Distr.
GENERAL

Working Paper No.8
13 May 2009

ENGLISH ONLY

**UNITED NATIONS STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE CONFERENCE OF EUROPEAN STATISTICIANS**

**EUROPEAN COMMISSION STATISTICAL OFFICE OF THE EUROPEAN COMMUNITIES (EUROSTAT)**

**ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (OECD) STATISTICS DIRECTORATE**

**Meeting on the Management of Statistical Information Systems (MSIS 2009)**
(Oslo, Norway, 18-20 May 2009)

Topic (ii): Governance

# EVOLVING GOVERNANCE AND PROCESS TO MEET THE IT DEVELOPMENT CHALLENGES AT ONS

**Invited Paper**

Prepared by Keith Jones, Office for National Statistics, United Kingdom

## I. INTRODUCTION

1. In 2005 ONS presented two papers at the MSIS conference; one covered the need for governance and the other the standard processes being put in place in order to control the major reengineering of the statistical systems in use at ONS.

2. This paper describes how both the governance model and processes have evolved over the last 4 years in response to Executive decisions

## II. GOVERNANCE

3. In 2006 ONS carried out a review of its Infrastructure Services. We faced a number of issues

- Data Centres were substandard with little disaster recovery capability leaving data at risk.
- ONS needed to make improvements to storage and backup of data capability
- There were security risks under the current system.
- There was an ageing estate with some applications up to 20 years old and based on unsupported technology

4. After considering the options, the ONS Executive made a decision to outsource the Infrastructure Delivery function through Public Sector Flex. Public Sector Flex is a cross government framework set up to provide Information and Communication Technology as a shared service across the public sector. The highly scaleable shared service is being delivered by Fujitsu Services and the framework and associated commercial terms can be used by any UK public sector entity to contract with Fujitsu without the need for a costly procurement process.

5. The major advantages for ONS are that we will benefit from a “Core Shared Service” intended to offer the best value for money ICT service available to the public sector, as well as a range of optional services. The Core Shared Service comprises a security accredited service delivering modern office productivity applications from a shared data centre facility, through a fully managed infrastructure. Users will have access to ITIL-compliant support accessible through a shared service desk

6. Having taken this decision, the next step was to look at the internal Information Management Directorate (IMD) Organisation required to ensure ONS achieved value for money from the outsourced function and were able to respond effectively to the continuing development and support requirement pressures faced. Figure 1 shows the IMD organisation which was introduced in April 2008.

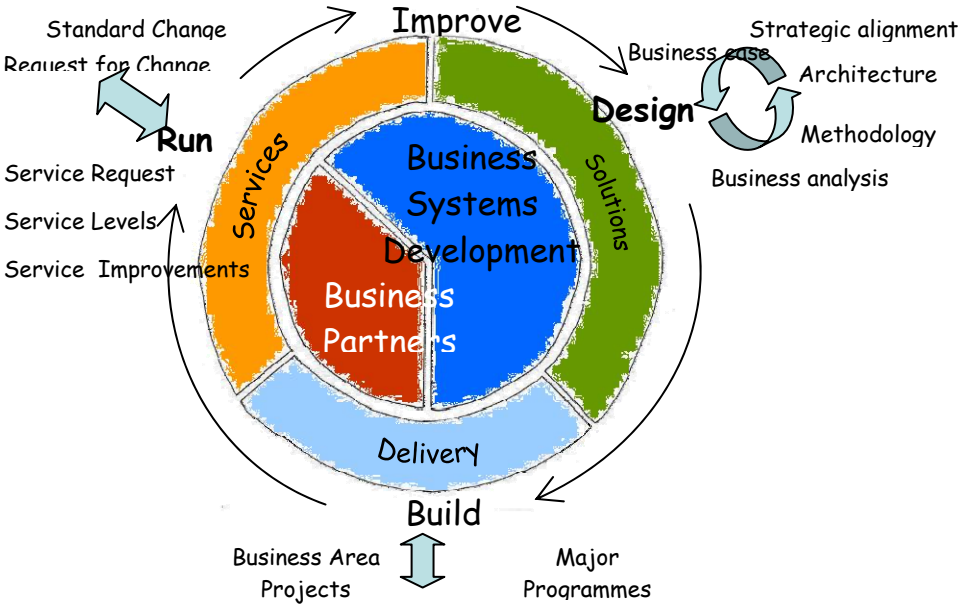


**Figure 1 – IMG Organisation and Lifecycle Management**

7. In addition to the requirement to manage the Fujitsu contract, it was clear from feedback that there were a number of other drivers for a change to the way IM supported its business. ONS were moving towards an organisation that delivered Business Change through series of smaller projects rather than it being channelled through a major modernisation Programmes. IM needed to be able to respond in an agile fashion to these requirements whilst ensuring that solutions aligned with corporate aims and objectives.

