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Topic (ii): Streamlining statistical production

## **Standardisation – a methodological perspective**

Prepared by Gary Dunnet, Statistics New Zealand, New Zealand

### **I. Introduction**

1. In late 2010, Statistics NZ successfully made a business case to the NZ Government to invest in a 10 year programme of work, Statistics 2020 - Te Kāpehu Whetū (Stats 2020). The purpose of this programme is to create a more efficient and sustainable way of working by addressing a number of key issues facing the organisation, that fall into two broad categories:
  - a. The existing severe risk, through legacy systems, to the ongoing supply and reliability of some of New Zealand's most important economic and social statistics.
  - b. The ongoing supply of statistics was at risk due to a perception of declining value for money.
2. Additional funding of \$138 million over a 10 year period was obtained for operating costs (equivalent to around \$14 million per year), with an additional \$12.7 million for capital expenditure.

### **II. Statistics 2020 - Te Kāpehu Whetū – The Approach**

3. The Stats 2020 business plan establishes that to remain a relevant organisation we need to change. This change is based around four strategic priorities (Leadership, Value, Transformation and Sustainability), and focuses on efficiency, system first thinking and looking outwards; as shown in the following figure.

Figure 1: Strategic Priorities

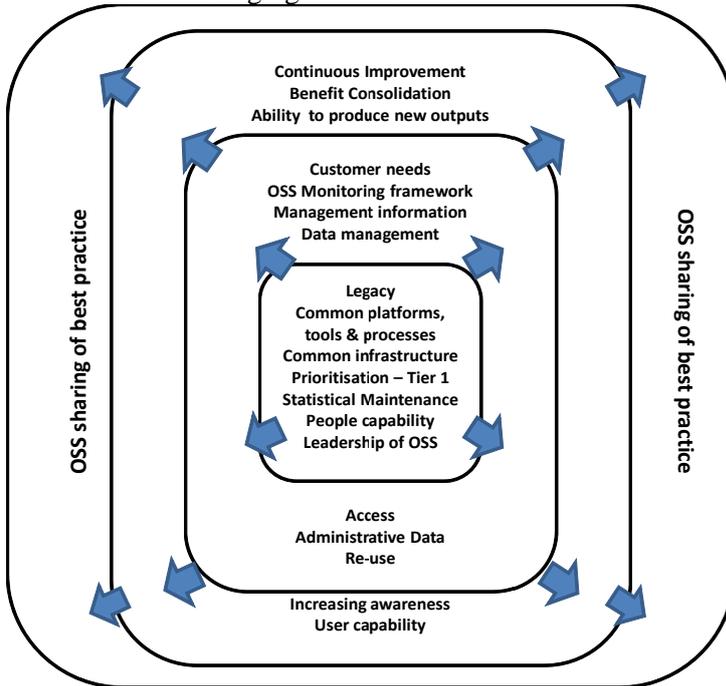


4. It is important to note that ‘Transform Delivery’ (Strategic Priority 3) aspect of the Stats 2020 programme is further broken down to relevance, standardisation, business improvement and administrative data.

5. Stats 2020 has been planned over the 10-year period. Initial emphasis is on addressing the areas of greatest risk and potential efficiency gains. This would then extend out to focus on increasing the value of the earlier developments to enable improved use of statistics, and finally ensure that there is momentum for ongoing improvement and potential to extend best practice across the Official Statistical System (OSS).

6. The following diagram illustrates the initial focus for the programme and how this extends out and increases value.

Figure 2: Stats 2020: changing focus of standardisation



7. The first phase which is currently underway is to address legacy issues by the migration to standard platforms based on functional needs. This reduces the risk of system failure while allowing the adoption of standard methods, processes and tools for common functions. Improved statistical maintenance is also part of this stage to ensure that the relevance and coherence of the organisational portfolio of statistics is maintained. Developing and recruiting the staff needed to effectively progress the change and maintain the production of quality outputs is a priority in this phase.

8. When the standard platforms are integrated to provide an end to end model, Stats 2020 will then extend out to include initiatives which will build on, and increase, the value of these early developments. Standardisation will facilitate the re-use of data, enabling data to be integrated across domains. This, combined with more analysis and interpretation, will enable new insights and enhance knowledge. The development of a data management strategy will make information easier to find access and organise. Access will be further facilitated by exploiting tools that enable users to search, interrogate, and manipulate data for themselves such as visualisation and geospatial tools. Barriers to access through existing policies, practices, or legislation will also be minimised, creating a culture of access, while still preserving respondent's confidentiality. The third phase will focus on ensuring that there is momentum for ongoing improvement and the potential to extend best practice (incl. standardisation) across the OSS. Emphasis will move to increasing the awareness of official statistics more broadly and ensuring that users have the skills and ability to understand and use statistics. A culture of continuous improvement will be embedded in Statistics NZ. There will also be a strong emphasis on ensuring that the potential created during the earlier phases of Stats 2020 is realised and delivers benefits for government, users, and respondents.
9. Underlying the whole programme will be a constant focus on benefit realisation and improving value-for-money (more for less).

