

Chapter 19

Data Management System

Data Management System

19.1 The role of the Central Statistics Office (CSO), as set out in the Statistics Act 1993, includes the ‘*collection, compilation, extraction and dissemination for statistical purposes of information relating to economic, social and general conditions in the State*’. The Office is also responsible for co-ordinating official statistics produced by other public authorities and for developing the statistical potential of administrative records.

19.2 The CSO collects information in a wide range of censuses and surveys¹⁶⁸, the biggest one being the Census of Population, which is undertaken every five years. For household surveys, information is collected directly throughout the year. Surveys of business and agriculture are conducted mainly by post, with some online data collection. The Office also compiles statistics from administrative sources (e.g. births, deaths and marriages) and intends to make increasing use of administrative data to reduce the burden on respondents and to compile new statistical analysis.

19.3 In November 2003, the CSO awarded a contract to Cognizant Technology Solutions (Ireland) Limited, to design, build and implement a new Data Management System (DMS).

19.4 The DMS project was the central component of the CSO’s Information Technology Strategic Implementation Plan (ITSIP) formulated in March 2002. The ITSIP, developed with consultancy input from Cap Gemini Ernst & Young, was a strategic IT plan which took account of the existing IT environment within the CSO and the anticipated implications of foreseeable business challenges. It reflected the latest international thinking¹⁶⁹ on the statistical business process and supported the CSO’s strategy of moving from a business silo based approach to a functional organisational model.¹⁷⁰

19.5 The ITSIP proposed a programme of IT application and infrastructure projects to be undertaken by the CSO over the period 2002 to 2006, with the introduction of the DMS being the largest element. Other proposed projects included the deployment of updated versions of the existing statistical analysis and reporting package, a document management and workflow system, a new IT helpdesk system and an agriculture register system.

Features of the DMS

19.6 The DMS project was designed to provide the CSO with a modern hardware platform and the capacity for greater information sharing on an integrated client-server environment. It was intended to replace the previous mainframe computing platform (VAX Open Virtual Memory System) which had been used by the CSO since the 1980s and was becoming obsolete.

19.7 The DMS includes a database facility which allows for all CSO data to be centrally stored and managed in a structured environment. Previously, the extent of data sharing had been limited, with separate elements of data being held on discrete systems throughout the Office.

¹⁶⁸ The CSO has around 100 live surveys and issues approximately 300 releases and publications on its website (www.cso.ie) each year, as well as detailed online statistical tables.

¹⁶⁹ The CSO consulted with leading national statistical offices including Sweden, New Zealand and the Netherlands.

¹⁷⁰ In the CSO context, this involved moving from a structure based on survey-specific business units to one based on larger units, each of which would perform a specific function (e.g. data collection, analysis, publication) for groups of related surveys.

19.8 With regard to survey processing, the aim was to install a suite of applications which would replace the variety of existing systems used by individual surveys, many of which had been developed by end users with no input from the IT Directorate. The DMS provides ten modular applications, each supporting a distinct stage in the statistical production process, i.e. collecting, processing, analysing and publishing. The use of common applications would also allow new features to be introduced without the need for separate modifications to multiple survey-specific systems.

19.9 Details of the individual applications within the DMS are provided at Annex A.

Project Overview

19.10 The project to deliver the DMS within the CSO commenced with an analysis of survey and business process needs in order to develop a detailed requirement specification which would form the basis for a Request For Tender (RFT) document. The focus of this report is on the subsequent stage, which was to design, build and implement the new system.

Scope

19.11 The scope of the project extended to all common survey processes within the CSO and included the design and implementation of the architecture to support the DMS. It also included the migration of existing survey processes and data to the DMS, the creation of interfaces with certain existing CSO applications and the importation of data from others.

19.12 Certain areas of CSO activity were specifically excluded from the project scope

- processing of the Census of Population and related support systems
- processing of the Balance of Payments surveys and related survey management systems
- initial processing of the industry data collection unit surveys
- systems supporting the CSO Administration Division.