8. The new organisation, a best practice industry model, was built on three major areas

- **Service Management** - To make sure the I.T. services required by the business are available when they need them
- **Solutions -** To design business solutions in partnership with our customers
- **Delivery –** To deliver IT business solutions that create and support valued services that our Customers can use

**Service Management**

9. Service Management manages all Service issues on behalf of IM including Requests for Change and Service Requests. Its main responsibilities are:

- To align I.T. provision with the needs of the business now and in the future
- To ensure costs are managed and quality of service is optimised through continuous service improvements
- Supplier Management - Manage internal and external relationships
- IMD Financial Management
- IMD Communications

**Solutions**

10. Solutions are the first point of contact into IMD for all new pieces of work which require IMD involvement. Its main responsibilities are:

- To enter early engagement with customers to explore solution options
- To develop business cases jointly with business areas
- To provide a holistic view of business change
- To align solutions to corporate aims and objectives
- To lead the development of the IM capability
- To provide expertise on Information Assurance

Solutions provide the analysis, architecture and testing capability into all projects given the go ahead to proceed

**Delivery**

11. Delivery manage, develop and support the business solutions through partners and internal delivery teams. Its main responsibilities are

- To work with our project sponsors and their teams to deliver solutions;
- To manage the project pipeline
- To deliver the IM project commitments to time, cost and quality
- To gain approval for new services to be deployed into live
- To provide development resources across new and legacy platforms
- To support existing services in line with agreed customer service support commitments
- To enable the production of existing statistical outputs
- To make approved small scale changes to existing services

12. Technical IM Delivery staff were reorganised around technologies with a view to helping develop common solutions across business domains. For development projects people with the necessary skillsets are brought together to form a Project team and supplemented by our external partners where required. We have also appointed Function Heads for each of the main skill areas – Architecture, Analysis and Testing in addition to the technical specialisms. It is their responsibility to develop the skills and expertise within their area and ensure standards are maintained within their function across each project.

13. At the time of writing this paper the new organisation has been in place for a year. It has helped clarify the roles and responsibilities of the different areas within IMD and feedback has been very positive from both within IM itself and the office as a whole. We are in the process of transforming our infrastructure through Fujitsu and agreeing SLAs and OLAs with the business and Service Providers.

14. The next section of this paper will concentrate on the IM Delivery Framework that we have put in place to ensure a standardised approach to delivering development projects.

## III. DEVELOPMENT PROCESS

15. Over the past 3 years, ONS's IT team have been through a radical transformation that has significantly improved the professionalism of our people. The change has been underpinned through the creation of the ONS Integrated Delivery environment (ONSide) which has been adopted by ONS as the mandatory framework for all IT enabled projects. The introduction of ONSide enabled IT projects to be developed consistently and with greater chance of success. The use of the methodology allows people to work in a more collaborative manner which enables business areas to develop their statistical concepts.

16. ONSide is based on industry best practice: it uses PRINCE2 for Project Management, the Rational Unified Process for the underlying development methodology, DSDM techniques principles for the development approach and ITIL for the standards required to move a system into production. It was originally developed from Method ABC supplied by our external partner, Steria (formerly Xansa). It has since evolved, taking into account the specific requirements that ONS has and we aim to produce six monthly releases of the framework based on feedback received from the Project teams using it, ONS Functional Leads and trends in the industry as a whole.

17. In addition to the tools and techniques, ONSide offers a series of templates which enable people new to the framework to gain an understanding of what information is required at each stage. There are also examples of best practice available on the ONS Intranet to aid the completion of the templates and we have a series of Quality Gates which each project must pass through before going on to the next stage. These gates align with the (Office for Government Computing) OGC guidelines and CIO council recommended quality gateways. We include a RACI matrix which dictates, for each stage in the process, who is Responsible for the production of a product, who is Accountable, who should be Consulted and who should be Informed.

18. The size, complexity and importance of each project govern how rigorously the Gates and reviews should be applied. The main principles behind ONSide are to facilitate and guide projects through the development process, not to add unnecessary bureaucracy. It can be tailored, refined and adapted to different project requirements. As with any framework, the application of common sense is still required.