### **III. How are we approaching standardisation?**

10. Standardisation is a key concept underpinning the Stats 2020 programme of change - by standardisation we mean standardisation across concepts, processes, methods, infrastructure and systems. There are a number of key elements that we see as important in developing a standardised environment.
11. Before starting to standardise our concepts, processes, methods, infrastructure and systems while maintaining relevance of our outputs, we needed to establish a plan of future developments (Statistical Infrastructure Programme). As we undertake these developments we ensure they reside within an agreed Enterprise Architecture that is based on international best practice and collaboration. To assist the developmental work we have established a strong governance model. So to demonstrate progress we, as good statisticians, are measuring progress. Each of these elements are described below.

#### **A. Statistical Infrastructure Programme**

12. The first phase of the Stats 2020 programme includes the development of a program of statistical maintenance for Statistics NZ's collections – akin to a long-term asset management plan for collections. Prior to the establishment of this programme, maintenance of our statistical assets were largely driven by the need to redevelop the underlying computing systems and often meant that appropriate planning opportunities (incl. R&D, Customer Needs Analysis, alternative methodologies etc.) were missed. The methodology group has been given responsibility for establishing and implementing this programme.
13. Within the statistical infrastructure programme is the Statistical Toolbox project, where this project identifies, acquires and maintains a set of standard tools and methods for the statistical functions required to produce the organisational collections. In addition, there is a project reviewing Statistics NZ's version of the GSBPM and working with UNECE around the review of the GSBPM.

#### **B. Enterprise Architecture**

14. Statistics NZ, like other NSOs, have a heavy reliance on information management & information technology. We have realised that in order to standardise our processes etc. we must also standardise our information management practices and supporting information technology. In order to achieve this Statistics NZ promotes a 'shared services' enterprise architecture model. The services are reusable software which may be developed in-house, sourced from other NSOs or from private companies. Business logic is extracted from applications and formalised as configuration rules which chain together processes and services into meaningful

business workflows. Data and metadata are defined and managed using standards-based formats aligned with the generic statistical information model (GSIM) reference framework. Processes and services are implemented in a standard way to collect performance and quality metrics to allow continuous improvement.

15. Over the years we have had many debates about the potential to develop one (big) IT solution to process all our collections. While technically feasible to develop one system or architecture, we have found that 'de-normalising' the data to such an extent that it is able to cope with all the different data structures NSOs reside over, or implement methodologies required becomes untenable for the end-user.

16. So as a consequence, Stats2020 development is based on a range of standard platforms rather than one (big) IT solution. Currently, five platforms cover all aspects of statistical production: data collection, economic outputs processing, social and household outputs processing, National Accounts processing and data dissemination are being developed. The platforms are at various stages of development. No limit has been set on the number of platforms that will ultimately be developed, but it is expected to be numbered in the tens and far fewer than the hundreds of survey processing systems in the organisation just a few years ago.

17. It is worth noting that recently the Government CIO has announced a cross-government ICT Strategy, which includes a heavy focus on standardisation, and that our Stats 2020 approach will facilitate the eventual transition to this wider cloud based IT approach with IT as a service etc.

### **C. International Collaboration and Partnering**

18. For a number of years, Statistics NZ has held regular bilateral and trilateral meetings with other national statistical offices (NSOs). The organisation has particularly close ties with the Australian Bureau of Statistics because of our geographical closeness. In addition, as we travel to other parts of the world to attend conferences etc. we often visit other NSOs so to develop relationships and identify areas of potential collaboration (subsequently via email etc.).

19. A particular collaboration that we are part of presently is the Statistical Network. Formed in 2010 with an aim to cooperating in the industrialisation of production of official statistics, currently the Statistical Network comprises an informal CSTAT group from NSOs in Australia, Canada, New Zealand, Norway, Sweden, Italy and the UK. Within these NSOs there is agreement about the need to work together in a climate of limited funding, ageing infrastructure, and increased user demand. Two types of collaboration were identified as worth pursuing: longer term efforts that would result in the largest gains but would require adopting enabling information management and architecture management standards, including standards to facilitate the exchange of data, and shorter term efforts that would help build trust between NSO's. As a result of some work on the longer-term challenges the Generalised Statistical Information Model (GSIM) has been developed; and in the short-term work has progressed in confidentiality, and editing and imputation.

20. For a number of years we have acquired tools (eg. x-12-arima) from other agencies, and also contributed to the international environment with our classification management system and Business Frame. It needs to be pointed out that it has been, and still remains the case that acquiring the tools is often the easy bit with most of the effort going into the workflow to integrate other agency tools. As part of Stats 2020 we have established a project to manage our Statistical Corporate Toolbox; with the mandate to re-use, buy and finally (as an absolute last resort) build, all of which is subject to a suitable cost-benefit analysis.

