



Discussion Paper

Australian Customs Integrated Cargo System: A Catastrophe in Governance of ICT

Why did this ambitious initiative to re-engineer the business of import and export processing cause a massive furore?
What can Australia learn from the experience?

The Executive Summary – and why you should read this paper...

On 12th October 2005, after more than three years of development, the Australian Customs Service Cargo Management Re-engineering Project entered a critical phase – commissioning of the new Integrated Cargo System Imports Module. Over the subsequent fortnight Australia's cargo ports ground to a halt. Fourteen days after it went live, Customs notified the industry that the prior system would continue to operate "indefinitely".

Australian Standard AS8015:2005, Corporate Governance of Information and Communication Technology was developed to promote effective, efficient and acceptable use of ICT in all organisations. It guides Directors on governing the use (including deployment of new projects) of ICT.

The extensive press coverage makes it quite clear that the deployment of the Import module of the Integrated Cargo Systems Project was neither effective, efficient, nor acceptable. The situation indicated a significant failure in corporate governance of ICT.

In this paper, Infonomics traces the press coverage of the CMR project from early reports of trouble in November 2003, discussing aspects of the project governance system that should have been in place and working to ensure project success. Our intent is not to be judgemental about what has happened with CMR, but rather to guide stakeholders in all ICT enabled initiatives regarding ways in which they might increase their certainty of success. The discussion points include:

- *A fundamental governance theme for major initiatives is to ensure that all facets of change are planned and delivered – including the change that needed to be made by external stakeholders. Plans should suit the organisation (which sometimes includes an entire industry) and should include particular reference to human factors, to ensure that an entire system of change is delivered, rather than merely a technology project.*
- *For many old, established systems, much detail of business processes is buried in poorly documented code, or even "folk lore", and the people who understood how things work have moved on. There is significant risk in trying to recreate, or rediscover the intellectual property.*
- *Key performance indicators should be established at the outset for both business change and technology aspects of projects. The KPIs should be designed to give confidence that good practice is being followed, and that satisfactory progress is being made in the achievement of the project's objectives. Schedule and budget are important KPIs, but they are not sufficient.*
- *The governance regime must ensure that all stakeholders are properly represented and engaged in the process, and that all voices are heard.*
- *In massive initiatives involving multiple vendors, governance mechanisms and contractual frameworks must promote conditions where all parties can work effectively to the achievement of the overall project intent.*
- *Ensure that progress is measured in terms of "proximity to goal". It is not the work that has been done that is critically important – it is the work that has yet to be done. The goal should be expressed as a set of clear objectives, and the effort remaining to achieve each should be tracked. If the effort to achieve goals is increasing, it may be necessary to reconsider whether the goals are really attainable at a reasonable cost.*
- *Performance goals should be expressed using business KPIs that have been cross-checked to ensure that they set reasonable targets, and performance reports should denote the actual measured performance of the system. KPIs should define "sustained peak" and "transient peak" performance requirements.*
- *If performance testing is conducted on a scaled-down basis, there should be proof that the system would scale up to the required volume without reaching limits that could not be resolved without re-engineering.*
- *Massive change projects tend to completely absorb organisations. Governance processes should ensure that primary questions of importance are asked well before any competing initiative takes on a significant and inappropriately distracting profile.*

Good governance of major IT enabled business change projects reduces risk and maximises value. Are you confident that your organisation's IT Governance is effective enough to ensure that your projects will not experience the problems of Cargo Management Reengineering?

Infonomics

Plain language about IT Governance
for executives and directors.

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Australian Customs Integrated Cargo System: What can Australia learn from the experience?

Lessons about IT Governance are hard to learn – and they keep coming

IT Governance – or Corporate Governance of IT is an increasingly frequent topic of discussion. There are numerous press articles and new guidelines are emerging. One formal guideline, the new Australian Standard AS8015:2005, says that Corporate Governance of Information and Communication Technology is “the system by which the current and future use of ICT is directed and controlled”. The purpose of the standard is to promote effective, efficient and acceptable use of ICT (we use the terms IT and ICT interchangeably) in all organisations. It provides guidance to Directors (including owners, board members, Directors, partners, senior executives and similar) on governing the use (including deployment of new projects) of ICT.

AS8015, and much of the material dealing with governance of IT, refers to the historical problem of IT project failures. These are situations where an investment in IT has, at the very least, failed to deliver the intended results at a reasonable cost. In many cases, the failures have been much more serious, with projects abandoned after many of millions of dollars have been spent, and organisations damaged, sometimes beyond repair.

