Business Requirements Document- BRD

Business Requirements Document

Document History

Version	Date	Author	Status	Section	Revision Description
0.1	05/13/2019	MGA/Axenit/JAL Technology	Presented to verification	all	Draft presented to verification
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0.5					
0.6					
0.7					

Approvals

Signature:	Signature:
Name:	Name:
Date:	Date:
Title:	Title:
Role:	Role:

1 GLOSSARY AND ACRONYMS

Term / Acronym	Definition
BPM	Business Process Management
BPMN	Business Process Model and Notation
CMS	A content management system (CMS) manages the creation and modification of digital content.
GCC	The Cooperation Council for the Arab Countries of the Gulf ("GCC")
GCC-STAT	The Statistical Centre for the Cooperation Council for the Arab Countries of the Gulf ("GCC-Stat")
DG	Director General
MARSA	The Brand Name of Product resulting from the Project "Integrated End to End Statistical Solution for GCC-STAT
SIM	Statistical Indicators Matrix
NSO	National Statistical Office
REST	Representational State Transfer is a software architectural style that defines a set of constraints to be used for creating Web services.
SDMX	Statistical Data and Metadata eXchange An international initiative that aims at standardizing and modernizing ("industrializing") the mechanisms and processes for the exchange of statistical data and metadata among international organizations and their member countries.
SMO	Statistical Management Office
URL	A Uniform Resource Locator, colloquially termed a web address

2 REFERENCES

1.	Invitation to Tender for Integrated End to End Statistical Solution for GCC-Stat of 14 October 2018
2.	Project Charter
3.	Arrangements, confirmed by notes which were gathered during meetings in working groups consisting of representatives of the Consortium and GCC-Stat.
4.	Meetings with vendors of Hardware- on 14-15 March 2019
5.	Communication with producers of Software- Metadata; Tableau, Process Maker
6.	Meeting with SDMX Expert - GOPA
7.	Meeting with GCC-STAT on 18th-20th June 2019

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4 THANKING

On behalf of the consortium members staff; technical team ; managers and executives ; we would like to express our deep gratitude and thanking to H.E Saber AlHarbi / Director General of GCC-STAT for the generous hospitality he reserved to the consortium representatives and for his personal engagement during the reception well-organized for the contract signature ceremony. His visionary message was received by all of us and transmitted back to our team, as lighthouse flashes guiding MARSA to be a successful story.

Our Thanks to all GCC-STAT team As well; Project Manager; Managers; Statisticians and SME's for their participations; their valuable inputs during requirements gathering and use Cases discussion meetings.

Consortium Executives;

5 EXECUTIVE SUMMARY

The Business Requirements Document (BRD) is generated based on the information collected during the Requirements gathering Stage at GCC-STAT meetings held from 10 March to 28 March 2019 and as a result of Use Cases discussion meeting from 18-20th June 2019.

BRD describes the proposed business solution for MARSA, including the user's needs and expectations, the purpose behind this solution, and high-level constraints that could impact the successful deployment, it is represents the analysis result of onsite communications with the GCC-STAT staff composed of:

1. The Project manager
2. The Project Technical Group,
3. The Project Functional Group
4. Subject Matter Experts

During these meetings a workshop was carried out to explain the requirements gathering methodology and to identify the GCC-STAT mandate and Activities in relation with MARSA Project. The User Journey principle was followed to discover the actions; steps, input data, output results and interaction with other actors to define each Business and Use Cases.

The BRD document contains the identified business process GCCS-TAT is executing to perform the different tasks to fulfill their duties. It describes both functional and non-functional requirements, an overview of the current processes which will be the basis for the implementation of new processes based on the proposed solution.

- We understand that the scope of project is about to propose directly the suggested to-be business Cases and use cases without mentioning the AS-IS Business Cases , but it would be more difficult at this stage to propose the changing and business transformation for GCC-STAT before completing the Solution and System design Stages which are planned after the requirement gathering Stage.
- So we found that it is more convenient to document the As-Is situation; do high level re-engineer these cases by simply linking these case with the application that will be used to execute the tasks related to each business case and after the design stage these BC will be redefined using the suitable function of the solution.
- We propose to have a dynamic BRD development in different version to guide our BRD Development,
- Initially use cases will be linked to solution components functions and operation process at high level at this stage and then UC will be updated once Design Stage is completed and re-adjusted during the solution components implementation.
- We acknowledge BRD can't be a static document wrote up and finished; especially we are working on To-Be situation linked to solution tools and functions which will be subject to changes imposed by the nature of the coming design **Stage 3** and development **Stage 4** ; this version of BRD is a complete and comprehensive one focusing on the UC linked to solution component with diagram identifying the actors; their roles and input/output information

- We expect that more details will be added to the way the use cases will be processed and operated at the operation level once the design and development of the project are completed.
- New BRD will be updated after acceptance of Design Stage.

6 PROJECT OBJECTIVES

The objectives of MARSA project have been set out in the project charter document; namely:

- Design and deployment of a centralized data warehouse for GCC official statistics.
- Automate the data collection, dissemination and management with advanced tools aligned with SDMX.
- Enablement of mapping different GCC strategies, policies and international statistics frameworks with indicators to be managed by the GCC-Stat.
- The effective automation of the statistics calendar and notifications management.
- Enhance the automation of GCC-Stat core business processes through the deployment of workflow management system.
- Implement effective and operational integration and data exchange between GCC-Stat and each of the six (6) national statistics offices (UAE, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait) covering all official statistics domains currently supported by GCC-Stat.

7 BRD OBJECTIVES

The objective of the BRD Document is to document the identified requirements analysis and subsequent conclusions and suggestion. We present user stories, requirements (functional and non-functional), technological and architectural concepts that fulfills identified needs.

Two meeting were held prior to develop the current BRD:

- Requirement Gathering meetings 12-28th March 2019
- Validation of UC list and presentation template 18-20th June 2019
- **During the first meeting - Requirement Gathering stage- we aimed to:**
  - Identifying and analyzing GCC-STAT Business workflows and use cases;
  - Developing improved versions of existing use cases and introducing new one;
  - Verification of some assumptions or not precise problems.
  - Communication and information flow using e-mails and video calls;
  - Classification of uses cases and workflows in terms of priority of implementation and complexity;
  - Mapping of functional and non-functional requirements to prepared uses cases and workflow;

These tasks will used to determine what needs to be done and form a starting point for solution design.

