taxpayers created approximately 3 million records. It was estimated that 20 million documents were processed annually, posing significant problems in storing, retrieving, moving, and locating files manually. An army of about 40-50 office attendants was required to move these files and documents. There were monthly 'search rituals' for files that could not be located. The peak load nature of tax filing also created bottlenecks in data entry. During the peak periods, IRAS needed a team of 80 key-punchers working continuously on two shifts.

Embarking on Business Process Re-engineering

With the involvement of the National Computer Board (which provided the information system support for IRAS) and an external consultant, Andersen Consulting, IRAS embarked on a massive IT project to revamp the current information management system. It was replaced by a $69m computer system - the Inland Revenue Integrated System (IRIS).

At its peak, the project implementation team comprised more than 200 full-time staff: about 150 from the external consultants, 30 from the National Computer Board, and 60-80 user representatives from IRAS.

Guided by an understanding of the issues at hand and a new vision statement, four new focus groups were formed to analyse the changes required in each of the key organisational components, that is, strategy, people, technology, and business process.

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5 ibid.
6 ibid.
7 Mr Lim Soo Chin, Chief Valuer, IRAS to Authors, September 11, 1995.
Current processes were studied to identify commonalities and differences across tax types to facilitate new process designs. More work groups were formed subsequently to study the 12 processes identified, for example, taxpayer identification, return generation, return review, payment processing, within the tax administration model.

Even as the development of IRIS proceeded at a frantic pace, IRAS continued to challenge the assumptions behind business processes, many of which could be traced back to policy and legislative issues that had led to process complexity and bottlenecks. For example, despite the fact that close to 70 percent of taxpayers were non-tax liable, IRAS could not do without the need for tax assessments. Although the change could substantially reduce the processing load of IRAS, the policy of reflecting rebates in tax assessments and the undesirable possibility of taxpayers falling in and out of the tax net rendered the initiative a ‘no-go’. The government policy was to have a system that would remind every taxpayer of the tax obligation and simultaneously show the respective tax concessions obtained, such as Goods and Services Taxes (GST) rebates.

Even without the policy or legislative constraints, these radical process changes were not just gains without costs. (See Exhibit 1.) The simplification of tax returns for businesses with less than $500,000 revenue to a four-line statement declaration, for example, made detailed checks by tax officers for deductibles difficult. Similarly, the expediency and the user-friendliness resulting from the simplification of the tax forms were traded off against the loss of certain information for statistical analysis, for example, the ability to correlate income with educational qualifications. Doing away with supporting documents in filer assessment also resulted in increased exposure for specific groups of taxpayers. Through the process, IRAS had resorted to working with companies to obtain such information directly from their source. The backend Taxpayer Audit was also beefed up substantially, growing from 20 in 1993 to about 200 in 2001. There were greater efforts to ensure voluntary compliance through taxpayer education, dialogues with professionals and trade associations, media publicity and the identification of compliance issues. The current audit approach looked beyond the passive desk audits towards field audits. Through the data-mining system, the tax officers performed various reasonableness analyses (for example, extrapolation from historical data, industry analysis, peer comparison, risk profiling, and cross tax type consistency checks).

The cross tax type integration offered by IRIS also led them to be more aware of the issues, through finer segmentation in taxpayer profiles. Audit focus had progressively expanded to cover specific groups like the doctors, stockbrokers, insurance agents, and directors. IRAS also implemented a system of double-checking with other government agencies to ensure that numbers reported were accurate. For example, property tax reports from an individual would be checked against his/her property ownership details at the Urban Redevelopment Authority (URA), to confirm that the figures reported to IRAS tallied with what was recorded at the URA. The audit approach changed from an all-encompassing audit that identified even ‘isolated cases of exceptions’ to selective audits that targeted ‘specific patterns of things.’ Mr Alan Ow, Deputy Commissioner, said:

> We took risks but they were calculated risks. We constantly ask ourselves, by setting those rules, “Are we allowing too much or too little to flow through the pipeline?” Yes, we relaxed the system but we did not throw away the baby with the bathwater.