Interface with Existing Systems

19.13 The DMS provides interfaces to two other IT applications used within the CSO

- The Central Business Register (CBR) holds information on all types of businesses engaged in economic activity in the State. It provides statistics on business demography and is used as a sampling frame for many business surveys conducted by the CSO.
- The Classification and Related Standards (CARS) database is the CSO's central repository for all classifications, concordances and coding indexes. It reduces the resources required to develop new surveys and contributes to improved data quality by supporting the use of standard classifications.

19.14 For a number of other applications, no specific interface was planned with the DMS, but it was envisaged that data could be transferred by a combination of export facilities within the applications themselves and import facilities within the DMS.

Business Objectives

19.15 The business objectives of the DMS project arose out of the goals of the CSO's Statement of Strategy (2001 – 2003) and its IT Strategy¹⁷¹ which were driven by the need to address the fact that existing technology was becoming obsolete and that discrete islands of data and processing were the norm throughout the Office. The objectives included

- to replace the existing legacy hardware platform with an integrated and fully operational client-server environment and to migrate all surveys to that environment
- to provide a survey processing system that would link to multi-channel data collection and dissemination systems and would cater for new surveys and extensions to existing surveys
- to deliver a data architecture to support the applications and a technology infrastructure which would make applications available to all members of staff.

Chapter Focus

The chapter set out to review

- the adequacy of the project appraisal carried out in advance of project approval
- the adequacy of the project governance and project management procedures in place
- whether the requirements were appropriately specified
- the effectiveness of contract management arrangements in the areas of procurement, change control, variation and price changes
- project performance against targets in terms of time, cost and delivery on business objectives
- the extent to which the new system is actually being used
- the extent of post project evaluation that has taken place.

Project Appraisal

19.16 Any appraisal that took place was undertaken in the context of the wider ITSIP programme rather than in respect of the DMS project in isolation.

Business Need

19.17 Following an examination of the existing IT environment within the CSO, the ITSIP highlighted two main issues which needed to be addressed

- most of the CSO's central processing systems and data holdings resided on a legacy server platform, which was considered to be a sunset technology and was at a risk of obsolescence
- there was a need for significant change in CSO business processes to enable it to meet the changing requirements of the EU and the Irish Government, particularly those arising from e-Government initiatives.

¹⁷¹ CSO Information Technology Strategy 1999 – 2002 and Beyond, April 1999.

Expected Costs and Benefits

19.18 The ITSIP provided a cost estimate of €13.05 million, including VAT, to complete all of the proposed IT application and infrastructure projects, €10.14 million of which related to the DMS project. The figures quoted excluded CSO personnel costs and all other internal costs.

19.19 The ITSIP did not separately identify the anticipated benefits for each proposed project. It outlined six categories of benefits expected to accrue from the entire programme of work

- support the CSO business strategy through facilitating e-Government initiatives, increasing demand for statistics, exploiting administrative records, reducing the burden on data providers and improving the timeliness and quality of outputs
- mitigate risks facing the CSO, including technical risks relating to the legacy IT platform, operational risks relating to the accuracy and timeliness of outputs and project management risks relating to the operation, resourcing and governance of projects
- improve accessibility, availability and integrity of data through the provision of integrated data, common data standards, common technologies, common maintenance policies and secure access for the entire organisation
- facilitate business process improvement through e-enabling and streamlining inter organisation processes (e.g. acquisition and synthesis of Revenue information), introducing common shared processes and implementing common standards across these processes
- increase operational efficiency through reductions in manual activity and duplication of tasks
- improve the service provided to users through the delivery of e-Government capability, utilisation of new technologies and implementation of new customer relationship management approaches.

Conclusion - Project Appraisal

Project appraisals should identify the needs a project is designed to meet and the extent to which it aims to meet them and provide information on the expected costs and benefits of realistic alternative approaches to meeting the identified needs.

No separate appraisal or business case was drawn up in respect of the DMS, or the other individual projects proposed in the ITSIP. The ITSIP was effectively used by the CSO as the business case for its request to the Department of Finance for sanction to proceed with all of the proposed projects. Large projects that comprise discrete components, such as the DMS, should have separate business cases in order to identify viable alternatives to the specific solution proposed.

