Distr.
GENERAL

CES/AC.71/2005/11
4 March 2005

ENGLISH ONLY

UNITED NATIONS STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE (ECE) CONFERENCE OF EUROPEAN STATISTICIANS

EUROPEAN COMMISSION STATISTICAL OFFICE OF THE EUROPEAN COMMUNITIES (EUROSTAT)

ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD) STATISTICS DIRECTORATE

Joint ECE/Eurostat/OECD Meeting on the Management of Statistical Information Systems (MSIS)
(Bratislava, Slovakia, 18-20 April 2005)

Topic (ii): Development strategies for statistical information systems

MEETING THE DEVELOPMENT CHALLENGES AT ONS – A CASE STUDY

Invited Paper

Submitted by the Office for National Statistics, United Kingdom[1]

I. BACKGROUND

1. The UK's Office for National Statistics (ONS) is currently undertaking a major modernization programme that affects both the business processes of the organization and its underlying technology.

2. As with many information businesses undergoing radical change, one of the most fundamental challenges initially faced at ONS was gaining widespread and formal recognition of the fact that the organization was embarking on a technology-enabled business-transformation programme. Recognition had been given at board level but technology's key role in enabling modernization was less clearly understood among function managers in a number of business areas.

3. This lack of clarity presented the group responsible for ONS's technology – the Information Management Group (IMG) – with several issues in its day-to day-dealings with business areas, particularly relating to the need for a corporately integrated approach to be taken to systems development work. These issues were compounded by ONS's lack of success in fully completing previous change programmes, and the level of employee scepticism and organizational inertia this had engendered.

4. This paper summarizes how IMG is facing up to its current challenges and has resolved earlier ones.

A. Challenges

5. The challenges for IMG in successfully delivering its elements of ONS's modernization agenda include:

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- helping deliver modernization while ensuring "business as usual" (currently produced outputs) is maintained at the highest standards with outputs produced to agreed schedules;
- the volume of work required over the next three years significantly exceeds IMG's in-house capacity;
- lack of investment in new technology has left IMG without the necessary in-house skills or infrastructure to undertake the modernization programme;
- myriad disparate legacy systems which are difficult and costly to support;
- development of new solutions based primarily on Java and Oracle technology, that will reduce and eventually nullify reliance on legacy systems;
- the impact of lack of investment on the standards, procedures, tools and techniques necessary for delivering solutions in the new technologies.

II. STEPS TAKEN TO ADDRESS CHALLENGES

A. Resourcing

Capacity and Forecasting

6. Production of an agreed schedule and accurate forecast of future work was hampered by planning processes where forecasting of development needs against available capacity was possible only at functional manager level. In addition, requests for new work - classed as "business as usual" - were often "silo" based, with managers in the same business area competing for scarce IMG resources, not knowing whether the other's requirement was more urgent or delivered greater benefits.

7. To address this, IMG developed a series of reports identifying all pieces of known work requested by the business, which was subsequently asked to prioritise the work. The overall budget was then discussed and agreement reached as to which piece of work was developed next. These priorities were often in need of review, however, since any delay in delivering the modernization programme would negatively impact on "business-as-usual" work and, consequently, modernization projects needed to be classed higher up the priority list than many people initially believed. The process of reviewing workload and priorities now happens on a monthly basis.

8. The improvement achieved to date must not give rise to complacency, however, since complete development of a coherent capacity and forecasting capability is yet to be achieved.

Flexibility

9. The ability of IMG to position staff operationally to meet demand was negatively impacted by staff's organization in functional silos and the fact that their principal skill sets were, and are, often relevant only to outdated legacy systems.

10. IMG acknowledged that a significant amount of training and mentoring must accompany the introduction of new technologies. The time required to ensure staff are skilled and fully productive in the new development environment will not be short, however, due to a lack of previous investment in training.

11. Even with training, not all staff can make the transition to the new technology platform and some will need to be redeployed outside of IMG. Such redeployment has been made difficult for IMG to control, however, since larger-scale movements in the workforce are simultaneously required by government directives concerned with cutting public-sector jobs and relocating civil servants away from the south-eastern region of the UK.

12. The volume of work to be undertaken – allied to the skills deficit discussed above – meant IMG needed to double its development resource last year to meet demand, and this was achieved through the partnership

described below. The resources provided through the partnership are naturally more costly than in-house staff and gaining understanding from business areas as to why their projects may have become more expensive has required strong communication regarding the indispensability of specific technical skills to delivering certain solutions.

Partnership

13. To meet the development demands of modernization while coping with "business-as-usual" work, IMG entered into a strategic partnership arrangement in spring 2004 with an external IT services company, Xansa. The partnership followed a formal selection exercise, which included visits to the premises of several organizations involved in similar partnerships with different IT services providers.

14. After an initial period of establishing exactly how IMG and Xansa people would work together on a day-to-day basis, the relationship is now yielding benefits and even greater dividends are expected to be reaped in the future.

15. The partnership required a mechanism for managing external staff, and the amount of money paid for them, to be identified and established. Similarly, a mechanism for enabling movement of in-house staff within the organization needed to be set up, ensuring employees were dealt with according to the rules governing civil service employment. Both mechanisms are now operational and any bureaucracy within them minimised.

16. As part of its future strategy, IMG is seeking to up-skill its own staff to full competence in the new technologies. To achieve this, IMG needs to take account of the following points:

- staff IMG wishes to train in new technologies are the same as those managing "business-as-usual" work and their release from duty for training would adversely effect normal production activity;
- unless IMG releases staff for training it will remain overly reliant on its development partner, Xansa;
- not all IMG staff will be able to make the transition from legacy systems to the Java/Oracle environment.