Australia’s record of IT projects that have encountered serious problems is no better than the rest of the world. We have distant examples, such as Westpac Bank’s fabled CS90 project, and much more recent ones, such as Sydney Water’s Customer Information and Billing System, and RMIT University’s Academic Management System. Many lessons should have been learned from these failures, to help organisations ensure that IT initiatives do not founder – and to help ensure that when the signs of trouble emerge, they are not overlooked.

Australia’s recent experience of sea and air ports grinding to a standstill after problems emerged in deployment of the Cargo Management Re-engineering Project suggests that the lessons are yet to be learned. Before reading the discussion of the initiative, we ask that you bear in mind two lessons from the past.

Lessons in history: Get the timing right – or pay the premium for risk.

The August Bank Holiday weekend is the busiest period of the year at London’s Heathrow Airport. In 1997, British Airways chose this weekend to implement a new system for baggage handling. Of course, something went wrong, and inevitably, luggage went astray. The cost of compensation to passengers left without clothing is believed to have exceeded the initial cost of the system.

The governance lesson here is simple. All change involves risk that something will go wrong. Whenever possible, that risk should be mitigated by scheduling the change to avoid factors such as high workload that could exacerbate a problem.

Lessons in history: Don’t persist in the face of unsolvable problems.

Some time in the mid 1980’s, a major bank installed an “upgrade” to the software that controlled its Automatic Teller Machine network. Soon, ATM users discovered that they could withdraw any amount of money they wanted – regardless of their balance and withdrawal limits –over and over again. The bank’s ATMs were giving away free money. Not surprisingly, word spread quickly, and what should have been an ordinary day quickly built the transaction volumes to unusually high levels. Investigation into the reason for the high load eventually uncovered the cause. Clearly, the bank had a major problem, and should have shut down the ATM network.

This really happened – in Australia. Of course, background detail is sketchy – no organisation would willingly publish all of the details of such a horrific event. But snippets emerged over time, and the tale became somewhat of an “urban legend”. Some parts of the story can still be found on the internet.

It seems that the bank’s executive was torn between the cost of the uncontrolled outflow of cash, and the embarrassment of having to admit that there was a problem. It is said that arrangements were made to feed the ATMs with cash, while technicians worked furiously to correct the problem. It took four days of futile effort before the bank confronted reality, and shut down the network so that the prior version of the software could be reinstated. The exact value of the improper “withdrawals” was never published – but is believed to run into millions of dollars – much of which was never recovered.

How did this happen? The simple answer was that inadequate testing had failed to detect faults in the software.

But, there are two governance lessons in this tale. First – check that the design of testing programs is sufficient to ensure that the risk of problems is properly mitigated. Second – when something goes wrong with a computer system, it’s best to take the hard decisions early.



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Australian Customs Integrated Cargo System: A Catastrophe in Governance of ICT

Daily newspapers are Infonomics' dominant source of case study material regarding the successes and failures of IT Governance. One substantial file concerns the Australian Customs Department's Cargo Management Re-engineering Project and the related IT solution – the Integrated Cargo System.

The Imports module of the Integrated Cargo System (ICS) went live On October 12, 2005. Within a week, a furore had erupted. Ports were reported to be choked with uncleared cargo. Horror stories were reported in all media of privacy breaches, and response times for simple transactions measured in hours. By October 21st, crisis talks were being conducted at Ministerial level. On October 24th, despite continuing protest, announcements were made that the system is here to stay. On October 26th, Fourteen days after it went live, Customs notified the industry that the prior system would continue to operate "indefinitely".

Before we explore further, we have to acknowledge that the press can be unreliable as a source of facts – if only because the organisations that present information are sometimes inclined to "spin" that information in ways that suit their own agenda. Thus, we might expect those banking on success of the project to present a positive slant – while those who will be disadvantaged to be rather less positive. But, regardless of spin, the governance system should have ensured that there was absolute clarity for the decision makers regarding the state of the initiative.

The extensive press coverage makes it quite clear that the deployment of the ICS Import module did not achieve the AS8015 target of being effective, efficient, nor acceptable. The situation is arguably a catastrophe in corporate governance of ICT, and probably will reveal many lessons to be learned – again! Most likely, the project will eventually deliver its intended outcome. Infonomics believes, and recommends, that attention to the governance processes will greatly improve the prospects for success of this initiative.