Views of the Accounting Officer

19.20 The Accounting Officer stated that the DMS was the largest project within the ITSIP, representing almost 80% of the work programme. As such, it set out the broad business case for the DMS. It indicated that the DMS would need to be developed as a bespoke application. Since the CSO did not have the capacity to develop the application in-house, it was considered that there was no viable alternative to the approach adopted, which would address the CSO's technological deficit and meet the strategic objective of introducing a centralised system.

Project Governance Structure

19.21 The Project Initiation Document, agreed following the appointment of the prime contractor to design, build and implement the DMS, set out the project governance structure. The main elements are described at Annex B. Although business users were represented within the governance structure, they had no direct representation on either the project board or the project steering committee, which were the bodies that made the high-level decisions in relation to the project.

Quality Assurance

19.22 The governance arrangements also included a quality assurance aspect, provided by an external consultant reporting directly to the programme manager. The role included developing a quality assurance plan, conducting regular audits, providing technical input to the project and providing quality control services in respect of project deliverables, document management and change management. It also involved independently assessing the quality assurance standards of the prime contractor.

Conclusion - Project Governance Structure

In any project seeking to introduce a significant degree of change, it is important that the governance structure provides for the interests of all stakeholders to be represented at an appropriate level.

The DMS project sought to make fundamental changes to the way survey processing was carried out within the CSO. It does not appear that the business users of the DMS were represented at a sufficiently high level within the project governance structure established. Although the interests of business users were represented on the business analyst team, they had no direct representation on the project board or project steering committee and consequently had limited ability to influence the decision making process.

Specification of Requirements

19.23 The first stage of the DMS project involved an analysis of CSO requirements and the preparation of detailed design specifications in relation to each survey and business process. It was carried out between October 2002 and April 2003 and involved extensive consultation with and contributions from over 100 business users within the CSO.

19.24 The requirements specification exercise was undertaken with consultancy support from Accenture. The role of Accenture included

- requirements analysis for existing CSO surveys in order to identify common processes which the DMS would need to support
- requirements analysis for corporate data management, including management information and information on survey compliance and data consistency for particular respondents
- consolidation of statistical surveys and processing thereof into a limited number of business process classes
- provision of functional specifications and high-level architectural design specifications for the overall data management infrastructure and for each of the business process classes identified
- investigation of the potential for use of the internet for the receipt and dissemination of statistical information
- definition and specification of the required interfaces to the CBR and CARS applications
- provision of a high-level data migration plan.

19.25 The specifications developed formed the basis for the RFT document which subsequently issued for the design, build and implementation of the DMS. The RFT was accompanied by a set of 132 specification documents providing potential tenderers with instructions in relation to all aspect of the project, including data migration, data management, logical database design, high-level architectural requirements and high-level functional designs for the individual DMS applications.

Conclusion – Specification of Requirements

The CSO conducted a comprehensive requirement specification exercise, which included consultation with business users from across the Office. External technical assistance was procured to analyse the requirements and develop high-level specification documents for the overall solution.

Contract Management

19.26 In November 2003, the CSO signed a contract with Cognizant for the detailed design, build and implementation of the new DMS for a fixed price sum of €5.96 million, including VAT. The agreed project plan showed a 42-month contract timeline, with the DMS scheduled to go live in May 2006 and the subsequent maintenance and support phase scheduled to expire in May 2007.

19.27 The timing of proposed payments in the contract payment schedule was linked to the acceptance of deliverables. In summary, the agreed contract deliverables were to

- design, build, test, deliver and install the DMS modular applications and operating environment and integrate them with existing CSO client server applications
- specify, install and test all required hardware and related software
- assist CSO staff to migrate over 100 existing statistical processing systems to the new client server environment
- support and maintain the DMS for the first year after implementation
- train CSO staff in the use and maintenance of the DMS.

Procurement Process

19.28 The procurement of the prime contractor was conducted by way of the restricted procedure, which is a two-stage process whereby only those candidates who meet specified minimum requirements at the pre-qualification stage are invited to submit a comprehensive tender for the project in question.

