Statistical Modernization Community:
CSPA Investment Planning and Alignment

Background

1.   Statistical organizations already have a long history of sharing principles, values, standards and frameworks. In the past, engagements between statistical organizations have been spontaneous, relationship driven with little way of obtaining an overview of what has taken place.

2.   Considerable effort has produced benefits across the international community but we are left unable to articulate how efficient we have been in this process.

3.   Each statistical organization has developed their own local implementations, duplicating effort and augmenting their local portfolio of systems. CSPA gives statistical organizations a vehicle to co-design and develop, and then implement shareable statistical services.

4.   Moving forward, it is necessary to foster an aligned and collaboratively led community. An active community seeking to leverage CSPA will allow statistical organizations to contribute statistical services towards achieving the vision of the High-Level Group. Individual organizations will voluntarily identify the nature of their contributions with the support of a global community.

5.   The Statistical Modernization Community will focus on the investment plans of participating statistical organizations to improve sharing and alignment. The main opportunities that we can focus on are:

- Greater sharing of each statistical organization's ICT portfolio investment and management plans
- Finding and exploiting opportunities to align engagements with some vendors
- Earlier collaboration on innovative and transformative approaches
- Leveraging modern technology development practices and tools to support physically dispersed teams

The language of investment

6.   Capabilities provide a useful language to describe needs for program driven investments and to articulate the benefits of such an approach. Historically, statistical organizations have invested in well-defined processes and solutions.

"The good news is that process thinking is an integral part of thinking about capabilities. It is just that capability thinking opens the door to new combinations required to create outcomes, rather than to support process steps. Consequently, a capability is more powerful than a process because a capability contains more than just processes, and applying a capability way of thinking opens the door to innovation and performance enhancement opportunities.[1]"

7.   At a broad level, a capability enables a statistical organization to undertake one or more activities. A business capability can be defined as "an ability that an organisation, person or system possesses". The Generic Activity Model for Statistical Organisations (GAMSO) describes and defines the activities that take place in a typical statistical organization, whilst the Generic Statistical Business Process Model (GSBPM) focuses on those activities directly related to statistical production.. There is a many to many relationship between capabilities and activities.Capabilities are typically expressed in general and high-level terms and typically require a combination of organisation, people, processes, methodology, standards and technology to achieve. An example of a capability is "seasonal adjustment".

8.   Statistical organisations currently undertake some level of road mapping or portfolio planning to ensure that they maximise the value for their investments. These portfolios use local frameworks and language. CSPA investment planning makes use of a standard Capability Reference Model based on the Business Capabilities Model developed by the European Statistical System as the basis for describing planned investments[2].

9.   A Capability Reference Model needs to be understood by those making decisions about investment and roll out of systems – but not by general statisticians. It aims to minimise the development cost of new systems by reducing duplication of development and designing for sharing across activities and organisations. The more a capability is reused by different activities the more money it saves us. The outcome of capability based planning should be an effective investment strategy that develops and sustains the capability priorities identified through the planning exercise.

10.   Using a Capability Reference Model allows CSPA services to be organized in a logical manner and allows the CSPA Statistical Service catalogue to expose the services both by the statistical processes that they support (aligned to GSBPM) and the capabilities that they provide to statistical organizations.

The role of CSPA investment planning

11.   The investment portfolios of individual statistical organizations would have current plans for improving the organization's capabilities over a period of time. A level of this planning needs to be exposed to the broader CSPA community to enable shared planning and collaboration.

---

[1] "Capability is more powerful than process" (Gartner Blog Network / Mark P. McDonald)
[2] Further information on the Capability Reference Model can be found in Annex 1.

12.   Not all investments need to be exposed. Some investments will be outside the scope of CSPA (i.e. projects on Corporate Systems), while others will focus on remediation work for local systems (i.e. technical infrastructure or specific statistical product projects). However, investments in statistical capabilities should be surfaced to the Statistical Modernization Community.