The Objective of ICS

From the beginning, ICS was intended to revolutionise the customs processes for Australia. In addition to greatly improved controls and tracking, ICS was to break an effective monopoly on customs processes that had been held by Customs Brokers and Freight Forwarders. By using web based technology, and B2B type interfaces between corporate systems and the new Customs system, importers and exporters were to have their first opportunity to deal direct and cut the intermediaries out of the picture. ICS was to be the enabler for an industry revolution, and casualties were a probable by-product.

Clearly, ICS was going to experience resistance from some sectors of its user base, and at the same time was going to drive a major revision to work practices and systems in many organisations. The first, and fundamental governance theme for this initiative should have been to ensure that all facets of change were planned and delivered – including the change that needed to be made by external stakeholders such as exporters, importers, agents and terminal operators. AS8015 defines six principles for corporate governance of ICT. The principles cover critical aspects of ensuring that an entire system of change is delivered, such as respect for human factors, and planning to best suit the organisation (in this case, the import/export industry).

Early signs of a difficult process

Infonomics' first news clip on ICS is dated 3rd November 2003. A substantial article in The Australian Financial Review tells of how ICS is the technology enabler to the Cargo Management Re-engineering initiative – a major overhaul of customs processes originally scheduled for deployment in June 2003. The original cost estimate of \$28m had risen to \$45m and was thought to be on the way to \$80m. One cause cited in the article was a lack of knowledge about existing systems and business rules.

This point immediately raises a governance flag. In common with many old systems, much detail of business processes is buried in poorly documented code, and the people who understood how things work have moved on. This human factors issue, frequently encountered in relation to outsourcing, creates risk in trying to recreate, or rediscover the intellectual property. The risk should be quantified, and alternatives should be canvassed. In some cases, it may be better to ignore the systems that exist, and redefine the business on a clean sheet.

By November 11th, 2003, The Australian reported that the project was now \$100m over budget and more than a year late. It was described as "the most complex IT based undertaking ever attempted in Australia". The article traces the project back to a 2001 tender won by IBM and Computer Associates. An intriguing quote, from a software developer involved in development of systems that would interface to ICS reads "Nobody expects



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software projects to be delivered on time". Among a wide range of "unfortunate" attributes of the project was a note that "bugs" in early releases of the software were not being fixed in a timely manner, and that some business transactions were taking much longer to complete than with the prior system. Warnings were given at this stage that confidence in the major imports module was low, given the problems experienced to that stage.

Key performance indicators should be established at the outset for both business change and technology aspects of projects. The KPIs should be designed to give confidence that good practice is being followed, and that satisfactory progress is being made in the achievement of the project's objectives. Schedule and budget are important KPIs, but they are not sufficient. Other KPIs should cover quality (including the "bug" count) and risk.

On December 11th, 2003, The Australian reported that cutover for the import component of ICS would not happen until Customs and the software developers were happy with the reliability of code. It said that developers of client systems would have three months from finalisation of a stable import system to complete their cutover.

Warnings of potential problems with the imports module were clearly given, and heard, more than 20 months prior to its eventual deployment. It was clear that this part of the change program was going to need intensive, ongoing, high level focus across the entire industry to ensure that it went smoothly. The governance regime should have ensured that all stakeholders were properly represented and engaged in the process, and that all voices would be heard.

Early in 2004, The Age reported problems with the third release of ICS, with developers of client end systems unhappy about the "persistent bugs". Again it was reported that "customs has said the system will not go live until there is agreement with the developers and industry that it is ready". Concern was noted that the problems with export functionality could indicate that import functionality would never be delivered. Not for the first time, reference was made to the mix of major vendors involved in the project, including IBM and Computer Associates as software developers and EDS as infrastructure providers.

Multiple vendors CAN work effectively together. But often, the contractual framework in which they operate creates barriers to effectiveness. In a massive initiative involving many parties, it is vital that the governance mechanisms promote conditions where all parties can work effectively to the achievement of the overall project intent. At a lower level, the quality KPI was clearly important, and needed to reflect not just the number, but the nature of problems and performance in dealing with them.

Further delay; persistent problems and polarisation of views

Four months later, in mid May 2004, The Australian reported that the export module was to go live in October that year, seven months later than previously planned. The delays were attributed to the system being "unable to cope with the volume of transactions it has to process", which were highlighted through "representations from the cargo, shipping and freight forwarding industries". Four days later, the Australian carried a more substantial discussion of the project, in which the Customs CIO was reported as saying that the "so-called CMR nightmare is largely a product of media exaggeration". The \$146m budget was then stated to include \$51m for transition of the industry and customs staff to the new systems. In the same article, the target of implementing the import module was reported as early 2005 – with "the lions share" of development cost already met, and "only minor roll-outs" lying ahead. However, the continuing presence of "technical issues" was also noted – with the import module "built and in the final stages of acceptance testing". It was to be available to industry in July 2004.