The Business Requirements Document is a product created as a summary of Stage 2 - Business Requirement Analysis.

The methodology of data collection based on the use cases and workflows in GCC-Stat was as follows:

- Getting to know the needs of each department.
- Discuss with heads of departments the nature of their work and identify general workflows.
- Data about each workflow will be used to fill in use case template form.
- Based on the material collected in the previous step, Use Case diagrams were prepared in BMPN.
- BPMN diagram will be verified by the heads of departments. If needed any adjustments and correction will be made at this point.
- Gathered data about use cases will be the basis for creating Functional Project and Specification of Integrated Platform.

The result of this phase is to understand and organize the processes existing in the GCC-Stat. Therefore, the plan was to conduct following tasks:

- To understanding all use cases in order to model or improve them.
- To align indicators with GCC-Stat and GCC General Strategies.
- To introduce notification alert on information published by NSO through their web site and send alert in case there are inconsistencies with data delivered and data publish by NSOs.
- Build the solution infrastructure-independent as much as possible due to the fact that it will be developed outside GCC-Stat.
- To improve on the transmission tables.
- To speed up the slow communication in information transmission Between NSOs and GCCSTAT.

➢ **While the second meeting** the focus was to expose the different use cases and discuss the way it will be presented in the BRD.

In the following sections, we present the As-Is use cases collected during our on-site visit and how they will be improved by our solution. BPM methodology was used along with type of steps and processes within each workflow.

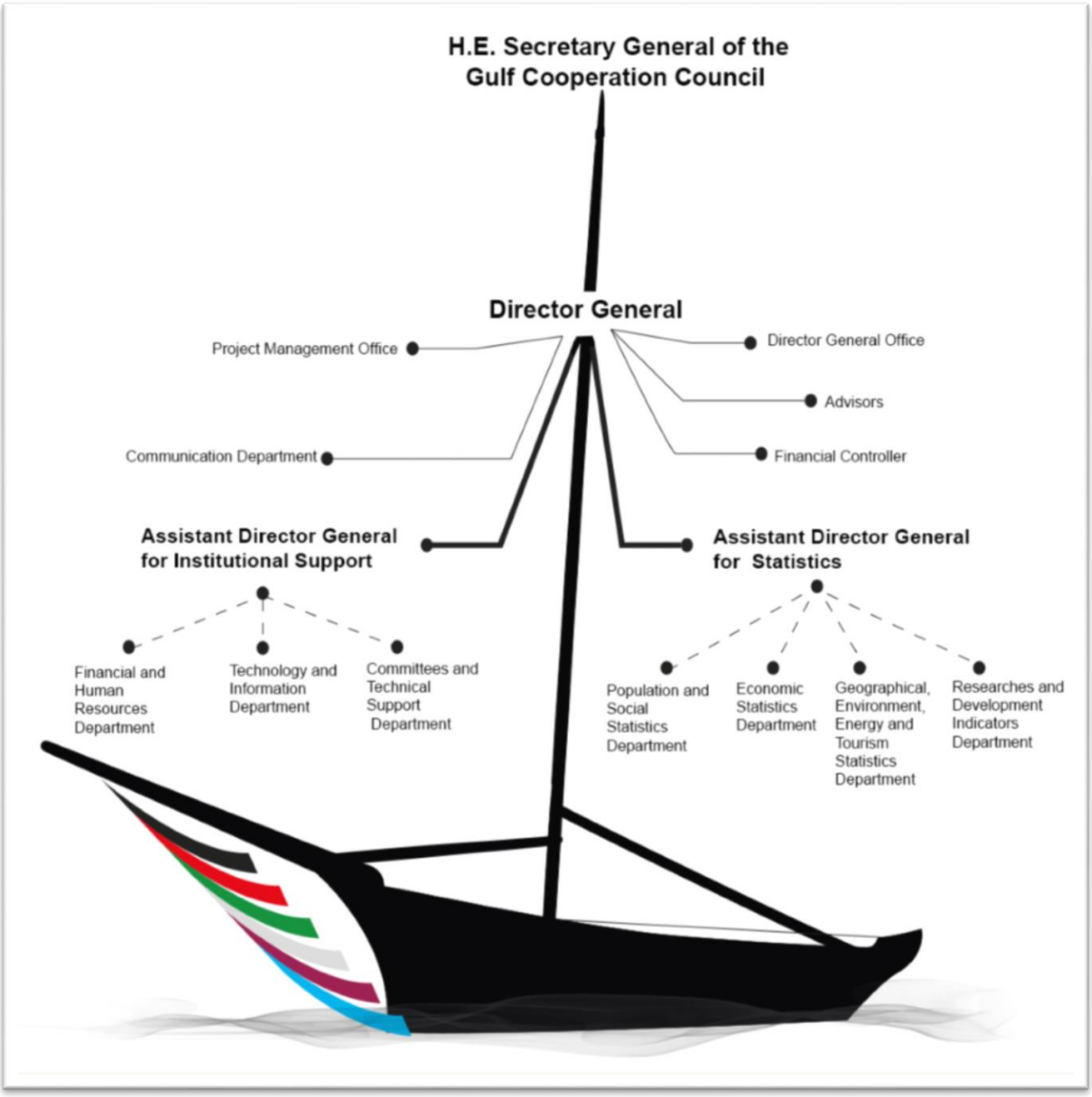
Each Business Use Case (UC) will be identified by a unique no (UC.xxx) and the actors who are involved the execution; reviewing or approving the UC.

Each UC will be shortly explained by a brief description and more detailed step by step process followed by UML Diagram.

(51) Use Cases were identified at these stages; (8) of them will be on mobile app.

During the project advancement some of these cases may split to more than one UC and some of them may be found to be merged.

8 GCC-STAT ORGANIZATION STRUCTURE



9 List of To-Be Use cases

The main goal of process modeling is to build a logical system that will become an axis linking all the subsequent elements of the project. Modeling is designed to describe, organize and explain the GCC-Stat rules of operation. At the same time, it creates a road map for the project.

Building the MARSA system on the basis of defined processes will allow to control such aspects as:

- analysis of the implementation of procedures,
- the actions of all participants in the process,
- real-time process performance monitoring,
- the flow of information between workers,
- the definition of responsibility for a given part of the process,
- Coordination of introduced changes in the process.

