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The case of the ICT Change Management at the
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Information technology modernization and standardization:

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Information technology modernization and standardization: The case of the ICT Change Management at the National Institute of Statistics

Silvia Losco

Sommario

Il rapido e continuo sviluppo delle tecnologie dell'informazione sta cambiando radicalmente il modo di produrre le statistiche. L'Information Technology sta acquisendo un ruolo sempre più importante all'interno delle organizzazioni che producono statistica, e la governance, l'organizzazione, le architetture e i costi stanno diventando fattori sempre più critici per l'IT. Questo lavoro presenta il progetto ICT Change Management che disegna un nuovo modello di funzione informatica e un nuovo modo di condurre le attività IT a supporto della produzione della statistica nazionale. Il modello punta a migliorare la governance dell'IT e a realizzare una organizzazione più efficiente e flessibile basata su processi, ruoli e responsabilità ben definiti. L'approccio segue i metodi e le best practices internazionali di riferimento, Prince2 e ITIL, e introduce i concetti di IT Portfolio Management e di IT Service Management. Il lavoro include inoltre i risultati dell'IT Benchmark condotto per raccogliere informazioni riguardanti l'organizzazione dell'IT e il livello di maturità dei processi IT negli istituti di statistica dei paesi membri dello Statistical Network.

Parole chiave: Change management, Information Technology, Governance, IT portfolio management, IT service management, ITIL, Prince2.

Abstract

The rapid and continuous development of Information Technology is dramatically changing the way statistics are produced; for this reason, Information Technology is acquiring an increasingly important role within organisations and themes referring to governance, organisation, architecture and costs are becoming critical. This paper presents the ICT Change Management project aimed at designing a new IT process model and at defining a new way to conduct IT activities at Istat. This model designs a more efficient IT organisation by clearly defined processes, roles and responsibilities to improve IT governance and execution. The present approach is based on IT portfolio management and IT service management according to the international framework and best practices, Prince2 and ITIL. The paper also includes an IT Benchmark Survey on the members of the Statistical Network, so as to collect information regarding IT organisation and the maturity level of IT processes focused on IT governance processes and functions.

Keywords: Change management, Information Technology, Governance, IT portfolio management, IT service management, ITIL, Prince2.

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1. Introduction

The official statistical system develops detailed knowledge of National's environmental, economic and social dimension at various levels of geographical detail, and helps all members of the society, citizens, administrators, in decision-making processes. Information Technology is evolving quickly and this changes the way to produce public statistics. Users want more statistics, delivered in more sophisticated ways and consequently Istat, like other producers of official statistics or service organisations, need to do more but also with attention to the use of resources that are less than before. The ICT function is acquiring an increasingly important role within our organisations. Regular updates and modernizing of the IT systems used in the statistical production process are necessary to enable it to perform its tasks and help fulfil the mission of Istat in a cost effective and industrialized way. The technical approach based on the update of the IT solutions isn't the only way to introduce a modernization. In this paper, a different level of IT rationalization and standardization will be discussed. It analyzes the organisational strategy and structural aspects to facilitate the introduction and adoption of innovation. The work aims at illustrating the ICT Change Management Project that Istat has been carrying out since 2012 to redefine Institute's ICT function changing the approach toward innovation and governance. It incorporates the way of working and also the ICT organisational culture from the viewpoint of achieving competitive advantages through ICT. The new approach introduces an *IT service management* and an *IT portfolio management* culture. The goal is to maintain a continuous focus on flexible technical and organisational solutions, in order to turn complexity into opportunity redefining ICT function and environment processes with the target of enhancing productivity, quality of ICT services, control, ICT governance in general allowing quicker innovations.

The project is a concrete instance in the Stat2015 programme designed to allow an industrialization, modernization and standardization of statistical process.

2. Organisational culture and IT

An understanding of culture is important to analyze information technologies at various levels, including organisational and technical, and can influence the successful implementation of information technology. Culture also plays an important role in managerial process that may directly or indirectly influence IT. In the last fifteen years, Istat was involved in a deep process of downsizing and technical modernization. Under a technical point of view, the transformation modernizes Istat's networks, applications and databases. So, as from year 2000, a gradual transition from a highly centralized structure to a more distributed organisation has started and, in addition to an overall restructuring of the organisation, the goal was to decentralize IT environments and also survey instrument development. The surveys and related IT activities passed mainly in the Statistical Department, located also in different site with a decentralized organisation. The IT organisation of the Institute was undergone a profound change. This changing embarked on a technical modernization but these efforts had a distinct effect on the overall IT culture of the organisation. Culture is a critical variable in explaining how IT groups interact each other and the conflicts that may emerge in the context of IT development, IT adoption and use, IT management.

Istat has a complex Information System both in terms of technology and organisation and the IT culture is relevant as a crucial element in the performance of statistical production.

As for the technological architecture the current configuration include servers located at the headquarters and at branch offices, workstations and printers located both at the headquarters and branch offices, telco network using TCP/IP services to connect the peripherals to the center. The software assets include ad hoc applications developed both with traditional techniques and with object oriented or prototype techniques. Also IT human resources are divided between the central IT division and in the statistical department performing application development to support statistical

mission. The aim of this distributed organisation is to ensure that efficient IT tools support real business needs but it doesn't optimize resources and investments. It introduces redundancies in IT systems covering the same business processes and doesn't encourage the development of reusable corporate solutions. In this organisation the culture is a critical variable in explaining how different groups interact and accept IT and innovation. For example, different groups vary on dimensions such as concern for efficiency, risk-taking, individual conformity as opposed to voluntary participation, emphasis on processes, routine, work standardization, and correctly following procedure. So on a technical point of view but also under a cultural vision, this distributed architecture and organisation is becoming more and more difficult to manage and raised problems of efficiency, quality of IT services and governance.