It appears that the end-point of the project was moving out. Often, progress reporting is delivered in terms of "elapsed from start" – equivalent to monitoring the voyage of a ship from the stern, looking back to the port of origin. Effective governance systems should ensure that progress is measured in terms of "proximity to goal". It is not the work that has been done that is critically important – it is the work that has yet to be done. The goal should be expressed as a set of clear objectives, and the work remaining to achieve each should be tracked. If the work is increasing, it may be necessary to reconsider whether the goals are really attainable at a reasonable cost.

In discussing the benefits of the system, the Customs CIO noted its coverage of "billions of dollars worth of imports and exports. It was forecast to handle 150,000 "messages daily in real time". And, there was a claim that Customs may also generate royalties from the intellectual property for the system. It was noted that vendors involved in the ICS development were keen to succeed so that they could "leverage their experience elsewhere".

This reference to 150,000 messages per day perhaps should have been linked to a business KPI. Often, the term "message" relates to a technical aspect of system workload, and these should be put in the context of business



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events. The comparison can be rather like the difference between the tachometer in a car and the speedometer. One measures the activity level of the engine, the other measures the result of the activity in terms that are consistent and meaningful for all. The business KPIs should have been cross-checked to ensure that they were reasonable targets, and testing reports should have denoted the actual measured performance of the system. The KPIs should also have addressed the "sustained peak" and "transient peak" performance requirements – the numbers of transactions in the busiest hour, and the highest conceivable loading in a period as short as a minute. And if performance testing was to be conducted on a scaled-down basis, the KPIs should also have provided confidence that the system would scale up to the required volume without reaching limits that could not be resolved without re-engineering. We wonder how many business events needed to be handled, and how many could actually be handled before the system started to degrade.

New complications, and another delay

All seemed quiet then until February 2005, when The Australian again reported on the project, announcing a further cost extension to \$184m. This appears to be driven by a budget of \$20m per annum to maintain the software. An interesting reference was also made to a 3 year, \$6.5m contract with Computer Associates for lease of the software. The article then went on to discuss Customs plans for replacing its long standing technology outsourcing arrangement with EDS.

Massive change, such as represented by CMR, tends to completely absorb organisations. Great care needs to be taken in adding to the change load, particularly when there may be interplay between two change initiatives. Governance processes should ensure that primary questions of importance are asked well before any competing initiative takes on a significant and inappropriately distracting profile.

Concern over the imports module emerged again late in May 2005. The Australian reported that industry concern had resulted in a further delay, recognising that "pushing too hard would prejudice the quality of the final product". In particular, delay in finalising the functionality was making it difficult for client system developers to finalise their software. For the first time, it was noted that the system needed to be in place "in time to deal with the pre-Christmas import traffic.

Timetables for change initiatives should include absolute clarity about periods of peak workload, and should ensure that business operations are not put at risk during these periods. If delivery of change during a peak period is unavoidable, measures should be put in place to ensure that useability, performance and operational integrity issues are unlikely.

A month later, on 21st June, The Australian referred to CMR as "the longest running technology development drama in public service history" as it reported another extension, with imports now scheduled to go live in October. The article says Customs "is confident it has solved teething problems in communication between customers' software and the new system". The cutover time was noted as being "in the middle of the Christmas import rush".

In a complex technology environment such as this, where there are numerous independent stakeholders, it is essential to ensure that each and every stakeholder has confirmed satisfactory testing outcomes. Further, it is vital that all participants have undertaken a comprehensive battery of tests that confirm not just the operation of the software, but the operation of the business, in the new regime. It is critical that the testing simulate real business conditions and experience, and not just simple, or simplistic test cases.

Four weeks later, The Australian reported that testing had commenced, though there was "grumbling inside the organisation about problems that could create further delays". The concerns were suggested as being related to integration with client systems.

The pressure mounts

By August 2nd, 2005, The Australian was reporting that Customs was racing to meet the deadline for launch of the system on October 12th. There were 180 "bugs" outstanding, and infrastructure upgrades to handle the load were progressing. However, scepticism was noted, with hints of problems that would carry through after implementation. A further complication was that some companies had not finished development of their systems that would interface to the new imports module.

