

**UNITED NATIONS
ECONOMIC COMMISSION FOR EUROPE**

CONFERENCE OF EUROPEAN STATISTICIANS

Work Session on Statistical Data Editing
(Ljubljana, Slovenia, 9-11 May 2011)

Topic (v): Changing organizational cultures

Influencing Change to Implement a More Effective Editing Strategy

Invited Paper

Prepared by Sarah Green, Office for National Statistics, United Kingdom

I. Introduction

1. In 2007, the UK Office for National Statistics (ONS) introduced the Eden project. The aim was to develop a new approach to editing and validating survey data that aimed to deliver efficiencies and improve process quality whilst maintaining output quality. The project was initially driven by advice from the Australian Bureau of Statistics (ABS), who had already implemented an editing strategy which had delivered the benefits ONS required.
2. The new editing strategy is based on using selective editing techniques. While this provides a more efficient and effective approach it also changes the philosophy behind editing in ONS.
3. In order to ensure successful implementation and, moreover, fully realise the benefits of the project, a key part of the work has been managing the change of culture created by the new editing approach and underlying philosophy. This has meant engaging the Office from top-level management down. Staff familiar with the old editing philosophy needed to be fully convinced of the benefits of changing to a new way of working if they were to support the implementation effectively.
4. Further, ONS has a commitment to users' in ensuring their requirements continue to be met under any new initiative. With this in mind evaluation of the impact of the editing approach on output quality, in relation to users' needs, has been vital to the success of the project.
5. This paper will discuss how: ONS secured the engagement and buy-in of users' and staff to the Eden editing approach; and how work moves forward to ensure the underlying principles are embedded into the ONS organisational culture.

II. Promoting the Idea & Barriers to Success

A. The Concept

6. ONS seeks to work collaboratively with other National Statistics Institutes to share best practices and continually improve processes, methods and delivery. In 2007, a delegation from ONS visited the Australian Bureau of Statistics (ABS) to discuss data collection processes and methods. During the visit the ABS shared their successful editing re-engineering project. They had been facing demands for more timely, coherent and relevant data. In order to meet these demands they developed a project to introduce a new editing strategy.

7. The editing strategy under the project consisted of using selective editing at the micro level but also allowed for staff to form expectations for the data. The key outcomes from the project were expected to be:

- a) a common theoretical framework for editing across ABS;
- b) improved provider relations and reduced provider load;
- c) significant operating efficiencies;
- d) improved statistical leadership and better National Statistical Service;
- e) a culture where people are actively encouraged to improve editing and analysis practices; and
- f) an environment which provides increased opportunities for staff.

8. Indeed, the project had been successful in the ABS, delivering efficiencies and improved quality; with limited resources and within existing systems.

9. ONS was facing similar demands to those of ABS and the success of their editing re-engineering project could help the Office meet these demands effectively. However, there were a number of inevitable barriers that could stand in the way of the success of such a project.

B. Potential Barriers

10. Barriers to implementing this change to editing took a number of forms. Costs and technology could have prevented the new editing approach being implemented but these could be planned for when taking the work forward. The larger hurdle to overcome was the inevitable change that the new approach would mean ONS staff had to undertake. If the methods and approach to editing were to be changed then the processes underpinning these needed to change in order for the full benefits to be realised. This cannot be planned for in the same way as the other more system based barriers.

11. Bridges (1995) explains that transition is a 3-part psychological process for people to move through, stating that: “Before you can begin something new, you have to end what used to be. Before you can become a different kind of person, you must let go of the old identity. Before you can learn a new way of doing things, you have to unlearn the old way. So beginnings depend on endings. The problem is people don’t like endings”.

12. Compounding this barrier was the fact that, as with many organisations, ONS had been going through a time of substantial change where numerous changes were being attempted to be implemented. This meant that staff were not only potentially disillusioned with the concept of change but also that they were flooded with vast quantities of communication on a daily basis. If the work was going to engage staff and help people move from endings to beginnings then communication had to stand out.

13. In addition, the methods that were to be discussed and suggested were not necessarily new, for example, the Monthly Business Survey (MBS) already had selective editing in parts and so there was a likelihood that this project could appear to be trying to ‘re-invent the wheel’. However, the practices that were similar were only seen in pockets. Implementing a similar approach to the ABS would provide a consistency that did not exist in ONS.

