ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

.Stat and SIS-CC Strategy 2014-19

Version: 2

Published date: 26 March, 2014

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Contents

1.   Introduction

This paper proposes strategic directions for OECD.*Stat* and the Statistical Information Collaboration Community (SIS-CC) for the years 2014-19. The document is the result of extensive consultations with SIS-CC members that took place in 2013, in particular during a workshop in April 2013[1], and earlier this year.

The document sets out with a short review of the role of OECD.*Stat* in the OECD, along with the corporate objectives assigned to it (Section 2). It then briefly recalls the emergence and current state of the SIS-CC (Section 3). Section 4 constitutes the core part of the paper as it outlines a five year strategy, in terms of the vision for SIS-CC and OECD.*Stat*[2] objectives, as well as directions for product and software developments. Section 5 concludes with the next steps.

2.   OECD.*Stat* and OECD Objectives

For more than a decade the OECD has made significant investments amounting to several millions of euros, in developing and evolving its Statistical Information System (SIS), a suite of integrated software components for statistical data and metadata. Central to SIS is the OECD.*Stat* data warehouse that integrates statistical production, sharing and dissemination processes. The enhancement and evolution of OECD.*Stat* continues to be a high priority for the OECD, as it is a core strategic platform which supports the analytical and statistical work of the Organisation.

As the central source of validated statistics and related metadata, it is hard to over-estimate the usefulness of a single, centralised platform where professional internal and external users can find nearly all of OECD's data. OECD.*Stat* has played an important role in facilitating data access and consolidation of statistics from different sources. Apart from hosting basic series, OECD.*Stat* has also been instrumental in providing access to indicators and derived statistical measures with analytical meaning. The possibility to create 'data cubes' has helped to produce sets of indicators that correspond to OECD publications but, unlike publications, are updated on an ongoing basis.

OECD.*Stat* is also an essential component of the OECD's dissemination and publication strategy. The OECD Council has requested that OECD data become fully accessible, open and free by 2015, and OECD.*Stat* is key to achieving this.

Overall then, OECD.*Stat* has been and will continue to be essential for the OECD's main outputs, namely the provision of reliable information for policy advice and high quality data. Its strategic role is fully supported by the OECD governing bodies and its senior management.

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[1] The following documents, already reviewed by SIS-CC members have formed the basis for the present note (*Portal login required in order to access documents*):

- Statistical Information System Collaboration Community Framework and Governance (original document signed by existing members in May 2011)
- Statistical Information System Collaboration Community Application Lifecycle Management (original document signed by existing members in May 2011)
- Community governance evolution survey
- DRAFT SISCC-governance-evolution (as presented on day of the SIS-CC 2013 workshop)
- DRAFT SIS-CC governance evolution and Strategic Directions (compiled post SIS-CC workshop based on further discussion and review by members)
- SIS-CC workshop 2013 - Highlights report for partner organisations (including actions from day 3)

[2] From section 4 onwards OECD.*Stat*, the single core product of which the OECD is sole owner of its intellectual property, will be referred to as *.Stat.* This is to indicate that, OECD.Stat can be implemented in each community member organization under their own brand XXX.stat. The *.Stat* system is now deployed in 10 organisations.

More specifically, OECD.Stat has fulfilled the following key functions:

Internal Data Sharing

OECD.*Stat* has enabled data consolidation at the OECD after several years of collective efforts – moving away from a fragmented 'silo' approach preventing data sharing, towards a coherent and strategic approach to data. Data consolidation has facilitated the creation of a single source of up-to-date, high quality data and metadata.

Machine to Machine Data Exchange

OECD.*Stat* has been a key component of the OECD Open Data strategy, in order to make statistical data and metadata available in "open" machine-readable formats, in particular the Statistical Data and Metadata standard eXchange format (SDMX).

Data Accessibility and Exploration

The main entry point to OECD.*Stat* is through a feature-rich data browser providing users the ability to explore and customise data and metadata, visualise it with dynamic charts and download it in various formats for further analysis offline. OECD.Stat is thus a key component of the "Accessibility" part of the Open Data Strategy.

Streamlined Data Dissemination Processes

OECD.*Stat* has enabled the OECD to structure its statistical data dissemination processes: integrating a wide range of data production tools with OECD.*Stat* in an optimal manner, and building a range of data publishing operations that source data in OECD.*Stat.*

International Standards Setting

OECD.*Stat* was the first dissemination system to provide a means for disseminating data in the SDMX internationally agreed standard. Having implemented a fully conforming 2.0 SDMX web service in 2007, OECD.*Stat* has been at the forefront of promoting the use and implementation of common standards. More recently the first working API has been implemented using the common statistical SDMX-JSON format as defined by the SDMX Technical Working Group.

3. Opening up to the SIS-CC

Following requests by several other organisations, the OECD began sharing OECD.*Stat* in 2007. These organisations were interested in OECD's successful experience of building a corporate-wide unified data warehouse, wanted to benefit from the OECD experience and avoid duplicative costly efforts of building similar but separate systems. A set of bilateral relations were then established (with IMF, SNZ, ISTAT and ABS). These bilateral agreements have enabled organisations to use OECD.*Stat* in combination with their own branding (e.g. ABS.*Stat*). At the same time, the OECD has retained the leadership role in OECD.*Stat* development to ensure that the product continues to evolve and meet its own business objectives.

In addition to the bilateral agreements, in 2010, the OECD set up the Statistical Information System Collaboration Community (SIS-CC). The SIS-CC was officially launched in March 2011 at the occasion of the first annual workshop when the Community came together for the first time. In 2011, the OECD

implemented a governance framework[3] in consultation with the SIS-CC members, to oversee the community related elements and work plan.

The SIS-CC is a community of OECD.*Stat* users which was setup so that participating members could benefit from a broad collaboration, sharing experiences, knowledge and best practices, and to enable cost-effective innovation in a minimal time.

The Community has steadily expanded since its inception at a rate of around 2-3 new members a year. There are now ten members[4] with a number of other organisations lined up to join. The achievements of the Community include the implementation of improved and customised versions of OECD.*Stat* and valuable information-sharing during the SIS-CC Workshops held in 2011, 2012 and 2013.

The Community has developed links to other international initiatives. The adoption of SDMX standards has been and remains a core objective. The Community positively influenced the new Open Data SDMX-JSON standard and works in close collaboration with Eurostat in the development of SDMX components (in particular SDMX-RI). OECD presented the SIS-CC in various international fora (in particular the High-Level Group on the modernisation of statistical production and services, HLG, and the Management of Statistical Information Systems, MSIS) where it has been recognised as the reference collaboration community for software co-development (See Appendix A for more details).

