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Modernization of statistical production and services and managing for efficiency**Business driven improvements in Statistics Norway****Note by Statistics Norway***Summary*

The paper describes the new strategy for the development of statistical methodology in Statistics Norway. The strategy emphasizes standardization work and the need for close cooperation between statisticians, methodological experts and information technology specialists. The paper will highlight the measures taken to enhance strategic governance, enterprise architecture and agile capabilities in statistical production.

The paper is presented for discussion to the first session of the Conference of European Statisticians' seminar "Modernisation of statistical production and services and managing for efficiency".

I. Introduction

1. Like many other national statistical institutes, Statistics Norway has to meet new user demands, competition and needs for improved efficiency. At the same time new data and technology can provide new possibilities. The strategies and plans of Statistics Norway address meeting these challenges. They aim to streamline the production of statistics, emphasizing the core values for official statistics as they are reflected in the United Nations Fundamental Principles of Official Statistics and the European Statistics Code of Practice.

2. Comprehensive programs to improve the business agility through quality management, Lean methodology (see Section III) and streamlining statistical production are in progress. Effective tools should be available to support all parts of work processes. A challenge is that the speed of development and change is not yet satisfactory. Even though the major development programs are regarded as top priority, they also compete for scarce resources and skills, and do not always create sufficient synergies across programs. There is a need to coordinate the major developments better, and to be able to prioritize projects across the different programs.

3. An improved holistic view of the business needs, and a better understanding of the business processes and interactions between business functions are necessary to improve the speed of change. This has led to the building of capacity in enterprise architecture and a need for more speedy development of production systems.

4. New business competencies and governance strategies and processes must be developed accordingly. This could lead to changes in the way we organize and run the business of official statistics. Having centralized the information technology (IT) function, the responsibility for strategic business developments is still to some extent decentralized. No specific business function has been given the cross sectional responsibility to coordinate and lead the strategic business process developments.

5. These issues are the main focus of this paper. The paper will highlight the measures taken to enhance strategic governance, enterprise architecture and agile capabilities. It begins with a brief overview of the status of improvement work with regard to quality, Lean programme and streamlining statistical production.

II. Work on quality

6. Statistics Norway has focused on the importance of quality management during the last decades. A systematic approach based on common principles of quality management has been adopted. The work has been supported by international initiatives, in particular the European Statistics Code of Practice (CoP) for the production and dissemination of statistics. A second round of peer reviews assessing compliance with CoP has just been completed.

7. Tools and procedures applied for quality assurance in Statistics Norway include quality reports and indicators, user surveys, self-assessments and quality reviews¹. Where relevant, tools can be linked to different stages in the business process model. Together with a quality framework, a business process model and an

¹ Quality Assessment and Improvement Methods in Statistics – What works Sæbø, H.V., Statistics and Economy Journal, Vol. 94 (4) 2014, Prague 2014

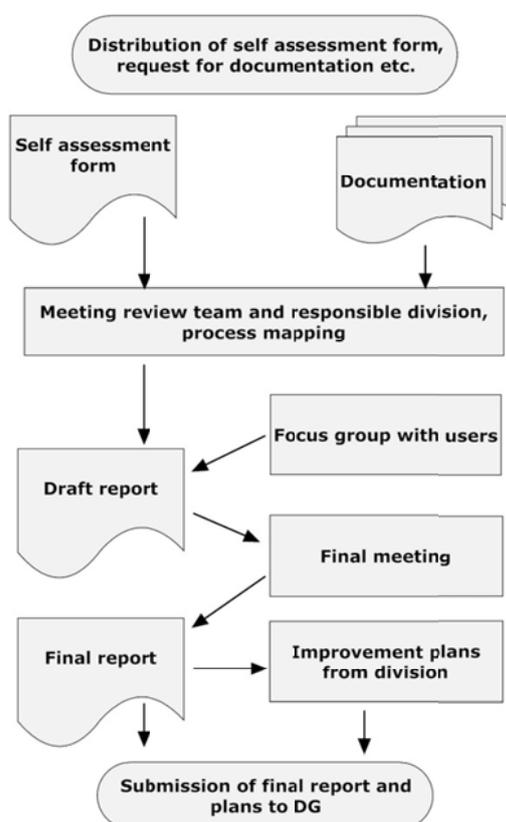
organisation for coordinating work on quality constitute a necessary infrastructure for systematic work on quality in a statistical institution.

