

## **A SYSTEMATIC APPROACH TO QUALITY: THE DEVELOPMENT AND IMPLEMENTATION OF A QUALITY MANAGEMENT FRAMEWORK IN THE CENTRAL STATISTICS OFFICE, IRELAND.**

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### **Abstract**

In the context of increasing and more formal scrutiny of official statistics at international and EU level and having regard to our goal of the continuous improvement of our statistical processes and products, the Central Statistics Office (CSO) Ireland launched a Quality Management Framework (QMF) programme of improvement projects in January, 2014.

The development of the QMF is an extensive and long-term programme of activities, which will ensure that statistical production meets the highest standards as regards quality and efficiency. The project focuses on the issues of standardization and storing of documentation in a central repository based on the principle of updating documentation once and reusing it multiple times for different products such as section manuals, quality reports, etc. It includes a system of metrics for data quality and internal processes, metadata standards, strong documentation control and other important internal governance elements. The project extends the use of systematic process improvement programmes to streamline, standardise, document and build robustness into our core processes of data collection, management, compilation, analysis and dissemination.

This paper will tell the story of the development of the QMF from how it was initiated to its current status where it transitions from planning to implementation. It will highlight the challenges faced by the quality team including the importance of identifying and implementing quick wins at an early stage, while keeping in mind critical success factors through the lifespan of the implementation pilot. The planning phase of this project was completed in November, 2015 with the implementation phase starting in January, 2016.

**Keywords:** Quality Improvement, Documentation, Change Management.

### **1. Introduction - The genesis of the CSO's Quality Management Framework**

In October 2013 a significant change programme called CSO 2020<sup>1</sup> was launched in the CSO Ireland. This programme comprised of a number of individual projects, the overall aim of which focused on delivering continuous improvement in what and how the CSO produces for its customers. One of these projects concerned the development and implementation of a Quality Management Framework (QMF) suite of Quality related improvement projects.

The QMF was scoped and developed as an extensive and long-term programme of activities, to ensure that statistical production meets the highest standards as regards quality and efficiency particularly in the context of increasing and more formal scrutiny of official statistics at international and EU level. The project proposals aimed for an office-wide approach to:

- (1) Designing quality in at the outset by focusing on good planning and survey design
- (2) Controlling for quality during business operations by establishing standard key metrics, and an understanding of what “good quality” is. Standardisation around documentation and data management are central to this process
- (3) Putting in place a continuous improvement programme to review methodology & processes

As one of the main underlying goals of the QMF project was to bring a level of standardisation to the various quality elements being developed, it was agreed that a common link between all of the projects would be critical to a successful project. After much consideration and research and taking account of the CSO’s involvement in the UNECE High Level Group on the Modernisation of Official Statistics, it was agreed to use of the framework of the GSBPM<sup>2</sup> as this common link.

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<sup>1</sup> <http://www.cso.ie/en/media/csoie/releasespublications/documents/corporatepublications/CSO2020.pdf>

<sup>2</sup> Generic Statistical Business Process Model

In early 2014 the QMF programme of projects began work in earnest, focusing on five projects in its first phase:

1. *Process mapping, process & output metrics* - All statistical processes to be process mapped using a GSBPM standard so that there is clarity around what the process has been designed to do and what roles and responsibilities staff have in each stage of the process. Process and Output metrics to be determined and implemented for all processes so that process performance can be assessed and measured.
2. *Documentation & metadata* – Research and develop recommendations and templates for survey manuals using the GSBPM as a framework, codebooks for disseminate data and a metadata standards including a template for the ESS metadata handler.
3. *Data management and storage* – Research and develop comprehensive data management policies incorporating the data protection framework.
4. *Staff time recording* – Research and develop an office-wide system where staff can record their time accurately and effectively and where this system provides outputs that are easily accessible for survey management, training analysis and workforce planning.
5. *Internal peer review system for statistical auditing* – Research and develop an updated Quality Assurance review process of statistical processes and methods using the GSBPM as a reference for the survey process life cycle.

The projects were resourced by staff working on a voluntary basis (staff worked on projects in addition to their normal day to day tasks) and were a combination of actual project implementation (Process Mapping project) and planning, research and development. The timetable for delivery for the projects was set to the end of 2015, at which time the QMF project board made a number of recommendations on the future implementation based on the results of the research projects detailed above.