14. These barriers meant that the culture in the organisation itself could prevent the beneficial changes from being implemented successfully.

II. Creating a Project That Can Succeed

A. Creating an Appetite

15. Kotter (2002) recommends that the first step to successfully implementing change is to increase the urgency in order to get people talking and telling each other “let’s go, we need to change things”. Kotter also recommends that success is the greatest motivator. While ONS had no successes to relate in terms of this project the Australian’s did.

16. In November 2007, Eden Brinkley and Lynne Bismire from ABS spent two weeks in ONS discussing the opportunity to follow the ABS editing strategy model in ONS. Using the Annual Business Inquiry (ABI) as an example, they carried out workshops and seminars demonstrating how their approach can benefit ONS and how it can be adopted to meet ONS needs.

17. The general philosophy was to involve all staff from the editing and validation area where possible – the project manager down to the lowest level person doing the editing work. Methodologists and the customers of the editing staff, in both analysis and publication roles, were invited to participate in the workshop – again from senior management down. This approach meant that everyone heard the same message so stopping bottlenecks and ensuring the messages filter down. It was also a key method in engaging staff at all levels in the concept of the work and how it could help improve what was currently done in ONS.

18. The workshops worked hard to highlight how the traditional ONS approach, that aimed to detect and correct all errors using edit rules for most variables may not be the most efficient and effective way of working, when compared with the ABS approach. Exercises, examples and discussions explored the fact that the principle of ‘the cleaner the data the better the quality of the final output’ had its consequences. Resource can often be wasted on checking information that may not lead to a change, or if it does, the change is inconsequential to the final output. Furthermore, this can result in over-editing the data which, in itself, can introduce bias to final estimates. An approach such as the significance editing that ABS had used could be more efficient and effective since it would only edit the potential errors that will have the largest impact on the final outputs.

19. These points could have easily been discussed in isolation by the top-level ONS management in correspondence with the ABS. However, the workshops engaged with staff at all levels across the disciplines. This approach was seen to result in, not only creating the desired urgency to change, but also in a wide feeling of ownership for the work since there had been substantial involvement in the concept. ONS moved forward with the work under the banner of the “Eden Project”, aiming to improve the editing and validation of data in ONS.

B. Building a Project Team

20. As already discussed, over and above the change in the editing method the new approach would require staff in business survey areas to develop their skills and have:

- an improved understanding of the data requirements;
- the desire to continuously evaluate and improve the editing process; and
- a good appreciation of balancing user requirements against budget and operational constraints.

21. This meant that it was not a solely methodological piece of work and, to gain the required buy-in, it was vital that the business output areas and the operational delivery professionals who worked within them were fully engaged in development.

22. A step to recognising and addressing this was in creating a project to take the work forward, that was run by a central team within the business output areas. The project team's role was to facilitate the process and implement the strategy consistently. The team was made up of staff with a variety of expertise from across the Office, so balancing both the statistical and business delivery elements of the project. Further, this project team was situated in the Survey and Administrative Sources Directorate, where the impact of the changes would be most felt by the staff. This approach gave a sense of ownership to those staff who worked on data editing.

23. Clearly, Methodology Directorate (MD) and Information Management Directorate (IMD) were identified as the key suppliers for the project that would help overcome the technical barriers that could prevent the success of the project.

24. MD had been key players in the ABS visit to ONS and worked to develop methods based on the Australian experiences that could be implemented in ONS. Their methods adopted a selective editing approach which removed the traditional ONS edit rule approach where values outside of determined

upper and lower limits failed and required manual editing. Introducing selective editing to the micro level meant that the editing process should be more efficient and effective since it will only edit the potential errors that will have an impact on the final outputs. This was a more proactive approach to survey work and managing efficiencies, replacing the reactive one which historically reduced samples or extended validation gates that has received poor customer feedback. Greater detail on the methodology introduced can be found in the paper by Skentelbery, Finselbach & Dobbins (2011).

25. The other key to engage the Office at all levels with the work was the governance that was put in place for the Eden Project team. A Steering Group was established, consisting of the directors of the main customers of the work and the main suppliers. Further a Project Board was established to keep track of the operational changes and deliverables.