19.29 Eleven responses were received at the pre-qualification stage, of which the top six scoring candidates were selected to proceed to the vendor evaluation stage. The six pre-qualified companies were furnished with RFT documents in early July 2003. Four tenders were submitted by the deadline, with no submissions being received from the remaining two companies.

19.30 Following the initial stage of the evaluation process, provisional scores were agreed and the three highest ranked candidates were invited for interview. The tender evaluation scores were re-examined on the basis of additional information provided at the interviews and final scores were agreed for each candidate.

19.31 Cognizant scored highest overall, achieving 77.8% of the maximum marks available.

Conclusion - Procurement Process

The procurement process was compliant with Department of Finance and EU requirements.

Project Cost and Change Control

19.32 The ITSIP provided a cost estimate of €10.14 million, including VAT, to design, build and implement the DMS. This figure excluded all costs associated with CSO personnel and any other internal costs.

19.33 The contract signed with Cognizant for the detailed design, build and implementation of the DMS was for a fixed price of €5.96 million. In the end, the total amount paid to Cognizant over the lifetime of the contract was €9.24 million, representing a 55% upward variance on the fixed price agreed. A breakdown of contract payments to Cognizant is provided at Figure 100.

Figure 100 DMS Contract payments to Cognizant (VAT inclusive)

Milestone	Task	Contract Amount	Amount Paid	Variance
		€m	€m	€m
1	Project Startup	0.47	0.47	—
2	System requirements and analysis	0.47	0.47	—
3 – 5	System Design and Build	2.12	2.12	—
6	System Testing and Delivery	0.71	0.71	—
7	Acceptance Testing	0.94	0.94	—
8	Maintenance and Support	1.25	2.13	0.88
-	Change Requests ^a	—	2.40	2.40
Total		5.96	9.24	3.28

Note: a Includes amounts totalling €0.29 million in respect of the commercial impact of delays to the project schedule.

19.34 Of the €3.28 million variance, €2.40 million related to agreed project changes and the remaining €0.88 million principally arose from the decision to extend the post go-live support and maintenance period from 12 months to 21 months, as allowed for in the RFT.

19.35 The other main categories of direct cost for the DMS project related to software, hardware, requirements specification and external quality assurance. A breakdown of the total direct project costs is shown at Figure 101.

Figure 101 Direct Cost of DMS Project (VAT inclusive)

Cost Item	Amount Paid
	€m
Cognizant Contract	9.24
Software	2.29
Hardware	0.63
Requirements Specification Stage	0.63
External Quality Assurance	0.31
Other	0.11
Total Direct Cost of DMS Project	13.21

Source: Comptroller and Auditor General analysis of project payments

19.36 In addition, the project costs shown in the closure reports prepared by the CSO in relation to the requirements specification stage (April 2003) and the design, build and implementation stage (April 2010) showed amounts totalling €5.01 million in respect of the attributable salary costs of CSO staff.

Conclusion – Project Cost

Payments to external bodies in respect of the DMS project, including the requirements specification stage and the post-implementation maintenance and support period, totalled €3.21 million. This represents a 30% upward variance on the cost estimate in the ITSIP.

In-house costs were not included in the original estimate quoted in the ITSIP, but were tracked during the project. Including the attributable salary costs of €5.01 million, the final reported cost of the DMS project was €8.22 million.

Views of the Accounting Officer

19.37 The Accounting Officer informed me that the original cost estimate was based on professional advice and reflected best practice in the public sector and prevailing market conditions. He stated that in a project of this scale, some variance is to be expected.

ITSIP Cost

19.38 The DMS was one of five IT application and infrastructure projects proposed within the ITSIP. The cost estimate to complete all of the projects was €3.05 million. During the course of the examination, I requested details of the outturn in respect of the other ITSIP projects. The CSO informed me that much of the work on the other projects was carried out in-house. They provided a figure of €0.48 million for external payments made to end May 2011, with the only project still ongoing being the introduction of a document management and workflow system.

Change Control

19.39 The Project Initiation Document, agreed in November 2003, specified the change control process that would apply in respect of proposed changes to the project.