## 2. Additional drivers

In 2015 there were a number of other external factors related to the principles of statistical Quality which needed to be incorporated and reflected in the ongoing developmental work taking place as part of the QMF project. These factors included:

1. *Peer review* – The 2015 Peer Review Report<sup>3</sup> made a number of recommendations on strengthening Quality Management. These recommendations focused on developing an integrated approach to Quality Management, promotion of standardised documentation on statistical methods, reviewing existing Quality guidelines and providing additional staff training on the quality of statistics.
2. *Regulation (EU) 2015/759 amending Regulation (EC) No 223/2009 on European Statistics*; - Article 5, paragraph 1 details the coordination responsibility of the Head of a National Statistical Institute for the development, production and dissemination of European Statistics, both within the National Statistical Institute and Other National Authorities producing European Statistics. This has wide ranging implications regarding the quality of how statistics are produced across the Irish Statistical System.
3. *National Statistics Board* – The publication of National Statistics Board’s Strategy for Statistics 2015 – 2020<sup>4</sup> made far-reaching recommendations for the development of the Irish Statistical System and the coordinating role of the CSO in building a world-class statistical system in Ireland.

In light of the factors detailed above and the conclusion of a number of CSO 2020 projects, a detailed consultation exercise took place in Autumn 2015 where all CSO staff made an input into the strategic priorities for the Office, following which decisions were made as to which corporate projects should be prioritised for the period 2016 to 2018.

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<sup>3</sup> <http://ec.europa.eu/eurostat/documents/64157/4372828/2015-IE-report/f21339d7-ad8d-44fe-9781-1a454861f242>

<sup>4</sup> [http://www.nsb.ie/media/nsbie/pdfdocs/NSB\\_Strategy\\_2015-2020.pdf](http://www.nsb.ie/media/nsbie/pdfdocs/NSB_Strategy_2015-2020.pdf)

Having regard to the drivers detailed above and taking into account the outcome from the CSO prioritisation exercise, where both staff and management decided that main strategic focus for the Office centred on developing a more standardised system of Quality Management, it was agreed that the implementation of the QMF should be the main priority. Due to the scale and ambitions of the project the previous model of staff working on a voluntary basis was not sustainable. In order to fully support the initiative the Management Board of the CSO established a new division, the Quality Management Support & Assurance Division (QMSA). This division, which was created in January, 2016, has been resourced with 7 staff that has specific responsibility for the implementation of the QMF recommendations arising for the CSO 2020 QMF project.

### 3. Quality Management, Support and Assurance Priorities 2016/17

The initial work plan for the new QMSA Division has been very much developed on the outputs from the CSO Prioritisation Exercise. The main projects for 2016-17 are summarised in the attached table:

**Prioritised QMSA activities, by commencement date from Q1 2016**

2016				2017		
Q1	Q2	Q3	Q4	Q1	Q2	Projects commencing after Q2 2017
QMF: Build documentation and metadata platform						
QMF: Process Mapping & Metrics						
QMF: Pilot of full QMF in Business Area						
Modernisation of Data Collection (Collection initiatives/Census 2021/Registers)						
	QMF: Documentation/Metadata					
	QMF: SAS governance					
	QMF: Data Management					
					Data Coherence	
					Time Reporting	

The main QMF projects for implementation for 2016-17 are summarised below

1. *Process Mapping & Metrics*

This project is continuing the work began in the CSO2020 project where all statistical processes will be mapped using a GSBPM standard so that there is clarity around what the process has been designed to do and what role staff have in each stage of the process. The mapping sessions are facilitated by QMSA team members where that current as-is process is documented. Some of the facilitators have professional certification in Lean Six Sigma training which allows the sessions to be viewed through a “Lean” prism so that any process inefficiencies can be identified and any recommendations around process improvement can be made in real-time.

A central repository will also be developed so that completed maps are visible to all staff and similar processes can be compared and standardised over time.

Once the maps have been agreed with the business areas, process and output metrics are then discussed and identified so that process performance can be assessed and measured. Very often these metrics allow the business owner to assess and decide when they can move from one process to another using a system of Quality gates and stop-go decisions. These metrics are determined using a combination of existing quality indicators (Response Rates, Timeliness, Confidence levels etc.) and referencing the development work ongoing on the production of Quality Indicators for the GSBPM.

2. *Survey Documentation & Metadata*

This project will concentrate on the implementation of the recommendations and templates made from the CSO 2020 Documentation & Metadata project. The implementation will again be based on a GSBPM standard and will follow the template set out in the detailed process maps which show which categories of the GSBPM are being used in each business area. A number of GSBPM based survey manuals have already been produced and business owners can use

these, together with a generic GSBPM manual, to complete a manual to document their processes. Similar templates will also be developed for codebooks for disseminate data and additional metadata standards including a template for the ESS metadata handler.

### 3. *Data Management*

This project also follows on from the research carried out by the CSO2020 project to the actual implementation of recommendations on data management policies and principles. New data management policies have been developed and the challenge is to implement these on a standardized basis across the Office, while also setting up the appropriate governance to support implementation. Additional development work is still required around the setting of appropriate data retention and archiving policies which will aim to resolve the non-standardised approach across each business area. Development work will also be completed in introducing a data storage strategy using the GSBPM where we are examining the possibility of storing data on a 4 Pillar approach for the Collect, Process, Analyse and Disseminate categories.