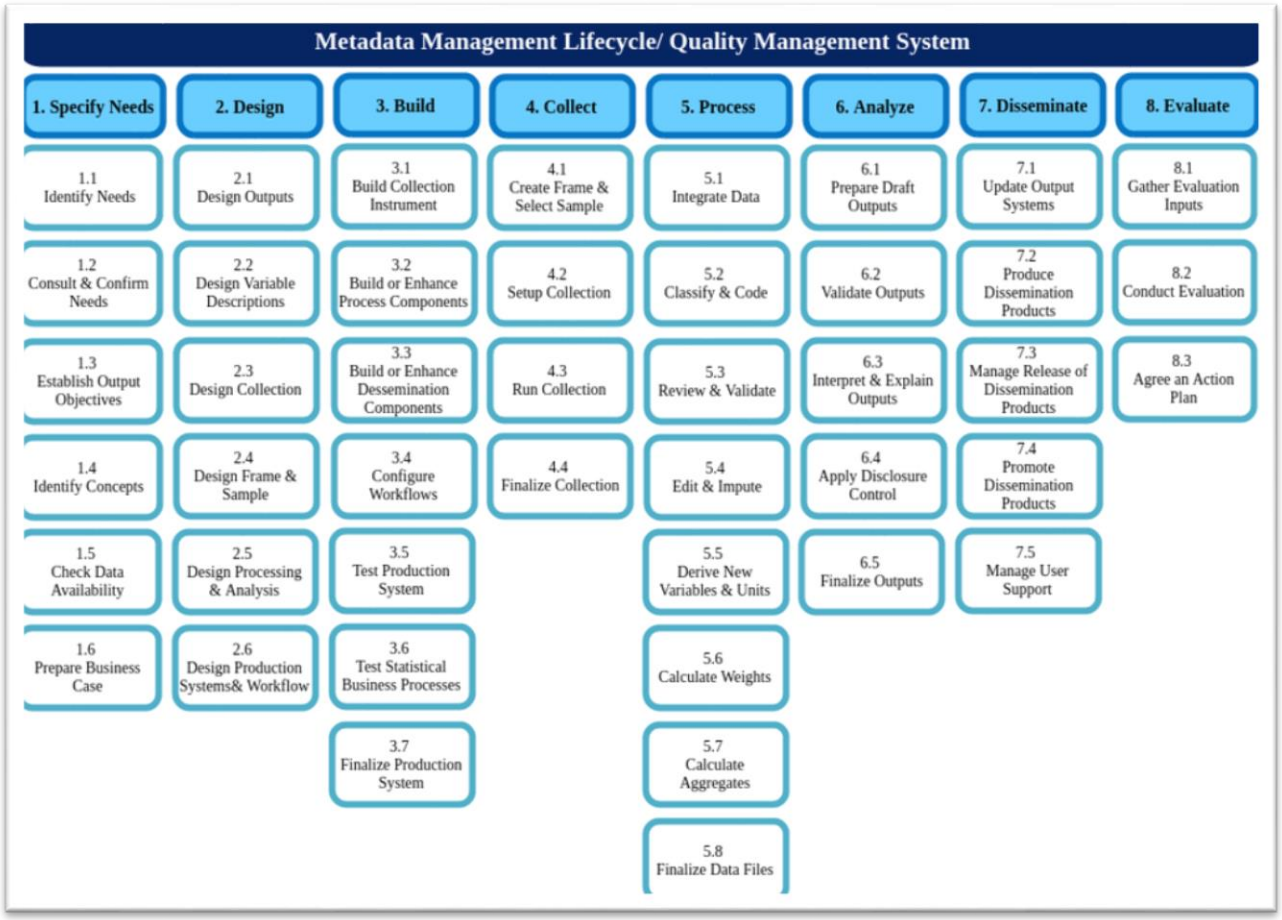
Below we propose list of To-Be Use Cases, define actors and document every use case using a common template and BPMN methodology. As a comprehensive categorization of statistics processes we use GSBPM to link use cases with common business steps in domain of Statistics.

UC ID	UC Name
001	Strategy Management – Adding new Strategy
002	Strategy Management – Deactivating Strategy
003	Strategy Management – Updating Strategy
004	Strategy Management – Adding Goals and Targets
005	Strategy Management – Updating Goals and Targets
006	Indicators Management - Adding new indicator
007	Indicators Management - Updating existing Indicator
008	Statistics Calendar Planning - Adding new Calendar item
009	Statistics Calendar Planning - Removing Calendar item
010	Statistics Calendar Planning - Updating Calendar item
011	Statistics Calendar Publication
012	Statistics Calendar Monitoring and Notification
013	Data Collection – Data Upload by GCC-Stat employees
014	Data Collection – Scenario #1: Using Fusion Reporting Nodes
015	Data Collection – Scenario #2: Using transmission tables
016	Data Collection – Scenario #3: Using FusionXL plugin for MS Excel
017	Data Collection – Scenario #4: Using raw SDMX file

018	Data Collection – Scenario #5: Using CSV file
019	Data Collection – Scenario #6: API/web services
020	Data Quality Assessment
021	Create QC
022	Data Aggregation - Prepare Data Aggregation Model
023	Data Aggregation - Run Data Aggregation Model
024	Presenting Different Frequency Time Series Together
025	Change data value in Fusion Registry
026	Ad hoc Demand - New Statistics
027	Ad hoc demand for dissemination of new statistics
028	Build new process for new Indicators
029	Data Warehouse Management – Versioning and Revisions
030	Metadata Management – Reference Metadata at Dataset level
031	Metadata Management – Reference Metadata at observation level
032	Data Warehouse Administration
033	Managing data access and confidentiality
034	Artifacts Management
035	Dissemination – Edge Server
036	GIS - Create maps and atlases for publications
037	GIS - Publish geospatial datasets to Open Data Portal
038	Manual statistical product publication on the Data Portal (DP)
039	New dashboard/dashlet publication on the Data Portal (DP)
040	New CMS entry on the Data Portal (DP)
041	Automated dataset publication
042	The user search for a dataset on the portal
043	The user browse dashboards on the server
044	The user query the data
045	Starting the application
046	Display statistical data on a map
047	Indicator selection component
048	Tabular view screen operations
049	Chart view screen
050	Side menu
051	Navigation menu

9.1 GSBPM

In order to better design and understand the needs of GCC-Stat a categorization of proposed To-Be Use Cases is introduced. Categorization is based on Generic Statistics Business Process Model 5.1 which was established in January 2019.