III. STANDARDS, TECHNIQUES, TOOLS

17. At the outset of the modernization programme, some IMG staff were already being trained in Java. The training was carried out over a 52-week period and – to alleviate some of the difficulty associated with releasing employees from "business-as-usual" duty – the Java course was radically reviewed and transformed into 16 weeks of learning, with staff then consolidating their knowledge on real projects rather than exercises.

18. A database had been set up recording the skills of IMG staff, the overwhelming majority of which were in legacy systems rather than those that would form the new environment. Using this database knowledge as a starting point, IMG investigated a career-development framework based on the Industry Structure Model developed by the British Computing Society. This provides a framework of career "families" for information management staff and gives guidance on the skills and experience people need to move through the career levels. The usefulness of this framework is such that it has formed the basis for an approach that is now being adopted throughout ONS, in all business areas.

19. Despite standard pro formas, programme reporting within ONS was often inconsistent in terms of the level of detail reports provided, and governance structures for many programmes required refreshment through an injection of new thinking, particularly with regard to the cessation of project management by committee. IMG has striven hard to re-establish appropriate controls and disbanded a number of project and programme boards in favour of a more rigorous management set-up. The bolstering of governance within IMG, through the appointment early this year of a Director of Information Management Governance, is set to continue improvements in this area.

20. It was recognized that in order to deliver in the timescales required and to an agreed and repeatable standard, a significant amount of work had to be done to establish a development framework.

21. From a starting point of no agreed development lifecycle, standards or tools, and only small "pockets'" of local expertise, IMG has introduced:

- a full lifecycle methodology - called ONSide – which is based on a framework provided by Xansa and amended to include ONS's specific requirements, including IT Infrastructure Library and The Open Group Architecture Framework approaches;
- the concept of Object Oriented Analysis and Design supported by the introduction of the Rational tool-set, the Rational Unified Process (software development) and the Dynamic Systems Development Methodology;
- component-based development;
- standard estimating and testing processes, using TASSC and KARNER estimating tools and the testing elements of the Rational tool-set;
- tailored training for development staff to support introduction of the above.

22. The amount of time required for staff to become familiar with the new techniques has taken longer than originally anticipated and the estimating approach is being updated to reflect this.

23. Although IMG staff were quick to welcome the rigour introduced by the new lifecycle and supporting tools, business areas needed convincing that this innovative approach would yield benefits before they began to embrace the lifecycle and request it be extended to cover some of their activities.

IV. ORGANIZATION

24. The IMG management board structure underwent major changes. Previously it was an extended management team but this was cut down to a more focused group with five members: the chief information officer and directors of strategy, applications, programme management and service delivery. Early in 2004, the programme management director was seconded to the first phase of ONS's Statistical Modernisation Programme to act as technical director. He subsequently returned to the IMG board in December 2004, at the end of his secondment.

25. As mentioned above, a Director of Governance was appointed in January 2005 and he is now the sixth member of the IMG management board.

26. There is an obvious need for applications development and support functions to be closely aligned with those in the service delivery area in order that end-to-end systems and service solutions can be delivered. Under the previous IMG board structure, the relationship between developers and infrastructure technicians was distant but the directors for these areas have worked together to bring down barriers and promote a more integrated way of working. In addition, by incorporating IT Infrastructure Library standards and service delivery activities into the full lifecycle model, ONSide (as discussed above), there is now a common platform on which all IMG functions can build.

27. As part of a change to its organizational structure, the service delivery area within IMG created a new-technologies deployment unit, together with capacity management and configuration management functions, to ensure development of overall solutions is considered and enabled, rather than piecemeal functional builds.

28. The cost of providing infrastructure and operational activities was often not included in business areas' project estimates – which tended to focus solely on development costs - and this put undue pressure on an already stretched service delivery organization. With the development lifecycle approach being adopted, and

estimating standards being put in place, there is now an expectation for a dramatic improvement in planning project resources.

29. External recruitment for senior positions such as Head of Systems Analysis and Head of Applications Support allowed a fresh perspective to be taken on the challenges associated with modernization and also injected new enthusiasm, expertise and thinking into ONS. The recruitment of new staff from outside the civil service necessitated movement of existing staff from senior positions. This required sensitive handling to avoid negatively impacting on delivery and staff morale, and lessons have been learnt resulting in the instigation of new processes to handle any such future moves.

30. With the provision of additional resources from Xansa and the introduction of the development lifecycle, it became apparent IMG could improve its organization, especially through setting up an overall design authority and technical architecture team. These were created using Xansa staff initially and a plan is in place to move in-house staff into the teams over time. A systems analysis and design function was also established together with a Java Technology Unit. The estimating and testing functions were established as virtual teams with staff trained in specialised techniques appropriate to the disciplines.

A. External Influencers

31. The steps noted above are major undertakings in their own right. However, ONS is obliged to make significant changes in line with government initiatives – particularly those aimed at achieving efficiency savings, the relocation of staff, and generation of detailed regional and local statistical information. Because these initiatives can have significant adverse effect on the modernization agenda, IMG has needed to undertake a number of tactical pieces of work while maintaining the drive to deliver against the strategic vision.

V. Summary

32. As with most complex business-transformation programmes, hindsight will always reveal changes that could have been managed differently. Nonetheless, one result of the programme to date is that IMG has moved from an organization with a high degree of scepticism about modernization - and many staff skilled only in legacy and outmoded systems and procedures - to a focused group with common aims supported by standard policies and procedures.

33. Despite the large workload, there is also now a new confidence among IMG staff, underpinned by a tangible drive to deliver projects and services using the right approaches and methodologies. IMG now needs to consolidate this position on the road to modernization and support other business areas in achieving the same measure of progress. This support of other areas is vital since delivery of ONS's overall agenda cannot be achieved until most functions within the organization are aligned in terms of their journey on the road to modernization.