19. The following paragraphs explain, at a high level, what is involved at each stage of the process, including the major products produced. Figure 2 shows the major processes and how they align to PRINCE2. It breaks down into

- Situation Definition
- Solution Shaping
- High Level Solution Analysis and Design (HLSAD)
- Detailed Solution Analysis and Design (DSAD)
- Solution Delivery
- Consolidation
- Transformation Preparation

# What is ONSide?

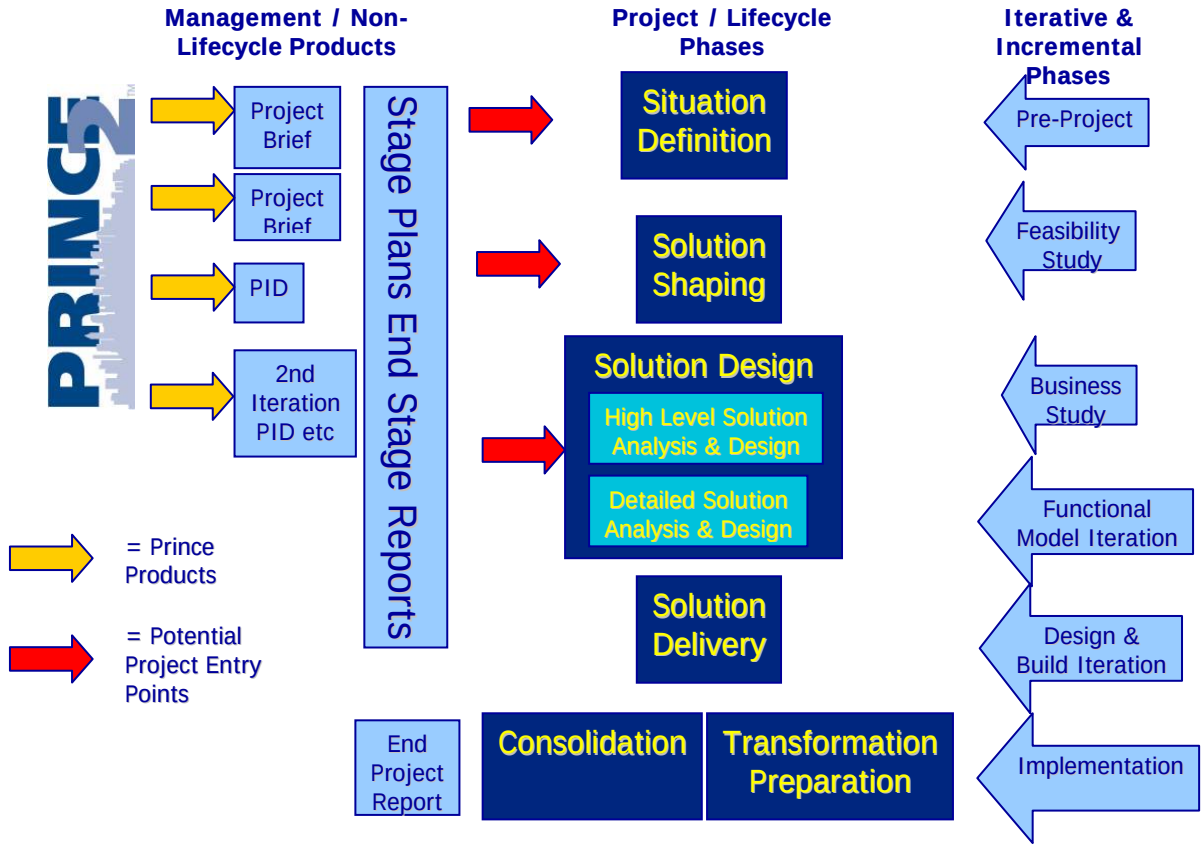


**Figure 2 – Major ONSide Stages**

20. **Situation Definition** - A pre-project phase where a business idea is developed into something which can move into either Solution shaping or project start-up activities. The main purpose is to understand how the business operates currently and what problems, issues and opportunities exist. It is also important to find out what benefits and business performance improvements the business expects to gain from a project and why these are important or necessary.

21. The main output is an Initial Findings and Recommendation Report (IFRR) providing a high level view of the background to the work and a recommendation as to whether the work should proceed.