Thus far much of the Community's output has been produced by the OECD as the lead organisation. This covers Run outputs (Coordination and Support) and Build outputs (Promotion and Product Development). Run activities have been funded by Community members' financial contributions as part of the bilateral agreements, while the majority of the Build activities have been funded by the OECD, capitalising on a decade of development that took place before the Community was created. Several Community members have made valuable in-kind contributions and have expressed a wish to expand such contribution.

From section 4 onwards OECD.*Stat*, the single core product of which the OECD is sole owner of its intellectual property, will be referred to as .*Stat.* This is to indicate that, OECD.Stat can be implemented in each community member organisation under their own brand XXX.stat. The .*Stat* system is now deployed in 10 organisations.

4.   Where are we heading: A 5-year Strategy for .Stat and the SIS-CC

Over the next five years, the vision of the SIS-CC will remain to provide an international collaboration framework for a more open, innovative and industrialised data dissemination, to collectively develop software, leverage innovations, mutualise costs, and promote standardisation. This will mean in particular that, as the demands and needs of the users change, the objectives of.*Stat* and the associated product development strategy will have to evolve in order to continue to respond to new challenges, while ensuring that .*Stat* continues to fulfill the existing key functions .

4.1   The SIS-CC Vision

The Community vision outlined above will be articulated around three main objectives (see details in Appendix B):

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[3] See the Statistical Information System Collaboration Community Framework and Governance document signed by existing members in May 2011.

[4] Today the SIS-CC members consist of: the International Monetary Fund (IMF); Statistics New Zealand (SNZ); Italian National Institute of Statistics (ISTAT); Australian Bureau of Statistics (ABS); the European Commission (EU); UNESCO Institute for Statistics (UIS); University of Manchester (Mimas); Statistics Estonia (SE); National Bank of Belgium (NBB); and the OECD as the lead organisation.

a) Collectively produce and develop software based on *.Stat* solution,
b) Share experiences, knowledge and best practices,
c) Contribute to International Collaboration.

SIS-CC work is focused on 4 main areas of outputs in order to deliver in line with these objectives. These are broken down into what are termed 'Build' and 'Run' activities':

a) Coordination (Run): Coordinate all community activities,
b) Support (Run): Support of community members as users of *.Stat*,
c) Promotion (Build): Grow the Community and increase visibility of *.Stat*,
d) Product development (Build): Continuous development of new features or components, evolution of the solution architecture, enhancement and maintenance.

In addition, the following principles will guide the future evolution of the Community**:**

- **Share a set of common business objectives,** even though each member organisation pursues its own strategy of which *.Stat* and SIS-CC are only components. *.Stat* Product Development should hence be driven with a view to building a solid data infrastructure to achieve the various business objectives: consolidating data, developing an SDMX and Open Data strategy, enabling new data experiences, streamlining data processes and implementing international standards. These common objectives position *.Stat* and SIS-CC to collectively address challenges and seize opportunities.

- **Remain open to welcome new members in the future** and continue to promote collaboration. However rapid growth is not a primary objective and should be kept at the current incremental pace, to ensure that the Community governance and other processes continue to function and deliver outcomes.

- **Facilitate increased investment** with the growing potential of joint innovations within and around *.Stat*. One of the key requirements for *.Stat* and Community evolution in this context, is reinforcing the Strategic Governance – the drafting of the 2014-19 strategic directions embodies this objective.

- **Introduce stronger governance** through increased involvement of senior management in the participating organisations, longer term shared vision, an adjusted governance framework, financial support and the establishment of an architecture task force. These should reinforce the strategic governance of the Community.

- **Further engage and collaborate with other international initiatives** while at the same time preserve the capacity of the Community to make decisions and innovate. In this way the Community can be a catalyst influencing international statistical and collaboration processes, even as the membership of these initiatives may vary from those of the SIS-CC membership.

4.2 *.Stat* objectives

The Community has identified five key objectives that are in line with the SIS-CC vision and will be the focus for *.Stat* evolutions over the next 5 years:

Upgraded Internal Data Sharing Facilities

Continuous improvement of the ease and speed with which data and metadata can be accessed by users is key. Data and metadata should be easily and directly retrievable onto user desktops for detailed analysis and data sharing.

More Open Data Dissemination – Developing an SDMX and Open Data Strategy

The development of a wide range of machine-readable web services and the capacity to scale to their future demand is another core objective of *.Stat*. It will enable more and more users to assemble content and data themselves, compare or integrate data, or collaborate with each other to produce new content.

More Innovative Data Dissemination – Enabling New Data Experiences

.Stat will provide services enabling richer and easier data experiences for a new generation of users. New services will be built sourcing the data in *.Stat*, including advanced search capabilities, visualisations, dynamic charts, and the capacity to explore data through mobile devices. These evolutions are expected to enable a more meaningful, contextual understanding of the data, as well as the emergence of communities of users around data. While open data approaches should facilitate innovation external to organisations to build new data experiences, each community member will continue to invest in its own data exploration services, structured along a specific editorial approach and interlinked with its analytical content and geared towards different audiences.

More Industrialised Data Dissemination – Streamlining Data Processes

The task at hand is to build a range of tools for data publishing operations that source data in *.Stat.* The objective is to continue streamlining data dissemination processes in order to reduce costs, shorten production cycles, develop single-source-publishing models or web-driven models, increase the capacity to innovate in response to users' demands, minimise manual operations and facilitate the creation of value-added products. An important dimension of industrialisation consists of enriching data with metadata so that data can be more easily found and better interpreted or improve data discovery through linkage with other data or analytical contents.

Implementing International Standards

The Community will continue to support and promote a number of important standardisation initiatives across the international statistics community. First and foremost, SDMX[5] will remain central to the *.Stat* evolution. *.Stat* will be able to leverage on SDMX momentum and contribute to the adoption of standards among statistical organisations for instance through integration with the global registry, implementation of the 2.1 SDMX standard, and provide support for the global Data Structure Definitions (DSDs). SDMX will continue to be a key part of *.Stat* serving both data imports and data exports. Organisations that do not load data conforming to DSD standards will benefit from the SDMX reference infrastructure (SDMX-RI) to map between different data structures. SDMX-JSON will provide the main format for Open data dissemination.

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[5] Statistics Data and Metadata eXchange (SDMX) standard for statistical data and metadata access and exchange. This is an ISO standard - adopted at the level of UNSC– which covers both content and technology.

.*Stat* is central to organisations' dissemination processes and can be mapped to the Generic Statistical Business Process Model (GSBPM v5.0), under "Build" and "Disseminate" – see Appendix C. In addition an exercise is underway, led by the OECD Statistics Directorate, to map .*Stat* to the Generic Statistical Information Model (GSIM). Generally, .*Stat* will further evolve towards a "Plug and Play" architecture[6].