A. Quality reviews

8. Quality management is important not only to assure quality when changing business processes, but also to identify potential areas for change. Quality reviews are an efficient tool to achieve this.

9. Statistics Norway started work with systematic internal quality reviews or audits of selected statistics in 2011² (see also footnote 1). CoP has guided the reviews. The reviewing process is illustrated in figure 1. It is performed very much like the European peer reviews, with the exception that specific statistics or subject matter areas are reviewed and not the institution as such.

Figure 1.
Setup of quality reviews in Statistics Norway



10. In the period 2011 – 2013, 21 different statistics or areas of statistics have been reviewed; at least one in each division producing statistics. Together these statistics represent almost 30 percent of the working hours used for statistics production in Statistics Norway. In 2014, no reviews were implemented, partly due to an escalation of the Lean project in the organisation. One of the recommendations from the European peer review is to implement regular quality reviews, and these

² Quality reviews in Statistics Norway – Setup and experiences Sæbø, H.V and Byfuglien, J., Paper for the Nordic Statistical Meeting, Bergen, August 2013.

have been taken up again in 2015. They are adapted to the Lean programme to prevent duplication and to supplement this.

11. The internal quality reviews have been based on three elements: Self-assessments on compliance with the principles and indicators in the CoP and other documentation, process mapping using Lean techniques and focus groups to evaluate user needs. A team of 4 persons has conducted the review. The team members have a background in quality management, statistics production, dissemination and survey methodology. One of the members is a methodologist. The team has been assisted by experts in conducting focus groups.

12. The reviews were “audit –like” even if they were carried out by an internal team. This implies focus on evidence. Findings are presented objectively in a report that is the sole responsibility of the team. The reports follow a standard structure, also including a consideration of strengths and weaknesses. There is no ranking, but each report ends up with a set recommendations based on the findings. The division responsible for the statistics reviewed can correct factual errors, but will make a separate action list on the basis of the recommendations. If they disagree with some of the findings/recommendations they can express this here. Reports and action plans have been sent to the Director General and are followed up annually. They are published on the Statistics Norway Intranet. The different steps in the reviews and experiences are described in more detail in the Quality Reviews in Statistics Norway (see footnote 2).

13. The reviews have resulted in more than 170 proposals for improvements. Many of the improvement points concern several statistics, and there is a reason to believe that they are valid generally in Statistics Norway.

14. The most important improvement points concern the need for:

- More focus on user needs and the relevance of statistics, in particular users want to see the statistics in a broader context;
- Better dissemination with more visualisation (graphs, maps, etc.);
- Improved documentation, in particular a need to update “About the statistics” which provides metadata for the users on www.ssb.no;
- Improved production processes – use of standardised tools;
- Increased understanding for and use of statistical methods, in particular in editing which requires relatively large resources;
- Increased knowledge of formalities (such as the basis for data collection).

15. Most of the improvement actions based on recommendations from the quality reviews performed before 2014 have now been completed. However, what remain are actions that depend on other parts of the organization than the subject matter divisions. For instance recommendations from the reviews emphasize the use of standardized tools, but the lack of speed in developing the common functionality that is needed can lead to costly changes in legacy systems. Furthermore, the resources available to continue the general quality work are scarce. These are examples of actions that require coordination, linked to the other major developments and issues addressed in this paper. For instance the Lean project would benefit from a close cooperation with other quality work, and especially with other staff experts on production processes, statistical methods. etc.

III. Lean programme

16. The purpose of the Lean programme is to create a culture for continuous improvement in Statistics Norway, with the main focus on improved timeliness and reduced use of resources. The Lean initiative follows the lines of earlier work on Total Quality Management (TQM) and other past efforts to enhance quality. A comprehensive programme to implement Lean methodology in Statistics Norway started in late 2011.

17. The core of the Lean methodology, as introduced in Statistics Norway, is to systematically assess work processes and operational control. Even though the goals are set by management, all staff is invited to participate in improving work processes. This gives them the possibility to develop their own roles and positions and influence the progress.