19.40 Over the duration of the project, the CSO formally approved multiple batches of change requests in relation to a variety of issues. The total payments made to Cognizant in respect of implementing the agreed changes were €2.11 million, including VAT. The largest single approved change request, at a cost of €0.31 million, related to the development of a DMS e-learning package, which is an interactive training application now available to CSO staff.

19.41 In addition to the costs of implementing the agreed changes, the CSO made payments to Cognizant totalling €0.29 million in respect of the commercial impact of delays to the project schedule, arising from the volume of change requests. Including this amount, the total of all payments made to Cognizant in respect of agreed project changes was €2.40 million.

Conclusion - Change Control Procedures

The extent of changes agreed over the duration of the project appears to indicate that the original specifications were not as comprehensive as they might have been. The changes related to a range of issues including additional training, data migration and metadata¹⁷² migration. Payments in respect of agreed project changes (€2.40 million) represent an increase of over 40% on the original fixed price sum in the contract (€5.96 million).

Views of the Accounting Officer

19.42 The Accounting Officer stated that the DMS project was split into two stages, the first being an extensive analysis of requirements, which provided a strong basis for the second stage to build the DMS. The contract was for a fixed price, which allowed the CSO to exercise greater control over the final project cost. Given the complex nature of the project, it was anticipated that additional needs would arise during project implementation. All change requests were subject to an approval process and were rigorously negotiated with the service provider. The CSO is satisfied that the approach adopted delivered a cost effective solution.

Project Timescale

19.43 The contract with Cognizant provided for a start date in November 2003, with an expected system go-live in May 2006, followed by a period of maintenance and support for the DMS application until May 2007. In the end, the DMS went live in the CSO in September 2007, which represents a 16-month time overrun on the original schedule.

19.44 A project closure report prepared by the CSO, in respect of the design, build and implementation stage, cited two reasons for the time overrun

- approximately ten months of the delay was due to an underestimation of the time required to fully prototype and test the new system

¹⁷² Metadata is essentially data about data, e.g. details of how, when and by whom the data was collected.

- a further six months was due to the need for Cognizant to address a number of software quality issues, which had been identified in a quality review undertaken by the CSO.

19.45 Since the timing of payments was linked to the acceptance of deliverables, several scheduled payments under the Cognizant contract were deferred as a result of project delays. Maintenance and support for the DMS application continued to be drawn down from Cognizant until May 2009.

Conclusion – Project Timescale

There was a 16-month overrun on the original 30-month contract schedule.

Views of the Accounting Officer

19.46 The Accounting Officer informed me that the time taken to complete the project was reflective of the need to prioritise the quality of the DMS in order to ensure its reliability in the long-term. The CSO is satisfied that the additional effort has achieved this goal.

Project Delivery

19.47 A project closure report, compiled by the CSO in April 2010, assessed the outcome of the project, with reference to the extent to which the business objectives have been achieved. Leaving aside the usage issues which are dealt with in the next section, the following progress was reported

- in relation to the objective of replacing the existing hardware environment with an integrated and fully operational client server environment, the closure report stated that all legacy systems and applications had been closed and the DMS was available on the CSO network to all authorised survey staff
- in relation to the objective of providing a survey processing system capable of catering for new surveys and extensions to existing surveys, the closure report stated that this had been achieved and it noted that the DMS was built to accommodate increases in the volume and frequency of CSO surveys, with security rules in place to control who could add a new survey or amend an existing one
- in relation to the objective of making the system available within the CSO's client server environment, the closure report stated that the system had been available to all authorised users since its launch in September 2007.

Conclusion - Project Delivery

The DMS achieved its core objectives by delivering a modern hardware platform and operating environment, centralised databases for data storage and management and a suite of survey processing applications available for use on all surveys. However, the extent to which the full potential benefits are being exploited by the CSO is dependent on the level of engagement with the DMS by survey teams. This issue is dealt with in the section that follows.

Views of the Accounting Officer

19.48 The Accounting Officer stated that the DMS project had achieved its critical objective of modernising the CSO's IT environment. IT staff within the CSO maintain and develop the DMS without any external consultancy costs. He stated that the DMS had delivered real and substantial benefits for the CSO, including the provision of support for the organisation's transition to a functional model and enabling the rapid introduction of new surveys, which would previously have required the development of bespoke IT systems.