	Specify Needs	Design	Build	Collect	Process	Analyze	Disseminate	Evaluate
Indicators Management		006, 007,	028		006, 028	028	028	
Strategy Management	001, 002, 003, 004, 005	004, 005						
Data Dissemination				024		024	024, 035	
Administration Module								
Data Collection	026, 030, 031	022, 026, 030, 031	020, 021, 026, 027, 030, 031	013, 014, 015, 016, 017, 018, 019, 026, 027, 030, 031	013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 027, 030, 031	020, 021, 027, 030, 031	030, 031, 027	
Data Artefact Management	026, 030, 031, 034	030, 031, 034	026, 030, 031	026, 034	030, 031	030, 031	030, 031	
Statistics Calendar Management	008, 009, 010,		008, 009, 010	011, 012				
GIS							036 - 037	
Data Portal							038 - 044	
Mobile Application							045 - 051	

GSBPM & To-Be Use Cases		
1 Specify Needs		
1.1	**Identify Needs**	001, 002, 003, 008, 009, 010, 026, 030, 031, 034
1.2	**Consult & Confirm Needs**	004, 005, 008, 009, 010, 026, 030, 031, 034
1.3	**Establish Output Objectives**	004, 005, 008, 009, 010, 026, 030, 031
1.4	**Identify Concepts**	004, 005, 026, 030, 031, 034
1.5	**Check Data Availability**	004, 005, 008, 009, 010, 026, 030, 031
1.6	**Prepare Business Case**	001, 002, 003, 008, 009, 010, 026, 030, 031
2 Design		
2.1	**Design Outputs**	004, 005, 006, 007, 026
2.2	**Design Variable Descriptions**	006, 007, 022, 026
2.3	**Design Collection**	026, 030, 031, 034
2.4	**Design Frame & Sample**	004, 005, 006, 007, 026
2.5	**Design Processing & Analysis**	004, 005, 006, 007, 026
2.6	**Design Production Systems & Workflow**	026
3 Build		
3.1	**Build Collection Instrument**	008, 009, 010, 026, 030, 031
3.2	**Build or Enhance Process Components**	026, 030, 031
3.3	**Build or Enhance Dissemination Components**	
3.4	**Configure Workflow**	008, 009, 010, 026, 030, 031
3.5	**Test Production System**	020, 021, 027, 028, 030, 031
3.6	**Test Statistical Business Processes**	020, 021, 027, 028, 030, 031
3.7	**Finalize Production System**	020, 021, 027, 028, 030, 031
4 Collect		
4.1	**Create Frame & Select Sample**	
4.2	**Setup Collection**	024, 026, 030, 031, 034
4.3	**Run Collection**	011, 012, 024, 027, 030, 031
4.4	**Finalize Collection**	013, 014, 015, 016, 017, 018, 019, 027, 030, 031
5 Process		

5.1	**Integrate Data**	013, 014, 015, 016, 017, 018, 019, 027
5.2	**Classify & Code**	
5.3	**Review & Validate**	020, 021, 027, 030, 031
5.4	**Edit & Impute**	013, 025, 027
5.5	**Derive New Variables & Units**	006, 022, 023, 028
5.6	**Calculate Weights**	
5.7	**Calculate Aggregates**	022, 023
5.8	**Finalize Data Files**	
6 Analyze		
6.1	**Prepare Draft Outputs**	024, 027, 028, 030, 031
6.2	**Validate Outputs**	020, 021, 028
6.3	**Interpret & Explain Outputs**	027
6.4	**Apply Disclosure Control**	
6.5	**Finalize Outputs**	027, 028
7 Disseminate		
7.1	**Update Output Systems**	027, 028, 030, 031, 035, 038, 039, 040, 041
7.2	**Produce Dissemination Products**	024, 039
7.3	**Manage Release of Dissemination Products**	038, 039, 040,
7.4	**Promote Dissemination Products**	042, 043, 044, 045, 046, 047, 048, 049, 050, 051
7.5	**Manage User Support**	040, 042, 043, 044, 045, 046, 047, 048, 049, 050, 051
8 Evaluate		
8.1	**Gather Evaluation Inputs**	
8.2	**Conduct Evaluation**	
8.3	**Agree an Action Plan**	

9.2 USE CASE TEMPLATE DESCRIPTION

To-Be uses cases are documented using a unified template for all use cases. Below is the description of some fields used in documentation for use cases:

Use case version – current version of use case. Version should be increased every time changes are introduced to the use case.

Last update – this field should be updated every time there is a change to the use case content.

Related requirements – list of requirements from Appendix A to Tender.

9.3 ACTORS

In the future use cases we introduce 7 general actors representing groups of employees with special privileges to perform specific actions.

Data Collection & Dissemination Team (**DDT**) – Employees of the Data Collection and Dissemination department of GCC-Stat responsible for data collection, dissemination, quality checks, statistical calendar

- Data Collection Team/SDMX Team – anything related to data, checking the missing data, connecting with NSO focal points. Includes specialist trained to work with SDMX technology stack and dealing with DSDs and artifacts.
- Data Dissemination Team - migration of data to production, creating dashboards, publication to Data Portal, Final Approval. Editor in Chief is a part of this team.

Statistics Management Team (Director + Experts + Specialist) - Group representing Heads of the Departments, Domain Experts and Specialist in the field of statistics.

- Director of Statistical Domain
- Statistical Management Team (Experts and Specialists)

Strategies Management Office (SMO) - Group representing Management in GCC-Stat, responsible for identifying the needs and strategies.

Quality Control Team – Actor responsible for final data validation and data quality. Represented for example by Chief Editor. Final review before Editor in Chief (Data Dissemination Team) accepts data.

DG Office – Director General Office. It the whole staff of Director General and/or employees who can act on it's behalf.

System Administrator – Employee or group of Employees with administrator privileges.

NSO – National Statistics Office of one of six GCC countries. In use cases this is represented as a employee of one of the NSO with privileges or account in MARSA system.