26. Influencing these governance boards appropriately has been key to the success of the project. In order to do this effectively it was vital to deliver a clear vision and plan for the work that could engage them.

C. Pitching the Vision to Move Forward Successfully

27. Having created the appetite to change the editing process the next important step was for the project team to develop and communicate a plan of work that would deliver the benefits described by the ABS to ONS.

28. The main aim of the Eden project was to improve the process quality (efficiency, effectiveness, robustness, transparency, flexibility, integration) of editing and validation while maintaining the quality of the final outputs. However, in order to keep engagement and avoid competing priorities that may derail the project, it was vital that the vision and aim tied up to the environment in the Office at the time. The economic climate in the Office at the time meant that there was a drive to meet efficiency targets and as such the project's objective was communicated as aiming to implement a new approach to editing and validation which would help Survey and Administrative Sources Directorate meet its efficiency targets. The main benefits were defined to be:

- achieving fit for purpose quality for all our datasets
- improving efficiency
- shortening timeframes for publication
- gaining better understanding of data
- shifting the balance between micro editing and macro editing
- reducing response burden
- creating greater job satisfaction for staff

29. This was not an approach to de-scope the project from its ultimate aims. Rather, it allowed the elements of the project that fitted with the direction of the Office to demonstrate success. This could then be built upon to deliver the wider benefits in the future.

30. Communicating this vision, together with the potential efficiency savings it could provide for the Directorate, engaged the top-level management sufficiently to get their buy-in to move forward. The added quality benefits that could also be realised were an added bonus at this point.

31. Further, it was essential to start with plans that showed savings being made as soon as possible. The workshop with the Australian's had focussed on the Annual Business Inquiry (ABI). Although, the largest gains in terms of savings would come from the ABI this was a more complicated project. Creating some success on shorter term projects would keep the project aims fresh in people heads and motivate them to continue to embrace the change over a longer period of time.

32. This led to a decision to pilot the approach on the Retail Sales Inquiry (RSI). This was chosen for a number of reasons, it:

- was a monthly survey;
- had a small number of variables;

- had a reasonable sample size;
- had pre-edited data available; and, importantly
- the RSI team were willing to commit and participate in the change.

33. The pilot would enable ONS to adapt the Australian approach and assess the costs versus the benefits. In order to ensure a pilot was sufficiently robust the Monthly Business Survey (MBS) was also introduced as a pilot. Once the Eden approach was understood and consolidated on these two short-term surveys then the method would be applied to the ABI.

34. The pilots on the short-term surveys meant that there were tangible benefits in the near future which gained greater support from the Steering Group and so the top of the Office. Savings and efficiencies could quickly be realised over the months.

35. While the focus on savings was consistent with the mood of the Office at the time and helped achieve the senior management goals of meeting efficiency targets this solution presented problems of its own. Staff, who had previously bought into the idea of a better way of working, as described by the Australians, were suddenly faced with the prospect that their jobs may become part of the savings. If the project was going to succeed it was vital that this problem was resolved.

III. Buy-in & Engagement for Implementation

A. Staff

36. Although staff had bought into the ideas and principles behind the Australian approach, it was not as simple as moving forward with engaged and empowered staff when implementation of the new ONS approach was on the horizon. Staff were being asked to move from the approach they had always known to an unknown future. This resulted staff fearing that:

- efficiencies as a result of the new methods would cut jobs;
- they may not be able to make the transition to the new way of working; and
- the quality of the work they produced would be decreased.

37. The first was a difficult barrier to overcome. The Eden team dealt with this by being transparent about the figures discussed in terms of savings. When reporting to the Steering Group there was a case to show cumulative savings, since investment at a point in time would mean year-on-year savings thereafter. However, it was important that it was clear to staff that if resource efficiencies could be made that this was only going to be a one-off reduction. If particular posts became surplus as there was a resource reduction the idea was to deploy these resources more effectively on other work that would add greater value to the final outputs. This message was inevitably met with cynicism but the quick wins from the pilots enabled the team to demonstrate that this would be the case no matter how good the savings.