4.3 .*Stat* Product Development Directions

The objectives for .*Stat* evolution outlined above will be further met through Product Development along the following directions (see Appendix C for a visual representation of how .*Stat* fits within a broader Data Dissemination information system; see Appendix D for a more detailed analysis of the Product Development Directions):

a) **.*Stat* Data Upload Engine:** the data upload engine links a number of internal production processes and tools (e.g. in-house data production software, Excel, SAS, Stata, etc.) with .*Stat,* to facilitate the upload of data. SDMX import functions will be developed to meet requirements such as data aggregation and shared data among organisations.

b) **.*Stat* Data Browser**: the browser will continue to provide key dissemination services. The Browser features a comprehensive data exploration and download tool, including data views creation, embedding and sharing functions. The interface should be further improved through responsive design. An easier branding, simpler configuration and multilingual capabilities are key requirements for SIS-CC members.

c) **.*Stat* Data Delivery Engine:** The evolution of .*Stat* Delivery Engine constitutes the core, priority part of the product development plan for the next 5 years. This engine will provide a wide range of data extraction services (standard formats such SDMX-ML, SDMX-JSON, OData Web Services formats, search engine API) as well as tables and charts extraction services. In the future, the development of linked data services (through implementation of standards such as RDF and other semantic web protocols) should be explored to enable easier linkage between statistical data and analytical content, or data aggregation and discovery mechanisms over the Internet. The release management function should be enriched to support better embargo functions, plus archiving and notification services. More fundamental aspects of the technical architecture need to be reviewed and improved in order to be able to meet requirements for large and frequent data exchange that may arise from machine-to-machine flows of data.

4.4 SIS-CC Governance

In order to deliver on its vision and achieve its objectives, the SIS-CC governance will be organised along four different levels (strategic, management, operational, and Architecture task force). The Architecture task force has been introduced, following members request, to drive the business and technical architecture of .*Stat* (see Appendix E for more details):

a) The **Strategic Level** comprises senior executives (often Chief Statisticians) from each SIS-CC member organisation steering the Community along the strategic directions and confirming the .*Stat* product priorities. This group will sign off on the 5-year strategic directions and meet once or twice per year as required. The Strategic Level will play a strong and important role in the future.

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[6] The Generic Statistical Business Process Model (GSBPM) is a standard for describing the processes and sub-processes used by each organisation. Together with the Generic Statistical Information Model (GSIM) this means that statisticians and IT experts in different organisations can speak the same language when describing statistical processes thus making it easier to design, develop and implement components that can be shared and reused in a "Plug and Play" environment.

b) The **Management Level** comprises senior managers appointed by member organisations and reports to the Strategic Level. This level monitors progress made on a quarterly basis, signs off on biennial work plans (including product roadmap), ensuring that these are aligned with the strategic directions.

c) The **Operational Level** comprises project managers appointed by member organisations and tasked with implementing the *.Stat* product evolutions as set by biennial work plans, as well as with providing the day-to-day support to members. The technical work regarding software development is carried out according to the ALM (Application Lifecycle Management) framework aimed at continuously industrialising the co-development process (see Appendix F for more details).

d) The **Architecture Task Force** comprises experts appointed by member organisations (two representatives each: business analysts and technical architects) and will have as a main task to drive the business and technical architecture of *.Stat*.

4.5 Funding arrangements

Two types of funding are envisaged to ensure the sustainability and growth of the Community (see Appendix E for more details):

Funding of '**Run' outputs** (coordination and support): these are funded by members' annual contributions, as defined in the bilateral MoUs between the OECD and each member.

Funding of **'Build' outputs** (promotion, product development): thus far these have been funded mainly by the OECD. In addition in-kind contributions have been provided by members. Several members have recently expressed interest in also contributing financially to Product Development to increase the collective capacity to meet the objectives. Such financial support may take the form of grants or voluntary contributions to the OECD.

The governance arrangements outlined above would ensure that any new funding would contribute to the agreed objectives and priorities for product development.

5. Next steps

The present document was submitted to Community members for review and comment in mid-September 2013. In providing feedback, Community members were asked to address in particular the following items:

- Principles for future development of SIS-CC;
- *.Stat* Objectives and Product Development Strategy Directions;
- Proposals for governance arrangements and funding.

The last of the feedback was received at the end of January 2014 with a final version circulated in March 2014. The goal is to have this process completed in order to have a validated version of the document by the Community workshop in April 2014.

6. Appendix A: *.Stat* and SIS-CC links to international initiatives and standardisation efforts

6.1 Overview

The SIS-CC has developed links to other international initiatives. The adoption of SDMX standards has been and remains a core objective. The Community positively influenced the new Open Data SDMX-JSON standard and works in close collaboration with Eurostat in the development of SDMX components (in particular SDMX-RI). The OECD has presented the SIS-CC in various international fora (in particular HLG and MSIS), where it has been recognised as the reference collaboration community for software co-development.

The Community should continue to further engage and collaborate with other international initiatives – while at the same time preserve its capacity to make decisions and innovate. In this way the Community can be a catalyst influencing international statistical and collaboration processes, even as the membership of these initiatives may vary from those of the SIS-CC membership.

As part of the 5-year Strategy this integration is made more explicit. Examples are:

a) **Standardisation / Relations to the SDMX initiative:** The Community enforces the standards as they are being defined and approved. The Community contributes to the collaboration by the mere fact of accelerating a consistent implementation of the standards by all its members. Through ideas and innovations triggered at Community level, the Community may contribute directly or indirectly to the SDMX initiative.

b) **International Groups - Relations to HLG and sub-groups:** Further alignment to the GSBPM process definition is a shared objective for the next 5 years. *.Stat,* as well as similar initiatives being undertaken by the international statistical community such as the Generic Statistical Information Model (GSIM*)* and the Common Statistical Production Architecture (CSPA or "Plug and Play").

c) **Relationship to Eurostat:** The Community has endorsed Eurostat for the SDMX-RI component implementation with ISTAT playing a pivotal role in the integration of SDMX-RI into *.Stat*.

6.2 *.Stat* and SDMX

SDMX is the global standard for statistical data and metadata exchange. The OECD is a sponsor organisation and strongly supports its implementation, both within the organisation and with its member countries through a range of projects, including those where the member country uses the *.Stat* product.

.Stat was the first dissemination system to provide a means for disseminating data in the internationally agreed standard, SDMX. Having implemented a fully conforming 2.0 SDMX web service in 2007, *.Stat* has been at the forefront of promoting the use and implementation of common standards. More recently the first working API has been implemented using the common statistical JSON format as defined by the SDMX Technical Working Group, in which the OECD participates.