22. **Solution Shaping** - During this phase we define a preferred approach for taking the business forward, defining the core components that will form the solution that will deliver the major business requirements.

23. The main output is a Feasibility Report which presents a number of options on technologies, timescales and costs and could include technical prototypes to prove certain concepts and confirm requirements. It should include a recommendation for the Steering Board to accept as the way forward.

24. **HLSAD** – During this phase we produce the definition of the solution at a high level, including the application and all it's supporting components

25. There are a number of key outputs from this phase:

- the Business Area Definition (BAD) articulates the business problem that is to be addressed. It defines the business processes that are to be supported and describes the recommended solution. It contains the Use Case Model to help clearly define the scope of what will be implemented;
- the Prioritised Requirement List (PRL) outlines and prioritises the requirements (functional and non-functional) of the system to be built;
- the Systems Architecture Document (SAD) defines the high level architecture, infrastructure and technical design of the solution;
- the Testing Strategy describes the approach to testing and
- the Development Plan provides a more detailed plan for activities within Build and Test. It provides the development strategy i.e. how the thing is to be developed.

26. **DSAD** – The purpose of this phase is to define the solution in enough detail to enable the construction of it. Typically within ONS projects, we run iterations of DSAD and Solution Delivery concentrating on a number of Use Cases within each iteration. It is important that the most difficult (architecturally significant) are tackled first as these have the greatest impact on the Design of the final solution.

27. The major outputs from this stage are:

- the System Requirement Specification (SRS) which details the Use Cases and supplementary specifications;
- the Software Architecture Document (SoAD) which provides a comprehensive architectural overview of the system from different perspectives: Use Case; Logical; Implementation; Process; Deployment. It specifies the sub systems, mechanisms, performance characteristics and sizings, etc and should be updated for each iteration for architecturally significant changes;
- the Technical Architecture Definition (TAD) which details the hardware and networks that will be used to meet the system requirements (only required for divergence from Corporate TAD);
- the Data Architecture Document DAD which contains the Logical Data Model, Entity Descriptions, Business CRUD.

28. During Use Case Analysis we create Sequence Diagrams for each Use Case flow and create a diagram showing how different classes will collaborate to produce the required solution. This is followed by Use Case Design where we apply standard patterns and mechanisms to produce common technical solutions to the same problems. We now have all our solutions broken down to individual sub systems which go forward to Solution Delivery

29. **Solution Delivery** – This phase delivers the solution in terms of tested software. During this phase we carry out the detailed database design, sub-system design and class design and deliver the code necessary. It is also important that we deliver code regularly into System Test to ensure code is of a suitable quality and is meeting the requirements specified in the Use Cases. Any defect fixing is also carried out in line with project guidelines until a solution is ready to enter Customer Acceptance Testing.

30. During this phase the operational documentation for supporting the Operational system is produced, in line with Service Management guidelines and any process change required is recorded.

31. **Consolidation** – This phase covers the warranty of the development where the system is handed over into support. It ensures that all customer and system documentation is completed and is responsible for carrying out the Post Implementation Review.

32. **Transformation Preparation** – this phase concentrates on the business transformation required to use the new solution. It tackles issues such as Business Continuity planning, preparation and execution of acceptance testing and execution of any HR changes required. Operational Acceptance is also carried out to ensure system will run in Operational environment and performs as expected. This can start in parallel to the

previous phases and the duration of it depends on the complexity of the solution and the degree of Business Change.

33. One of the key decisions we have made to help ensure success of projects is the adoption of the Rational toolset to capture the requirements, develop and document the analysis and design models and to version control the models and code. This gives a single repository for this information and helps ensure traceability of requirements through to code.

## IV. FUTURE DEVELOPMENT CHALLENGES

34. Over the last three years we have concentrated on development within projects, primarily due to the funding models that exist for projects and to build confidence within ONS that IMD has the ability to deliver solutions in our modernised environment. Whilst we have been mindful of reuse it has never been high on the agenda for any individual project where delivery of functionality has been paramount.

35. However, the recently agreed IT Strategy has increased the emphasis on reuse and there is now genuine desire to implement common solutions across the organisation. We have started to consider the merits of a Service Oriented Architecture (SOA) within ONS and recent development work has been designed with this in mind. There are major decisions to be made around organisation of IM staff within Projects, version control and deployment of services and the appetite of ONS to invest in this approach. If we can successfully implement SOA it should lead to quicker development times and decreased support costs – this is the challenge we face over the coming 12 months.