Heavily customised from a US-based tax administration system, the implementation of IRIS10 was not without problems. The experimentation with intelligent character recognition (ICR) technology to address the data capture problem, for example, was an instructive lesson. Initial implementation with real cases revealed unexpected taxpayer behaviours outside IRAS’ control, like the drawing of arrows, underlining, or the inclusion of remarks such as ‘see attached’ on the forms, that would render them unreadable by the ICR. Even with a low 5 percent to 10 percent rejection rate, there were

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5 ibid.
6 ibid.
7 Mr Lim Soo Chin, Chief Valuer, IRAS to Authors, September 11, 1995.
8 Field audit was seen as a more effective way of ensuring compliance because it enabled face-to-face discussion/clarification of disputed tax issues, the examining of original source documents, the enhancement of audit presence and the opportunity to build relationships. The approach was ‘friendly, no surprise’ as owners were pre-notified about the visits.
9 Mr Alan Ow, Deputy Commissioner, IRAS to Authors, November 16, 1995.
errors on almost every tax form. The additional efforts to review and correct these errors were very time-consuming. Eventually, the use of ICR was scaled down to capture just the document identification numbers for turnaround documents. Project Director, Mr Tay Yong Chin, reflected on the multiple ‘valleys of despair’:

The tunnel is so long and winding. You must constantly try to let them see the light at the end of the tunnel. Otherwise, you can't find enough energy for the project. Even if we win the battle, we don't want to have a ‘battle-field’ full of ‘dead’ people.\(^{11}\)

**Organisational Change**

*Change has a face of its own. It can conjure up such strong feelings in us. But if change has a face, it also has a heart. For at the heart of change is its people...*

Extracted from IRAS News, Issue no.8

The implementation of IRIS required significant organisational changes. One major change was the restructuring of the organisation from one based on tax type to a functional structure involving cross tax types. The functional reorganisation was effected in July 1994, about six months before the first IRIS rollout. The move generated much uncertainty among staff, such as the subjective mapping out of work activities according to the new functional structure, the assigning of staff to these functional units, and the related equity or job sizing issues. The mentality was very much “more people means more power.” Moreover, given that “everyone wants to retain good people,” the ranking of people and the allocation of the good performers were particularly sensitive - even more difficult than tussles over financial resources. Many such problems had to be resolved through a high-level staff committee chaired by the Deputy Commissioner. “We have learnt that the best way to deal with uncertainty is to be open,” noted Mr Ow, as chairman of the staff committee.

In line with the better matching of tax cases to the employee's skillset through IRIS, IRAS also changed the staff mix to rely more on non-graduates in assessing normal tax cases. The graduate to non-graduate ratio was reduced from 3:2 to 1:3. Through structured courses, cross-training, and buddy systems, significant effort was also invested in training tax officers across tax types for the provision of ‘one-stop’ services.

Other organisational changes were put in place to align with the IRIS implementation. (See Exhibit 2.) IRAS was accorded a statutory board status by the government in 1992. As a statutory board, IRAS re-negotiated the funding formula with the Ministry of Finance. Previously, IRD was allocated a fixed budget based largely on historical spending patterns. This facilitated a more flexible and nimble management of human and financial resources outside the limits of civil service. The revision of staff remuneration and service schemes helped IRAS to attract and retain good staff. Mr Ong Khia Hong, Director of Corporate Services, noted:

*We should be very clear about the relative worth of each person we have and the compensation scales should be adjusted to reward these people. We are more discriminating now.*\(^{12}\)

Three generations of management successors were also identified and allocated throughout IRAS as ‘role models’ to ‘walk the talk.’ Koh Yong Guan said:

*I don’t expect all will welcome the change given a project this size. There will be those who are faint-hearted or cynical. But what you need is a handful of good people to support you, [and] a handful to support those who support you. This mix of younger folks with senior management provides a strong impetus for action.*\(^{13}\)

