UNECE Statistical Capacity Development Strategy

Endorsed by the Conference of European Statisticians, June 2018

I.   Introduction

1.   At its meetings in in October 2017 and February 2018, the Bureau of the Conference of European Statisticians (CES) strongly supported proposals that the UNECE Secretariat should continue to develop and implement statistical capacity development activities to respond to new initiatives at the global level. These initiatives include statistics for the Sustainable Development Goals (SDGs), the increased use of geospatial information, and the modernisation of official statistics. In addition, the UNECE Expert Meeting on Statistics for SDGs in April 2017 emphasised that all countries require improvement of their statistical capacities in the context of measuring SDGs.

2.   PARIS21 (the Partnership in Statistics for Development in the 21st Century), which is hosted by OECD, has convened a group of experts from national and international statistical organisations to review the approach to statistical capacity development at the global level, based on the discussion paper "Realising the Data Revolution for Sustainable Development: Towards Capacity Development 4.0[1]". UNECE actively participates in this group, and has benefitted from the exchange of ideas. The UNECE strategy is in line with the conceptual framework developed by this group, and can be seen as a means of implementing it in the UNECE region.

3.   In pursuing its programme of work in the region, UNECE closely collaborates with other important stakeholders to complement activities, find synergies and avoid overlap, particularly Eurostat and the European Free Trade Association (EFTA). Eurostat is an important actor, present in the region in the context of the European Commission's Enlargement and Neighbourhood Policies (ENPs) and respective priorities. Eurostat is currently preparing a regional statistics programme (Statistics for the Eastern Partnership), for implementation to start in late 2018/early 2019. The programme, financed from the EU's external action budget, will support the development of official statistics in the six countries of the ENP East (Ukraine, Belarus, Republic of Moldova, Georgia, Armenia and Azerbaijan.) In addition, Eurostat supports statistical activities from the European Statistical Programme, for example, training as well as the organisation of statistical workshops and high level seminars. These cover mainly the ENP East region but also the participation of statisticians from Central Asia.

4.   Eurostat also supports the countries that have a perspective of accession to the EU (EU enlargement countries) in their preparations for membership of the EU, by providing technical assistance focused on the development of all statistical areas that are part of the EU legal requirements. This includes assessing their compliance with EU standards in statistics and with the European statistics Code of Practice, as well as being involved in the accession negotiations in the

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[1] http://www.paris21.org/capacity-development-40

part of the future accession treaty that relates to statistics. The means for the statistical cooperation programmes come mainly from the EU Instrument for Pre-accession Assistance (IPA).

5.   The CES Steering Group on SDGs has recently established a Task Group on Capacity Development, which will be an important partner in the implementation of this strategy.

6.   Taking account of the above drivers for change and partnerships, this strategy document sets out the principles, priorities and tools that will form the basis for future UNECE statistical capacity development activities.

II.   Current situation

7.   According to the UNECE Strategic Framework for 2018-19, the statistical work programme will:

"support statistical capacity building of ECE member States, particularly of those with less developed statistical systems. It will promote the implementation of the Fundamental Principles of Official Statistics and other United Nations standards and best practices, and provide advice on legal and institutional frameworks of official statistics. This work will be demand-driven and address national priorities identified through global assessments of national statistical systems. It will focus on modernizing statistical production, population censuses, SDGs indicators, gender-disaggregated statistics, economic statistics, environmental accounting and indicators."

8.   Statistical capacity development is a cross-cutting responsibility for all staff of the UNECE Statistical Division. It is closely tied to the development and implementation of standards and guidelines in many areas of official statistics. Within UNECE, statistical capacity development activities are coordinated by a Regional Adviser on statistics. In most cases, these activities are carried out in collaboration with other national or international statistical organisations.

9.   UNECE statistical capacity development activities have traditionally focused on the countries in the Eastern Europe, Caucasus and Central Asia sub-region. However, recent developments such as SDGs and the need to modernise statistical production affect all UNECE member countries. Few countries can currently produce more than about half of the global indicators needed for measuring SDGs. Other related challenges include the growing importance of integrating statistical and geospatial information, demands for many new types of statistics, and the appearance of potential new data sources. Statistical capacity development is, therefore, urgently needed in all UNECE countries, though the amount, nature, type and form will naturally vary from country to country.