On the other hand ICT is becoming a strategic resource for any organisation and in particular for a national institute of statistics where it is the key to the collection, analysis, production and distribution of information. Dissonance between stakeholder groups and their respective value sets may affect an IT implementation and innovation, introducing potential areas of conflict and increasing risks of failure.

3. Statistical evolution and IT audit analysis

The statistical evolution, designed in Istat with the Stat2015 programme, allows the transition to a business environment based on a Service-Oriented Architecture supported by plug-and-play technology, with the industrialization and standardization of production processes. In this programme the adoption of an Enterprise Architecture (EA) and of a Business Architecture (BA) is required to reformulate statistical processes and to implement generalized services, methods and standards. BA and EA are actively seen as a key driver for standardization, in particular to supports a centrally managed standardization process and to ensure that all new projects are based on standards.

In this framework, the ICT function plays a key role for the achievement of the objectives of the statistical modernization programme. The traditional chain, based on the vertical integration of different specific ICT tasks and ICT architecture has become out-of-date. The importance of Information Technology for senior management has been investigated from the viewpoint of achieving competitive advantages through ICT. However early management approach and tools suffered from several shortcomings. First of all the misconception that technology, in and of itself, can provide advantage, but also the fact that models, such as strategic grid and the strategic opportunity matrix, are too general to guide statistical organisation to specific opportunities. The risk is the failure to capture the change and dynamism of the competitive climate and the neglect of the nature of technological change.

Statistical environment has been addressed by core-competence thinking and work on sustaining ICT based advantage. But core-competencies are a collective learning of the organisation, especially to coordinate different production and IT skills. In the statistical organisation, ICT deployment is both a multi-stakeholder and a multi-disciplinary issue. So ICT has to maintain a continuous focus on flexible technical and organisational solutions. In the other site, it is essential that a statistical organisation recognize that IT services are crucial, strategic and therefore organisations must invest appropriate levels of resource into the support, delivery and management of critical IT services and critical IT systems that underpin them.

The effective management of information, information systems and communications is of critical importance to the success and survival of statistical enterprises. Under this approach it is more and more important ICT efficiency, quality of services and ICT governance based on statistical priorities and IT risks. The involvement of multiple stakeholders will imply the need for different models under multiple disciplines.

According with this new IT strategic vision and approach, in 2010 Istat started a process of Information Technology Audit. This process, conducted by expert on IT and statistical organisation of the Organisation for Economic Co-operation and Development (OECD) and Bank of Italy, aimed first of all to identify and to analyze the organisation's technological infrastructure and soft-

ware assets. Then the process assessed the quality, efficiency and effectiveness of the processes for the provision of ICT products and services and made proposals to overcome problems and to ensure the development of the ICT function in line with the strategy of the Institute.

Audit identifies some important points of attention that arise from the pervasiveness of dependence on information and services and infrastructure that deliver the information but also the increasing scale and cost of technology and related IT services in Istat. But the most important evidence was the potential for technologies to enable the transformation of statistical process and practices. As a result of emerging evidences and resulted recommendations by the Audit, it was evident that IT management practices that traditionally have applied are no longer sufficient to support the increasing demand of statistical environment.

The IT Audit analysis led to the definition of several proposals to overcome the observed difficulties and to ensure the enhancement of the ICT function in line with the overall Institute strategy. The recommendations resulting from the Information Audit highlighted the need for a deep rearrangement of Istat's processes, with focus on those regarding the ICT central area.

This considerations led Istat to project a changing program of ICT organisation whit a governance scope, the ICT change management project.

4. Toward IT governance

The ICT Change Management at Istat, started in 2012 and ongoing, is an ambitious and challenging project with the main objective of designing and defining a new way to conduct IT function at Istat with a new approach services oriented according with the statistical model based on the Generic Statistical Business Process Model (GSBPM); the approach is oriented to achieve adequate governance, management and control of IT environment following the business vision, goals and strategies. Alignment with the statistical vision is crucial for the project that is the ICT line of the Stat2015 programme, but also ensuring that flexibility is preserved is a major challenge. To achieve this outcomes, the project designs a more efficient IT organisational structure by clearly defined processes, roles and responsibilities, to improve the governance and execution of IT function within the Institute. It also enables the transition from the actual status of IT function in Istat (*As Is*) to the planned future status (*To Be*) through a structured approach.

The approach used analyses the current ICT organisation to design the new IT model focusing on a process based organisation. In this way the tendency to work stand alone, as a silos, can be overcome allowing the ICT organisation to work more integrated (*by process*).

The ICT Change Management focused some crucial key components and benefits resulting. First of all a better alignment of business and IT, basing the approach on statistical focus. In this domain an understandable view of what IT does for business management and statistical processes is prominent. The alignment between IT and statistical strategy is an important consideration to create an ICT organisation within a governance scope. A change in statistical strategy may require a redesign of IT architecture with a reorganisation of the institute. Similarly, independent ICT developments may lift obstructions and thus open up opportunities. The alignment practices require a process to create a new fit from a consideration of the full scope of the business, from strategy to operations, from product and service functions to technology trends. The project focuses on the alignment relation with a balanced mutual influence between Statistical and IT domain but it considers also the alignment needs of other levels of managerial activity for management and operational control.