An organisation-wide service quality committee was set up to define key performance targets and decide

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10 In terms of its hardware set-up, IRAS took a three-tier client-server approach. The mainframe at Data Center bulk-processed and identified work items for manual action. The front-end servers, which were HP9000/7500 machines with up to 12 CPUs each, managed and distributed images and work items. The intelligent workstations allowed access to Lotus Notes and Microsoft Word, which were integrated with IRIS. The whole IRIS was supported by a network system integrating the 1,200 workstations with Foundation for Co-operative Processing (FCP) gateways, super Local Area Network (LAN) servers, routers, image and workflow servers, eight optical jukeboxes of 187 gigabytes each, and a 70 gigabyte RAID drive. Application data were housed in an Informix relational database system. IRAS was awarded the ‘Plexus Application Excellence Award’ by Recognition International during the AIIAM (Association of Information and Image Management) Conference 1995, San Francisco.

11 Mr Tay Yong Chin, Project Director and Director of Management and Information Services, IRAS to Authors, March 19, 1996.

12 Mr Ong Khia Hong, Director, Corporate Services Division, IRAS to Authors, September 11, 1995.

13 Mr Koh Yong Guan, former Commissioner, IRAS to Authors, September 19, 1995.
how best to track them in IRIS. Thirty-six key process
performance indicators were established and
cascaded downwards.

It is stressful. There is seemingly an
overwhelming effort from everyone to
meet management targets.\textsuperscript{14}

Koh Yong Guan
Commissioner

Complementing these changes, Excellent Tax
Administration for the 21st Century (ET21) , an
internal change management programme, was also
instituted to promote the core values of ‘Integrity,
Fairness, and Professionalism’ and to create a
culture in IRAS of service excellence and continuous
improvement. The core values were constantly
communicated through in-house newsletters,
posters, and videos featuring stories about how
IRAS staff had applied the core values in their daily
work. Managers also consistently articulated many
of the policy changes in terms of the IRAS core
values. The mass property appraisal system, for
example, was regarded as fair to taxpayers as every
property could now be appraised annually. Core
value awards were conferred, through staff voting,
to staff who strongly manifested the IRAS’ core
values in their daily work. Four sub-committees were
also set up to address staff well-being, quality action
circles, service quality, and organisational review.
Specific total quality training programmes were
developed and offered to all employees. The
management also encouraged the staff to contribute
at least two suggestions during the year. Each
division was given a discretionary budget, the Eye
on Innovation Fund which served as a motivational
tool. Higher level awards were also established.

IRIS IMPLEMENTATION

In phases, IRIS was eventually cut over in early
1997. It provided the integration platform for ‘one-
stop’ services in IRAS. The system captured tax
returns through imaging and processed the returns
automatically through a series of embedded review
and validation rules. About 80 percent of tax returns
flowed through the processing pipeline without
human intervention. The workflow management
system categorised the other 20 percent exceptions
by their complexity, and the work items were
assigned to tax officers with matching skill sets and
level of workload. Once the work item was allocated,
the related document/tax return would be pre-
fetched overnight and delivered automatically to the
assigned officer. The integrated system allowed
queries on all tax types to be dealt with by ‘one-
stop’ service simply by using the taxpayers’ NRIC
(National Identification) numbers. Context-sensitive
search features were embedded to allow fast and
accurate response to taxpayers’ queries. Because
tax officers shared the same set of electronic
information, they could thus maintain a stand that
was consistent with the rest of the organisation. IRIS
also boosted enforcement efforts through non-filer
management, tax-in-arrears management, and case
management. Errant taxpayers could be identified
promptly and appropriate courses of action could
be systematically implemented according to the
case history of taxpayers. IRIS also accorded the
management more visibility, since this would enable
the immediate gathering of information such as the
number of cases allotted, open, closed, and the
aging of outstanding cases. Tay said:

The system doesn’t lose documents;
you know when the document comes
in, how many times the officers access
the document, when it is completed.
The computer system now chases
you!\textsuperscript{15}