38. The second fear was one of transition and, following the Bridges (1995) model, was dealt with by recognising the 3 stages in dealing with a transition. The first part this model is referred to as the 'ending phase'. This is where people need to let go of the old situation and their associated identity with it. Bridges suggests that this stage is critical for people to start the transition process since, even though the change may be a positive one, there is still a need to let go of the old situation. To deal with this the Eden team ensured that staff were involved in discussions for the implementation of the selective editing methodology. Working with the teams to understand their current processes that underpinned micro level editing allowed for areas of good practice to be kept. It was essential to acknowledge that the change was not devaluing the work that had been carried out by the teams for a number of years. Working with the teams it was clear that, while they may not have been quite ready for the changed approach, they felt that the current validation gates needed to be reviewed since they were no longer working as effectively as they could be. It was important for the Eden team to build on this and demonstrate that the new approach was a chance to improve process quality further than just reviewing the current validation gates. This was an opportunity to update our systems and rethink about how we worked in order to ensure that we were always producing the best quality work we could.

39. Engaging with staff and recognising the value that had been added by the teams and the need to work with their expertise to implement the improved methodology meant that people started to move into what Bridges terms the 'neutral zone'. Here staff acknowledged the change from the old way of working but were not fully aware of what the new reality would be like. It was important when people reached this point that they received the necessary information to feel empowered to move onto the last phase of 'discovery' or 'new beginnings'.

40. To move people through this, in addition to looking at areas of good practice in processes that could be carried over the team also looked for frustrations in the work and whether these could be removed with the incoming change. This engaged staff in the change and allowed them to feel empowered to shape it. It was also invaluable in the success of the project, not only in allowing the change to take place but in building on the experiences of those people who worked on the processes everyday.

41. In order to remove the fear of transition further, training was designed for the teams to ensure that they were equipped to deal with the changed methods effectively. They were also included in the testing of the new methods on a dummy database to get used to the new process and highlight any issues that they found with it before going live.

42. The project team recognised that without this input the end product may be methodologically sound but would not be a practical solution that could continue to meet customer requirements. Further though it was important to recognise that not all people would go through these stages of accepting transition together, some would be more receptive and quicker than others. Therefore it has been vital that each message is not just given once but repeated and re-visited, in order to attempt to engage everyone to buy into the change.

43. The fear that the change would adversely impact on the quality of the work had a slightly more tangible answer to give people. MD would design the thresholds within the selective editing methodology to ensure that any bias introduced was less than 1%. In addition to sharing and explaining the results of the methodology development with staff who would be affected it was also important that they could see this in practice.

44. Test systems were set up to run unedited data through selective editing and compare results against what would have happened under the old systems. Although there were issues with dummy database (since identical replication any manual interventions that were made prior to running results was difficult), the ability for all to participate practically in the change was helpful in getting them engaged and understanding that there was no impact on the final output quality. The other aspect of ensuring that staff understood that the output quality was still fit-for-purpose was ensuring that customers & users felt this was the case.

B. Customers & Users

45. While the fears over the change felt by staff could be understood and rationalised by the team in order to achieve buy-in it was more difficult to do the same for the many different users of our statistics. It should be noted that for this work customers and users of the data were not only external to ONS but also internal customers who used the data from the output being affected, such as National Accounts.

46. Informing users of the change would not be enough to eliminate concerns over decreases in output quality. Users needed to be engaged and involved to ensure they were aware of the changes. It was important to include key users from the start in order to understand their data needs and how these may be affected. When MD was designing the specific selective editing method for each survey, key users (both internal and external) were involved. Workshops were run to collaborate with users to decide which level the thresholds would be set to control the bias. This was a compromise between the publication levels users required and those that would allow for meaningful selective editing thresholds to be set. Reaching this decision collaboratively meant that not only were users informed of the changes that would occur but were engaged and involved in the decisions that shaped the change. This gave the buy-in that was required to move forward with implementing the approach effectively.

IV. Moving Forward – Maintaining Momentum & Making Change Stick

A. Promoting Success from Short-term Wins

47. The short-term wins created by RSI and MBS gave a perfect platform to promote the success of the project. It could be shown that the implementation for both caused no major problems and that management information and quality measures throughout implementation showed that the number of errors detected had, as anticipated, decreased with no adverse impact on output quality. This provided a key piece of communication – the approach was producing the benefits and that staff were starting to change and accept the changes. These changes may not have been universal but, they were enough to allow the selective editing to make the improvements it had promised. In fact, for RSI and MBS to date an average error reduction of approximately 20% has been seen.