The implementation of SDMX 2.1. in *.Stat* is based on collaboration with Eurostat, provider of the SDMX-RI component. It will leverage on the mapping tool developed by ISTAT, as part of *.Stat* solution, based on SDMX 2.0, which should be made available in 2014. Integration of *.Stat* with the global SDMX registry should follow.

The Community, with its membership from International Organisations, NSOs, Academia and Central Banks, provides a unique opportunity for implementing SDMX based tools and a compatible dissemination system – *.Stat*, that further promotes the use and adoption of the SDMX standard on a large scale.

7. Appendix B: SIS-CC Vision, Values, and Outputs

7.1 Community Vision

The SIS-CC vision is to provide an international collaboration framework for a more open, innovative and industrialised data dissemination, to collectively develop software, leverage innovations, mutualise costs, and promote standardisation. To achieve this, the Community has three strategic objectives:

a) **Collectively produce and develop software**, by leveraging on the *.Stat* platform and related components, and in so doing build a robust, component-based and scalable architecture,
b) **Share experiences, knowledge and best practices** through multilateral collaboration and building of a collective capacity, concerning the Community.
c) **Contribute to International Collaboration**, by accelerating the implementation of standards and contributing to the international 'Plug and Play' architecture vision.

7.2 Community Values

The **Community members share the same set of core values** that should guide all future joint activities:
- **Partnership**: The Community philosophy is based on one of collaboration rather than a customer/client commercial relationship; all members participate in the Community decision process through agreed processes.
- **Transparency**: Information will be openly and transparently shared among Community members according to community processes; the Community governance framework will ensure fair and equal access to information by all members.
- **Commitment**: The Community members will commit to respecting the coordinated work plans put in place, as individual organisation's plans become dependent on the outputs.
- **Industrialisation**: The Community outputs will be developed according to best practices in terms of application lifecycle management.
- **Standards**: The Community will commit to foster and promote internationally defined standards, such as SDMX, GSBPM and GSIM.

7.3 Community Outputs

SIS-CC work is focused on 4 main areas of outputs to deliver the Community objectives. These are broken down into 'Build' and 'Run' activities'.

Coordination and Support are **'Run'** outputs in the sense of keeping the Community running and supporting the implementation of *.Stat* in each organisation; the funding of these outputs should be fully secured by the annual contributions by members.

Promotion and Product development are **'Build'** outputs, and represent the investments made by members in order to enrich the solution and expand the Community. Their funding depends on the members' willingness to invest more into the Community, either through direct funding or in-kind contributions.

a) **Coordination (Run)**: Coordinate all community activities – management of the 5 year strategic plan, work plans and dependencies; planning and management of the strategic reviews, SIS-CC workshops, multilateral quarterly reviews and bilateral reviews; animation of the Community work streams and the Architecture task force.
a) **Support (Run)**: Support of community members as users of *.Stat* – for installation, and on an ongoing basis (management of incidents, request for information, upgrades, and security issues).

b) **Promotion (Build)**: Promote the Community and *.Stat* in international fora as opportunities arise or on a bilateral basis; support potential members from evaluation through to signature of a Memorandum of Understanding (MoU) with OECD.

c) **Product development (Build)**: Continuous development of new features or components, evolution of the solution architecture, enhancement and maintenance (including curative, adaptive and security maintenance).

8. Appendix C: *.Stat* Functional Architecture

8.1 *.Stat* Positioning in GSBPM Reference Model

The positioning of *.Stat* in the GSBPM v5.0 is shown below.
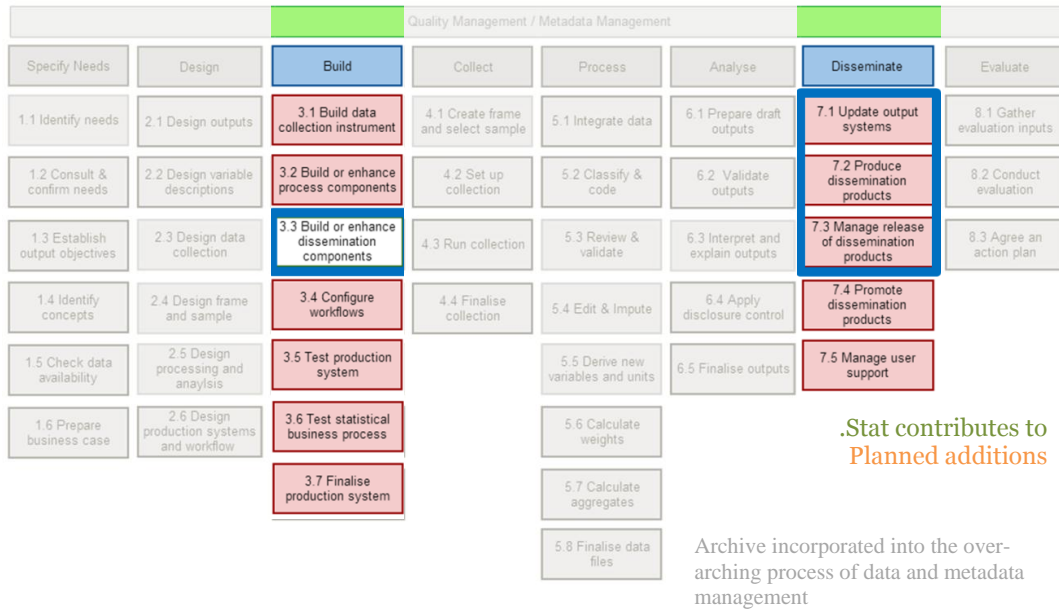
.Stat can be mapped today to the Generic Statistical Business Process Model ([GSBPM](#)) under "Disseminate" and "Build". In the future it will also incorporate archive functions as part of the over-arching process for data and metadata management. The *.Stat* data warehouse is part of the broader information system supporting these steps. The diagram below illustrates the *.Stat* contribution to these processes:
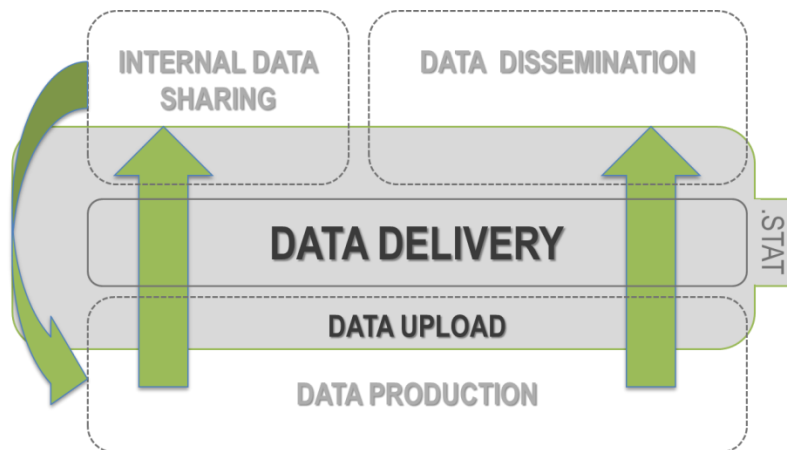
.Stat's core value-added lies in "Data Delivery", a set of functions that enable dissemination and data sharing, and "Data Upload", a set of functions interfacing data production processes into a single upload mechanism to feed dissemination channels[7].