18. Tools for better operational management and control are central. All departments are involved, and mapping of processes to identify bottlenecks is carried out. To facilitate this, a number of internal Lean guides have been trained. Some 50 projects have been carried out by now, in “waves” that comprise a few departments at the same time. The work is first concentrated on describing and proposing improvement of processes within each department. The objective is to train the staff in Lean thinking and techniques in order to establish a Lean culture. The next phase will go deeper into processes that involve several departments, where we will look at the possibilities to improve core and cross-cutting processes. These are more costly and challenging, but normally have a greater potential for improvement and benefits.

19. Again, this addresses the need to coordinate different initiatives. Within the first phase of Lean, recommendations from the quality reviews have been used as criteria to choose areas or work processes for Lean improvement projects.

20. When we start improving cross-cutting processes in the next phase of Lean, all major development and standardization projects such as those mentioned in the next chapter have to be taken into account, also the work on establishing enterprise architecture. The business process model will be a useful tool in this context.

21. The Lean programme has an internal project manager, but external consultants are currently quite heavily involved in progressing Lean in the first phase. This is useful to ensure a sound general methodology that works in different organisations, and sufficient force in the implementation of the program. However, compliance with frameworks and practices that are specific for national statistical institutions have to be safeguarded by our own experts.

IV. Streamlining statistical production

22. Early work on the development of standard IT solutions in Statistics Norway started around the year 2000. However, more coordinated developments to support the complete model of working processes in the production of statistics within Statistics Norway started in 2008. From the beginning the work was steered and coordinated within the “FOSS” project³. One of the first tasks of that project was to develop a complete business process model. Statistics Norway chose a stepwise

³ Standardisation for improvements in Statistics Norway (Gløersen, Rune and Sæbø, H.V.), Paper for the seminar on Modernization of Statistics Production, Stockholm 2009

method of carrying out development work, where we built partly upon solutions that already existed, or on developments already commenced which could be developed further into general and shared solutions. Nevertheless, most of the developments were upon completely new solutions.

23. Statistics Norway has chosen a strategy to develop four integrated production platforms, which to a large extent cover the main phases Collect, Process, Analyse and Disseminate. We have developed a central data reception system that is well integrated with the Norwegian Government portal for web questionnaires, through which Statistics Norway will collect all web forms from businesses. Furthermore, we have established a central system for data editing and estimation, which currently is used by approximately half of the sample surveys carried out. The system is used both for business and household surveys, and has just recently been enhanced to cover also register based statistics. We have also established a first version of a data warehouse solution for analysing and producing tables for register based statistics on labour market and earnings. This solution will be developed further towards an enterprise warehouse for Statistics Norway. Finally, the dissemination platform has been completely modernized, and we are currently improving the Statistical databank, which serves as the master data store for all data published on the web site. In addition, a complete and integrated metadata system is needed. This is only partly implemented.

24. The need to ensure coherence within the new production system and to provide for the possibility to break down developments into smaller modules, has led to increased efforts to define the target systems architecture. Developments should be carried out according to this target architecture, to ensure the integration needed within and between the main production platforms. The need for further work in this area is described later in this document.

25. To underpin the need to speed up change, Statistics Norway is currently about half-way through the developments needed to provide for a complete new platform for the production of statistics. Concerning data collection, some collection instruments, for instance Blaise, are not well integrated into the central data reception system. Basically this is a problem regarding the need to share metadata for further processing. The most complete platform is within dissemination. However, the functional and technical backlog in this area is also rather comprehensive. Within data editing, there is a need to implement more sophisticated editing functionality, especially on statistical edits, macro editing and automated corrections. The master metadata systems will be upgraded, and a comprehensive work to ensure complete metadata integration throughout the production process and life cycle of data is still just beginning.

26. Shared solutions are dependent upon standardisation at different levels. Development of shared solutions requires a common terminology for concepts, which again is a precondition for standardisation and reuse of variables, classifications, data descriptions and the use of technical standards for representation of data. Statistics Norway has therefore invested a lot of work in the preconditions for developing and storing shared metadata. A master plan for improving information management at corporate level is under way.