III.   A new approach to capacity development

10.   In the past, UNECE statistical capacity development has focused mainly on providing training workshops. These were mostly related to specific subject-matter domains. In this way, the focus was more on people than on the organisation. In view of the new challenges identified above, and particularly the demands related to producing statistics for SDGs, a new, more holistic approach is needed. This requires a strategy that considers all aspects of the organisation, and targets support and development where they are most needed.

11.	The cornerstone of the strategy is the concept of capabilities. In general terms, a capability is defined as the "ability that an organisation, person, or system possesses - capabilities typically require a combination of organisation, people, processes, and technology to achieve"[2]. Capabilities are things that an organisation does, or needs to do. Examples in statistical organisations could include seasonal adjustment, internet data collection, or applying machine-learning techniques. As the definition above says, capabilities require combinations of different factors or dimensions – rather like the economic concept of factors of production (land, labour, capital). The full set of dimensions for capabilities in official statistics is presented in Section IV(C) below, and defined in more detail in the Annex.

12.	One reason for not just focusing on training people is that some statistical organisations struggle to pay a competitive salary, and hence have a high staff turnover. Training people can therefore have a limited impact. Whilst training of people will still be needed, it should be undertaken in combination with ensuring that the organisation is sufficiently equipped in terms of methods, technology, processes, information and standards, whilst ensuring a suitable institutional framework is in place.

## IV.	A strategy for statistical capacity development

13.	The goal of the strategy is to support member countries to develop and enhance the capabilities they need to produce official statistics, and to implement international norms and standards. The main stakeholders and beneficiaries are national statistical systems. Other stakeholders include national and international organisations that provide capacity development support in the UNECE region. The strategy is based on three pillars: principles, priorities and tools.

### A.	Principles

14.	The strategy is based on the following principles, which are intended to cover all dimensions of the capabilities to be developed or enhanced:

- Demand driven – capacity development activities respond to the needs identified by countries, including through global assessments of national statistical systems;
- Open to all – capacity development is needed by all UNECE countries, in the contexts of data for SDGs, or modernising statistical production, regardless of the level of development of their statistical systems;
- Linked to UNECE's normative work – capacity development activities promote the implementation and use of CES standards and guidelines;
- Focused – related to the above point, capacity development activities focus on areas where UNECE has recognised expertise, to ensure optimal use of limited resources;
- Results oriented – capacity development activities are planned and implemented to maximize their impact. This impact is assessed, for example using a maturity model, and the results of assessments are used to improve the efficiency of future activities;

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[2] Derived from the definition used in The Open Group Architecture Framework (TOGAF)
http://pubs.opengroup.org/architecture/togaf9-doc/arch/chap03.html

- Cooperation and partnership with others – capacity development activities are coordinated with other organisations that are providing capacity development support. This will avoid duplication and ensure coherent and consistent support to countries;
- Sustainability – capacity development activities result in sustainable increases in capacity in beneficiary countries;
- Flexibility – the provision of capacity development support is flexible and agile, to respond to changing demands and circumstances.

B.   Priorities

15.   Whilst capacity development activities will be demand driven, and priorities will therefore be set by national requirements, it is possible to identify some of the likely priority topics for capacity development over the next three to four years, based on observation of recent trends. Likely priorities include:

- Statistics for SDGs – with a focus on institutional issues and strengthening national statistical systems;
- Geospatial information management, including integrating statistical and geospatial information;
- Population and housing censuses, migration and gender statistics;
- Environment statistics and environmental-economic accounting;
- Modernising official statistics;
- Core economic statistics and the impacts of globalisation.

16.   In addition, increased emphasis will be placed on enhancing management and organisational capacity. This will include strategic topics such as change and risk management, developing effective partnerships, capability and resource planning. The UNECE work on modernisation of official statistics, has shown that often the main barriers to development are not technological. They are more often linked to organisation and management culture. Training technical experts will not have the required impact if the organisation and management cultures do not support development and change.

C.   Tools

17.   Statistical capacity development activities will have a much wider scope than just the provision of training. They will draw on the definition of capabilities, introduced in paragraph 11 above. According to that definition, capabilities have several dimensions. The full set of dimensions for statistical capabilities is shown below, and these dimensions are defined in the Annex.