A strong perception of recalcitrance on the part of organisations that would use the system for imports was the core theme in a Computerworld report of 27th September 2005. It reported on emails from Customs, which



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warned that the old system would be shut down on October 12th, and that all users must promptly put in place arrangements for obtaining their electronic security certificates, without which they would be unable to access the new system. The article also reported that the Customs Brokers and Forwarders Association (sic) had been "fighting tooth and nail against the system", purportedly because the new system would enable importers and exporters to bypass the agents. It went on to say that the industry was divided over whether or not the ICS was stable under load, with the Customs CEO saying that the system had undergone rigorous function, stress and volume testing.

Previously mentioned governance controls and indicators should be subject to regular and focused scrutiny as major projects move into their final phases. Any indications of risk should be assessed and action taken to mitigate any unacceptable risk. For every indicator that is not firmly "in the green", there should be an assessment of whether that factor presents an unacceptable or uncontrollable risk that the entire initiative might fail.

A commitment is met...

One day before the scheduled cutover, The Australian reported on 11th October that Customs had been "forced into another embarrassing backdown", by issuing a last minute exemption for end users that were not ready for the new system. The article reported that many end-users had only just installed their interfacing software, and that they had insufficient time for training. The "bug count" now stood at 304, but none were seen as critical. Some users were reported to have said that performance of the new system was unacceptable, and that there was already a backlog of work – though the reasons for this were unclear. Importantly, the risk of freight delays was clearly signalled – with concerns for pharmaceuticals and health care being raised explicitly. The Customs Brokers and Forwarders Council was reported as saying that Customs had not co-operated with the Council, and a key supplier of end-user software agreed that insufficient time had been allowed for training.

Human Factors are often a source of catastrophic outcomes. When a situation requires the agreement and co-operation of multiple parties, and some parties are not giving their agreement or co-operation, there is significant potential for a crisis to develop. While frustration and desire to meet commitments may well motivate some to drive through such obstacles, a good governance system will ensure that there is a balanced appraisal of the circumstances before making any over-riding decisions. As part of the balanced appraisal, a good governance system should ensure that any objections are properly and, if necessary, independently assessed.

... and chaos erupts

One day after cutover, on October 13th, The Australian Financial Review ran two articles – "Anger erupts as ports software delays freight" said one on page three. "Cargo chaos on the waterfront" continued the theme on page 25. In the articles, it is alleged that the systems were flawed, and that they had been inappropriately introduced at the start of the Christmas rush. Predictions were made that major freight terminals would grind to a halt in the subsequent week. One forwarder claimed that the software "hasn't worked from the beginning". Again it was stated that most end user organisations had not fully tested the system, and that it was "deeply flawed". In contrast, the Customs Minister said that businesses responsible for the majority of imports were happy. Problems were described as arising from unfamiliarity on the part of users, and a Customs spokesperson was reported as saying "This is one of the biggest electronic government systems implemented in recent memory". Users again claimed that there had been "virtually no end-to-end testing and no training". A Freight Forwarder claimed that the intentions for Cargo Management Re-engineering were being compromised by the problems arising from the "early" implementation of the imports module of ICS.

Detailed planning for major deployments should include careful consideration of progressive success criteria, with well defined contingency windows, and thoroughly tested exit plans. The progressive success criteria should give confidence that the deployment is proceeding according to plan, and that no unexpected, or unmanageable problems are occurring. The success criteria should be plotted across the timeline for the full deployment (which may be several days, or even weeks), and should include major checkpoints where irrefutable go/no-go decisions are made by the project's most senior governing body. Contingency windows should make it clear exactly how much time may be allocated to dealing with a problem before the decision to suspend, or reverse the deployment becomes automatic and binding. Exit plans should exist in respect of every major checkpoint, to ensure that normal business operations can be reinstated in time to avoid unacceptable commercial damage in cases where unsolvable problems have been encountered. In cases such as this, the development of the success criteria should take into account prevailing business conditions – with less contingency and more stringent criteria when there is less room for anything to go wrong. An additional success criterion that is frequently omitted is confirmation that



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the total system – including the end-users – is able to deliver acceptable (and well defined and reliably measurable) throughput and service performance levels.

By October 18th, the Customs Brokers and Forwarders Council was asking Customs to abandon the cutover until after the Christmas season, according to The Australian Financial Review. Claims that faxes were being used instead of the new system contrasted with claims that “businesses had been given months of training and workshops”, and that “150,000 import messages have been processed”. Comments reported in the article suggest that key players were adopting entrenched positions – some insisting that the new system was good, as others blamed the end-users for the problems. Political polarisation also became evident.