13.   The emergence of a widely adopted CSPA and the accompanying community has a positive impact on sharing between statistical organizations in two ways:

- It broadens the types of sharing to smaller parts of IT solutions rather than the large grained, complex pieces that have historically been shared;
- It builds on and enhances sharing of non-ICT dimensions of a capability

Benefits

14.   An aligned and consistent investment planning process across the community will deliver the following benefits:

- Reduced costs for individual statistical organizations through harnessing collaborative development opportunities
- Identify areas where collaborative investment between community partners will deliver effiencies and fast track community outcomes
- A comprehensive view of the application portfolio that exists across the community, supporting a culture of strategic ICT asset management.
- A framework to identify areas for investment by external vendors
- A comprehensive capability based portfolio of CSPA compliant services that is able to be used by any community members

15.   Community members govern their own investment priorities. The key attraction for utilising the proposed model is that the outcomes above are realised through simply utilising existing statistical organization investments in an aligned manner to deliver a greater range of outcomes at a marginal cost.

The Investment Planning Process

16.   The long term goal for the Statistical Modernization Community is to use statistical organisations' individual investment portfolios to establish a Community Investment Plan. Once this information is known, through good portfolio management practices, it can be used to identify ongoing opportunities for collaboration.

17.   The CSPA investment planning process consists of five steps as outlined below:
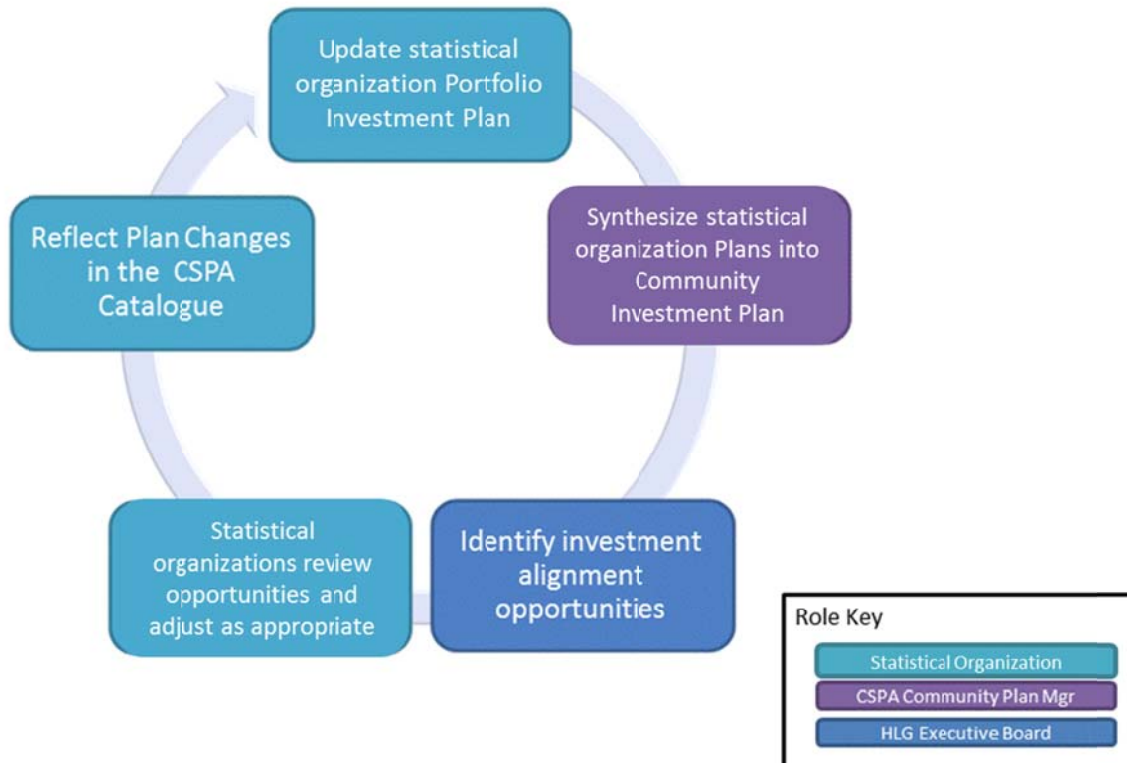

Figure 1. Investment Planning Cycle

Update statistical organization Portfolio Investment Plan

18.   To help combine the individual portfolios into a community investment plan, we need to capture consistent information across these portfolios, and then use visualisation tools to highlight areas of interest.