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[7] In GSBPM terms: The data production area corresponds to the "Collect", "Process", and "Analyse" steps. The "Data Upload" functions correspond to step 7.1. (Update output systems); "Data Delivery" provides functions that support steps 7.2. (Produce dissemination products) and 7.3. (Manage release of dissemination products), especially through the provision of data web services which, through SDMX and Open Data strategies, become data dissemination products as such, and simultaneously enable other dissemination products and their management. Taking into account that the GSBPM model is not a linear model – hence data sharing activities, which are more about data dissemination towards a specific (usually internal) audience, may feed back to data production processes.

8.2   *.Stat* Functional Representation

The grey shaded boxes in the figure below show a visual representation of how *.Stat* fits within a broader Data Dissemination Information System of organisations; the boxes with dotted lines represent other components of the Data Dissemination Information System that are not supported by *.Stat* but are enabled by it.

In particular, *.Stat* provides the following 3 key functional areas:

   a)   **The *.Stat* Data Upload Engine**
   b)   **The *.Stat* Data Delivery Engine**
   c)   **The *.Stat* Data Browser**

.Stat users can primarily be categorised on the one side as Data Producers and Editors who are in most cases internal users, and on the other side as Data Consumers, who can be both internal (sharing data), and external (consuming the data disseminated).

Of the latter, which constitute the target audiences for data dissemination, users of the *.Stat* Browser are predominantly experts (Statisticians, Analysts, Researchers, Journalists, Developers and NGOs). Hence the evolution of data dissemination interfaces, when geared towards general public and lesser expert audiences, or more specific audiences requiring high customisation, will be mainly driven outside of the *.Stat* Browser, through interfaces developed within each organisation (data portals, "apps", etc..) and outside (through third parties developing applications consuming open data).

This trend further reinforces the *.Stat* Data Delivery Engine as the priority for Product Development, enabling multiple new data experiences based on data, charts and tables extracted from the *.Stat* Data Delivery Engine.

9. Appendix D: Key Directions for *.Stat* Product Development

A potential roadmap for *.Stat* development for 2014-19 period based on members' feedback and in line with agreed *.Stat* objectives is outlined below. **At this stage, the 5-year roadmap is indicative only: it will need to be reviewed on a biennial basis as part of the work-plan, and adjusted** depending on the resources Community members make available for Product Development.

.Stat **Direction 1 - Developing an SDMX and Open Data Strategy**

What exists today?

a) *.Stat* Data Delivery Engine: Automated data exchange in place through SDMX 2.0 interface with several organisations and data-resellers / aggregators.

b) *.Stat* Data Delivery Engine: Beta version of open data web services released in 2013, SDMX-JSON format approved by SDMX/TWG.

Future direction

.Stat Data Delivery Engine: Build on current adoption of standard among statistical organisations to:
a) Support globally agreed DSDs through SDMX artefacts
b) Provide SDMX Registry API and integration with the SDMX global registry
c) Provide SDMX v2.1 compatible APIs

.Stat Data Delivery Engine: Reach out to the broader community of web-developers to:
a) Provide Open Data web services (SDMX-JSON, OData)
b) Provide tables / charts extraction web services (SVG, HTML)
c) Explore further semantic web/Linked data opportunities (RDF, SDMX-RDF data cube vocabulary)

.Stat Data Delivery Engine: Enable easy access to data/metadata through popular desktop tools to:
a) Provide open data web services geared towards MS Office tools (ODATA)
b) Provide easy and fast access to structural and referential metadata for internal users (DotStatGet)

.Stat Data Browser: Provide web-developers easy ways of editing queries to include in their app to:
a) Create a query builder into the *.Stat* Data Browser

.Stat Data Delivery Engine: Optimise the capacity to scale to higher volumes in order to:
a) Provide asynchronous delivery mechanism for voluminous data extraction
b) Optimise the technical architecture (centralised cache service) to support very high data bandwidths

.Stat Data Delivery Engine: Support the data aggregation use case to:
a) Provide mapping of multiple data sources to a local source (SDMX Imports)

OECD.*Stat* **Direction 2 – Enable New Data Experiences**

What exists today?

a) *.Stat* Data Browser: A modern feature rich data explorer designed for web based interactions by expert users, with a capacity to brand and adapt to various organisations.

b) *.Stat* Data Browser: Data downloads possible in a number of file formats (XLS, CSV, PC-AXIS, SDMX etc.), created on the fly based on the selected data.

c) *.Stat* Data Browser: A capacity to create and share data queries (data views) by data producers and data consumers.

Future direction

.Stat Data Delivery Engine: Enable consumer-centric data portals leveraging the corporate data warehouse to:
a) Improve search-ability through integration with external search engine (Search API)
b) Enable semantic linkage to analytical content (RDF, SDMX-data cube vocabulary)

.Stat Data Delivery Engine & Browser: Enable easy sharing, re-use and embedding or mash-up of charts and tables, and socialising around interesting data to:
a) Provide charts & tables queries creation service to data producers / editors and consumers, through the *.Stat* Data Browser or third party application interfaces
b) Enable easy embedding of charts & tables through extraction web services

.Stat Data Browser: Further improve data exploration capabilities to:
a) Improve the browser experience across wide range of devices (Responsive web design)
b) Provide qualitative data exploration capability
c) Provide very large datasets exploration capability

.Stat **Direction 3 – Streamlining of Data Dissemination Processes**

What exists today?

a) *.Stat* Data Upload Engine: A complete set of data and metadata upload mechanisms for various formats, via batch or a graphical user interface (GUI).

b) *.Stat* Data Delivery Engine: A number of data delivery management functions exist (data views, theme tree, data copy, units, etc…) and a simple embargo management function.

c) *.Stat* Data Delivery Engine & Browser: Support of 2 languages.