The re-engineering efforts at IRAS resulted in
significant improvements. The processing cycle time
for tax returns dropped drastically from 7-18 months
to just below five months. Income tax arrears were
reduced from $1.14 billion to $761 million and the
tax revenue collected was at a record high of $16
billion. Furthermore, the more focused effort in
handling exceptions led to an additional $103 million
tax penalty revenue for the year. An external
survey also revealed a 95 percent satisfaction level
among taxpayers for professionalism and service
quality. The cycle time for tax refunds also improved.
98 percent of tax refunds were processed within one
month from the dates the refunds arose.
Notwithstanding the introduction of GST, the staff
strength had remained relatively constant at around
1,600. More importantly, the staff had been re-
deployed to do more value-adding tasks. Koh Yong
Guan noted:

\begin{itemize}
\item[14] Extracted from comments in a survey of tax officers conducted on July 14, 1996.
\item[15] Mr Tay Yong Chin, Project Director and Director of Management and Information Services, IRAS to Authors, March 19, 1996.
\end{itemize}
I sense that people in IRAS have a greater sense of satisfaction doing more meaningful tasks. They are now thinking of checking criteria rather than doing the checking themselves. It is a different level of satisfaction.  

Koh Yong Guan was presented the Meritorious Service Medal, one of the highest national honours. The IRAS also won the Singapore National IT Award for public sector organisations for its innovative IRIS implementation. A World Bank report had similarly acknowledged the innovative leadership of the IRAS in revenue administration.

PHASE TWO - NEW LEADERSHIP: INNOVATING BEYOND IRIS

In April 1997, Koh Yong Guan left IRAS for a new position at the Monetary Authority of Singapore. Mr Koh Cher Siang, who had served as the Permanent Secretary for Education, became the new Commissioner. He took office with a strong mission to inject a much clearer focus and greater urgency in attaining superior service quality, captured in the phrase, "I Respond And Serve (IRAS)". While IRIS primarily addressed problems in internal processing, the use of IT was now directed towards better servicing of taxpayers. Koh Cher Siang said:  

We want to use technology, not necessarily leading edge technology, in an innovative way to improve our taxpayer service.

As the diffusion of the Internet and Web technologies became more widespread, IRAS began exploring the potential of leveraging on the Web to achieve greater taxpayer convenience. These efforts led to a host of new initiatives like e-filing, e-stamping, expanded auto-inclusions, and a common payment collection platform for other government agencies for example, Singapore Broadcasting Authority (TV and radio licence fees) and Singapore Customs & Excise Department. In a way, the experience of IRIS implementation had boosted the organisation's confidence in launching new initiatives and responding to new challenges. Exhibit 3 traces the continuation of these initiatives from the time of IRIS.

The implementation of e-filing to tax filing through a web-front, for instance, amalgamated familiar IRIS concepts like tax form simplification, auto-inclusions, and filer-assessment. (See Exhibit 4.) Given the page length restriction of the HTML form and the concern with download response time, the eight-page tax form was compressed into a single page. The need to economise on the data fields resulted in more efforts towards auto-inclusions, for example, automatic capture of employment income and computation of eligible tax reliefs. Auto-inclusions were progressively expanded to the civil service, statutory boards and major corporations on a voluntary basis (for employment incomes), the Central Depository (for dividends paid by Singapore-listed companies), charitable organisations (for deductible donations), and unit trusts (for interest income). The inability of e-filing to attach physical supporting documents also stretched the filer assessment concept further to assess tax based on taxpayers' declarations without the relevant documentary evidence. Since its first launch in February 1998, the number of e-filers had climbed steadily from 112,897 to 694,000 for the Year Assessment 2001 (YA2001), which reflected the income earned in the last calendar year before 2001. The indirect cost saving was tremendous as IRAS saved about $2.70 for each return filed electronically.