19.   CSPA provides a portfolio management tool to capture\update the current state of the statistical organization's portfolio and highlight the areas where investments are planned. The portfolio management tool also captures information on the sourcing model expected to be utilised (buy as is, contract to build, build in house) to assist in identifying areas where the use of external vendors may be beneficial.

Figure 2. Input Dialog for Portfolio Management Tool

20.   The tool assists statistical organizations to align their portfolio to the CSPA Capability Reference Model and requires statistical organizations to classify their investments into one of three categories

- Innovation – Projects where the approach or methods to be used are still being developed. Big Data projects are currently of this nature. There is considerable uncertainty as to what form any software service might take.

- Transformational -   Projects where the approach or methods are relatively settled, and the key requirement is to develop an effective (generic) software implementation. There will be still be refinement of the methods. Small Domain Estimation is an example of this category.

- Harvesting – Projects where a well functioning software implementation exists and there is a need to modify it to achieve a business gain. This might arise from the need to standardise processes, shift to a new IT infrastructure. In many cases this might proceed relatively organically – with separate organizations making offers to modify existing tools so that they are more inter operable.

21.   This taxonomy enables a more explicit process of portfolio management. The three levels of the taxonomy give some guide to the pathway to implementation and achieving benefits. The

expectation would be that Harvesting activity would provide more immediate benefit as the timeframes for delivery would be more certain and the business aspects better understood.

22.   The taxonomy would also enable the explicit management of ideas through to the achievement of business gains. The progression of activity from innovation through to implementation can be charted. This will enable all interested parties to understand what choices of approaches and methods have been made, and what software implementation issues have been identified as critical.

23.   In particular using this model will enable explicit decisions to be made about whether any further work is needed and who the best provider of any software service might be.

24.   This taxonomy also highlights the need for a process that monitors implementation and identifies evidence of business gains being achieved so that there is a feedback loop that can inform other stages of the process.

Synthesize statistical organization Plans into Community Investment plan

25.   The process of synthesizing statistical organization investment plans uses the CSPA portfolio management tool to create and overall picture of the Statistical Modernization Community's ICT portfolio. This unified view provides the community with:

- A view of investment coverage and gaps
- Areas of likely duplication or overlap
- Areas of vendor engagements
- A consolidation of the types of investments to be undertaken (Innovation, Transformation, Harvesting)