Future direction

.Stat Data Delivery Engine & Browser: A highly configurable data delivery mechanism, supporting the organisation's branding, accessibility and multilingual requirements to:
a) Provide an integrated data delivery management Graphical User Interface for data editors
b) Increase branding capability of the browser User Interface
c) Provide localisation capabilities (multiple language support, beyond 2 languages)
d) Provide an accessible browser User Interface

.Stat Data Delivery Engine: A highly configurable data delivery mechanism, supporting the organisation's management processes to:
a) Provide release management capabilities (embargo, archiving and versioning)
b) Provide capacity to synchronise data release processes with the publishing back office
c) Streamline charts & tables delivery mechanism through extraction web services

*.Stat* Data Upload Engine: Further optimised and expanded data upload mechanisms to:
a) Provide SDMX Import and mapping capability
b) Optimise high-volume data upload capability
c) Improve units / attributes management capabilities
d) Provide microdata (DDI format) upload capability

10. Appendix E: SIS-CC Governance and Funding Model

10.1 Overview

The figure below provides an overview of the SIS-CC governance structure and key activities.
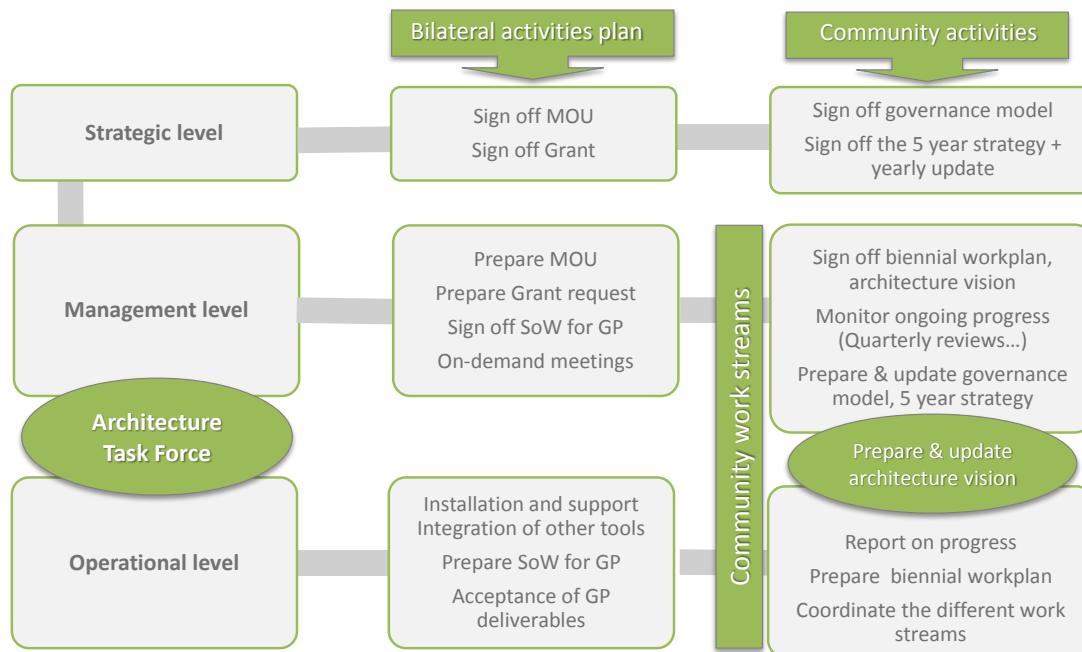
The following activities will continue to govern the Community work:

Bilateral activities will continue to involve OECD (SIS-CC Support functions) and any Community member. The bilateral MoU between the two parties will continue to be the principal legal foundation of a member participation in the Community. In addition specific statements of work (SoW) and possibly grant requests will be agreed bilaterally, covering direct contributions to product development.

Community activities will be coordinated by OECD (SIS-CC coordination functions), with an equal level of information and possibility to participate and contribute by all members. Important evolutions are proposed at the different levels of community management that are listed hereafter.

The **integration with the international collaboration** framework will guide decision making regarding the adoption and implementation of standards.

The SIS-CC community governance structure will operate at the following levels:

a) **The Strategic Level** comprises senior executives from each SIS-CC member organisation steering the Community along the strategic directions and confirming the *.Stat* product priorities. This group will ensure alignment to the 5 year Strategic Directions meeting on a bi-annual basis. A formal meeting, chaired by the OECD Chief Statistician, will be held once a year to discuss the strategic directions and formally validate the priorities for the coming year. Other less formal meetings may be held, as appropriate. As not all Community members may attend these meetings, they shall not be considered as a formal part of the Community decision making process. The Strategic Level will play a strong and important role in the future.

b) **The Management Level** comprises senior managers appointed by member organisations and report to the Strategic Level. This level monitors progress made on a quarterly basis, signs off on

biennial work plans, making sure these are aligned with the strategic directions. Management Level meetings are chaired on a rolling basis, with overall coordination carried out by OECD as part of the Community Coordination outputs. Operational decisions will be delegated by the Strategic Level to this Group. Management Level will report to the Strategic level on a regular basis, and prepare all aspects that are to be reviewed and signed off by the Strategic Level on a yearly basis, including the Grant Requests, and the 5 year Strategic Directions updates.

c) **The Operational Level** comprises project managers appointed by member organisations and tasked with implementing the *.Stat* product evolutions as set by biennial work plan, as well as with providing the day-to-day support to members. The Operational Level will be animated by OECD as part of the Community Coordination outputs. It will report to the Management Level on a regular basis. This group should meet frequently, in most cases virtually, to discuss technical and operational aspects of the Community activities related to *.Stat* Product Development and Support.

d) **The Architecture Task Force** comprises experts appointed by member organisations (two representatives each: Business Analysts and Technical Architects) and will have as a main task to drive the business and technical architecture of *.Stat*. The Architecture Task Force will be animated by OECD as part of the Community Coordination outputs. The work of this group will focus on driving forward the 5 year Strategic Directions in terms of product architecture evolution. This group will meet virtually several times per year, and provide a global annual report on their activities and recommendations for future architecture evolutions during SIS-CC annual workshop.

Community work streams are areas of common interest that are identified progressively through the ongoing discussions. They cover technical items (such as: integration of *.Stat* with single sign on tool, or exploring RDF integration in *.Stat*), or business items (such as: approaches to data portals or *.Stat* user training materials). They usually represent an opportunity where an experience in one organisation can benefit the others, or where there is a potential innovation that requires more discussions to be assessed collectively. Work streams are established on an ad hoc basis by the Management level at quarterly review meetings, defining the goal of the work stream, establishing who is leading it and inviting interested members to join in. It is then up to the lead organisation to take forward the work and report back at Management meetings.