### 4. *End to end Pilot of QMF projects*

While there is clarity on what the expected outcome is for each of the QMF projects, it is the case that as we move from research to implementation there is still a lot of knowledge to be gained in determining the mechanics of how each of the projects will work on a practical basis and how each project will knit together to form the overall Office Quality Management Framework. This project involves running two pilot projects combining each of the prioritised QMF actions (Process Mapping, Metrics, Documentation, Metadata and Data Management) end to end for two business areas. These pilots will take place in Crime Statistics and Government Financial Statistics. The pilots will allow testing to take place on how the GSBPM can be used to link and integrate each of the individual QMF initiatives. The lessons learned from each of the pilot projects will then be used to inform and assist in the planning and

implementation phases of the future QMF projects which are due to commence in late 2016 and all of 2017.

#### 5. *Development of a Quality Information System*

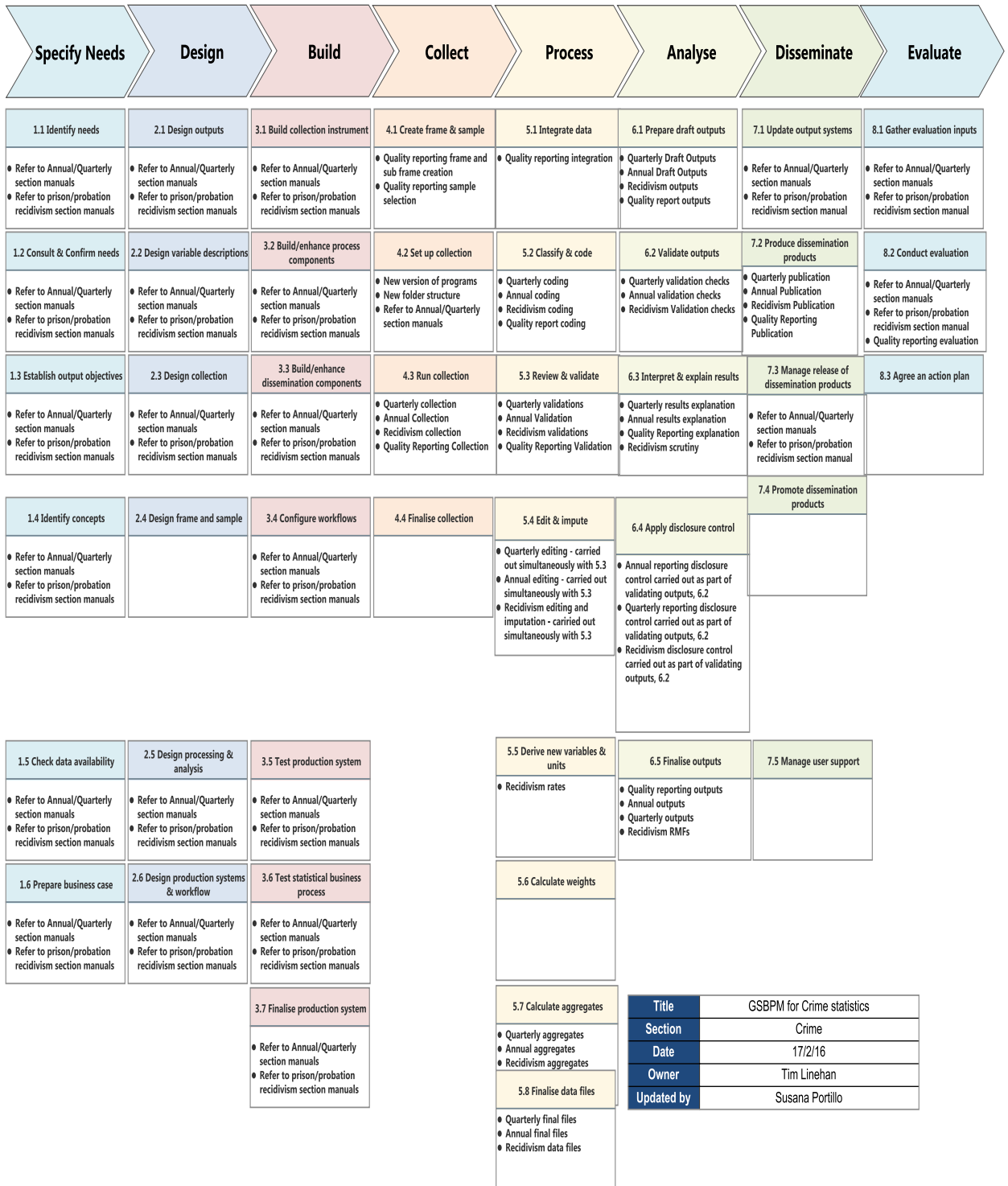
A Quality Information System must be specified, planned, developed and launched where users can lodge, view and update their survey documentation, metadata, process maps, metrics, data holdings and codebooks. This will allow for all relevant elements of the QMF to be stored in one location so that they are visible and accessible to users, survey owners and staff. This will cut down on the level of duplication and burden in maintaining survey documentation and will allow for and facilitate updating documentation once and reusing it multiple times in different outputs (e.g. Survey manuals, metadata, Quality Reports etc.). The GSBPM framework will be central to the design and operation of this system.