Meanwhile, The Australian reported that Qantas freight terminals were nearly full, with delays occurring in the collection of cargo. Predictions were made that the waterfront would feel the effect within 3 to 4 days.

Post-implementation governance and operational governance should overlap, to ensure that relevant business performance indicators are being monitored, and that satisfactory levels of performance are being achieved. The indicators should compare actual performance against expected, and the expected performance should be based in real-world assessments and experience. They should reflect strict business measures as well as technical results, and wherever feasible, should include a historical perspective. For critical aspects of performance, the indicators should include threshold markers and trends, so that acceptable but deteriorating situations are readily identified and resolved.

On October 19th, The Australian Financial Review reported a proposal to revert to the previous system for sea freight, to better cope with the massive volumes. Air freight was to be left on the new system. Less than 60% of containers to be cleared at Port Botany had actually been processed. Meanwhile, a ministerial spokesman reminded us of the benefits that would be delivered when the system became fully operational – particularly as a result of the increased rigour compared with the old system. The reliability of ICS was questioned, with two hours of unavailability or poor functioning within the first three days of operation.

Port Botany was reported as being 90% full on October 20th, in The Australian’s continuing coverage of the problems. Additional warnings suggested that Melbourne and Brisbane ports would also fill up over the weekend. Stevedoring firms were reported to be looking for options to create alternative locations at which to temporarily store containers. An article on Crikey.com.au summarised the situation, with one broker saying that it could process less than 10% of its recently arrived shipments. Information obtained from the Melbourne Ports CEO showed that airport terminals are designed to clear goods within 24 hours, while sea ports operate on a clearance cycle of 3 to 4 days.

The ripple effect emerges

Nine days after cutover, on October 21st, The Australian reported that the ports were in chaos, and that a shutdown of ICS was being considered. Many classes of goods, including pharmaceuticals, were said to be delayed. Another freight forwarder reported that its business was operating at one third of its normal throughput. For the first time, the effects on importers were reported indicating that economic impact of the system problems was beginning to emerge.

Many contemporary IT based initiatives can have far-reaching effect. As part of the early planning, it is important that the “field of impact” is assessed, and that planning take proper account of the interests of all stakeholders. The analysis should address both the desirable outcomes for, and the potential risks to each stakeholder community. Monitoring of activity, performance and impact of change should be in place well before change is deployed, and should persist until there is conclusive proof that the change is completely embedded and stabilised.

On the same day, The Age carried comments from the Customs Brokers and Forwarders Council, referring to the situation as a “catastrophe” and “a clear and present crisis”. It was reported that the delays in processing cargo were resulting in additional costs – not just for brokers and forwarders, but for allied industries such as transport operators. Mention was also made of apparent problems with security and privacy, with the system returning data for other organisations. Customs advised that more than 200 staff were deployed to operate a 24 hour help desk in support of businesses needing help with the system. It was reported that customs officers were clearing cargo manually, and that quarantine and security requirements were being waived in an effort to reduce the backlog. The Executive Director of the CBFC was reported as saying that Customs had failed to consult properly with the industry, and that concerns had been expressed by the organisation for more than a year.



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The CBFC had been vocal for a significant period. As the representative of an industry that was significantly impacted by the new systems, in terms of day to day business operations and, more fundamentally, in terms of their basis for business (they would no longer have an effective monopoly on the handling of imports and exports), it would be unsurprising that such a body would be anything other than demanding and critical. Often, governance systems shut out inputs from such sources, considering them to be biased and unhelpful. The governance system needed to ensure that it could process inputs from all significant stakeholders in the process, and ensure that the inputs were appropriately balanced. The governance system needed to ensure that decisions were made on the basis of facts, and that opinions were given due regard, but did not inappropriately sway the process.

Also on October 21st, Radio 2GB's Alan Jones interviewed Minister for Justice and Customs, Senator Chris Ellison. Jones opened the interview with a synopsis of the situation, including claims that businesses were running short of stock because it was stuck in the system and couldn't be cleared. The Minister said that he was seeking a solution by noon on that day, and that feedback to his office from industry was that it would be best to continue with the system. He gave assurances that ships would not be turned away, and said that "if this suggestion that they've (Customs) got does not work by midday then on sea cargo we'll have to revert to the old system". Senator Ellison continued: "everybody in industry supported the introduction of this new cargo system. The problems have been in the IT area...". When pressed on the cost of the system, the Senator said that the US Government's equivalent project was costing \$3 billion over 10 years, that the current Australian system could not operate "next year" and that the implementation of export functionality last year went well.