A wide range of other e-services like e-stamping were also launched. (See Exhibit 5.) A citation from Singapore Wave (2000, 1 Aug), a government Internet publication, stated that "the IRAS site is the most effective and popular of the 'e-Government' interactive sites." A recent study of 'e-Government' in 22 countries by Accenture also featured the IRAS site prominently as an illustration that Singapore being among the world's most sophisticated in the use of the Internet for government and public functions.

16 Mr Koh Yong Guan, former Commissioner, IRAS to Authors, September 19, 1995.
18 IRAS had been actively improving its service level throughout the organisation. Mechanisms, e.g., taxpayer feedback committee, focus group sessions, and taxpayer surveys, were institutionalised to seek taxpayers' views on various tax changes and system enhancement.
19 Mr Koh Cher Siang, Commissioner, IRAS to Authors, March 22, 2001.
20 The Stamp Duty Act was amended to provide for electronic stamping via an electronic certificate that was linked to a dutiable document. All the e-stamps were captured in a database that might be accessed for checking by lawyers. E-stamping was the first of its kind in the world. Since its launch, almost 65 percent of dutiable documents had been transacted through the system. The number of users had grown to about 1,000. The success of e-stamping attracted the attention of major tax administrators internationally.
THE ROAD AHEAD

As progress was made, some of the compromises or dilemmas in the earlier decisions during the IRIS implementation began to resurface. For example, despite the significant training efforts and enhanced system capabilities, it remained difficult to train officers beyond one tax type. "It is impossible to create a tax superman given the depth of knowledge required!", noted a frustrated manager. In addition, the high turnover of such officers made the training investment impractical to justify the relatively few cases of cross-tax type inquiries. Most of the tax queries were direct responses to requests for information made by IRAS tax officers. Besides, the different tax types had different processing cycles. Cases of cross-tax type inquiries were not very common. There were also concerns about the loss of specialised tax knowledge. A recent internal survey had highlighted issues about inter-functional communication. One manager gave the analogy of "playing half a chess game", that is, one planned the move while someone else followed it up. There were concerns that this may cause the tax competency be eroded over time. The problem was particularly pronounced for corporate tax that often required in-depth knowledge not only in the relevant tax domain but also in the specific organisational background. Consequently, other questions that surfaced included: Should the cross tax type integration be reviewed? Should IRAS scale back the claim of ‘one-stop’ services and revert back to the tax specialisation structure? How could IRAS structure to balance the ‘one-stop’ services to taxpayers and the high cost of providing such services?

Moreover, IRIS, being primarily an income tax platform, was becoming increasingly cumbersome in servicing other tax types. Goods and Services Tax (GST), for example, being a self-assessment tax system, had a very different assessment, collection, and enforcement cycle compared with income tax. For example, the return filing and payment for GST were essentially the same event. But the inflexible software architecture of IRIS made the merging of the two events difficult. The tax officers processing GST were thus forced to change their operating requirements to fit IRIS rather than the other way round. Consequently, the issue was whether the development of IRIS structure should have been more tax type based rather than cross-tax type based.

Koh Cher Siang noted:

IRIS is a 80-20 mass assessment system. The more new tax schemes you have, the more the 20 percent exception will increase, diluting the production efficiency of pipeline processing.\(^{21}\)

The question was whether such a system would hamper IRAS' ability to respond nimbly and swiftly in administering budget changes and innovative tax schemes amidst the dynamic business environment. Simultaneously, the pace of IT obsolescence was throwing up new challenges in the management of IT investments. The legacy technology of IRIS (for example, COBOL and mainframe) was already restricting its compatibility to fully leverage on innovative e-solutions in the market. Similarly, the e-initiatives like e-filing and the provision of a personalised mailbox for each taxpayer might ultimately 'cannibalise' its heavy investment in the imaging technology in IRIS such that there would be less of a need for the imaging of tax returns and tax correspondences. Koh Cher Siang then had to deal with the ensuing issues: Should IRAS postpone further IT investments into the e-services infrastructure until the payoffs from IRIS were fully realised? Should IRAS initiate the planning and deployment of the next generation of computerised tax system, in place of the highly successful IRIS?