The Seven dimensions of statistical capabilities

18.   To improve a capability in a statistical organisation, it is usually necessary to address several of these dimensions. For example, in the case of seasonal adjustment, just training people, or providing a software tool, will not be sufficient to ensure that the organisation has that capability. Capacity development has to take a more holistic approach, taking all seven dimensions into account.

19.   For any capability (such as seasonal adjustment) it is possible to assess the current level of an organisation, and to identify a desired future level. This assessment can be broken down by the capability dimensions shown above, to identify which of the dimensions are priorities for investment and capacity development. The "maturity model" approach can be a useful management tool for this purpose. The use of maturity models is explained and illustrated in the annex.

V.   Implementing the strategy

20.   The first concrete step towards implementing the strategy will be to put in place a mechanism for gathering national priorities on an on-going basis. This will build on the information obtained during the electronic consultation of the strategy with the members of the Conference of European Statisticians, as well as:

(a)   Information from the global survey of capacity development needs in the context of statistics for SDGs, conducted by PARIS21 and the High-level Group for Partnership, Coordination and Capacity-Building for statistics for the 2030 Agenda for Sustainable Development (HLG-PCCB);

(b)   Recommendations from the Global Assessments of National Statistical Systems conducted jointly be UNECE, Eurostat and EFTA;

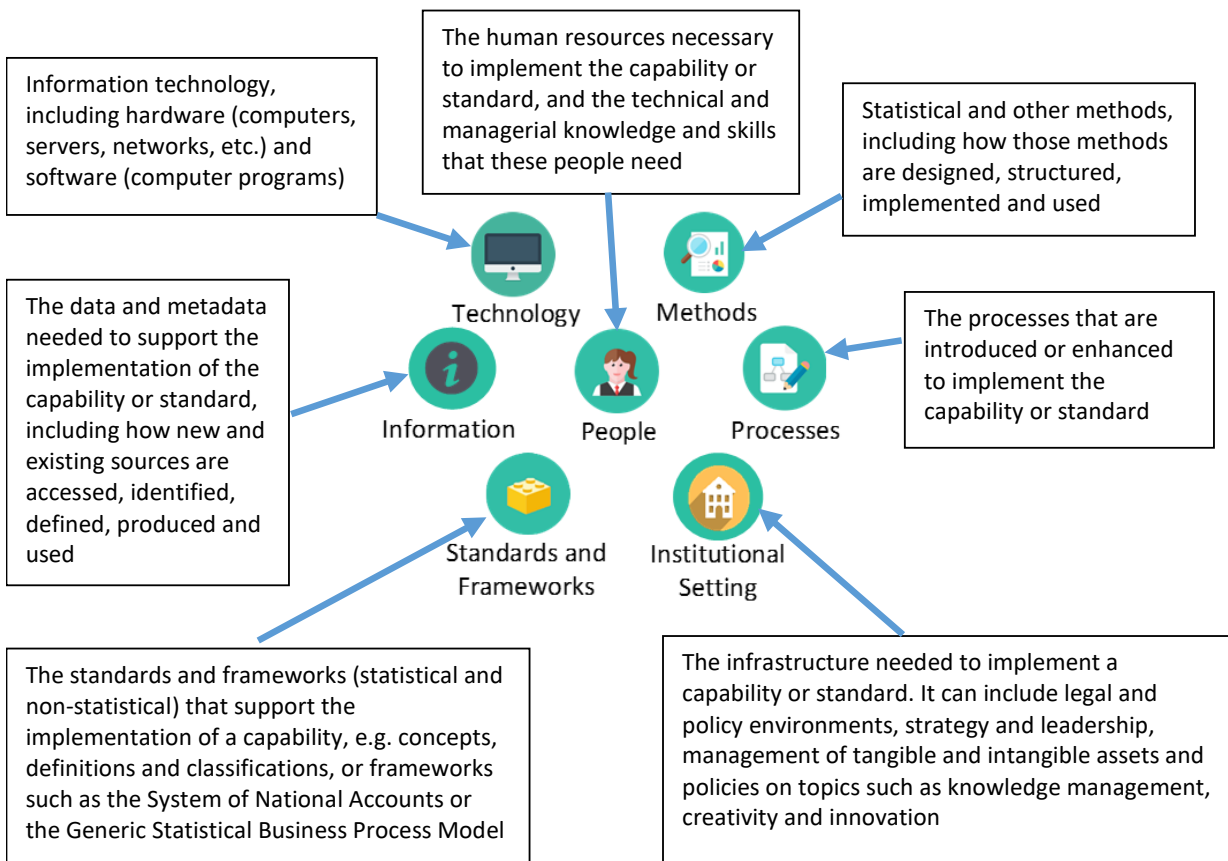(c)   Needs identified by UNECE expert groups and through existing capacity development activities.