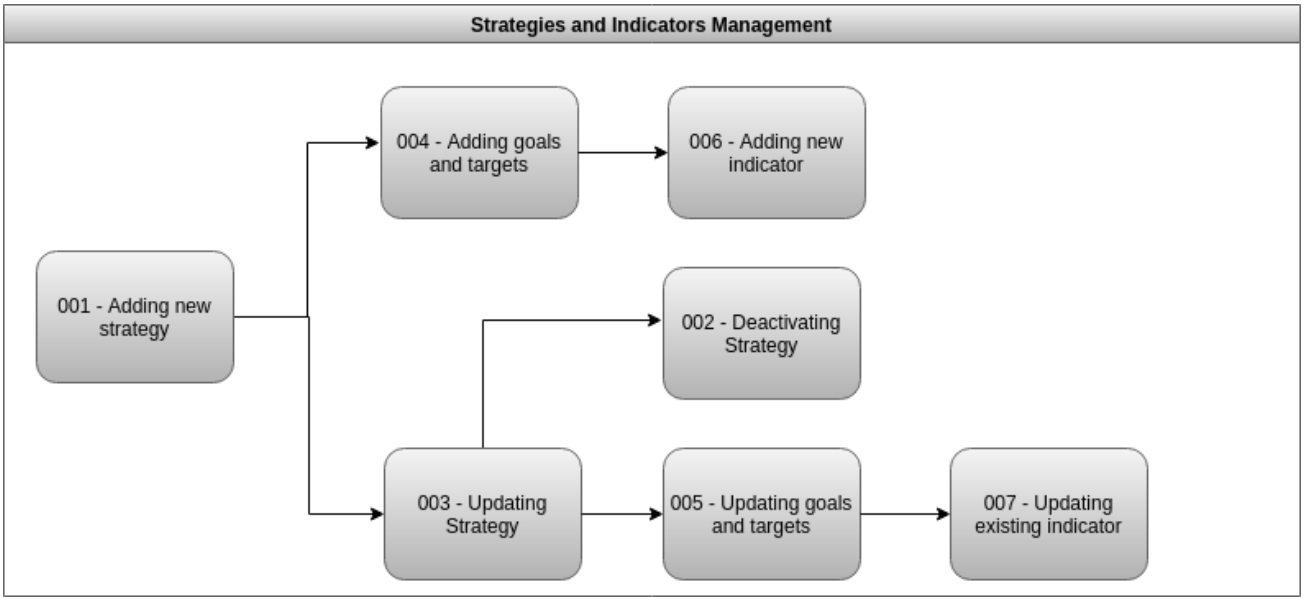
System – MARSA system identified as an action or trigger by internal processes in the system e.g. incoming automatic notification.

Client - the mobile application or Data Portal user.

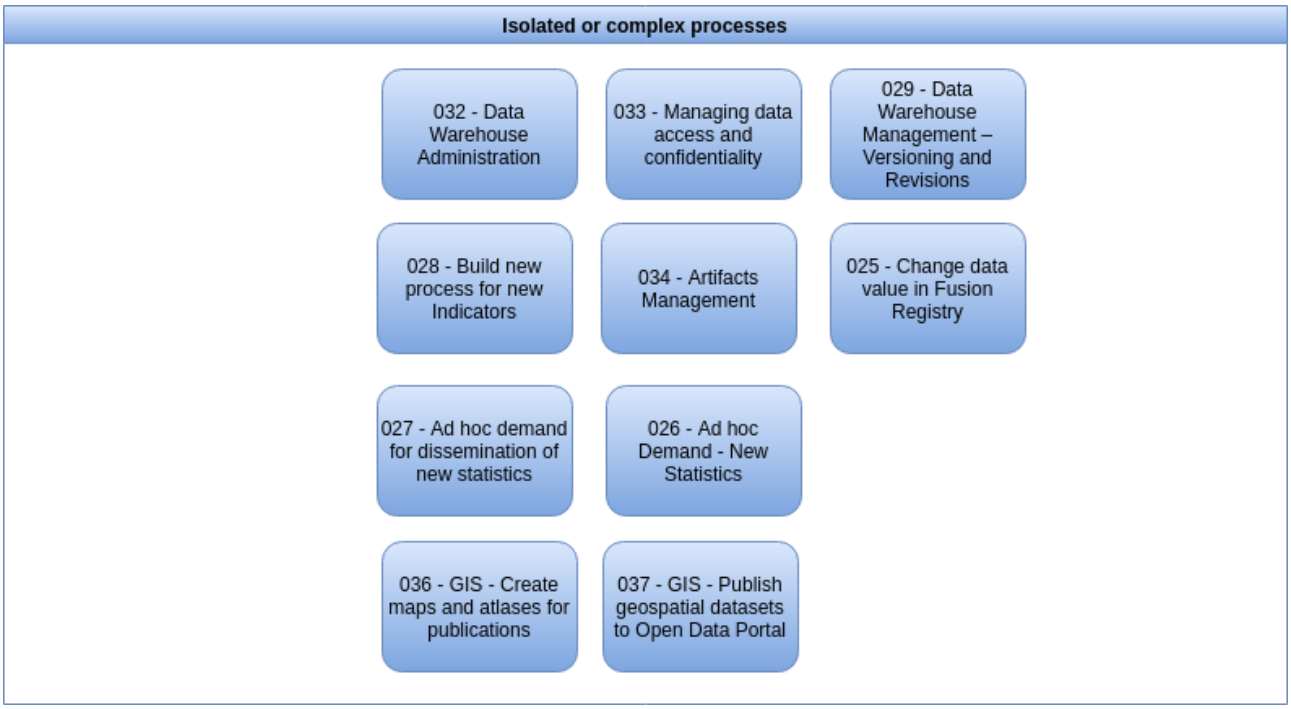
9.4 General To-Be Use cases

In this section general overview of all general use cases will be shown along with dependency tree describing connections between use cases.