Furthermore, despite the success of the slew of e-services, IRAS felt it had to move beyond the facade of an attractive website and the provision of online forms. IRAS hence also had to grapple with the following - the business model IRAS hoped to evolve to with these e-initiatives; the kinds of relationship it should build with taxpayers in reconciling IRAS' roles of enhancing taxpayer compliance while maintaining a high service quality.

One high-level team had been tasked with the exploration of the an operating possibility of a 'no tax return and no tax filing' model for individual taxpayers that would require only one contact each year. The goal was to eliminate the need for most taxpayers to file any kind of return. This concept would necessitate a connected network that linked taxpayers, employers, government organisations, statutory boards, and financial institutions to IRAS for the automatic identification of new taxpayers and auto-inclusions of tax return information. Some of the possible unintended consequences of such an

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21 Mr Koh Cher Siang, Commissioner, IRAS to Authors, March 22, 2001
approach included whether it would scare away potential foreign investors. IRAS also had to decide if these auto-inclusions should be made compulsory, with the consequences of non-compliance formally laid down. There was also the concern that IRAS might be stretching the limit of the trust that taxpayers had unquestionably placed on the organisation thus far.

Koh Cher Siang noted:

Even as IRIS has proven to be very successful for us, we cannot assume what we did in the last few years will carry on to work for us. We have to constantly ask ourselves - How are businesses, taxpayers, and tax planners operating? Are we in tune with the constant tide of change?²²

As the new Commissioner looked across the horizon from the open view in his 24th-storey office, he knew that much was yet to be done. The state-of-the-art Revenue House, the visibility of IRIS, and the success of e-filing had generated more pressure to meet the expectation of taxpayers, as well as to keep the tax operation tight, trim, efficient, and effective. Koh Cher Siang said:

What's the way forward? The key is that not only you need to instil in the people that it makes sense to change again, fully aware of the fatigue with change that many are facing, but you also need to convince them to take the steps of faith on technology and walk with you into a domain that is not 100 percent safe either.²³

²² ibid.
²³ ibid.
# EXHIBIT 1

## BEFORE AND AFTER IRIS IMPLEMENTATION

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<thead>
<tr>
<th>Pre-IRIS</th>
<th>Post-IRIS</th>
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<tr>
<td><strong>BEFORE operating scenario:</strong></td>
<td><strong>AFTER operating scenario:</strong></td>
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<tr>
<td><strong>Technology:</strong></td>
<td><strong>Technology:</strong></td>
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<tr>
<td>• Paper-based tax returns and correspondences: &quot;papers, papers everywhere!&quot;</td>
<td>• Digital imaging and workflow management: data capture, document management, workflow routing</td>
</tr>
<tr>
<td>• Taxpayer services limited to some non-standardised FAQ databases (maintained manually or on PCs)</td>
<td>• Taxpayer services applications: TPS_Assist, case management, correspondence management</td>
</tr>
<tr>
<td>• Manual assessment of all tax returns by tax officers</td>
<td>• Straight-through processing: automated assessment, payment/refund processing, taxpayer accounting</td>
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<tr>
<td>• Mainframe IMS for taxpayer accounting</td>
<td>• Audit and investigation applications: pre-audit risk assessment, data warehousing/mining, CAATs with external database linkages</td>
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<tr>
<td>• Audit and investigation support restricted and only through formal requests of information from IMS</td>
<td>• Executive information system that integrates with time-reporting application on Lotus Notes</td>
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<td>• Stand-alone time reporting system on Lotus Notes</td>
<td><strong>Process:</strong></td>
</tr>
<tr>
<td><strong>Process:</strong></td>
<td><strong>Process:</strong></td>
</tr>
<tr>
<td>• Organisation by a tax type structure with little cross tax type communication</td>
<td>• Functional reorganisation along processes across tax type</td>
</tr>
<tr>
<td>• Separate taxpayer services for different tax type</td>
<td>• One stop taxpayer services</td>
</tr>
<tr>
<td>• Passive, desk audits with an all-encompassing strategy to catch all</td>
<td>• Streamlined procedures: unique tax reference, tax form simplification, fixed filing deadline, pipeline processing, instalment payment, annualised tax billing, etc.</td>
</tr>
<tr>
<td>• Substantive checking of all supporting documents</td>
<td>• Filer assessment and mass property appraisal</td>
</tr>
<tr>
<td>• Respective audit and investigation teams for different tax types</td>
<td>• Integrated audit process with extended field audits, regular audit conferences/experience-sharing seminars, and joint investigation teams</td>
</tr>
</tbody>
</table>
**EXHIBIT 2**