21.   National priorities will be assessed using the principles set out in the strategy, to see how the identified needs can be most efficiently addressed. Demand for capacity development will be matched with supply, i.e. the ability for the UNECE and/or partner organisations to provide the necessary support.

Annex - Capabilities and maturity models

A.   What is a capability?

1.   A capability is defined as "The ability that an organisation, person, or system possesses. Capabilities typically require a combination of organisation, people, processes, and technology to achieve" (Source: The Open Group Architecture Framework v9.1 - http://pubs.opengroup.org/architecture/togaf9-doc/arch/chap03.html).

2.   Practical examples of capabilities in statistical organisations include seasonal adjustment, internet data collection, web dissemination, data editing, questionnaire design, etc. The idea of capabilities can also be applied to implementation of statistical standards. Capabilities can be defined in terms of frameworks such as the Generic Statistical Business Process Model (GSBPM) or the Generic Activity Model for Statistical Organisations (GAMSO).

3.   What are the dimensions of statistical capabilities? As the definition says, capabilities require combinations of factors or dimensions – rather like the economic concept of factors of production (land, labour, capital).

Figure I: Full set of dimensions for statistical capabilities

Information technology, including hardware (computers, servers, networks, etc.) and software (computer programs)

The human resources necessary to implement the capability or standard, and the technical and managerial knowledge and skills that these people need

Statistical and other methods, including how those methods are designed, structured, implemented and used

The data and metadata needed to support the implementation of the capability or standard, including how new and existing sources are accessed, identified, defined, produced and used

Technology

Methods

The processes that are introduced or enhanced to implement the capability or standard

Information

People

Processes

Standards and Frameworks

Institutional Setting

The standards and frameworks (statistical and non-statistical) that support the implementation of a capability, e.g. concepts, definitions and classifications, or frameworks such as the System of National Accounts or the Generic Statistical Business Process Model

The infrastructure needed to implement a capability or standard. It can include legal and policy environments, strategy and leadership, management of tangible and intangible assets and policies on topics such as knowledge management, creativity and innovation

4.   To improve a capability in a statistical organisation, it is usually necessary to address several of these dimensions. For example, in the case of seasonal adjustment, just training people, or providing a software tool, will not be sufficient to ensure that the organisation has that capability.

5.   There will be some cases where one or more dimensions will not be relevant, in these cases those dimensions can be ignored.

B.   What is a maturity model?

6.   A maturity model is a self-assessment tool to help an organisation understand the extent to which it has developed a capability or implemented a standard. In other words, it helps the organisation to understand its level of "organisational maturity" with respect to that capability or standard. Maturity models are tables where the columns show the maturity levels and the rows show the maturity dimensions (see Figure II). The dimensions should be the same as those defined above for capabilities (technology, methods, information, people, processes, standards and frameworks, and institutional setting). Depending on the type of capability or standard, one or more of the dimensions might not be relevant. If so, these dimensions can be ignored.

7.   Maturity levels may need to be defined specifically for different capabilities or standards, but the following generic definitions should be used as a starting point:

(a)   Initial awareness - A few people in the organisation are becoming interested in the potential value of developing the capability or implementing the standard. The organisation as a whole is unaware of the need for the capability or standard.

(b)   Pre-implementation - The capability or standard is considered experimental, and is limited to a few people or parts of the organisation. Some other parts of the organisation are becoming interested in the potential value of the capability or standard.