Use of DMS

19.49 Two significant issues have arisen since the DMS went live in the CSO in September 2007

- the rate of migration of surveys to the DMS has been slower than anticipated
- the level of usage for certain applications has been relatively low.

Migration to DMS

19.50 At the outset of the project to design, build and implement the DMS, there were 101 live surveys being produced by the CSO. The project scope document highlighted certain existing CSO surveys which would not be migrating to the new DMS, but it did not specify how many surveys it was envisaged would be processed using the DMS applications.

19.51 It was initially planned that the migration of all relevant surveys would occur in a short time frame following the go-live date. Where individual survey teams did not wish to migrate their surveys to the DMS, they had to apply to the project board for approval to be exempt.

19.52 The CSO informed me that there were a variety of reasons why some survey teams did not wish to migrate to the DMS

- due to the volume of change requests received following user acceptance testing, many were deferred for a period of time, with the result that survey owners were unwilling to go-live with a system that did not fully meet their requirements
- the need for a code review and other project delays had resulted in a loss of momentum and to some extent a loss of confidence, among users, in the system
- there was a reluctance among some survey teams to move from their own survey-specific systems that had been developed over time to a generic system which did not offer some of the customised features.

19.53 Following go-live of the DMS in September 2007, the rate of migration of surveys to the new system was slower than anticipated. In June 2008, a subgroup of the CSO Senior Management Committee carried out a review of the issues affecting migration and made a number of recommendations for amendments to the DMS - these were submitted as further project change requests.

19.54 In light of continued migration issues, a further internal review was commissioned in November 2008. The review considered the extent to which the DMS had delivered the targeted functionality, the uptake by survey area and by application and issues affecting migration. It was completed in March 2009.

19.55 Following the review, the CSO changed to a slower more targeted migration approach, focussing on medium and large scale surveys, where the most efficiency gains could be made through migration to DMS. Figure 102 presents information provided by the CSO on the current status of survey migration to the DMS.

Figure 102 Status of Migration of Surveys to DMS, at 1 June 2011

Survey Size	Surveys Using the DMS	Surveys in process of Migration	Migration Date Scheduled	No Migration Scheduled	Total
Large	13	4	2	7	26
Medium	13	2	1	2	18
Small	4	2	3	20	29
Total	30	8	6	29	73

Source: Central Statistics Office

19.56 At 1 June 2011, there were 73 live surveys¹⁷³ being produced by the CSO that had either been in the original scope of the DMS project or had been added since. Of these, 30 were being processed using the DMS and a further 14 were scheduled for migration before the end of 2012. There was no migration date scheduled for the remaining 29 surveys.

Use of DMS Applications

19.57 The internal CSO review of migration issues, completed in March 2009, found that for those surveys that had migrated to the DMS, the use was concentrated on the seven applications within the survey administration, data collection and processing stages of the survey lifecycle (see Annex A). The remaining three applications were being used only to a limited extent or not at all.

19.58 Following the internal review, the CSO decided that future use and support of the DMS would primarily focus on the seven applications that had been identified as having the highest usage. In November 2009, the Seasonal Adjustment, Imputation and Dissemination applications were removed from the primary DMS menu. The underlying code for these applications is still available should it be required at a future stage.

Conclusion – Use of DMS

One of the principle objectives of the DMS was to introduce generic systems for CSO work processes. However, given that many surveys have yet to migrate to the new system, there is still a requirement for parallel running of pre-existing systems that have overlapping functionality with the DMS and consequent support costs.

The original DMS concept was for an end-to-end statistical processing system, covering each step from data capture to the dissemination of results. The decision to discontinue use of three of the applications and to focus principally on the earlier stages in the survey processing lifecycle would appear to be inconsistent with the original vision.

¹⁷³ The total number of live surveys, at 1 June 2011, was 101, but 28 of these were not within the scope of the DMS project.