EXAMPLES OF ORGANISATIONAL CHANGES IN IRAS

<table>
<thead>
<tr>
<th>Information</th>
<th><strong>Before Re-engineering</strong></th>
<th><strong>After Re-engineering</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• No common source of information</td>
<td>• Common source of information</td>
</tr>
<tr>
<td></td>
<td>• Fragmented and limited tax type specialisation</td>
<td>• Integrated and shared across tax types</td>
</tr>
<tr>
<td></td>
<td>• Redundant preparation of data by tax officers</td>
<td>• Responsive, online, and simultaneous access to data by tax officers</td>
</tr>
<tr>
<td></td>
<td>• Managers as compartmentalised technical specialists - ‘divide and rule’</td>
<td>• Managers as members of the core management teams (Commissioner's meeting), with frequent rotation</td>
</tr>
<tr>
<td>Competence</td>
<td>• Highly specialised by tax types</td>
<td>• Generalists/specialists with strong cross tax types coordination</td>
</tr>
<tr>
<td></td>
<td>• Limited matching of job complexity and skills of tax officers</td>
<td>• Automated matching of job complexity and skills of tax officers</td>
</tr>
<tr>
<td></td>
<td>• All-encompassing review</td>
<td>• Review by exceptions</td>
</tr>
<tr>
<td></td>
<td>• Relationship with taxpayers: weak, desk-bound, passive</td>
<td>• Relationship with taxpayers: frequent field-visits, proactive</td>
</tr>
<tr>
<td></td>
<td>• Complex tax compliance procedure</td>
<td>• Streamlined tax procedures for voluntary compliance</td>
</tr>
<tr>
<td></td>
<td>• Approach: to catch and prosecute taxpayers</td>
<td>• Approach: to assist taxpayers to comply with the law</td>
</tr>
<tr>
<td></td>
<td>• Vague interpretation of the Income Tax Act</td>
<td>• Clear practice guide to give business certainty</td>
</tr>
<tr>
<td>Authority</td>
<td>• Vague individual accountability</td>
<td>• Strong individual accountability with clear performance targets</td>
</tr>
<tr>
<td></td>
<td>• Narrow supervisory span of control (5-7 staff per supervisor); about six reporting levels on average</td>
<td>• Expanded supervisory span of control (15-20 staff per supervisor); about three reporting levels on average</td>
</tr>
<tr>
<td></td>
<td>• Long apprenticeship (six months to a year)</td>
<td>• Shorter apprenticeship (from three weeks to three months)</td>
</tr>
<tr>
<td></td>
<td>• Limited involvement of tax officers in work improvement teams</td>
<td>• All officers are involved in work improvement teams</td>
</tr>
<tr>
<td>Rewards</td>
<td>• Rewards tagged to broad indicators like GDP growth</td>
<td>• 36 performance indicators were established and cascaded down. Performance discriminated at the individual level, within and across divisions.</td>
</tr>
<tr>
<td></td>
<td>• Fixed bonus for everyone</td>
<td>• Variable bonus for different tax officers ranging from 0-6 months, heavily performance-driven</td>
</tr>
<tr>
<td></td>
<td>• Fixed scale pay increment and promotion, i.e., 19 narrow salary grades</td>
<td>• Pay increments and promotions are on a salary range which allows differential increments, i.e., 10 salary grades with wide ranges</td>
</tr>
</tbody>
</table>
## EXHIBIT 3