(c)   Early implementation - Awareness of the need for the capability or standard is spreading, but it is implemented in an inconsistent manner by different people or different parts of the organisation. An organisation-wide programme or strategy to implement the capability or standard is being prepared.

(d)   Corporate implementation - An organisation-wide programme or strategy for the capability or standard is in place. There is a widespread awareness of the need for the capability or standard, and it is implemented in a consistent manner across the organisation.

(e)   Mature implementation - The capability or standard is seen as an important part of the work of the organisation. It is delivering benefits throughout the organisation. The need for the capability or standard is well understood. It is integrated into the work of the organisation, and it is implemented in a consistent way throughout the organisation.

8.   Each cell in the maturity model table should contain a short description of what that combination of maturity level and dimension means in practice. These descriptions will often be specific to each capability or standard.

9.   The idea of maturity models for official statistics has been adapted from the Open Group Service Integration Maturity Model (OSIMM)[3]. Several pilot maturity models were developed under the UNECE High-Level Group for the Modernisation of Official Statistics in 2016, covering

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[3] http://www.opengroup.org/soa/source-book/osimmv2/

the implementation of the Generic Statistical Business Process Model and related standards, as well as risk management in statistical organisations[4]. Two examples are given in Section D.

Figure II: Maturity levels

Dimensions	Maturity Levels				
	Initial awareness	Pre-implementation	Early implementation	Corporate implementation	Mature implementation
People	Description	Description	Description	Description	Description
Methods	Description	Description	Description	Description	Description
Technology	Description	Description	Description	Description	Description
Standards / frameworks	Description	Description	Description	Description	Description
Processes	Description	Description	Description	Description	Description
Information	Description	Description	Description	Description	Description
Institutional setting	Description	Description	Description	Description	Description

C.   How should maturity models be used?

10.   Maturity models are used to determine the current level of maturity, and also to define the target level for the organisation. They are management tools to identify where improvements are needed, and to help decide on priorities. The target level of maturity might be "Mature implementation", but for some capabilities or standards, the organisation might decide that a lower level of maturity is sufficient. In the example in Figure III, the target maturity level is "Corporate implementation". The organisation has decided that it has already reached this level for the "Methods" dimension, but not for the other dimensions. It has most work to do in the "Technology" and "Processes" dimensions, as the organisation is only at the "Initial awareness" level for these dimensions. As a result of this assessment, the "Technology" and "Processes" dimensions are likely to be priority areas for future work.

11.   There may be cases where it is preferable to set different target maturity levels for the different dimensions, this is also possible. In such cases, the relative distances between the current and target levels should be considered when deciding on priorities.

12.   A further development of this approach could be to collect information about how organisations have increased their maturity levels for the different dimensions of key capabilities. If this could be done in a structured way, it could provide a sort of "roadmap" of good practices for other organisations to follow. Some prototype templates for this sort of "roadmap" were also developed during 2016 in the "Modernisation Maturity Models" project under the High-Level Group for the Modernisation of Official Statistics[5].

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[4] https://statswiki.unece.org/pages/viewpage.action?pageId=129172266
[5] https://statswiki.unece.org/display/RMIMS/MMM+Roadmap+Tools

Figure III: Maturity levels targets

Dimensions	Maturity Levels				
	Initial awareness	Pre-implementation	Early implementation	Corporate implementation	Mature implementation
People	Description	Description	Description	Description	Description
Methods	Description	Description	Description	Description	Description
Technology	Description	Description	Description	Description	Description
Standards / frameworks	Description	Description	Description	Description	Description
Processes	Description	Description	Description	Description	Description
Information	Description	Description	Description	Description	Description
Institutional setting	Description	Description	Description	Description	Description

Target

D.   Examples of maturity models

13.   Two examples of maturity models are given on the following pages. The first is for the implementation of the Generic Statistical Business Process Model (GSBPM)[6], and the second is for risk management[7]. They were both developed as pilot exercises under the High-Level Group for the Modernisation of Official Statistics during 2016-17. They illustrate the flexibility of the maturity model approach, and how it can be tailored to support specific standards or capabilities.