Another important domain for the project is shared understanding amongst all statistical and technician stakeholders and creating a common language using best practices and international framework as common reference. It helps us to understand existing structure and to transfer knowledge from a domain to another and support alignment practices.

With regard to IT governance, points of attention are to design a clear ownership and responsibilities, based on process orientation and the fulfillment of the risk management requirements for IT control environment. The project is central for defining, managing and monitoring the structure

of relationships and process to direct, manage and control the IT environment to achieve statistical goals by adding value balancing risk. Furthermore, the project designs an IT process model that links IT process, IT resources and information to enterprise statistical strategy and objectives.

The model is a description of the structure, the relations and the interactions of the business and IT unit and processes. It is representation of a system for development, design, realization and management of IT in Istat.

It introduces and adopts good practices of planning and organizing, acquiring and implementing, delivering and supporting, and monitoring and evaluating IT performance. This approach guides also the operational changes in the IT statistical production chain, highlighting the required standard activities, performances and expected outputs that should be put in place under this method. The project is articulated with emphasis in three main phases. The first one is the *design* of IT process and governance model. This phase of the project was focused on analyzing and designing the new IT process model compliant with IT best practices and recommendations. As a result, a set of core processes, from IT strategy definition to operation, has been completely re-engineered and defined into operating procedures with evidence of process flowchart, activities, rules and responsibilities, KPI's and metrics. At same time, several activities like a benchmark involving ICT organisations of Statistical Institutes were conducted to support the business process reengineering.

The second phase is the *implementation* of IT process and governance model. During this phase, the Institute is committed to implement the new IT process model following a gradual approach. A short list of selected processes were identified to be fully implemented. This required an effort in terms of organisational alignment, set up of new IT tools and solutions to better fit the process needs (like trouble ticketing platform, configuration management data base, project management PMO solution, etc.), training and communication program addressed to all stakeholders involved. The third phase is the *verification* of the implementation . This post implementation phase is focused on guarantee the continuous improvement cycle by performing checks on process changes, collecting feedbacks and apply the correct fixings. During this phase the Institute will review the ICT Process Model and, if necessary, introduce the required improvements.

5. Principles and frameworks to control innovation

5.1 IT service management

The project has adopted the ITIL (IT Infrastructure Library) framework as approach to implement a framework of best practice and guidance for IT service management to support the statistical environment.

The primary objective of ICT service management is to ensure that the IT services are aligned to the business and statistical needs and actively support them. It is imperative that the IT services underpin the business and statistical processes, but it is also increasingly important that IT acts as an agent for change to facilitate business transformation and statistical evolution. This approach is essential to achieve business benefits from IT at an agreed and controlled cost also in the statistical organisation. Without good IT service management, it is common for IT projects to fail or go well over budget at project state, for ongoing costs of ownership to spiral out of control, and for statistical process to fail to achieve the expected benefits. ITIL's value proposition, adopted by Istat, centres on IT service provider understanding customer's business objectives and priorities and the role that IT services play in enabling these objectives to be met.

The ITIL Framework is divided into 4 main Sections:

1. *Service Strategy*: The focus of this area regards the achievement of strategic goals or objectives and the use of strategic assets. Strategy processes show how to transform service management into a strategic asset.
2. *Service Design*: The focus of this area is the process of designing IT services, along with the governing IT practices, processes and policies, to realize the strategy and facili-

tate the introduction of services into the live environment ensuring quality service delivery, customer satisfaction and cost-effective service provision.

3. *Service Transition*: The focus of this area is the process of developing capabilities for transitioning new and changed services into operations, ensuring the requirements of Service Strategy, encoded in Service Design, are effectively realized in Service Operations while controlling the risks of failure and disruption.
4. *Service Operation*: In this area the process focused on achieving effectiveness and efficiency in the delivery and support of services to ensure value for the customer and the statistical environment. Strategic objectives are ultimately realized through Service Operations.

There is another important service in ITIL, it regards the *continual service improvement* in which, learning from experience, it is possible to adopt an approach of continual improvement for IT services. ITIL adopts a lifecycle approach to IT services, focusing on practices for service strategy, service design, service transition, service operation and continual service improvement.

The GSBPM provide a basis for statistical organisations to agree on standard terminology to aid their discussions on developing statistical metadata systems and processes. Therefore, the GSBPM should be seen as a flexible tool to describe and define the set of business processes needed to produce official statistics. The ICT Change Management project linked the IT Service Management to the Business Model taking into account the guidelines of GSBPM. The use of this model can also be envisaged in other separate, but in this contest it is a key to harmonizing statistical computing infrastructures, facilitating the sharing of software components, in the Statistical Data and Metadata eXchange (SDMX). From a statistical perspective, the adoption of ITIL to design the IT process model ensure many benefits. First of all the IT services are aligned better with the statistical priorities and objectives; then they are more reliable and work better for statistical users so this IT organisations helps the increased statistical productivity, efficiency and effectiveness. Finally a more effective change management, enabling the statistical environment to keep pace with change.

5.2 IT portfolio management

The purpose of IT portfolio management is to help an organisation to manage, plan and control IT projects. All the IT portfolio management framework are designed to help an organisation to maximize the potential for projects to succeed by helping address each element of the project at the right time and to the right level of detail for the size and complexity of the project.

The ICT Change Management project considers the IT portfolio management an important approach to support the statistical environment to introduce innovation or to manage the changes. To be successful an IT project in a statistical organisation must deliver the outcomes and benefits required by the statistical production and the stakeholders, meeting time targets and staying within the resources assigned to the project.