And in Melbourne, ABC host Jon Faine also explored the issue, interviewing David Brush, the Immediate Past President of the Customs Brokers and Forwarders Council of Australia, and Yurgen Salwat, Director of Optech – a Medical Supplies Company.

Late on Friday 21st October, Computerworld reported the decision to retain the system. In a brief reprise of the problems experienced, Computerworld reported that the security problems which had exposed sensitive commercial information to unauthorised viewers was "understood to have originated from a hot-fix to the system", and had since been rectified. The article also cites the influence of major businesses such as Coles and Woolworths, which had reported satisfaction with the system.

The process of assessing the cause of faults and implementing corrections requires care and diligence. It is not a process that should be done under pressure. History shows that "on the fly" fixes often introduce new problems and exacerbate the situation. Governance systems need to ensure that there is absolutely strict control over any such change activity, to ensure that new problems are not created.

More consequences, and the inevitable decision

A new week dawned and The Australian reported on October 24th that Port Botany would reach 100% capacity the following day, and that Qantas was also experiencing capacity problems at four airport cargo terminals. It also reported that despite a decision to retain the system made on the previous Friday, freight handling organisations were having trouble logging into the system.

The next day, October 25th saw Computerworld report that the Australian Computer Society had raised concerns regarding the potential for the problems to reflect badly on Australia's ICT industry. The ACS "questioned whether appropriate project management techniques and governance were applied throughout the \$250 million ICS project". The ACS pointed out that national infrastructure software can have a great impact on the national economy, and offered independent, professional input for any enquiry that might take place.

A front page article in Computerworld discussed the exposure of sensitive data in an article by Julian Bajkowski. It said that the exposures had been acknowledged by Customs, despite the system having been assessed for security by the Defence Signals Directorate. While Customs acknowledged that the problem had occurred, the article seems to suggest that Customs and Industry had quite different views on the extent of the problem. Referring to the broader problems with the system, CIO magazine suggested that one cause of the problems was the unexpected impact of intensive data validation carried out by the new system. The difficulty was apparently exacerbated by a lack of any capability to correct errors – with rejected clearance requests having to be withdrawn and recreated. The article says that the previous system had features specifically to deal with the situation where inconsistent data was presented by shippers. Meanwhile, the NSW Ports minister is reported to have said "There couldn't be a worse time to introduce a new computer system".



Australian Customs Integrated Cargo System: What can Australia learn from the experience?

Introducing new technology and systems involves far more than the technology. In reality, most aspects of business are critically dependent on the efficient, effective operation of information systems, and when these systems go wrong, widespread consequences can rapidly emerge. Business and the economy, and individuals and communities depend on systems and can suffer harm when they fail. Consequently, it is important that all significant changes are assessed in terms of the wider risks – the risks that will arise for stakeholders in the event of failure. The proper understanding of these risks should provide a rock-solid foundation for pre-deployment checks such as performance and reliability, as well as for during-deployment controls such as go/nogo decisions, and back-out triggers.

On Wednesday, October 25th, thirteen days after switching on the new system, Customs finally agreed to allow customs brokers and freight forwarders to revert to and use the original system indefinitely. But warnings were given that the old system is still due to be decommissioned in March 2006, because it cannot be supported. A Customs spokesperson said that "Customs had expected the system to work better than it did". It continues with Customs statements including "Things we tested, which worked well, in reality didn't work well", and "We are well aware that this is causing a lot of pain and heartache". Customs also claimed that round-the-clock efforts had been made to improve performance, and had made a positive impact. But an air cargo handling company reported that its throughput was down by 19.6% as a result of the system's introduction. Specific reference was made to the slowness of the web based system. The Customs Brokers and Forwarders Council said that small business created the majority of 3.3 million customs declarations annually, but that there had been insufficient attention to these organisations in the development of the system. The CBFC also stated that different organisations, such as port operators, were only part of the picture, and that a lack of problems for some operators did not necessarily mean that all was well across the industry. Discussion of the problems included mention that there was an unusually large number of stakeholders for the project, that many brokers had only a few days to roll out and train on the new system. An expert from Gartner commented that most IT projects faced greater problems in preparing people and processes than with technology itself. The article suggests that the main cause of the breakdown was problems with integration of broker systems and the new Customs system, and inadequately prepared users.

The aftermath, and a new beginning

In an article entitled "Customs blames the messenger", Computer Daily News also reported Customs denial of blame. Quoting from a Customs press release, the article says that "the problems experienced in part, flow from inaccurate and incomplete information being submitted by some users, which the new system is designed not to accept for security reasons". Customs is further quoted as saying that "pressures in cargo on the waterfront are easing".