27. The process of changing the production systems from supporting the production of individual statistical products, to support the functionality needed by common production processes, has led to a fundamental change in the skills needed for planning and development. To ensure coherence at the enterprise level and to provide for the focus needed to support the strategic direction set out by top management, the capabilities within strategic governance will be strengthened.

V. Strategic governance

28. The comprehensive development programs mentioned in this paper, emphasize the need to improve the capability within strategic leadership and governance. Measures to establish the discipline and competence of design by architecture, and the need to run project development in a controlled environment have been taken. To some extent, the focus on the general architecture, the standardisation of processes and tools, and the need for a strict regime of project and portfolio management could be regarded as unnecessary bureaucracy and an impediment to the agility needed for rapid change. Our view is that these are part of the solution and not part of the problem.

29. Streamlining statistics production by standardising the tools and methods according to general work processes can hardly succeed, unless

- The user needs are thoroughly analysed;
- The development work is driven towards a target architecture;
- Sufficient architecture capabilities and governance are in place;
- Projects are strategically governed in a controlled environment of portfolio management;
- A framework for programme governance is in place to ensure coherence across projects and to optimize the total benefits.

30. Developments should be guided towards well-defined and communicated target architecture. This will help to decompose comprehensive development projects into smaller parts, providing for stepwise changes, which significantly reduce the risk of failure. The target architecture is the basis for ensuring the necessary coherence and integration. Continuous deployment of new features improves the business ability to adapt to change, and forces the implementation of change management to become a business wide competence.

31. As the business changes over time, so will the architecture. Defining and building up the enterprise architecture is in itself a stepwise process. It takes time, and all parts are not necessary from the beginning. However, the complexity of the business and the IT solutions that support the business process is rapidly increasing. This implies that the enterprise architecture must be continuously maintained and governed. In addition, strategic developments in IT require architecture governance. Being an instrument to achieve strategic goals, the anchoring of the architecture work will normally move towards the top management.

32. Statistics Norway has also implemented best practice processes for project and portfolio management. Prince 2 is used as a framework for project management, which is centrally supported on the government level. The project proposals are systematically assessed according to user needs and sound business cases. We have also established a framework for Management of Portfolios, to ensure common prioritization and balancing of the project portfolio according to the available capacity. A project office has been created, and a role of Director of Project Portfolio has been defined at the top management level. However, we still need to implement sound roles and procedures on the level of clustering projects into programs. This should enable better coordination of projects. Currently the projects tend to become too big or too complex, occasionally leaving responsibilities on the project owners and projects managers that are beyond their capabilities.

33. One of the experiences has been that the project portfolio management processes can end up being too rigorous for some of the typical projects. The time

spent to achieve a decision which must be taken outside the project can be unacceptably long, hampering the progress of work. The governance issued must be fit for purpose, and cover change management in general. This will be subject to evaluation, where we will also look for ways to better categorise development work into more than one defined process as we have created for the big, strategic projects.

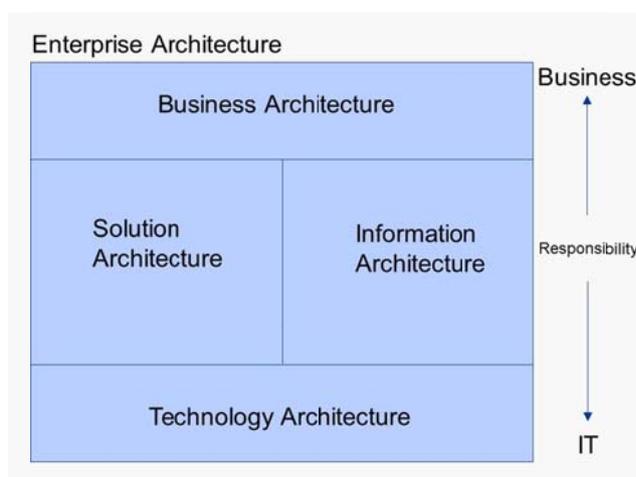
VI. Enterprise architecture

34. Statistics Norway has acquired valuable input to the modernization work from international collaboration. The development of international models like the Generic Statistical Business Process Model (GSBPM)⁴ and the Generic Statistical Information Model (GSIM)⁵ has given the necessary direction for national development work. This has led to increased efforts in building capacity in development and maintenance of a framework for enterprise architecture at Statistics Norway.