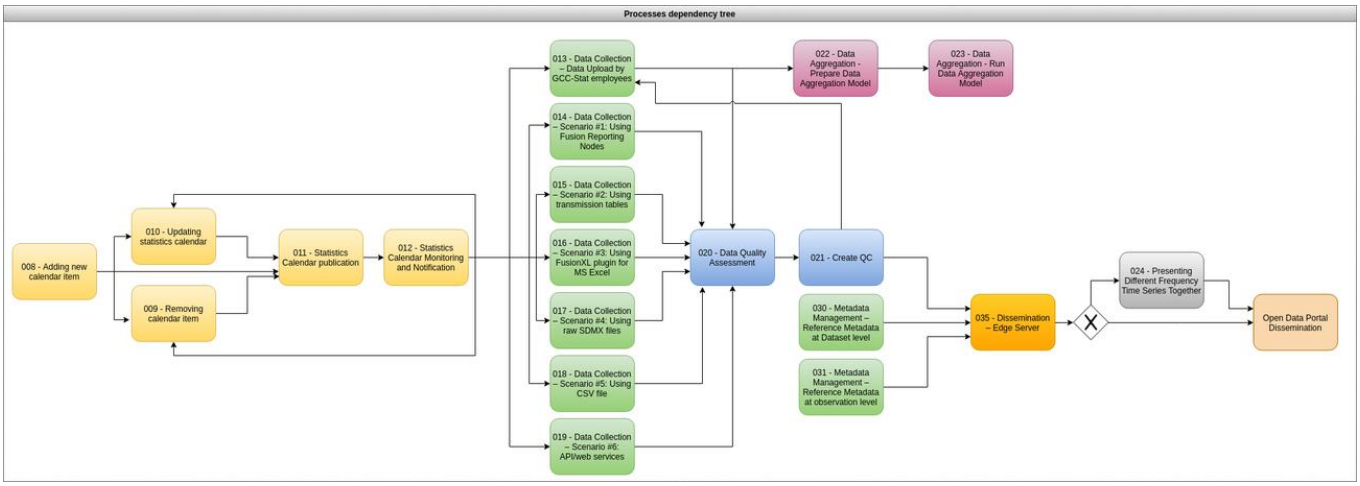
Use cases 001 – 007 are focused on Strategies and Indicators Management. Dependency between these use cases is show below.



Proposed use cases consist also of processes which are in general isolated situational (e.g. triggered on-demand). These use cases are show below. Some of them represent complex processes which are composed of different use cases.

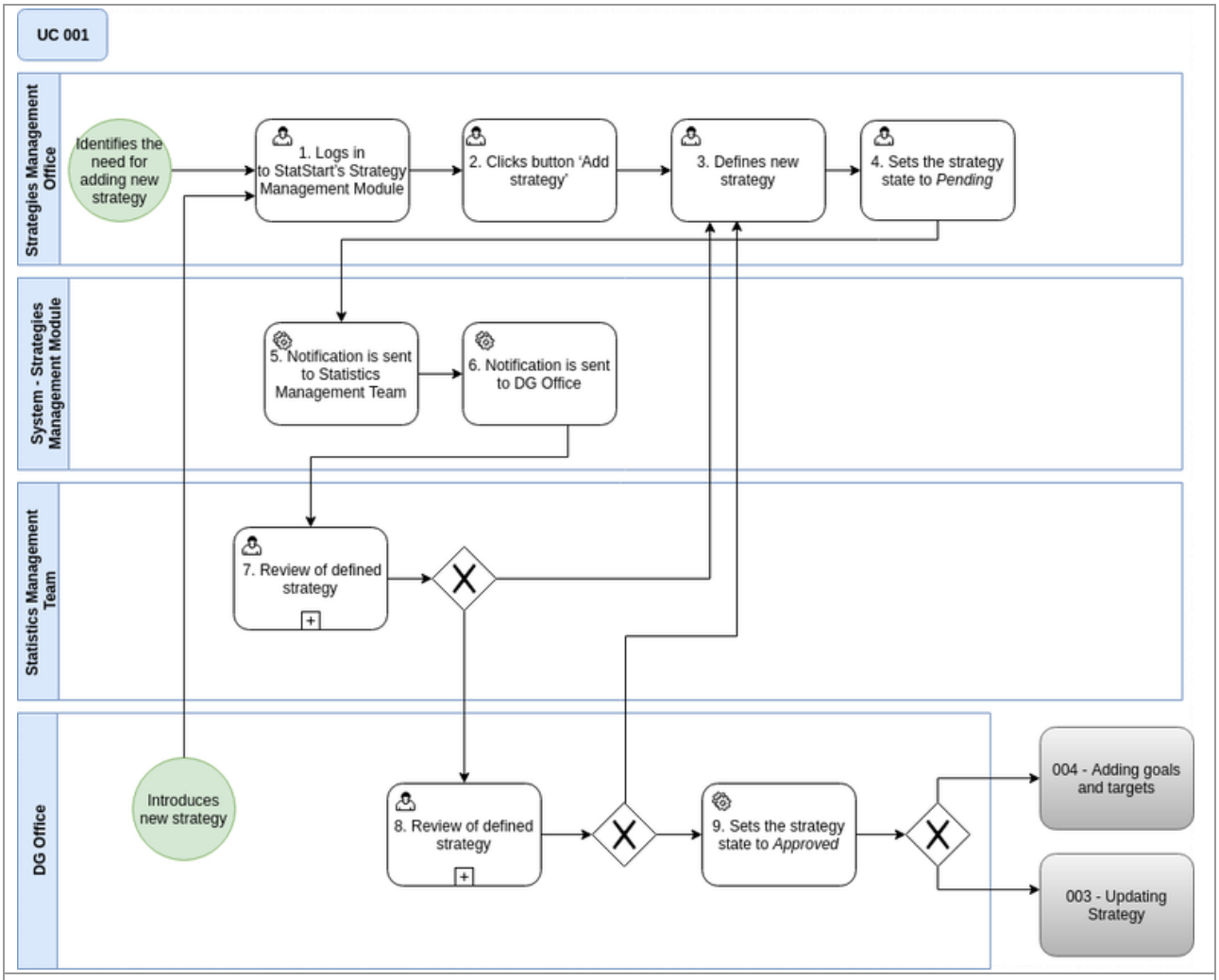


Below are shown fundamental use cases with dependencies between them.