The impact of the problems on Australian business was highlighted in a reader's comment to The Australian, published under the heading of "Customs gets its timing wrong". An importer of CDs and DVDs stated that, because of delays clearing air freight, they were unable to supply stock to retailers. The writer said: "It is unbelievable that Customs would introduce a new computer system during the busiest retail time of the year."

On October 26th, The Australian reported that Port Botany was effectively closed, with 20,000 containers awaiting clearance and six ships waiting, unable to unload. The Port of Melbourne, with a capacity of 38,000 containers, was also said to be experiencing problems. However, there were also indications of large numbers of containers being cleared and ready for collection, and complaints from a senior Customs official that the situation was being misrepresented by some.

Finally, on October 28th, The Age reported that freight terminals were "starting to clear", while the government was pressuring organisations to expedite removal of goods that had received customs clearance. The article continued with discussion on the financial consequences of the problem.

The way forward – Our thoughts

Regardless of who might carry responsibility for the decisions leading to almost total paralysis of Australia's ports, it seems undeniable that the cutover to the imports module of ICS was a comprehensive failure. In subsequent enquiries, it may well be proven that individual elements of the system worked well. But the reality is that, as a whole, the system failed utterly.

But this failure does not necessarily mean that ICS should be abandoned. Nor, at this stage, should the money spent – something in the region of \$200 to \$250 million – be considered as wasted. However, it is inappropriate



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also for hasty work to be launched to “cure the problems”.

Now is the time to take a deep breath, and go back to basics. The first imperative is to ensure that effective governance processes are in place from this point forward – because there are many decisions to be made, and they need to be made properly. The Australian Customs Service should look to contemporary guidance, such as that provided in AS8015, and ensure that its governance system for CMR and other initiatives is capable of steering the initiatives to a successful result. To learn what is missing from the existing governance system, it would be best to thoroughly review it, taking input from all stakeholders. The governance system should ensure that all significant decisions are made appropriately, by the right people, on the basis of robust evidence that the conditions to proceed are in place and stable.

In an improved governance framework, the Australian Customs Service and major stakeholders need to revalidate the business case for CMR, to confirm and positively articulate the objectives and value that the nation will accrue from the project. Then should assess the work required, from this point forward, to achieve the objectives. Doing so will involve evaluating the technology that has been created, the readiness of the industry, and the detail of the actual problems experienced during October. A new plan should be prepared, with engagement and agreement of all stakeholders, for the achievement of the objectives and value. That plan needs to be fully and accurately costed, using the benefit of experience to date. The plan must detail the work to be undertaken by all parties, and the cost of the work must be calculated, to enable confirmation that there is an economic case for persisting.

The final word, looking back...

It is likely that analysis and debate of CMR and ICS will continue for months, if not years – just as it did in the case of RMIT’s remarkably problematic Academic Management System that was launched late in 2001.

Two articles in The Australian IT on 1st November 2005 set the scene. One describes how retailers are being hit by shortages due to Christmas stocks being held up – repeating the theme of several prior articles. The other discusses the testing of the new system. It says that the industry had a year to “practice using” the system, that “there were no critical errors” and that “the complications that arose for users were trivial”. The article points to the key problem being “incorrect insertion of information into the system” – with the new system being quite unforgiving of inaccuracies – whereas the old system was quite tolerant.

Adding rigour to a process often adds considerable complexity – especially during the transition phase when the processes launched with low rigour suddenly transform to the high rigour situation. Virtually no contemporary IT initiatives are launched on a green-field, with no existing data to handle. In cases such as CMR, there should have been extensive testing of the IT system and the end-to-end business process, to ensure that the low-rigour data already in the system would not cause problems, and that the intended high-rigour environment would operate correctly.

There are many lessons in history – some not so old – that should be guiding organisations to greater success with IT enabled business change. In “Project perils in technology revival” on 4th May 2004, The Australian’s Andrew Birmingham discussed six “famous dinosaurs”, and proposed ten reasons why large IT projects fail:

1. Lack of proper senior management sponsorship
2. Complexity of stakeholder relationships
3. Poor management of expectations
4. Poor corporate governance
5. Mistaking the non-project effort required
6. Scope creep
7. Culture of denial
8. Poor resourcing
9. Employing the B-team
10. Underestimating the importance of project management

How many of these traits apply to projects of 2005 and beyond? Do any of them exist in your projects, as some most probably did in the Customs project?