CRITICAL EVENTS AND TIMELINE OF IT INITIATIVES

<table>
<thead>
<tr>
<th>Year</th>
<th>IRIS Project Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>• 12 months instalment payment scheme</td>
</tr>
</tbody>
</table>
| 1994 | • GST implementation  
      • Introduction of tele-file  
      • Functional reorganisation |
| 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 organisations 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 authorisation system (EASY) |
| 2003 | • E-Auto inclusion scheme for employment income |
EXHIBIT 4

EVOLUTION OF PROCESS INITIATIVES

"When we look back, we are amazed at how far we have progressed."
-- Deputy Commissioner, IRAS

**Large Taxpayer Base**

Close to 70 percent of taxpayers do not pay tax eventually.
_Could we do without tax filing and assessment?_  
No, due to policy constraints.

_If assessments were required, do we need graduates to do them?_  
Segmentation into complex and simple cases.  
Simple cases handled by polytechnic and A’ level students.

_Could we do without manual assessment?_  
Yes, with the embedded rules in pipeline processing.

For ‘sure cases’ of non-tax liable taxpayers (annual income below $18,000), the elimination of the need for tax filing.

With auto-inclusions, the vision is towards ‘no-return, no filing’ tax assessment system for taxpayers.
EXHIBIT 4
(CONTINUED)

EVOLUTION OF PROCESS INITIATIVES

Data Entry

 Attempted tele-filing but limited interface.

 Expensive experimentation with intelligent character recognition. Despite 95 percent accuracy, errors occurred on almost every return. Scaled down.

 Self-developed data entry and verification programme (with built-in check digit and independent re-key only for selected fields)

 Do we really need all the data items?
 Simplification of tax forms.

 Let taxpayers key in themselves through e-filing.

 Link up IRAS computers to other computers - the auto-inclusion efforts.
EXHIBIT 4  
(CONTINUED)

EVOLUTION OF PROCESS INITIATIVES

File Storage

From microfilm archives: Can we abolish the need to maintain taxpayer records for 7 years? No! Legislative requirement.

Can the records be in electronic form?
Modification of the Act to provide for document imaging

Do we image selectively or everything?
Everything, to minimise the administrative complexity

Do we really need all the documents?
Relaxing the need to file supporting documents in filer assessment

Doing away with some supporting documents (national servicemen's pay, ministries, statutory boards)

Doing away with more supporting documents (e.g., IR8A, dividend vouchers, donation receipts) through auto-inclusion

Doing away with the physical handling of documents, e.g., e-stamping

Possibility of creating personalised mailbox accounts for taxpayer correspondences
EXHIBIT 5
IRAS E-SERVICES

<table>
<thead>
<tr>
<th>Service</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Filing</td>
<td>E-Filing for Individuals, E-Filing for Companies, Application for Certificate of Residence (for tax resident companies only), E-Filing for Employers, E-Tax Clearance, E-Services Authorisation System (EASY), Auto-Inclusion Scheme for Employment Income, E-Filing for GST Traders</td>
</tr>
<tr>
<td>E-Listing</td>
<td>Directory of Buildings / Estate Names, Integrated Legal Requisition System (InteReq), List of GST Registered Businesses, List of Licensed Appraisers &amp; House Agents, Electronic Valuation List</td>
</tr>
<tr>
<td>E-Payment</td>
<td>E-Nets</td>
</tr>
<tr>
<td>E-Stamping</td>
<td>E-Stamping</td>
</tr>
<tr>
<td>Fax Express Service</td>
<td>Fax Express Service</td>
</tr>
<tr>
<td>Inland Revenue Information Service (IRIS)</td>
<td>Inland Revenue Information Service (IRIS)</td>
</tr>
</tbody>
</table>