Views of the Accounting Officer

19.59 The Accounting Officer stated that the DMS project had set out an ambitious vision and it is the view of the CSO that the major part of this vision has been achieved. He informed me that the CSO's strategy for the use and development of the DMS is to concentrate on those surveys and processes where its usage can be maximised. This is achieved by concentrating migration efforts on large and medium sized surveys. The surveys that have yet to migrate are generally small and non-complex and have a limited impact in terms of parallel running. The provision of data capture and processing functionality in the DMS, which is being widely used by the large and medium sized surveys, is consistent with the original vision for the DMS.

Post Project Evaluation

19.60 The CSO completed a closure report that sets out the high-level lessons that have been learned from the project. It states that these lessons have informed the preparation of its IT Strategy for 2010 to 2012. It reported this learning over the following categories

Scale of Project

19.61 DMS was a major project, involving the implementation of a complex and comprehensive vision and significant organisational change. Delays and technical problems experienced during the implementation phase resulted in a degree of pessimism and doubt among users as to the achievability of the project. Matters identified included the importance of

- taking an incremental approach to new developments
- delivery via small-scale projects
- early realisation of benefits from IT investments
- the close alignment of IT developments with business plans and strategy.

Scope of Requirements

19.62 The DMS project aimed to satisfy the full survey processing needs of a wide range of survey types. The need to provide a generic solution for business and household surveys added to the complexity. A decision was taken early in the project to base the survey requirement specification on the 'as is' rather than 'to be' situation – this had the benefit of stabilising requirements but meant that new or changing aspects were not covered. The implications included the need for

- future development of DMS in line with survey area requirements
- scoping of IT projects to separately develop household and business surveys
- further retirement of legacy applications and migration to DMS
- development of corporate dissemination applications and communications and support processes between IT and business areas.

Quality Control and Capability

19.63 At the outset of the project, the CSO's processing applications were based on old technologies and its skills base reflected this. It was decided to outsource project delivery in order to procure skills not available within the organisation. As the CSO acquired further knowledge and skills during project implementation, it was able to build on its own quality assurance processes. It was a software quality review carried out by the CSO that identified the need for major code rework during project implementation. Matters identified included the need for

- a skills and sourcing policy
- outside recruitment of IT skills where necessary
- in-house IT development where possible
- training for end users and encouragement of learning and research by IT staff.

Business Engagement and Culture

19.64 A feature of the project management structure was the strong commitment of senior management. The closure report acknowledges that the loss of engagement by business users during the migration phase was related to the quality of the communication of corporate objectives. Matters identified included the need for

- more active communications by IT staff
- simpler governance and decision making processes with strong emphasis on adherence
- support for end-user computing
- emphasis on a business process model to reinforce alignment between business and IT objectives
- development of DMS in line with business requirements.

CSO IT Strategy 2010 - 2012

19.65 The CSO informed me that its current IT strategy was strongly influenced by the experiences of the DMS project. The strategy has consolidated the applications and software architecture for CSO statistical processing, which includes the DMS. The following are its key points

- the DMS is a core strategic application, fully supported in-house, used for data capture and processing - functionality will be added to support its use by a greater number of surveys
- development of DMS reflects business requirements in the CSO's Plan for Business and Organisational Development¹⁷⁴, including support for a functional organisation structure and a reduction in the burden on survey respondents
- the retirement of legacy IT systems which were considered out of scope for the original project and their migration onto DMS by the end of 2012
- the re-engineering of the National Accounts data system (outside scope of original DMS project) which will use the database and data management features of the DMS
- the approach to applications development will focus on small-scale projects developed in-house, with an emphasis on the early realisation of benefits and the re-usability and inter-operability of functions.

¹⁷⁴ The CSO's Plan for Business and Organisational Development, issued in May 2009, recommends a new organisational structure for the Office.

Conclusion – Post Project Evaluation

The CSO completed a comprehensive post project evaluation. Given the fact that the types of issues experienced by the CSO commonly recur in respect of other large public sector IT projects, there is a need at central level to distil the lessons identified and put gateway controls in place to guide the development and delivery of future large scale IT projects.