Use Case Title:	Strategy Management – Adding new Strategy				
ID:	**001**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Strategies Management Office					

• System - Strategies Management Module • Statistics Management Team • DG Office
Overall description:
Use case describes process of defining and adding new strategy to the future system via StatStart – focal point application for managing and tracking progress of GCC-Stat's Strategies.
Business that triggers use case / frequency:
• DG Office: introduces new strategy which should be tracked and its progress measured. • Strategies Management Office (SMO): identifies the need for adding new strategy to the system.
Inputs and Outputs:
Inputs: Data about new strategy. **Outputs:** New strategy and its relevant data is in the MARSA system.
Use case description (step by step):
1. Strategies Management Office: Logs in to StatStart's Strategy Management Module. 2. Strategies Management Office: Clicks button 'Add strategy'. 3. Strategies Management Office: Defines new strategy and its relevant data (name, description, priority, start date, end date, status of strategy). 4. Strategies Management Office: Sets the strategy state to *Pending.* 5. System – Strategies Management Module: Notification is sent to Statistics Management Team. 6. System – Strategies Management Module: Notification is sent to DG Office. 7. Statistics Management Team: Review of defined strategy. If any corrections are needed to go to step 3. 8. DG Office: Review of defined strategy. If any corrections are needed go to step 3. 9. DG Office: Sets the strategy state to *Approved*. After Step 9: • UC 004 - Adding goals and targets • UC 003 - Updating Strategy
Alternative flow:
Only when approval process will introduce some corrections in new strategy data. Then proper updated and review process should be introduced.
BPMN diagram (optional):



Notes:

This use case is only specific for Strategy Management Module. Adding new variables and indicators to the MARSA system which can be linked with target's progress is the subject of another use case and is done in separate module.

Related requirements:

Req. type	ID	Description	Comment
Functional	7.1	Ability to enroll new GCC Domain strategies/ GCC policies/ GCCSTAT Strategy and international statistical domains frameworks with define goals.	
Functional	7.3	Ability to update any defined strategy and accordingly identify related affected indicators.	

Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	
Functional	7.5	Ability to automatically initiate adding new indicators related to new strategy added or objectives changed.	
Functional	7.6	Ability to define the relationships mapping between different strategies/ policies and frameworks.	
Non-Functional	8.17	Should support various triggering conditions such as value change, value greater than, value greater than or equal, data begins with, data ends with, etc.	When defined value of target is reached or goal is fulfilled Management will be notified.

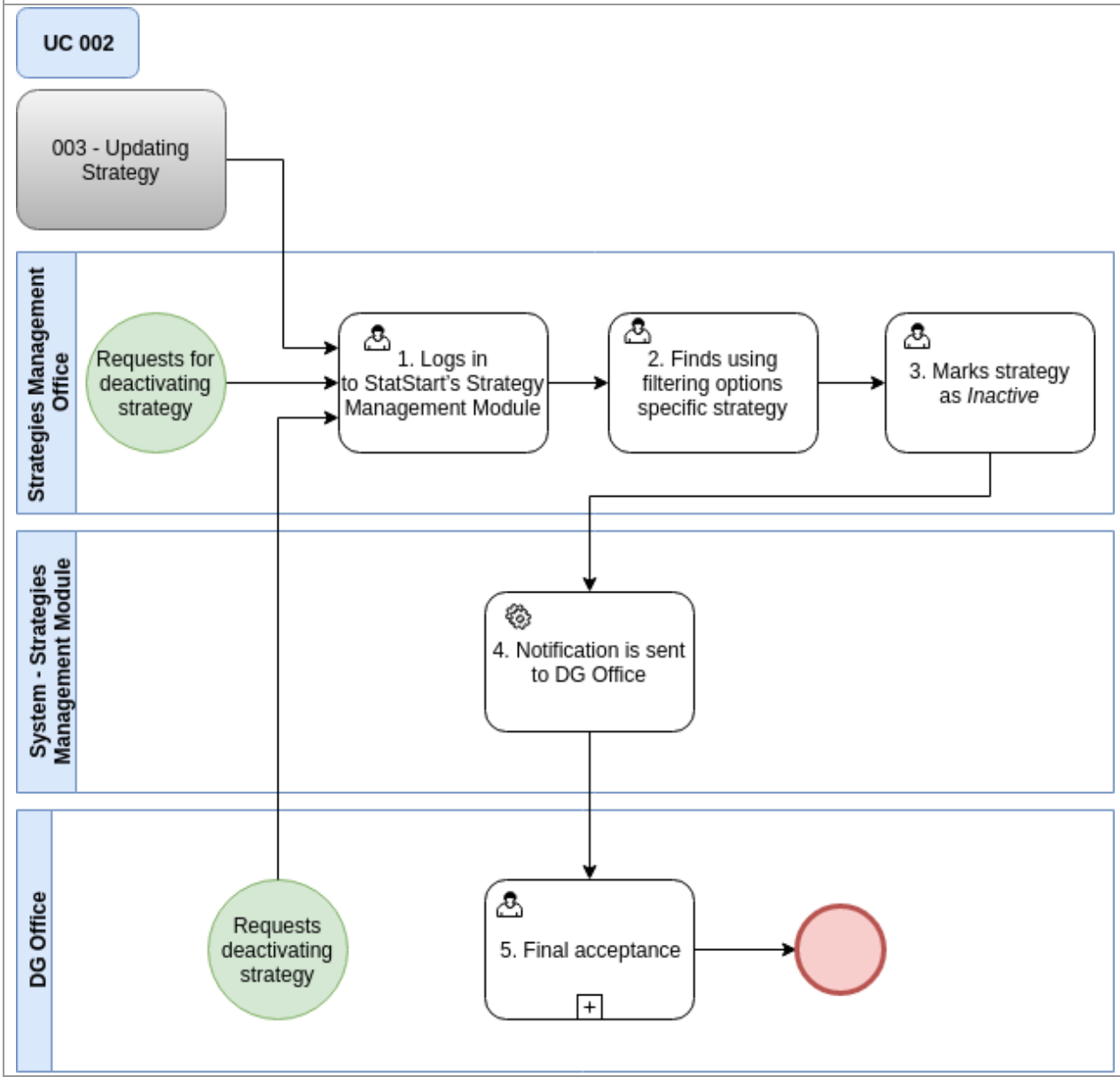
Use Case Title:	**Strategy Management – Deactivating Strategy**				
ID:	**002**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Strategies Management Office • DG Office • System - Strategies Management Module					
Overall description:					
Use case describes process of marking existing strategy as inactive due to e.g. being outdated or marked as redundant due to annual review. Marking existing strategy as inactive in the future system will be done via StatStart – focal point application for managing and tracking progress of GCC-Stat's Strategies.					
Business that triggers use case / frequency:					
• DG Office: Requests deactivating strategy. • Strategies Management Office (SMO) identifies the need for deactivating existing strategy (e.g. annual review). • UC 003 – Updating Strategy – the need to update metadata					
Inputs and Outputs:					
Inputs: - **Outputs:** Updated MARSA system.					
Use case description (step by step):					
1. Strategies Management Office: Logs in to StatStart's Strategy Management Module. 2. Strategies Management Office: Finds using filtering options specific strategy. 3. Strategies Management Office: Marks strategy as *Inactive.*					

4. System - Strategies Management Module: Notification is sent to DG Office about deactivating strategy.
5. DG Office: Final acceptance.