### **D. Governance**

21. In order to govern standardisation, we have decided to modify an existing structure (Standards Governance Board) to become the Standardisation Governance Board (SGB). The fundamental change was to shift the Standards Governance Board from its previous role of management and approval of operational standards to that of strategic guidance and championing of standardisation. This was also coupled with the heightened expectation of our methodological & classification areas to champion standardisation, creating stronger governance of standardisation across the organisation and supporting effective cost quality trade-offs.

22. We also recognise we need a culture where standardisation is the norm, where staff know how and when to standardise, and the appropriate occasion for an exception. Where decisions that affect the quality of individual statistical outputs are made with due consideration of how they will affect the efficiency of production and maintenance of quality across statistical outputs. Governance arrangements for standardisation need to strike the right balance between allowing local initiatives to resolve local problems and the need for standards to be applied consistently across the organisation. A centralised approach will deliver greater benefits for standardisation across business areas. Therefore some centralisation of authority over end to end statistical production is required to champion, oversee and maintain standardisation.

23. It is important to be clear on the relationship between IT infrastructure and standardisation. Statistical standardisation drives the end to end business model that is realised through IT infrastructure and systems. SGB exists to govern the former and IT have a different mechanism to provide advice on the latter.

24. Overseeing compliance with standardisation is a formal step in the approval of business plans and project plans, and a requirement incorporated in the standard templates. This has led to an explicit formal step for new or redeveloped statistical production proposals to be reviewed for alignment with endorsed statistical policies including standards, classifications, guidelines and practices required to support standardisation. It is expected that this step will be overseen by project steering committees with any substantive deviation forwarded for consideration by SGB. Overarching support for standardisation through steering committees will be enabled by methodological & classification representation at these meetings.

## **E. Benchmarking and Measuring Progress of Standardisation**

25. We recognise that we need a comprehensive understanding of our current level of standardisation, the level of standardisation we are aiming to achieve, or how we will achieve it (a Standardisation Roadmap). Statistics NZ is developing a fuller understanding of the degree to which standardisation has been applied and should be applied across the organisation in order to track and measure progress towards improved standardisation. In order to do this we are developing a standardisation matrix to house a comprehensive stock-take of standardised concepts, methods, processes, and infrastructure, and how they operate within Statistics New Zealand. The matrix will allow for easy identification of the following:

- a The current level of standardisation within the current environment.
- b Instances of, and reasoning for deviation from standard concepts, methods, processes, and infrastructure.
- c Instances of planned shift to standard concepts, methods, processes, and infrastructure.
- d Gaps and opportunities for standardisation.

## **IV. Medium to Longer-term Vision**

26. While the Statistical Infrastructure Programme has established a sound process for planning the maintenance and redevelopment of our statistical assets, the next stage will involve working with the subject matter area experts to develop longer-term plans for their statistics, which will involve R&D, the use of administrative & big data – this will then truly lead to a programme that becomes the ‘way we do things around here’, leading to a customer focussed, sustainable organisation.

27. As the Statistical Infrastructure Programme progresses, we expect to be adding more tools to the Statistical Corporate Toolbox and our measurement of the level of standardisation will show where we need to invest in further tools.

28. With the Stats 2020 programme the Statistical Methods group have been given a clear mandate to take a stronger leadership role, both in terms of leading key piece of infrastructure development but also to help navigate the organisation with sound technical leadership. We see the key objectives of the group to include:

- Increase relevance, improve efficiency, build influence

- Agree, articulate, and maximise our contribution to Stats 2020
- Collaborate more effectively within, across, and beyond our group
- Strengthen leadership and champion standardisation
- Create a stronger group identity across the group
- Create an environment where innovation can flourish
- Create a more challenging and satisfying environment for our people

29. To achieve this we will build a culture of practice leadership, increase our engagement, and up skill our influencing and technical capabilities to be more responsive to customers and focus on relevance and efficiency. We will share our expertise and embrace new ways of working and connecting with others across the organisation and the OSS, with a conscious focus on both continuous improvement *and* innovation.

30. To date, we have seen significant gains through the use of standardised concepts, processes, methods, infrastructure and systems, that reside with our platform based enterprise architecture. The medium-term challenge is to design an organisational structure to best exploit these & further gains; for example, traditional stove-pipe support models are inefficient under this scenario, whereby a more collaborate approach between IT, subject matter experts, statistical methodologists and ‘process engineers’ is considered to be very efficient. Once the design work is done, the longer-term challenge is to deliver the organisational structure that matches.

## **V. Conclusion**

31. Statistics 2020 - Te Kāpehu Whetū (Stats 2020) has provided Statistics NZ with a real opportunity to deliver on its strategic priorities of Leadership, Value, Transformation and Sustainability, with standardisation central to the success of the overall programme. The challenge we, as methodologists, face is to find the correct level of standardisation that delivers a practical solution that meets the needs of the organisation and its user community.