Conclusion

The DMS project delivered on its core objectives of modernising the CSO IT environment, facilitating centralised data storage and providing a set of survey processing applications available for use on all surveys.

However, issues relating to the use of the DMS have impacted on the extent to which the original vision has been realised

- a decision was taken to discontinue use of three of the ten DMS applications delivered, which is inconsistent with the original concept of an end-to-end statistical processing system
- although the DMS introduced generic systems for common work processes, the fact that many surveys have yet to migrate to it means that there is a continuing need for parallel running of some pre-existing systems which have overlapping functionality with the DMS.

From a project appraisal viewpoint, no detailed consideration of potential alternative approaches was documented.

From a budgetary perspective, payments to external bodies totalled €13.21 million, which represented a 30% upward variance on the cost estimate in the ITSIP. As regards the prime contractor, although adequate change control procedures were in place, the changes agreed added 40% to the original fixed price sum, which indicates that the original specification exercise was not comprehensive.

In terms of post project evaluation, the CSO carried out a detailed exercise, which identified issues encountered on the DMS project and documented the lessons learned. These lessons may have application for future large scale IT projects in all public sector organisations.

Annex A DMS Applications

The DMS provides ten modular applications which were intended to cater for the survey processing needs of most surveys.

Stage in Survey Processing Life Cycle	Application	Description
Survey Administration and Data Collection	Register Management	Provides the functionality required to maintain a register, which is a list of units that may be selected for a survey.
	Sample Selection	Supports the selection of a sample from a CSO register, stored in either the CBR or DMS Register Management application.
	Survey Management	Supports the administrative functions surrounding the issue of questionnaires and ensuring their timely return.
	Respondent Management	Provides a cross-survey view on survey compliance and data consistency across surveys for a particular respondent.
	Data Capture	Provides functionality to capture unit record data from returned questionnaires and perform subsequent editing on this data.
Processing	Imputation	Where there is no response to some or all parts of a questionnaire, the imputation application allows substitute imputed values to be determined based on a series of user-defined rules.
Analysis	Aggregation	Allows unit level data to be summed and averaged, weighting factors applied and indices produced.
	Seasonal Adjustment	Allows a user to select a time series of data from a database and apply seasonal adjustment factors to this data.
Publication	Dissemination	Provides the functionality required to set up tables within a database which may subsequently be populated with results produced in the aggregate database.
All	Security	Controls user access to data and access to functionality within the DMS.

Annex B – Project Governance

The main elements of the project governance structure were

- A Project Board whose role was to approve changes to the overall project scope, source any additional funding required and make decisions in relation to resource allocation and competing business priorities. Its membership included CSO staff at senior management level and a representative from the Centre for Management and Organisation Development, in the Department of Finance.
- A Project Steering Committee whose role was to review project deliverables, consider issues referred by the programme manager, monitor progress, initiate any necessary corrective action and ensure the smooth running of the overall project. It reported directly to the project board and its membership included senior staff from both the CSO and the prime contractor.
- A Programme Manager who was also a member of the project steering committee. The role included accepting project deliverables on behalf of the CSO, arranging project payments, disposing of issues and changing requests escalated, ensuring adherence to business objectives and discussing progress with the prime contractor. The programme manager was also required to execute formal project reviews and make regular presentations to the project board.
- A CSO Project Management Team which was responsible for day-to-day management issues. Its main duties were to plan the project, monitor progress, highlight project drift or slippage and resolve any design issues, technical issues or change requests. It was also the owner of the change management and risk management processes and it was responsible for the co-ordination of interactions between the CSO and the prime contractor.
- A Business Analyst Team whose role was to represent the interests of CSO business users. Its responsibilities included participation in the finalisation of requirements validation, signing off on business decisions for the project and providing the prime contractor with specialist expertise in CSO business areas and statistical processes. In relation to the migration of surveys, its role included facilitating end users to identify data to be migrated and then undertake the logical translation and transfer of data into the DMS.
- A Test Team comprising senior CSO staff which was responsible for agreeing test strategy with the prime contractor. In addition to inspecting the results of tests carried out by the prime contractor, its role included undertaking its own technical, functional and operational readiness testing of DMS applications.