26.   Figure 3 (below) is an example of such a view. This will be available in the CSPA Business Plans and Interest catalogue (along with the accompanying data).
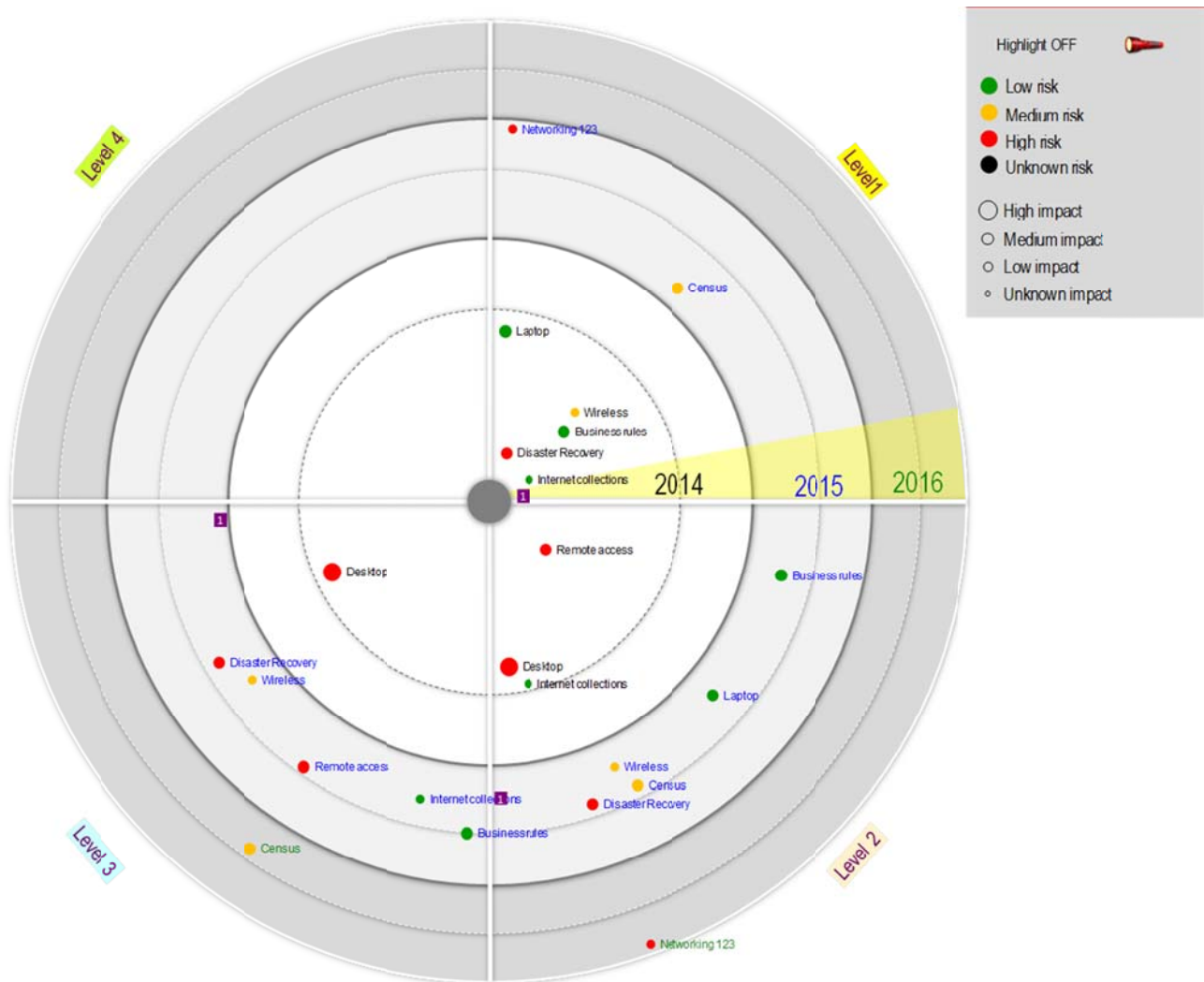
Figure 3. CSPA Portfolio Management Tool

Identify investment alignment opportunities

27.   Using the CSPA Portfolio Management Tool, the community can identify areas of common interest (i.e. innovations in specific capabilities) where statistical organizations could collaborate to progress. This enables the community to advance at the speed of the most advanced member, collaborating on the earliest investment options.

28.   The community investment plan will highlight areas where alignment of investments may provide benefits to individual CSPA community members and/or the community as a whole. These might be areas where overlaps in investments exist between community members highlighting an opportunity for multiple statistical organizations to combine investments to deliver a more cost effective outcome.

29. It may also identify gaps where statistical organizations have identified a future investment in an emerging capability but where there is no immediate investment planned. In this case there may be an opportunity for multiple statistical organizations to agree on a combined approach that allows them to invest jointly in order to deliver this capability earlier.

30. This investment plan does not necessarily indicate a preference for any sourcing mode, however, models that promote and enable wide community participation will greater increase the burden sharing opportunities of CSPA. Commercial vendors offer an opportunity to leverage international products and capability to deliver rapid progress and increased capability.

<u>Statistical organizations review opportunities and adjust as appropriate</u>

31. Statistical organizations should make use of the community investment plan to shape their own investment plans and approach. Where the community investment plan highlights areas of potential collaboration statistical organizations should initiate and drive these opportunities.

32. Based on the investments highlighted by the community investment plan individual statistical organizations may change the timing of planned investments to better align with other statistical organizations are may identify opportunities to make use of or enhance an existing CSPA service rather than invest in building a new instance.