10.2 Terms of Reference for Strategic level group

Skill requirements
The Strategic level group consists of senior executives from each Community member organisation.

Main focus
Steering the Community along the strategic directions and setting the Community priorities. This group will sign off on the 5-year strategic directions and play an important role in the future of the Community.

Group engagement
A formal meeting, chaired by the OECD Chief Statistician, will be held once a year to discuss the strategic directions and formally validate the priorities for the coming year, with possible updates to the strategic directions.

Other less formal meetings may be held, as appropriate. As not all Community members may attend these meetings, they shall not be considered as a formal part of the Community decision making process.

Key points for the group

- Take strategic decisions, guide medium to long-term developments, ensure resource availability and monitor progress at a high level.
- Delegate operational responsibility and decision making to the Management level group, including the preparation and proposition of the 5-year strategic directions based on organisations' needs.
- Sign-off on Memoranda of Understanding.
- Sign-off on Grants to fund specific scopes of project.
- Assure organisation's commitment including resources.
- Promote the work of the Community both within each member organisation, and the international fora.

10.3 Terms of Reference for Management level group

Skill requirements
The Management level group consists of senior managers from each Community member organisation.

Main focus
This level monitors progress made on a quarterly basis, signs off on biennial work plans, making sure these are aligned with the strategic directions. This level also prepares strategic directions updates for the strategic level to sign off and reports on work progress to the strategic level.

Group engagement
The Management Level group will meet every quarter with meetings being chaired on a rolling basis.

The Management level group will also meet face-to-face during the annual Community workshop to discuss and formulate the product and community evolutions.

Other less formal meetings may be held, as appropriate. As not all Community members may attend these meetings, they shall not be considered as a formal part of the Community decision making process.

Key points for group

- Overall coordination carried out by the OECD as part of the Community Coordination outputs.
- Strategic level group delegates operational responsibility and decision making to Management level group, including the preparation and proposition of the strategic directions based on organisations' needs.
- Sign off biennial workplan (including product roadmap), ensuring alignment to 5-year directions on an annual basis.
- Monitor progress reporting to strategic level group on a quarterly basis.
- Collect and propose to Strategic level group the priorities based on the 5-year directions, the Architecture Task Force recommendations, business and user needs, and resource commitments.
- Prepare business cases to include costs/benefits, to ensure that new requests align to the 5-year directions and propose this to the Strategic level group.
- Prepare Memoranda of Understanding and Grant requests.
- Manages organisation commitment including resources.
- Promote and animate the work of the Community both within each member organisation, and the international fora.

10.4 Terms of Reference for Architecture Task Force

Skill requirements

The Architecture Task Force consists of experts appointed by member organisations maximum of two representatives from each: Business Analysts and Technical Architects.

Main focus

Drive the evolution of business and technical architecture of *.Stat*. The work of this group will focus on enabling the strategic directions through a solid architecture vision for the *.Stat* product.

Group engagement and reporting

The Architecture Task Force will be animated by the OECD as part of the Community Coordination outputs. This group will meet virtually several times per year, and provide a global annual report on their activities and recommendations for future architecture evolutions during annual Community workshop.

Provide a consultative role to review and provide recommendations for the *.Stat* architecture to the Management group, for validation and assured alignment to the overall product directions.

Key points for group
 – Assure alignment of business and technical architecture, and overall product directions.
 – Provide recommendations for the *.Stat* architecture with the bigger picture in mind and in order to improve the process of distributed software development.
 – Continuely monitor the development of the SDMX international standard and identify implications for the *.Stat* product architecture to further support the SDMX artefacts.
 – Ensure a level of consistency with other common components of statistical agencies infrastructure that also align to international standards namely GSBPM and GSIM.
 – Ensure development of new components and features is carried out within a structure that safe-guards modularity and maintenability of the product over time.
 – Clarify the concept of 'non core plugins' that are not part of the product, hence not maintained as such by the Community, but which can nevertheless be shared amongst member on an ad hoc basis.
 – Identify proactively opportunities for statistical data dissemination processes such as linked and open data, secure and automated embargo process, data visualisation, data search and versioning, evolution towards the cloud, and position them as part of the architecture evolution vision.
 – Ensure continuous improvement of *.Stat* in the area of security and performance, and adaptation to new cyber-threats.

10.5 Community Funding Model

Two types of funding are currently in place, with more options being proposed by members to directly finance Product Development operations:

a) **Funding of "Run" outputs (Coordination and Support):** These have been, and will be funded by, the members recurring financial contributions, as defined in the bilateral MoUs between the OECD and each member. This recurring equal financial contribution by all members will be reviewed on an annual basis to ensure it covers all Run costs and the Community remains sustainable.

b) **Funding of "Build" outputs (Promotion, Product Development)**: The majority of Product Development have been funded thus far by the OECD. In addition, members have made in-kind contributions as regards the Community work plan. Several members have expressed interest in making financial contributions for Product Development, to increase the collective capacity of the Community to meet the objectives.

The following three options enable members to provide direct investment in product development (Note: option 1 has existed since community inception, options 2 and 3 have been outlined and agreed at the 2013 SIS-CC workshop; all three options are considered by the various Community members as coexisting ways of contributing –depending on their specifics in terms of staffing, resources and procurement rules):

a) Option 1: SIS-CC member contributes in-kind through onsite or remote developments, relying on internal staff or their own sub-contractors trained on *.Stat* development. The Community member bears the technical responsibility for managing the development, with the OECD being responsible for quality assurance and integration in the mainstream product. In-kind contributions are made visible through the ongoing reporting mechanism that is available to all Community members. The funding member (and other members, depending on the functional scope and interest) drives user acceptance tests before final acceptance of the deliverables by the OECD.

b) Option 2: SIS-CC member contributes in-kind through direct contract with the OECD Global Partner[8], based on a standard, and trilaterally agreed, Statement of Work (SoW). This reduces the capacity building efforts and leverages on the existing core capacities and processes built by OECD with its Global Partner. The Community member bears the technical responsibility for managing the development, with the OECD being responsible for quality assurance and integration in the mainstream product. The funding member (and other members, depending on the functional scope and interest) drives user acceptance tests before final acceptance of the deliverables by the OECD.

c) Option 3: SIS-CC member contributes financially through OECD funding following grant request procedures based on a specific, trilaterally agreed, Statement of Work (SoW), and more exceptionally on a specific ad hoc agreement as part of the bilateral MoU. Contrary to options 1 and 2, the OECD bears the technical responsibility for managing the development, on top of the regular responsibility for quality assurance and integration in the mainstream product, delegating the development to its Global Partner. The funding member (and other members, depending on the functional scope and interest) carry out / contribute to user acceptance tests driven by the OECD, before final acceptance of the deliverables by OECD.