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[6] Source: https://statswiki.unece.org/pages/viewpage.action?pageId=129172266
[7] Source: https://statswiki.unece.org/display/GORM/8.+Risk+management+maturity+model

Maturity model for the implementation of the GSBPM

Dimensions	Maturity Levels				
	Initial awareness	**Pre-implementation**	**Early implementation**	**Corporate implementation**	**Mature implementation**
Business	No standard business process descriptions/ definitions are in use across the organisation's statistical programs. Different business processes are followed by different individuals/ business units undertaking the same tasks. Projects/statistical programs exist in isolation. There is little or no business process coordination. A few individuals are becoming interested in the potential business value of the GSBPM, but the organisation as a whole is unaware of the GSBPM.	Use of GSBPM is basic and limited to a few individuals. Some business units are becoming interested in the potential business value of GSBPM and investigate how adopting the GSBPM as a reference standard could assist standardisation activities. Communication activities are carried out in some business units to demonstrate the benefits of using the model.	Use of GSBPM is spreading, but practice varies between individuals and between business units. Some business units are documenting/ defining existing statistical production processes using the GSBPM phases/sub-processes. GSBPM phases/ sub-processes are being used for generic project/ statistical program scoping and planning.	A corporate-wide programme/strategy for use of GSBPM for managing statistical production processes is in place. Management uses GSBPM as a framework for all planning of statistical production and for standardisation of production processes. The organisation standardises and describes procedures for all GSBPM phases and sub-processes in a consistent manner.	Management uses GSBPM systematically and regularly for managing and improving business capabilities and standardisation. The organisation has widespread expertise and familiarity with the use and application of the GSBPM. It is the reference framework for all statistical production. GSBPM-based responsibilities are shared between job positions and are described in job descriptions.
Methods	No common approaches regarding the development and use of methods. Methods are identified and defined with no reference to GSBPM. A few individuals are becoming interested in the potential value of mapping/documenting methods per GSPBM phase.	A few individuals are mapping/ documenting existing methods per GSPBM phase/sub-process. Some business units are becoming interested in the potential value of mapping/ documenting existing methods per GSPBM phase in order to improve coherence and consistency. New methods are developed with reference to GSBPM phases.	Individuals and business units are mapping/ documenting new and existing methods per GSPBM phase/sub-process, but the practice varies. A corporate-wide strategy for the use of GSBPM to map/document methods per phase/sub-process is not yet in place.	A corporate-wide strategy for the use of GSBPM to map/document methods per phase/sub-process is in place. There is a widespread awareness of the use of GSBPM to map/ document new and relevant existing methods per phase/sub-process and a consistent approach is adopted across the organisation to carry this out.	Methods are standardised and optimised within the GSBPM and extensively re-used. This standardization facilitates inter-institutional collaboration efforts. The use of GSBPM to map/document methods per phase/process is an important part of methods management and delivers value by identifying duplication and potential for reuse. Mapping/ documenting methods to GSBPM phases/sub-processes is well understood and applied in a consistent manner.

	Maturity Levels				
Information	No standardised way of defining information objects (data and metadata) with reference to their use in GSBPM. No integration of information.	Identification and classification of information objects by GSBPM phase carried out for one or two statistical programs in order to improve consistency in information objects being used/referred to in the different sub-processes.	New projects adopt standard methods of classifying information object use and terminology by GSBPM phase/ sub-process. Existing applications have a varied practise regarding mapping of information objects by GSBPM phase/ sub-process.	Information objects used within the organisation are mapped to the GSBPM sub-processes, and the changes to information objects through the sub-processes, are well defined.	Information object usage and nomenclature is harmonised/standardised across the organisation, with GSIM in routine use as the basis for describing and defining information objects. The reuse of information objects is maximised wherever possible
Applications	Applications are developed without reference to GSBPM. Applications are developed stand-alone, at silo level, without reference to common statistical processes across the organisation. Every statistical program has its own production system, with little coordination between the programs. Common problems are solved in different ways.	As a first step toward standardization, existing applications are roughly mapped to (one or more) GSBPM phases. The mapping is generally not applicable to GSBPM sub-processes.	Specification of scope for new applications start to be defined by GSBPM phases / sub-processes. An overarching plan setting priorities for improvement, standardization and development of applications has been adopted. Applications and services are mapped to GSBPM phases /sub-processes.	Using GSBPM to define statistical functions and system developments for all relevant existing applications, and as a basis for all new application development. Monitoring and coordination of the GSBPM implementation plan for applications. A comprehensive list of IT services (Service Catalogue) is in place to manage the use of services.	All relevant applications are mapped at component level to GSBPM sub-processes (or lower). A comprehensive list of IT services (Service Catalogue) is used across the organisation to monitor/maintain all the components of the statistical production systems.