<u>Reflect Plan Changes in the CSPA Business Plans and Interest catalogue</u>

33. The CSPA Business Plans and Interest catalogue should present an up to date of the current state. It should be reviewed regularly to ensure that investment decisions are reflected and that all planned and active collaborations are highlighted.

Investment Principles

34. The principles assist statistical organizations in the management of their own investment portfolio, and informs how the Statistical Modernization Community brings these individual portfolios together to advance CSPA services.

<u>For statistical organizations investment planning:</u>

35. **Investments should aim to deliver CSPA compliant services -** Investment options will identify opportunities to add services, meeting all quality requirements, to the CSPA catalogue. This can include developing new or enhancing existing systems in line with the CSPA architecture.

36. **Investments should seek to harness industry capability -** Investment options should take advantage of commercial opportunities, as well as community resources in developing opportunities.

37.   **Community members update portfolios for collaboration -** To ensure planning alignment across the community, statistical organizations update their portfolio plans to reflect their collaboration opportunities.

For the Statistical Modernization Community:

38.   **The decisions for investment are opportunities for collaboration -** Community selects investments as priority opportunities for collaboration by statistical organizations.

39.   **Decisions on investments are well informed -** Selection of investments is a result of informed decision making, taking into account priorities surfaced by member statistical organizations.

40.   **Investment decisions use fair and transparent processes -** Selection for investments is based on a transparent process allowing for engagement by community members.

41.   **Investment decisions should be balanced across types of investment -** Selection of investments should be balanced across a range of investment types, to ensure a blend of value gain and risk management.

42.   **Investments distributed across Capability Reference Model -** Selection of investments should be balanced across the capability model to improve coverage of the statistical production lifecycle.

Implications in adopting the Investment Planning process

43.   There are implications in adopting this framework for the way the community operates. Effective knowledge brokering is required to understand the current state of development of software tools within the community. It needs to be easy to identify tools that perform different functions so that the right sort of project is initiated. The Capability Reference Model needs to provide a taxonomy of capabilities of sufficient granularity to enable efficient communication about the scope of the functions performed by existing tools. This will also help discussions about which business activities are considered to be well implemented and which are not.

44.   Collaborating on different types of projects requires different engagements from different parts of the community. Innovation activity will be more open ended and require more "open" expectations about what a project can achieve. This type of project should benefit from the broadest set of perspectives of the different groups of statistical organizations. The benefit of collaborating on innovation projects is to reduce the risk of statistical organizations separately following a similar learning process, duplicating costs, and with some risk of not appreciating critical issues.

45.   In terms of collaborating on transformational projects, the process of international collaboration will be greatly assisted if individual statistical organizations are already well functioning communities. The challenge of incorporating the perspectives of different streams of

knowledge within statistical organizations is best managed within individual statistical organizations. The main challenge is to surface the insight that different statistical organizations have been able to generate.

46.   The very specific implementation work is likely to be most efficiently implemented separately. Generating code is a detailed activity and the challenge will to find the most effective mechanisms of review and assistance.

Annex 1. The Capabilities Reference Model[3]

47.   The capabilities reference model shows what core business capabilities are needed in statistical organizations. It describes *what* statistical organizations do (as opposed to the *how*). Subsequently the model will be used to show which business capabilities are in scope for the statistical community and which business capabilities are left to the individual members.

48.   The Capabilities Reference Model:

- Sets a common language for the business (which portion of the business is/needs to be addressed and/or will be impacted
- Triggers and informs service identification, specification and design (ultimately linking to a service-oriented architecture (SOA) approach[4])
- Supports prioritization and optimization discussions through defining which capabilities should be addressed first and by what organization, department or governance mechanism
- Supports the successful development and management of the business capabilities (covering methods, processes, standards and frameworks, related metadata, IT systems and people skills) that underpin the ability of statistical organizations to conduct their business.

49.   The Capabilities Reference Model should be used as an anchor model at different stages of discussion (e.g. between business and IT) and should be referenced where appropriate in different stages of planning, design and implementation of information systems.