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[8] The OECD is also engaged with a Global Partner to expand developer bandwidth and start to create a pool of developers and competencies to take on Product Development on a forfeit basis. The Global Partner is open to SIS-CC members to utilise as described in the funding options in section 10.2.

Contributions to product development through all of the above options are to be well coordinated as part of the biennial product roadmap and workplan, in-line with the 5-year Strategic directions.

10.6 Priority Setting Mechanisms

Priority setting has thus far been set annually at the SIS-CC yearly workshop. Going forward these priorities will be set in the biennial work plan that is in line with the 5-year Product Developments, with the possibility to update the work plan on a yearly basis.

The biennial work plan will reflect the OECD work plan and the SIS-CC work plan.

The OECD work plan will be based on OECD resource commitment and will be prioritised by the existing OECD management mechanisms.

The Community work plan will be based on contributions by Community members (in-kind or financial) as outlined above, on top of the recurring standard contributions. Each Community member will set priorities with regards to its contribution, that will be defined in the Statement of Work (SoW) (according to the 'who pays decides' principle) – provided the scope of work falls within the agreed 5-year strategic directions. A Community member may also choose to leave it to the Community members to decide how the resource brought forth should be used in priority; in which case the resulting 'pool of Community resources' will be prioritised as part of the biennial work plan elaboration process.

This will ensure that new funding will contribute to agreed priorities for Product Development. It combines the pooling of resources based on consensus regarding product evolution, with the capacity for members to take on new initiatives and accelerate Product Development in areas of priority, to the benefit of all.

11. Appendix F: Industrialisation of *.Stat* Product Development

The Application Lifecycle Management (ALM) Framework was proposed by OECD in 2011 when it was validated by all Community members. It is a living document that captures all processes and procedures to industrialise software development and release management processes.

.Stat product development has been, from the Community inception, industrialised through a set of procedures and practices defined in the Application Lifecycle Management (ALM) framework, as well as in the context of the installation package of the *.Stat*.

Product development is organised by monthly sprints according to standard agile development practices.

With the Community expanding, the extension of potential developers (OECD staff, OECD Global Partner, Community member staff), and the wish expressed by several Community members to invest more, the pace of Product Development will accelerate. Hence the industrialisation effort must continue and be accelerated.

The section below briefly describes the current status of the Community in regard to Product Development processes and procedures, as can be read in the 'Statistical Information System Collaboration Community Application Lifecycle Management' (ALM) document, as well as the future directions for further industrialising the Product Development. It will be extensively updated during 2013 to reflect the numerous changes that have been, and will continue to be introduced.

11.1 Current Status

Members can today provide a set of requirements that are validated and consolidated before further defining the business requirements that are taken forward to form the annual work plan. The work plan is then formally validated during the annual SIS-CC workshop by all members.

A shared development environment running on Microsoft Team Foundation Server (TFS) provides all members with access to a single source code and the ability to regularly retrieve the latest version to undertake local developments before submitting to the central repository. Several steps have been put in place that enable a robust review and consolidation of the source code before final integration and release that include mandatory technical specification documentation (SAD), peer code reviews, shelved builds, localised testing, traceability and automated checks. This ensures a level of consistence coding and robustness of the final product.

Product knowledge and capacity across the Community has so far been extended through in-kind contributions, either localised developments or staff loans to the OECD to work on a pre-agreed list of deliverables that are of particular interest to the sending organisation. The OECD is also engaged with a Global Partner to expand developer bandwidth and start to create a pool of developers and competencies to take on Product Development on a forfeit basis.

A major pain point for all organisations has been the installation of the *.Stat* product. In order to relieve the pressure and reduce the overall installation effort, a number of enhancements have been made to the packaging and release process over the last year in order to streamline the installation process and address the concerns raised by members. However, this is an ongoing process that is also closely linked to future evolutions (e.g. branding and configuration). Further enhancements will take place until a suitable level is reached.

An in-depth security review was undertaken in 2011, which lead to a set of significant improvements to the product and development process. This included protection against potential SQL injection and cross side scripting attacks, as well as introduction of a set of coding standards.

11.2 Generic roles in the ALM framework

The generic roles as per current framework are the following ones:

- The role of the OECD
  1. Validate initial concept
  2. Review detailed business requirements
  3. Consolidate all base requirements into work packages
  4. Compile work plan and scheduling
  5. Review draft technical specification (SAD) and validate approach
  6. Monitor deliverables through TFS work items
  7. Code review of shelved build
  8. Acceptance, integration and release

- The role of the Community member:
  1. Provide initial concept
  2. Provide detailed business requirements to include other members input where appropriate
  3. Review work packages
  4. Review and validate work plan and scheduling
  5. Provide technical specification (SAD)
  6. Add task completion and associate change sets with TFS work items
  7. Create unit tests
  8. Code comparison, test and compile before submitting shelved build
  9. Check-in code once confirmed by OECD
  10. Complete user acceptance testing and provide report

11.3 Further Industrialising the Product Development

The directions for further industrialising the Product Development process are the following ones:

1. Specification:
   a) Assured alignment to business and technical architecture through participation by members to the architecture task force
   b) Increased shared responsibility for large scale developments with some members taking on the requirement gathering element only, to utilise those members with greater business analysis capabilities
1. Coding:
   a. Consolidation of source projects to allow to identify and notify of dependencies when changes are made
   b. Consolidation and rationalisation to simplify code based and the overall OECD.*Stat* product
   c. Introduction of tools to maintain a high-level of code quality and conformance to industry standards
2. Testing:
   a. Introduction of a continuous integration server to allow for instance feedback on code changes and automate the build, test and deployment process

        b. Increased test coverage through the introduction of mandatory unit testing and automated functional tests

        c. Moving towards a Test Driven Development paradigm

3. Security:

        a. Continuous improvements in line with industry best practices

        b. Regular audits performed by members on a rolling basis

4. Documentation:

        a. Mandatory level of documentation for all new developments

5. Packaging:

        a. Further enhancements to *.Stat* product installation and configuration to move to a more automated deployment process

        b. Increased frequency of minor releases to reduce the complexity of deployments that include large scale changes

As part of the ongoing improvement process and key drivers for future work, members can contribute to each of the Key Streams on the Community portal. This is an important element, not only for product development improvements, but the Community as a whole, and will drive many future initiatives based on members' feedback in line with the overall strategic directions. The Key Streams include; Deployments in organisations, Security of the application, Environment upgrading, Branding, Localisation, and End user training material. The full list of the Key Streams can be seen on the Community portal.