Maturity model for risk management

READING KEYS	ITEMS / CORE AREAS	DESCRIPTORS	MULTIDIMENSIONAL ANALYSIS AND READING GRID: RM MATURITY			
			STAGE (LEVEL) 1	STAGE (LEVEL) 2	STAGE (LEVEL) 3	STAGE (LEVEL) 4
			Attributes / Performance indicators	Attributes / Performance indicators	Attributes / Performance indicators	Attributes / Performance indicators
RISK RATIONALITIES: RM FRAMEWORK AND PROCESSES	Risk Framework	Attitude towards uncertainties (Risk Philosophy)	No proactive though: the organisation is reacting to situations and risk issues after they occur and it is not able to distinguish between positive and negative risk	Risk is considered a static phenomenon instead of a dynamic one. Risk approch mainly focuses on past events	Opportunistic approach: a common and consistent definition of risk exists and is applied throghout the organisation, but risk approch mainly focuses on avoiding unexpected large loss events	Open and proactive approach to risk that considers both threat and opportunity. Risk based approach to achieve goals is used at all levels
		Mandate	The board does not feel the need for managing risk	Following an external demand (legislative or regulatory, government pressure, stakeholders' influence)	By an administrative or political board	Both by a strong both administrative and political board
		Management leadership and committment	Management is not committed to establishing risk management and has not assumed a leadership role in implementing it	Some risk management initiatives are supported by top management on ad hoc basis across the organisation	Senior managers take the lead to ensure that approaches for addressing risks are being developed and implemented in all key and relevant areas	The leadership for risk management is embedded at all levels of the organization. RM is a formal and regular senior management activity. Senior management also oversees all the risk management framework and is visible involved in risk management practices and initiatives
UNCERTAINTY EXPERTS: PEOPLE, ROLES, STRUCTURES AND INTERACTIONS	Culture	RM internal culture	The focus is primarily on responding to crises and is reactive rather than proactive. Prevails a culture resistant to change witjh emphasis on protecting physical and financial assets	People tend to be risk adverse: a caution approach is taken to risk management overall (risk avoidance)	RM is done proactively and a culture of control is being disseminated	Individual and organisational expectations for RM are synchronised. The focus is on opportunities, not just risk avoidance. The organisation fosters a culture of continuous learning and participation and people are encourage to be innovative. Staff is highly committed to the success of the organisation
		Linkage to ethics and value	No ethics policy or guidelines in place. No clear statements of shared values or principles or attention to legal issues	Organisation may have an ethics statement but philosophy reflects legal and political considerations (compliance approach) and any written policies are applied inconsistently	Ethics and values principles/guidelines and legal/political considerations are understood by staff and risk management approach is aligned with them	Ethics and values are consistently reflected in RM organisation practices and actions. Regular surveys on this topic consider risk. An organisational climate of nmutual trust exists at all levels
TECHNOLOGIES: SUPPORT	RM Information system	ICT tools	No RM information system has been envisaged	A specific pilot RM information system is being implemented as a part of other information systems	A generic software may be used to support management in tracking key and relevant process areas	Each stage of the risk management process is tracked in a Web based tool thoroughly integrated with other corporate information systems
		Document management	Record management supporting activities and decisions is focused on physical and financial assets. The organisation does not document information about risk	A document management system, mainly focused on past events, may be envisaged: 1. to comply with legal, regulatory and governance requirements; 2. to record information with reference to some stand-alone processes identified and related mitigation actions	Organization identify resources in terms of document systems to support management in recording key and relevant process areas	Information about risks are recorded in a consistent and secure way, establishing the policies and procedures needed to access, use and transfer information, as part of a structured Information Management Plan. Each stage of the risk management process is recorded appropriately