50.   The next table summarizes the key use cases identified for the European Statistical System (ESS) Business Capabilities Model

Used by	For what purpose
Usage by ESS governance	Show which business capabilities are in scope for the ESS collaboration and which business capabilities are left to the individual members Support the longer term development and management of business capabilities that underpin the ESS' ability to conduct business- demonstrating the benefits of multi-year planning Identify very unique business capabilities that could be shared or leveraged upon by other ESS members rather than developed redundantly Support the scoping of centers of excellence
Usage by ESS Enterprise architects	Use the business capabilities model to support statistical service identification, specification and design (linking to SOA) Use business capabilities to encourage stakeholders to think about the strategic business requirements first
Usage by ESS Business Leaders	Use the business capability model to take discussions with IT a step back and focus on what the key elements of the business are. Identify the business' key capabilities, for example the ones that will differentiate, and use

---

[3] The content of this Annex is a slightly modified extract from the ESS EA Reference Framework.
[4] For further explanations see http://www.opengroup.org/soa/source-book/soa_refarch/services.htm

	this information to ensure focus on key areas (e.g. for individual statistical organizations) Break down silos between business units/organizations by identifying common business capabilities and common solutions
Usage by ESS project	Axe projects around business capabilities. Already in the project initiation request, always specify which capability/ies will be improved and how Align project outputs with business capabilities and thus provide a map for business people to better understand how outputs support the business
Usage by ESS IT Leaders	Gain stability in technology design. Business capabilities modeling in general offers more stability than business process modeling as business capabilities are less volatile. They thus lead to a more suitable business design artifact on which to pin technology design Use the business capability model as a communication tool to represent a consistent view of what the ESS and its members do

51.   The ESS Business Capabilities Model provides a good description of the business capabilities identified for statistical authorities within the ESS. It can be used as generic Capability Reference Model for statistical organizations.

52.   The model structures capabilities into 3 levels (level 0, level 1 and 2) and each capability is provided with a description.

53.   The figure below shows the level 0 and 1 business capabilities identified for statistical organizations. The subsequent table provides the related descriptions.
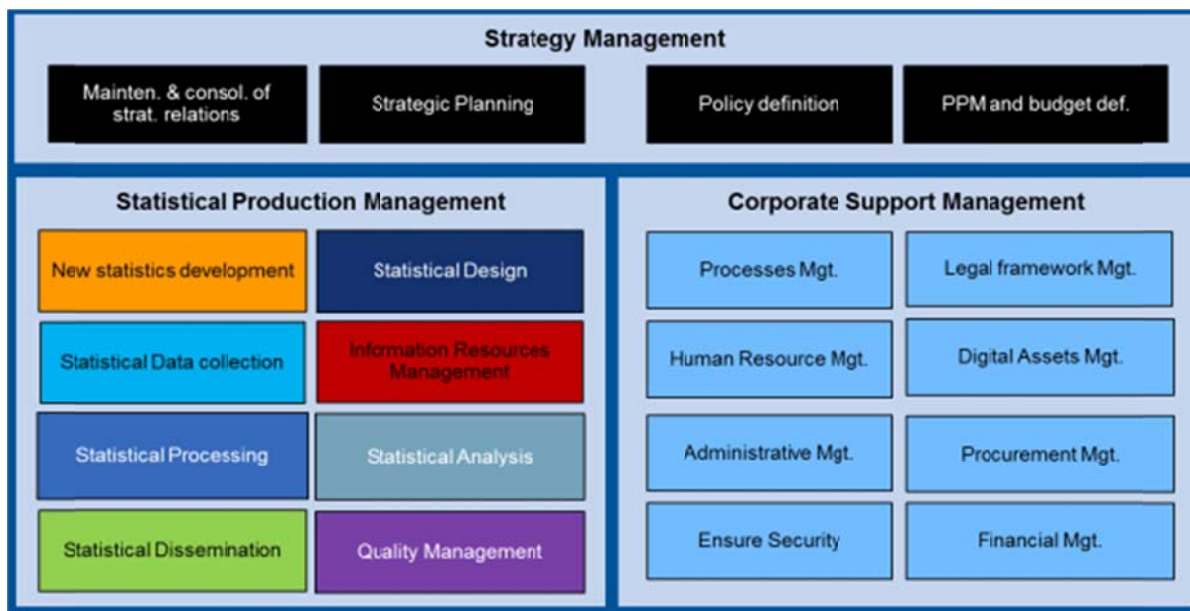