48. Such successes meant that both the Steering Group and other surveys areas were keen to apply the method more widely. As such the Quarterly Business Survey and Vacancies Survey are currently implementing selective editing. Further, the momentum to introduce selective editing on the ABI, as discussed by the Australian's has gathered pace. More details on the methodology for selective editing on the ABI can be found in the paper by Skentelbery, Finselbach & Dobbins (2011).

49. The gains that had been made at the micro editing stage also gave greater momentum to implementing the same changes at the macro editing level – this would allow the project to realise all the benefits. Given the drive for efficiencies the project had focussed on delivery of the selective editing methodology but there is more to do if the full benefits are to be realised. It will be important in achieving this, that those staff that have successfully accepted and embraced the change are highlighted as champions and used to influence those on the output editing side to change their methods.

B. Anchor the Changes into the Corporate Culture

50. If the Eden Project is deemed to have been successful it needs to be part of the corporate culture. To realise the benefits the approach taken must be commonly adopted by business areas where appropriate. In order to help this, the general principles underpinning the Eden Project editing approach have been pulled out to be disseminated. The Eden Project principles are:

- a) Holistic Approach. Take a holistic approach to processes so everyone is working with final customers requirements in mind.
- b) Sound Methods. Statistical methods should be consistent with scientific principles and internationally recognised best practices, and be fully documented.
- c) Optimise Use of Resources. Use resources where they have the most impact on quality of the final product – in order to meet customer requirements, so providing value for money.
- d) Process Quality. Strive to ensure that processes are efficient, effective, transparent, robust, integrated and flexible.
- e) Contextualised & Informed Data. Structure processes to ensure that staff use respondent, output, customer and real world knowledge to further inform the data received.
- f) Continuous Quality Improvement. Measure, monitor, and analyse key variables in each process and output. When appropriate, feedback the information to make improvements either to that stage, or to earlier stages, in the statistical production process.

51. It is hoped that using this framework can be embedded into the Office culture, meaning that the principles which produce the process quality improvements will be understood and accepted as the way to work.

52. Further it can be seen that the principles can be applied more widely to the United Nations Economic Commission for Europe (UNECE) Generic Statistical Business Process Model and the Office. For example, applying the same principles to response chasing strategies will provide process and statistical improvements in assuring scientifically derived response targets are understood and that the deployment of resource is effective in the outcome of this process.

53. It is also vital that the project links in with the future vision of the Office. Change is the only constant and so even though the Eden Project solution fits today it may need to be altered to fit the future. With the moves towards electronic data collection it is important to ensure that the Eden Project does not work in isolation and provide solutions that may only be relevant for a few years. This is neither a cost effective approach nor an approach which will negate the need for further, extensive change management. If the Eden Project can effectively change the way Office works and this is consistent with the future direction of the Office then we will have a workforce who are flexible enough not only accept but anticipate changes in order to meet our customers needs in the most effective way possible.

54. There is still much work to be done before the changes are fully embedded. The dissemination of the framework and work on macro level editing will be vital in achieving this. What has been achieved to date is the successful implementation of selective editing on two surveys and the acceptance of this by staff to make it work and further readily accept it on other surveys. Leading and influencing the organisational change to support the editing strategy is not a one-off process. It is iterative and requires building on at every stage to achieve our vision.

References

- Kotter, J. (1996) *Leading Change*, Harvard Business School Press
- Kotter, J. & Cohen, D. (2002) *The Heart of Change*, Harvard Business School Press
- Bridges, W. (1995) *Managing Transitions – Making the Most of Change*, Nicholas Brealey
- Hooper, E. & Lewis, L., (2010) The application of selective editing to the ONS Monthly Business Survey, European Conference on Quality in Official Statistics, Helsinki, 4-6 May, 2010
- Skentelbery, R., Finselbach, H. & Dobbins, C. (2011) Improving the efficiency of editing for ONS business surveys, Conference of European Statisticians Work Session on Statistical Data Editing, Ljubljana, 9-11 May, 2011
- United Nations Economic Commission for Europe (2009) *Generic Statistical Business Process Model*