IT projects are different from the normal operation of the organisation in that they have specific objectives to deliver new benefits to the statistical production. They may introduce significant changes to the way the operate in the statistical environment for all the organisation and also for stakeholders. IT project are connected to innovation and have a specific, temporary management organisation and governance arrangements set up for the duration of the project. They are susceptible to risks not usually encountered in the day to day operational work.

In order to manage effectively IT projects, the ICT Change Management project has adopted the PRINCE2 (PRojects IN Controlled Environments) framework as approach to implement a framework of best practice and guidance for IT portfolio and project management to support the statistical environment. PRINCE2 is a process-driven project management method, it is based on some principles that can be well apply to statistical production. It is based on continued business justification that can guarantee the strategic alignment of the IT project with the statistical mission. It is also focused on products, so each work package is defined by one or more deliverable products, with tolerances to time and quality quantified in advance. This specific attention for product and for an efficient control of resources make this framework very useful to manage IT projects for statisti-

cal production that involves different skills and a complexity of solutions. The statistical organisation needs a structured approach to the program and project management that provides a structured method for managing projects, people and activities in a project. Using a project management approach helps to design and supervise the project in a more flexible way, and what to do if the project has to be adjusted if it doesn't develop as planned. In the method each process is specified with its key inputs and outputs and with specific goals and activities to be carried out, which gives an automatic control of any deviations from the plan.

Other important principles of PRINCE2 are learning from experience, defining roles and responsibilities, managing by stages, managing by exception.

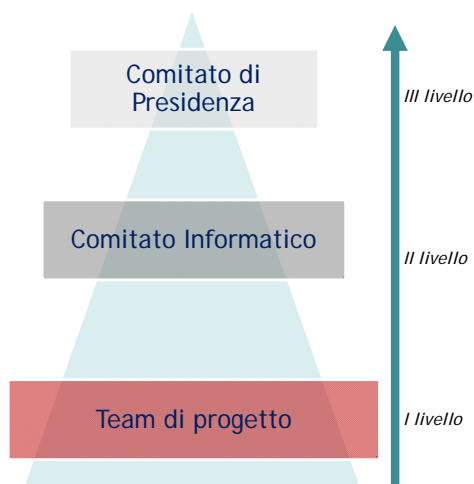
All these principles can help the statistical organisation to implement an IT project governance, establishing a framework for decision-making (roles, responsibilities, authorities), implementing a stakeholder management strategy and putting in place a quality management strategy, managing uncertainties (threats and opportunities), managing problems and changes at the right time.

6. Project organisation and domains

The scope of the ICT Change Management project is the design of the IT process and governance model. This is a core and crucial phase of the modernization and standardization process of Istat because it deals with the IT culture at different levels of details. The project considers the direct impact of cultures on various aspects of IT use and outcomes and provides a more complete perspective of the relationships between the different IT groups and business. The project structures the activities in four main domains: IT process model, organisation, tools and compliance and regulatory guidelines. All the line of activities included in the main domains of the ICT Change Management project are led by teams that involve human resources spanning across different IT organisation units and focusing on specific and different IT areas of competence, i.e. software development division, IT infrastructure division, EA unit, department IT unit. The governance of the project is provided by the IT Steering Committee and a Working Group, that are in charge of its coordination, design, monitoring and assessment.

The validation of project deliverables took place following a gradual approach on three different levels of responsibility and detail. In particular, the sharing and validation of the IT process model is divided into three steps, according to a logic bottom – up. At the first level there is the project manager validation; the second step involves the IT Steering Committee with all IT members of the department IT unit. The third level involves the top managers of Istat. The next figure represents the three levels of validation of the IT process model, designed in the project.

Figure 1 - The bottom-up validation schema



6.1 IT process model domain

The *IT process model* domain includes project activities of defining the model of the IT process and the reengineering of IT key process. The methodological approach follows the international best practices and standard of references for the definition of IT service and project management. It is tailored to the statistical process model GSBPM. The deliverable of this domain is the model of the IT process and the reengineering of key process following two dimensions:

- (a) operating as *ICT Service provider*
- (b) focusing on *IT portfolio management*.

To approach the project with regard to IT process model domain, Istat leads a methodological approach based on a *Gap Analysis* focused on gathering information about current operating practices/routines compared with the international best practices for IT service management and project management.

All the phases of analysis involves all Institute's organisational functions that discussed and operated with the core project team in a coordinated way. A formal document collection was produced on related topics and all the documentation was shared on a website and reviewed to collect feedbacks from main stakeholders involved in ICT Change Management project.

The domain focused on gathering information about the actual status of IT function in Istat. The information regards not only IT solution and infrastructure used to support statistical process but also the current operating practices and routines performed in the operational environment. To realize this baseline of information (*As Is*) it was organized a wide range of interviews involving all Institute's organisational functions (more than 60 interviews including Departments of statistical data production). The gap analysis compare the *As Is* status with the *To Be* status through a structured approach that allows to design a path towards possible changes in a more rational and measurable way, defining specific actions involving different skills that need to interact within a shared view of a tangible progress. Several shared meetings were organized to collect feedbacks from main stakeholders involved in CM project. The issues coming from the gap analysis were addressed to be overcome in a process design phase following best practices and standard of references for the definition of IT service and project management, ITIL and PRINCE2.