Figure 4. Capabilities Reference Model – Levels 0 & 1

54.   In relation to CSPA, the part on Statistical Production Management is relevant. The other two level 0 capabilities, namely Strategy Management and Corporate Support Management are out-of-scope.

55.   Detailed description of the level 1 capabilities for Statistical Production Management is provided in the following table.

Statistical Production Management	
Business Capability	Description
New statistics development	The ability to explore and innovate new statistics based on existing and new data source.
Statistical Design	The ability to design the statistical outputs, concepts, methods, collection instruments and operational processes required to produce statistics
Statistical Data Collection	The ability to gather data for official statistics
Information resources Management	The ability to manage custodianship and ownership of data and metadata.
Statistical Processing	The ability to check, clean, and transform the collected data and produce, examine and make ready for dissemination
Statistical Analysis	The ability to examine and make sense of data before dissemination
Statistical Dissemination	The ability to manage the release of the statistical products to users
Statistical Quality Management	The ability to perform quality assessments and put in place control mechanisms over the statistical value chain

56.   In the following section, the statistical production management capability is expanded further to its level 2 business capabilities.
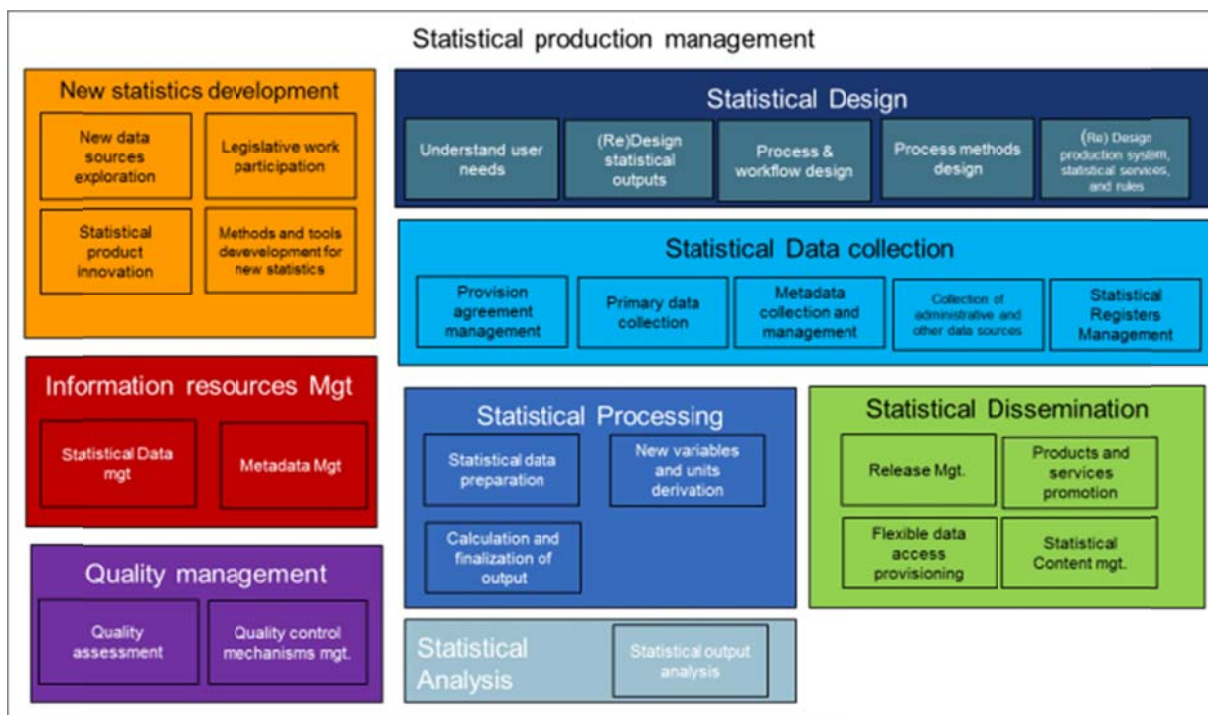

Figure 5: Capabilities Reference Model for statistical production management level 2

57. The table below describes each of the business capabilities required for a statistical organization for statistical production management.