35. The first architecture discipline was established within the IT function. The need for common systems to support the life cycle of statistics production required the development of more complex systems, which made the systems more business critical. The systems and solution architects entered the scene. In addition, the requirements on IT to provide for best practice management of IT maintenance and operation were taken on board. However, we still lack sufficient capacity to meet the current needs.

36. The ability to provide for a coherent and holistic planning of the IT infrastructure and applications requires a corresponding action on the business side. The role and responsibility of an enterprise architect should be established, to take care of the complete architecture framework needed. The work on enterprise architecture is to some extent also encouraged by the international discussion on the industrialization of official statistics. The idea of harmonising the different parts of the business of official statistics according to common high level models to provide for collaborative development and sharing of tools and solutions has been brought further into the development of a common framework for enterprise architecture.

Figure 2
Simplified Enterprise Architecture Framework



⁴ Generic Statistical Business Process Model: www1.unece.org/stat/platform/display/GSBPM

⁵ Generic Statistical Information Model: www1.unece.org/stat/platform/display/gsim

37. International business models are used as reference models, and create the core of the business side of the enterprise architecture. GSBPM is the core business process model within the business architecture, just recently supplemented by the generic activity model for statistical organizations (GAMSO)⁶. As mentioned before, Statistics Norway has developed a specific version of GSBPM, which is defined in three levels of detail, and is accessible on the intranet.

38. GSIM defines the high level of the Information Architecture, and the Common Statistical Production Architecture (CSPA)⁷ outlines the principles and model framework within the Solution architecture. Recently, the need to agree upon a common Logical Information Model for statistical data as part of the Information Architecture has been launched. Such a model would become a reference for a logical model of statistical data in Statistics Norway. This approach to large and complex development projects has already been used in Statistics Norway, in a joint venture project to establish a scientific environment for on-line research on Norwegian register data, where the developments are guided by a comprehensive model for all the information objects handled by the system⁸.

39. Well-defined Business Architecture and Information Architecture are tools to provide for a high-level specification for the design of the IT systems, whether they will be procured and implemented or built in-house. To some extent we therefore regard the Enterprise architecture as constituting a demand and supply side. In order to provide for better coordination and guidance of the strategic developments, Statistics Norway decided to move part of the architecture work out of the IT Department. As long as architecture work is inside IT, it is also regarded to be an IT “thing”. There is a need to get the rest of the business and the top management on board the architecture driven development. While the Business Architecture is business owned and the Technology Architecture is owned and managed by IT, the business meets IT in common discussions, interests and competence within the Solution and the Information Architecture. The field of Information Architecture is a prominent part of the business competence in a statistical agency. CSPA is to some extent a technical response to the business process model, which also needs a consistent information model to be able to orchestrate IT components into the complete support of business processes.

40. The shared and coordinated responsibility between the business and IT concerning enterprise architecture is an initiative to provide for improved business driven developments. It allows the business to concentrate on defining what they need and where to go, leaving the responsibility on “how” to get there to IT.

VII. Initiatives to improve business agility

41. The Lean project has so far focused on continuous improvement within the current operational work. At the same time, the efforts to become more professional in the governance and management of big, strategic projects in statistics have led to a comprehensive framework for project portfolio management. However, the middle

⁶ Generic Activity Model for Statistical Organisations
www1.unece.org/stat/platform/display/GAMSO

⁷ Common Statistical Production Architecture: www1.unece.org/stat/platform/display/CSPA

⁸ RAIRD Information Model (RIM), Linnerud, J., Risnes, Ø. and Gregory, A. For information about the RAIRD project: www.raird.no

level of change management has not caught sufficient attention. This covers small and medium size development work, changes needed to encompass new regulations, medium complexity technical upgrades etc. The volume and impact of this work is perhaps highly underestimated. The way we are able to break down big development work into smaller pieces, could also bridge the gap between the way we run the strategic developments and the continuous improvements and mid-size projects. The need for change has become normal; hence it should not always be treated as something special.