6.2 Organisation domain

The *organisation domain* defines rules and responsibilities in line with IT process model. The project adopted a responsibility assignment matrix, known as RACI Matrix to clearly define roles and responsibilities within the IT organisation. The key responsibilities role are defined as follow:

- a) *Responsible*: Those who do the work to achieve the task.
- b) *Accountable* (also approver or final approving authority): The one ultimately answerable for the correct and thorough completion of the deliverable or task.
- c) *Consulted* (sometimes counsel): Those whose opinions are sought, typically subject matter experts
- d) *Informed*: Those who are kept up-to-date on progress, often only on completion of the task or deliverable.

Every process of the model is linked to a RACI matrix that assigns a clear role to the different Unit of the IT organisation, both in the IT Central Department and in the IT Unit located in the statistical departments.

6.3 Tools domain

The *tools domain* defines and sets up of main supporting tools to change management process. The new approach on ICT Service management and IT portfolio management has to be supported by specific tools. This tools focus the integration of functions and configurations and leverage a business view of the IT services and IT projects enabling the organisation to quickly resolve or escalate issues and problems, improve root cause isolation and provide higher levels of business user

satisfaction. Using this business view, IT support organisations manage projects, incidents, problems and service requests throughout their life cycles at a more efficient and effective rate.

6.4 Compliance and Regulatory guidelines domain

The *Compliance and Regulatory guidelines domain* checks on ICT security policies and regulatory guidelines. As part of the guidelines that the Institute has called for information security, the guidelines are recommendations for the implementation of these guidelines in order to adequately protect information assets, connected to the statistical data and scientific research. The domain is divided in 16 relevant themes of analysis as cyber security, business continuity management, data protection, policy, risk management, reporting. The main findings analyzed are represented by a maturity level detected on a scale from 0 to four (not exist, ad hoc, repeatable, defined).

7. The IT benchmark survey

In addition Istat performed also a benchmark survey involving the Statistical Network in order to gain a better understanding on how the National Statistical Institutes deal with ICT rapid evolution. ISTAT designed an IT benchmark survey to collect information regarding IT organisation and the maturity level of IT processes. In particular, scope of the survey is to investigate on two main topics: the Enterprise Architecture and some selected IT process in the Service Strategy area, Demand Management and Service Portfolio Management. The benchmark defined five dimensions of observation:

- strategy governance and control
- roles and responsibilities
- integration and communication
- processes
- standard and tools.

The benchmark survey was conducted by questionnaire submitted to members of the Statistical Network. The questions, about 40, were divided into 3 specific sections:

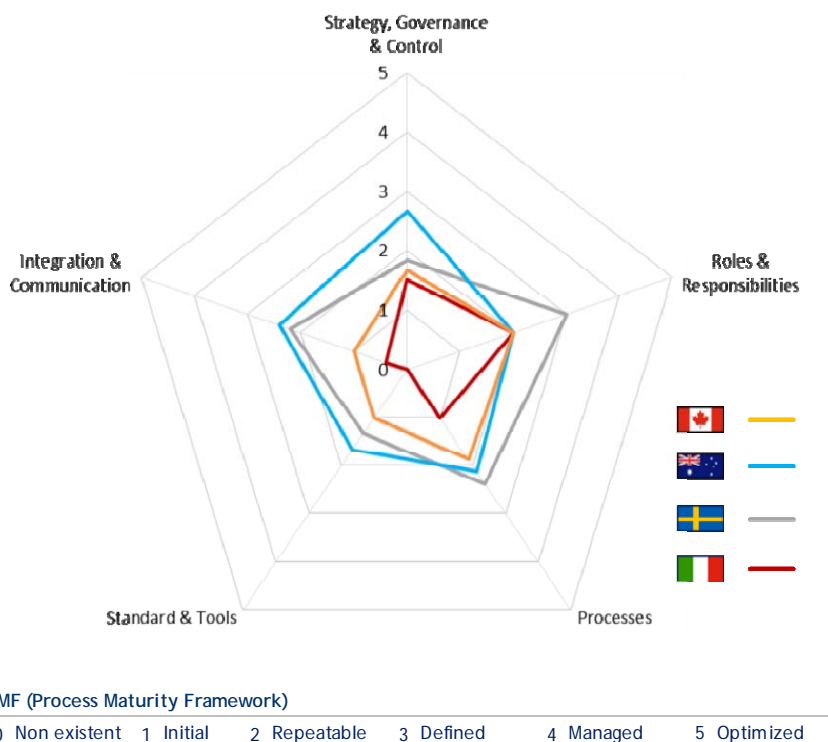
1. Overview Institute (organisation, quantitative data);
2. Enterprise Architecture, to explore if and how it has been applied by other institutions;
3. IT Strategy with a focus on Demand Management and Service Portfolio Management.

To facilitate exposure of the acquired data, the questions were grouped in the 5 main dimension of observation (government and control, roles and responsibilities, standards and tools, processes, integration and communication).

Of the 6 institutions of the Statistical Network invited to participate, 3 have provided support to the analysis. The data collected were analyzed and the Process Maturity Framework (PMF) has been used to analyze the results. In particular, the method has been used to measure the maturity of Strategy Processes on a scale from 0 to five: (i) zero= not existent; (ii) 1= initial; (iii) 2= repeatable; (iv) 3=defined; (v) 4=managed; (vi) 5=optimized.