Business Capability	Description
New statistics development	
New data sources exploration	The ability to explore the potential value of new data sources for improving existing statistics or innovating to obtain new statistics.
Legislative work participation	The ability to participate in and influence legislative work that form the legislative basis of official statistical production in a way that will support decision makers and be regarded as useful and important.
Statistical product innovation	The ability to innovate i.e. create new statistical products based on existing data sources and the exploration of new data sources that are useful and important to users.
Methods and tools development for new statistics	The ability to effectively develop methods and tools to support the exploration and innovation of new statistical products.
Statistical Design	
Understand user needs	The ability to collect, assess and translate user needs into statistical outputs.
(Re) Design statistical outputs	The ability to design statistical output so that it is valid and useful for the user based on sound statistical methodologies.
Process & Workflow design	The ability to design statistical production processes and workflows in an effective and flexible manner to ensure efficient production as well as ensuring the easy replication/reusability of the processes. This includes data collection, process & analysis, and dissemination.
Process methods design	The ability to develop, maintain and enhance methods to be delivered by statistical processing services supporting statistical production.
(Re) Design production system, statistical processing services, and rules	The ability to design and implement the necessary systems to deliver and combine statistical processing services and related rules for the production of statistics.
Statistical Data collection	
Provision agreement management	The ability to conclude provision agreements with information providers (explicit or implicit) to provide data according to requirements (timeliness, confidentiality, quality, transmission protocol, authorship, ...).
Collection of administrative and other data sources	The ability to manage the process of requesting, receiving and testing data from administrative sources as well as other data sources (big data, internet data, scanner data, …).
Primary data collection	The ability to set up and manage surveys through to their finalization and transfer to processing and analysis.
Metadata collection and management	The ability to enrich the received data with metadata to support the further processing and analysis as well as the dissemination of the statistical output.
Statistical Registers Management	The ability to set up, maintain and provide "register" services supporting collection and integration of data.
Statistical Processing	
Statistical data preparation	The ability to efficiently integrate data from different sources, classify and code data, review and validate the data as well as edit the data and perform

Business Capability	Description
	imputations to improve the information set quality. This requires shared methods, processes and workflows.
New variables and units derivation	The ability to derive new variables & units for the statistical output according to shared methodologies.
Calculation and finalization of output	The ability to calculate the necessary weights and aggregates and prepare output data for analysis and dissemination using shared methodologies and processes.
Statistical Analysis	
Statistical output analysis	The ability to validate outputs as well as interpret & explain outputs and finalize output for dissemination using shared methodologies and processes.
Statistical Dissemination	
Release mgt.	The ability to manage the release of statistical output as well as accompanying content according to release schedules so that users have predictable and equal access to data.
Products and services promotion	The ability to promote the statistical output for potential users and notify the press and other stakeholders about statistical output.
Flexible data access provisioning	The ability to make statistical output data and metadata flexibly available for manual and machine-to-machine access through multiple channels.
Statistical content mgt.	The ability to author and manage the distribution of content related to the statistical output. This includes press releases, interpretations, and reports.
Statistical Quality management	
Quality assessment	The ability to assess the quality of statistical processes as well as output according to shared standards and practices.
Quality control mechanisms mgt.	The ability to set up, execute, monitor, and evaluate control mechanisms in the production process to ensure a high quality of statistical output.
Information resources Management	
Statistical Data mgt.	The ability to manage data (including personal micro data) efficiently and securely through the entire life cycle from data collection to dissemination.
Metadata mgt.	The ability to manage metadata throughout the production cycle