As can be seen in the project descriptions above the GSBPM framework is the central, common focus which is being used to link the various projects and initiatives to create the Quality Management Framework for the CSO. An example of how the GSBPM is being used can be seen in the attached chart which summarises the production of Crime Statistics.



SIPOC - Release  
 SIPOC - Quality report

**GSBPM for Crime Statistics**



**4. Managing the change process - Initial Challenges**

As with the introduction of any new work practices and behaviours it is vital than the QMSA team gain the trust and cooperation of both staff and management to support the

new quality initiatives. “Culture eats strategy for breakfast”, a phrase originated by Peter Drucker and made famous by Mark Fields, President at Ford, is an absolute reality when introducing any large scale change in an organisation. Organisational culture can be a strong influence that counteracts and resists attempts to change, no matter how good the strategy is. While the core work is very much concentrated on quality management, the reality is that the QMSA team are also change agents of practice, behaviour and culture. With this in mind it is vital that the QMSA team get buy in and cooperation from the key stakeholders across the Office. These include senior management who need to act as Project champions, middle management whose support is required to implement the change programmes and general staff who need to see the value in moving from their existing systems and behaviours to a more standardized approach to managing quality in their business area.

The challenge for the QMSA team in implementing the QMF is to develop a system that supports change and innovation through the use and promotion of good practices. The approach taken to date is built around staff consultation and strong communications. This is especially the case with the Data Management and Metadata projects, where we will develop systems that take account of users’ requirements while meeting the detailed specifications developed from the QMF projects. One of the main drivers to support this change in practices and behaviours involves the use of strong governance tools to manage the move to a new working environment.

In our communications with staff there is a strong acknowledgment of the necessity to balance the burden of implementing the changes to support Quality Management with the reality of the business areas prioritising the day to day work of statistical production. While the business areas main emphasis is concentrating on producing their statistical outputs on time, the QMSA team continues to build awareness of the need to have a standardized approach to managing, assessing and continually reviewing the Quality of their core processes. This balance between business as usual and striving to continually improve the quality and efficiency of statistical production is a fine balance but one which the QMSA is committed to advance.

## 5. Conclusion

“Tús maith, leath no hoibre” - This is an Irish proverb which means that a good start is half the work. However like most Irish proverbs it also has another meaning which is you're not done yet. While it is obviously early days, the progress made to date by the QMSA team is very encouraging. This is partially due to the QMSA division having a clear roadmap for the next 2 years as a result of the CSO prioritisation exercise and the initial focus on implementing a number of quick wins and practical Quality developments so that the Office can see some immediate benefits. These quick wins are concentrated on the extended use of process maps to document processes, to build clarity and awareness of process performance to staff and to highlight a number of immediate process improvements through the use of Business Process Improvement techniques.

While the work schedule for the team to the end of 2017 is very clearly defined and structured, there is another block of work which must be carried out post 2017 which will build on the first phase of QMF projects. Planning work will begin on a number of follow on projects and actions including:

- *Quality guidelines & training* – this project will focus on the updating of the existing Office Statistical Standards & Guidelines to reflect new practices and developments from the QMF and developing a training programme to promote and support these practices.
- *Develop a new system of Quality Assurance reviews* – this project will focus on updating the existing Statistical Audits process with a more collaborative approach among business support areas to carry out Quality Assurance reviews.
- *Survey Risk Management* – this project will determine and establish a formal ‘risk management’ approach to statistical operations including an Office template for ‘quality assurance plans for statistical operations’.
- *New survey planning group* – this project will examine how best practice Project Management could work for new survey planning.

- *Process reviews / Lean Six Sigma* – This involves the compilation of a multi-annual LSS programme based on a project selection mechanism that prioritises areas for review, including training with the ‘live projects’.

In addition the QMSA team must be mindful of the requirement to design an overall Quality Management system that not only meets the needs of all business areas within the National Statistics Institute but also that is also scalable to allow for it to be rolled out across the entire Irish Statistical System thereby meeting the requirements of entire Irish Statistical System where Other National Authorities are producing both European and national statistics. This is a consideration that has to be central to all the development and implementation work that the QMSA team are involved in.