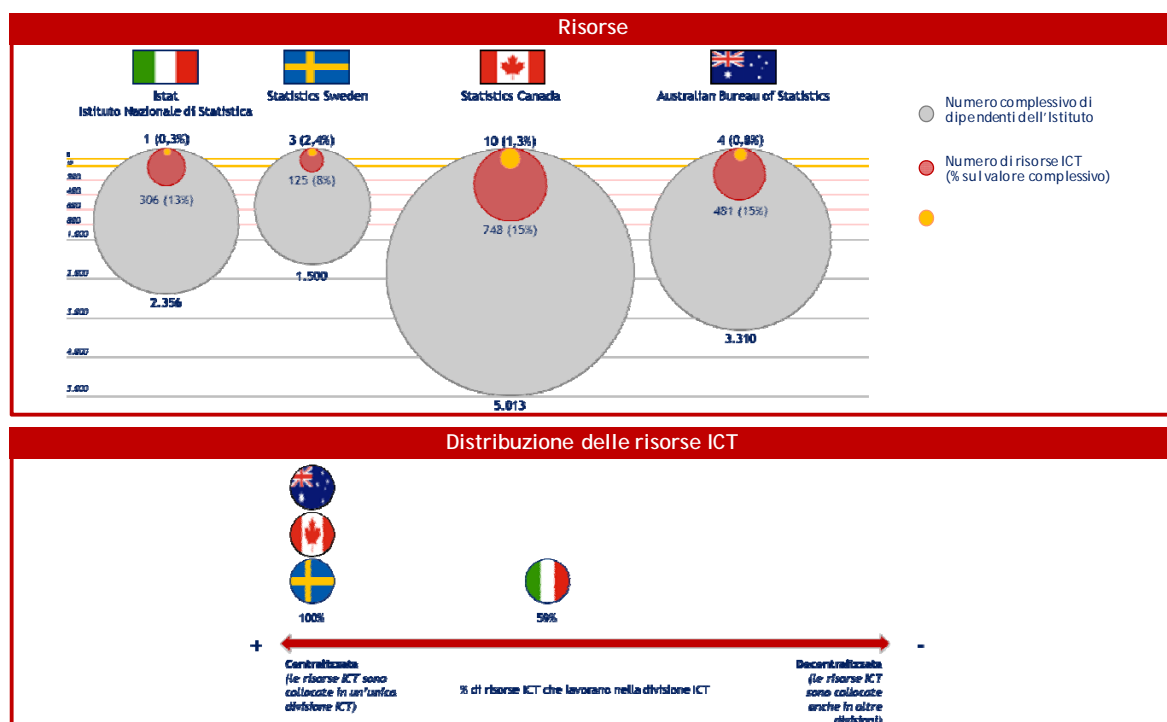
The general result of ICT benchmark study is displayed using the Maturity Model by applying the scale from zero to five to the dimensions of observation (see figure 2). The general result of the survey shows that the maturity level of the statistical institutes involved in the survey is between 1 and 2, so the level of ICT governance is considered initial or repeatable. The Australian Bureau of Statistics (ABS) is the Institute which overall has the highest level of maturity on the processes of demand and service portfolio management (average on 5 areas: 2,2). In IT strategy, Istat has a level of maturity inhomogeneous on 5 main areas, with a more pronounced gap on standards and tools and integration and communication.

Figure 2 - The general result of the ICT benchmark.



Under the organisation dimension, the distribution of ICT resources shows that Istat is at the moment the only institute, among respondents, to have opted a distributed organisation with IT human resources located in the department of statistical production to support IT environment (see figure 3).

Figure 3 - ICT organisation



The results of the ICT benchmark has been extremely valuable for the implementation of the ICT change process in Istat because it shows the dimension, according with the other country, on which the institute has to work to design a more efficient IT organisational structure with clearly defined processes, roles and responsibilities. The priority dimensions for Istat are processes, standards & tools, integration & communication.

8. Relevant finding

8.1 The IT process and governance model for Istat

The IT process model designed in the project, according with ITIL and PRINCE2 frameworks, describes with details processes, procedures, tasks and checklists to align IT services. The model can be useful in a public contest for statistical environment to align ICT with the needs of business and of the statistical production and to achieve integration with the institute's strategy, delivering value. It allows the institute to establish a baseline for planning, implementation, and measurement activities for ICT services and ICT projects.

Istat's model was built with an approach is based on a continued service improvement that aims to align and realign IT services and projects to changing statistical needs by identifying and implementing improvements to the IT services and projects that support the statistical processes. It incorporates many of the same concepts articulated in the Demanding Cycle of Plan-Do-Check-Act.

The perspective on improvement is the statistical perspective of service quality, the process effectiveness, efficiency and cost effectiveness. The IT processes are built following this perspective through the whole lifecycle introducing standard activities, performances (KPIs), expected outputs as results of the process and adherence to international standards and regulations.

In the model, the IT process represents a logically ordered chain of activities that can also be considered as a value chain, as each step increases the value of the IT product towards the statistical product. At a high level of abstraction, processes are a list of ordered activities and IT products represent the IT services that have to meet statistical objectives. The processes are linked in a logical way and it becomes possible to represent the process chain, which starts with the stakeholders and concludes with users, statistical users (see Figure 2).