42. The need to improve the agile capability within the business is evident, but not specific to Statistics Norway or even to the statistics industry. However, it is neither possible nor desirable to change the business in all aspects and in all areas at the same time. While we professionally gather a lot of ideas and experience from the international work within official statistics, in general there are also lessons to be learned from other industries. Streamlining production processes and speeding up development processes is not specific to official statistics. Gartner, Inc. (www.gartner.com) is a leading information technology research and advisory company. Statistics Norway uses their analyses and advice for guidance and inspiration in some of the challenging areas within IT and business development.

43. Gartner describes the need to think about what they call Bimodal IT⁹. Bimodality represents a way to bridge the valuable elements and lessons learned from the industrialization of IT, with the capabilities needed to cope with the upcoming challenges of digitalization. This basically means how to combine risk management and internal focus on efficiency gains, with the need to become more innovative and externally focused, i.e. on new data and user needs.

44. Bimodal change processes within the business represent two complementary and valuable strands on how to develop the business, and how to run IT. On the one hand, we need to ensure that crucial parts and services within the office are solid, reliable and predictable. On the other hand, we need to change fast, to innovate and to experiment. In the figure below, some differences in characteristics are pinpointed.

Figure 3.
Characteristics of Bimodal IT

Mode 1		Mode 2
Reliability	Goal	Agility
Price for performance	Value	Revenue, brand, customer experience
Waterfall, V-Model, high-ceremony IID	Approach	Agile, kanban, low ceremony IID
Plan-driven, approval-based	Governance	Empirical, continuous, process-based
Enterprise suppliers, long-term deals	Sourcing	Small, new vendors, short-term deals
Good at conventional process, projects	Talent	Good at new and uncertain projects
IT-centric, removed from customer	Culture	Business-centric, close to customer
Long (months)	Cycle Times	Short (days, weeks)

Source: Gartner

⁹ Bimodal IT: How to Be Digitally Agile Without Making a Mess, Article from Gartner EXP Report 2014 No. 5 (www.gartner.com)

45. Agile development methods have been adopted in a number of development projects in Statistics Norway. The Lean projects contribute further to becoming more agile. Especially on the input and output side, we have recognized the need to speed up deliveries. This has led to a less rigorous need for managing change in large, comprehensive projects. Instead, large and small improvements are continuously prioritized by the business and carried out by IT using for instance Kanban methods. In other areas, the consequence of change must be elaborated and controlled, providing for the use of more traditional plan-develop-run methodology.

46. The key objective is to establish change management throughout the organization, in a way that is fit for purpose in the types of change required. We try to develop a process oriented statistical production system to enable the statisticians to implement new statistical products in the production chain, without the need for IT expertise. When we succeed in this, new products and normal changes required from new regulation and new user needs, should be implemented much faster than today. However, we must also provide for speedy changes in the production system itself, and especially in areas where we expect changes to happen rather frequently.

47. One way to achieve this is to categorize the applications according to what Gartner defines as a pace layered model¹⁰. This is an approach that segments the application portfolio based on business value and rate of change. Gartner has defined three application categories or “layers” to distinguish these application types and to help organizations and IT to develop more appropriate strategies for their development and support.

48. These categories are described as:

(a) Systems of record — established packaged applications or legacy homegrown systems that support core transaction processing and manage the organization's critical master data. In statistical offices we should define standardized systems that support the business processes in this category, together with master data and metadata systems like statistical populations systems and master metadata systems. This category comprises applications that are subject to major change every 10 years or so;

(b) Systems of differentiation — consist of applications that enable unique company processes. Within the office we should regard this as being systems which are specific to certain products or areas of the business that cannot be accommodated only by systems of record. This comprises applications that typically are subject to change within a timeframe of 2-5 years;

(c) Systems of innovation — new applications that are built on an ad hoc basis, often without full knowledge of needed requirements, and systems that are exposed to users or technologies where rapid change is required. In the office we typically could categorize (parts of) the systems on the input or output side in this area, where we typically address new business opportunities and needs. New demands and opportunities require change within 0-3 years.