Analysis and design are based on a set of specific processes and functions of PRINCE2 and ITIL. The model is articulated in the 4 ITIL's areas of reference Service Strategy, Service Design, Service Transition and Service Operation. PRINCE2 approach is the reference for the Service strategy area and, specifically, for the Demand Management and Service and portfolio management processes. The selected processes and functions to design the Istat IT model are ten as shown below, classified in the different areas:

(a) *Service Strategy*

Service Strategy Area includes the processes to improve governance and decision making. In this area the process model describes the means of fulfilling the organisation's objectives focusing on the determination of strategy, projects to support the strategy and organisational capability and resources. Istat IT models includes 3 specific processes described below:

1. Determination of market space and IT policies
2. Demand management
3. Service and portfolio management

(b) *Service Design*

Service Design Area includes the processes to improve the design of new or changed IT services for the statistical production. The Service Design stage of the lifecycle starts with a set of new or changed statistical requirements and ends with the development of the IT solution. Istat IT models includes 1 specific processes described below:

4. Service Level Management

(c) *Service Transition*

Service Transition Area includes the processes to improve the development and improvement of capabilities for transitioning new and changed IT services into the production environment, including release building, testing, evaluation and deployment. Istat IT models includes 3 specific processes described below:

- 5. Change management
- 6. Asset and configuration Management
- 7. Release and deployment

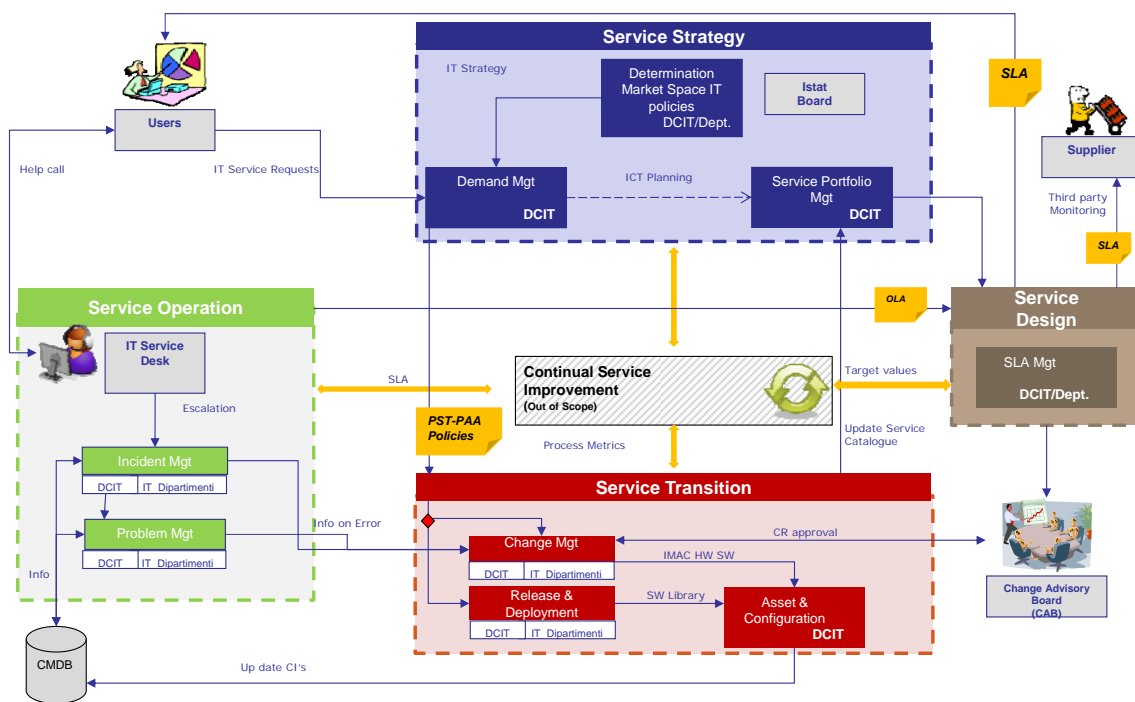
(d) *Service Operation*

Service Operation Area includes the processes to improve the on going execution of a standard set of IT procedures or activities. Service Operation Area includes all functions, processes and activities designed to deliver a specified and agreed level of IT services. Istat IT models includes 3 specific processes described below:

- 8. IT service desk
- 9. Incident management
- 10. Problem management

The model provides a high level view of process interaction, starting from the Service Strategy to Service Operation (see figure 4).

Figure 4 - Istat IT model



In the model the IT Central Department (DCIT), throughout the *Determination of Market Space, IT Policy and Strategy process*, defines the ICT Strategic Plan, according with the Institute’s statistical goals. The Strategic Plan includes all ICT projects/initiatives to be realized to support the business needs on three-year base.

To collect the business requests and address correctly the human and financial resources required to implement the ICT Project Portfolio, the IT Central Department (DCIT) performs the *Demand Management* process.

The Demand Management gives inputs for new services to be identified and designed by IT Central Department. In the model the review of Service Portfolio Catalogue is performed by *Service Portfolio Management* process. Periodically, the service feature is negotiated between the IT

Central Department and Statistical Department throughout the *Service Level Management* process.

The services provided by IT Central Department are monitored by Service Operation activities. Users are supported by *Service Desk Function* which detects incidents and investigate problems on software and ICT infrastructure. Both *Incident and Problem Management* processes aimed at detecting and resolving incidents throughout the submission of *Request for Change* (RFC) to Service Transition area. The *Change Management* process is responsible of implement the RFC approved by Change Advisory Board (CAB). The RFC developed/Implemented are taken in charge by *Release & Deployment* process responsible to test and release into production environment/infrastructure all changes referred to software application or infrastructure.

Changes are finally inventoried by *Asset and Configuration management* process and registered into a configuration management data base (CMDB). The settings of KPI's, metrics and SLA to monitor the above processes guarantees a *Continual Service Improvement* for IT Organisation.

8.2 Organisational considerations

The current organisation of information technology, according to an organisational "silos" vertical, in which each department 'reply' in-house some computer activities common to other functions, should evolve towards a process in which each department is actor for the part of concern, a business process unique and common.

The ICT Change Management project has identified two strategies of intervention that guided the organisational solution. The first is to strengthen the coordination of IT by the IT Central Department improving the process model in the Strategy Area. Key benefits in this line are connected with the introduction of a program manager officer to manage the IT strategy and all the IT demand of resources. The second one is to support a centralization of IT human resources to support operational, design and transition area according with the ICT organisation of other institute of Statistical network.

The process to define the IT Strategic Plan has been innovated by introducing a more participative approach by involving other Institute's committees like:

- a) *Information Technology Committee* (CI) attended by IT Central Department Director, top Managers, Demand Manager and ICT delegates from statistical departments. It represents the main roundtable to negotiate IT Services and projects to be provided to business;
- b) *Enterprise Architecture Committee* composed by EA experts consulted for strategic decision on ICT architecture to ensure the alignment with statistical business architecture;
- c) *Change Advisory Board* (CAB) attended by IT Central Department Director and Top Managers responsible to evaluate and approve main Request for Change (RFC) submitted by Operations.

The services provided by IT Central Department are supported and monitored by Service Operation activities. The Service Desk Function represents a qualified single point of contact for users to address service requests to IT Central Department. Throughout the Service Desk, the IT Central Department is able to quickly identify the user's requests for service or assistance offering a standardized set of services defined in features/characteristics and timing. It can also monitor the "status" of each request (trouble ticketing) and provide information to users and detect incidents and investigate problems on software application or ICT infrastructure.

8.3 Tools to support IT model

The ICT Change Management project has identified the needs to support the general process of changing adopting tools that implement IT service and IT program management. The tools enable organisations to automate the workflow of processes familiar to frameworks such as ITIL and PRINCE2. The tools provide modules that enable business end users to find knowledge to manage IT projects and the demand of resources connected with the activities and support/resolve their computing-related issues or request an IT service via an IT self-service module.

Three main functional groups of tools are indicated by the project:

- (a) Program and project management tools
- (b) Configuration management tools
- (c) IT service desk tools

The table below summarize the tools and the process directly associated.

Table - Tools to support IT model

<i>Tools</i>	<i>Area/Process</i>
PPM – Program and Project management solutions	Service strategy area Demand Management IT Service and portfolio management
CMDB – Configuration Management Data Base	Service Operation Service transition
Services Desk and Trouble Ticketing – Management of Service desk and trouble ticketing	Service desk Incident management

11. Remarks and future steps

The IT model illustrated above allows to overcome the limits of the “*as is*” IT organisation. The “*to be*” model offers an integrated view of the IT process, that can facilitate the realization of Istat industrialization and modernization. In fact the Service Strategy process helps Istat to determine the ICT Strategic Plan to figure out ICT guidelines and policies to manage IT systems according with statistical needs. The process is aimed at guarantee the alignment of IT strategies to statistical requirements and Institute’s strategic goals and at minimize risk related to provide IT services. Service Strategy is also aimed at collect and evaluate the overall Institute’s ICT requirements to finalize the ICT Strategic Operation. In the medium period, the processes of this area can be implemented through a road map properly designed and scheduled, focusing particularly on:

- a) need to clearly define IT policies and standards for ICT environment (ICT Architecture);
- b) need to create a service and portfolio management system to support statistical environment;
- c) need to consolidate the planning phases with the Statistical Department defining priorities, activities, allocation of financial and human resources.

Also the Service Operation function helps Istat to design IT services, along with the governance of IT practices, processes and policies. It provides the primary window for users to contact the IT Organisation to be supported on a day-by-day basis. The Service Desk is responsible for collect and manage trouble tickets and IT standard services (IMAC requests). It is also responsible of manage any events which is not part of the standard operation of a service which cause an interruption to, or a reduction in, the quality of the services. Its objective is to restore normal operations as quickly as possible with the least possible impact on the business/users. Incident management and control activities include identification, logging, categorization, prioritization, initial diagnosis, escalation, resolution and closure. Problem management is responsible for managing the lifecycle of all incidents. The processes of this area helps to identify an issue before it places system performance at risk.

In the medium period, these processes can be implemented focusing particularly on:

- a) need to introduce a trouble ticketing system and standardize the supporting operation of statistical processing;
- b) ensure the continuity of business operation throughout ICT monitored infrastructure (fast incident detection/resolution);
- c) need to consolidate development platforms and statistical analysis.

The Service Transition process helps Istat to design IT services, IT statistical processes, and

other aspects of the service management effort. Service Transition addresses how a planned service solution interacts with the larger statistical business and technical environments, service management systems required to support the service, processes which interact with the service, technology, and architecture required to support the service, and the supply chain required to support the planned service. In the medium period, these processes can be implemented through a road map properly designed and scheduled, focusing particularly on:

- a) need of managing Request for Change in ICT Infrastructure/application centrally;
- b) assure the governance of ICT configuration items throughout a Configuration Management Data Base (CMDB);
- c) standardize the release of ICT Application and ensure the performance of testing & quality control procedures.

The Service Design with the SLA management process is responsible of defining, negotiate and monitoring the level of services between IT Central Department Organisation and statistical Departments. It assures also that all operational level agreement (OLA) and outsourcing contracts of IT Services are suitable to guarantee the agreed level of services. In the medium period, this process can be implemented focusing particularly on monitoring the level of service performance of ICT suppliers and setting Key Performance Indicators (KPI's) and metrics to measure the ICT Services. Finally a changing process relies on people, consequently, a good people training is one of the most relevant factor to put in place. The new IT model can be real effective only if people change their approach and their way to work helping the institute to turn complexity in opportunity.

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