49. Pace layering and bimodal IT are complementary. Bimodality orchestrates two distinct modes of capabilities, one for deploying services and one for solutions, which both relate and should be part of the corporate governance model for the entire IT function, including the business functions themselves. The balance

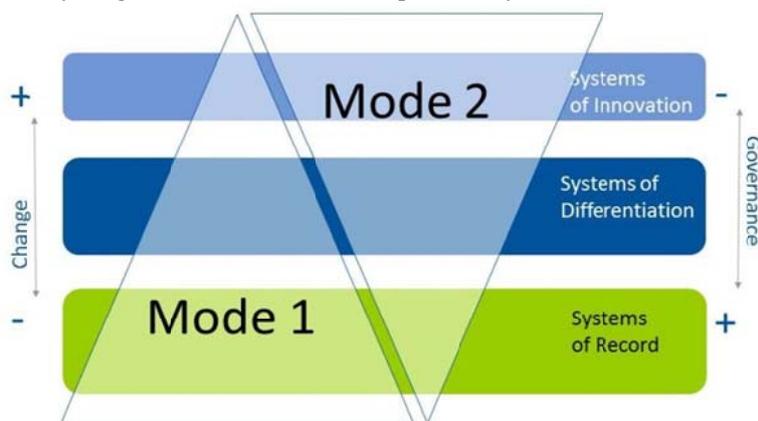
¹⁰ Accelerating Innovation by Adopting a Pace-Layered Application Strategy, Jim Shepherd, Gartner Research (www.gartner.com)

between mode 1 and mode 2 will likely evolve over time. Mode 2 will start modestly, with a project focus; but as it expands, mode 1 will shrink. Once a mode 2 capability has been created, mode 1 involvement in systems of innovation will most likely diminish.

50. Statistics Norway has just started to define processes which are more aligned with the agility defined by the nature of applications and areas of the production.

Figure 4.

Pace Layering and Bimodal IT are complementary.



Source: Gartner

51. Referring back to some viewpoints mentioned in the chapter on strategic governance, these strategic predictions from Gartner underpin the need to establish change as the normal mode within certain areas of the office. This means that we need to bring the Lean development and project portfolio development approach together. Again, this should be done under a coordinated, corporate governance and control.

52. If we look at international collaboration efforts like those encouraged by the High Level Group for the Modernisation of Statistical Production and Services (HLG), different preconditions and requirements could be assessed within the different categories. Just to mention a few:

- Cooperation in mode 1 (core systems) requires plan-driven and approval based governance, for instance also predictable maintenance and management of shared services and solutions. No such mechanisms exist today;
- Cooperation in mode 2 (systems of innovation) requires speed of development and time-to-market in deployment. Speed of (shared) development is a bottleneck within international collaboration today.

53. These challenges must be addressed, but they are not insuperable. It would be particularly worthwhile to join efforts in innovation. The effort to experiment with big data at the international level is a very good example of such an effort. Joint funding of common experiments will pay back, basically because no legacy systems or other typical obstacles that hamper cooperation exist.

VIII. Conclusions

54. Statistics Norway is striving to speed up the processes of change and development. Streamlining statistical production, quality reviews and Lean methodology alone are not enough – all such initiatives have to be followed up and guided in the same direction. To some extent the quality reviews themselves are a tool for such strategic guidance. The ability of the business to accommodate change is an important measure of quality.

55. The work processes for change and development of processes and products must be fit for purpose. The application portfolio should be assessed by its business value and the rate of change. Quality assessments and Lean methodology should ensure that we accommodate change management into the strategic governance at all levels. To speed up the pace of change is not only about sufficient funding and the right skills, but doing the right things the right way.

56. The top management at Statistics Norway has taken measures to ensure that the different initiatives are coordinated and move the institution in the same direction, in accordance with the strategy and capacities. Quality and improvement work is a continuous effort. User needs change over time, so does the environment for producing statistics including the technological possibilities. Consistency of purpose and management support on all levels is important. Change management will be further enhanced and implemented throughout the organisation, supported by strengthened capabilities to guide developments on all levels according to the overall business goals and strategies.

57. Concerning international collaboration, the vision of the High Level Group for the Modernization of Statistical Production and Services also requires the statistical offices to become more agile. International collaboration is useful in more or less all areas of our core business, which means that international collaboration also needs governance models that are fit for the purpose. We need to share efforts to create new value for the users, by participating in joint venture projects and partnering outside statistics. Harmonized business process models and enterprise architectures are a precondition for increased collaboration and shared developments. This calls for active engagement widely taken up by top management in statistical organisations.