Alternative flow:

-

BPMN diagram (optional):



Notes:

Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	Deleting as a part of management.

Use Case Title:	**Strategy Management – Updating Strategy**				
ID:	**003**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- Strategies Management Office
- System - Strategies Management Module
- Statistics Management Team
- DG Office

Overall description:

Use case describes process of updating existing strategy. Updating existing strategy in the future system will be done via StatStart – focal point application for managing and tracking progress of GCC-Stat's Strategies.

Business that triggers use case / frequency:

- DG Office: introduces new strategy which should be tracked and its progress measured.
- Strategies Management Office (SMO): identifies the need for adding new strategy to the system.
- UC 001 - Adding new strategy – modifying previously added strategy

Inputs and Outputs:

Inputs: New data about strategy.
Outputs: Updated data about specific strategy in the MARSA system.

Use case description (step by step):

1. Strategies Management Office: Logs in to StatStart's Strategy Management Module.
2. Strategies Management Office: Finds using filtering options specific strategy to edit.
3. Strategies Management Office: Clicks button 'Edit strategy' next to the strategy.
4. Strategies Management Office: Updates strategy and its relevant data (name, description, priority, start date, end date, status of strategy).
5. Strategies Management Office: Sets the strategy state to *Pending.*
6. System - Strategies Management Module: Notification is sent to Statistics Management Team.
7. System - Strategies Management Module: Notification is sent to DG Office.
8. Statistics Management Team: Review of updated strategy. If any corrections are needed to go to step 4.
9. DG Office: Review and approval of updated strategy. If any corrections are needed to go to step 4.

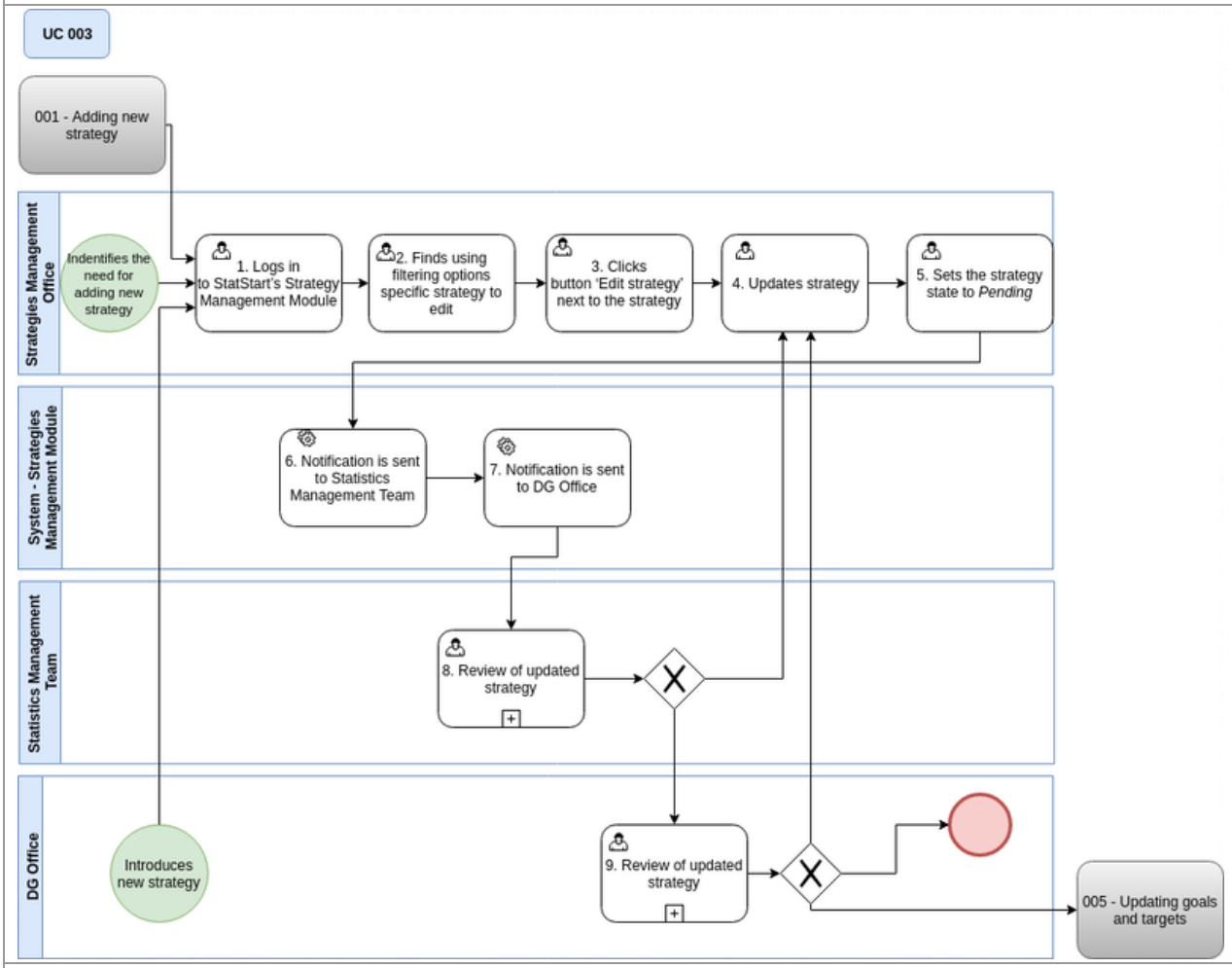
After Step 9:

- UC 005 - Updating goals and targets

Alternative flow:

Only when approval process will introduce some corrections in existing strategy. Then proper updated and review process should be introduced.

BPMN diagram (optional):



Notes:

Updating strategy can involve:

- Updating base strategy properties
- Updating goals and its properties
- Updating targets and its properties

Related requirements:

Req. type	ID	Description	Comment
Fuctional	7.2	Ability to define each strategy indicators for analysis.	

Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	
Functional	7.5	Ability to automatically initiate adding new indicators related to new strategy added or objectives changed.	
Functional	7.6	Ability to define the relationships mapping between different strategies/ policies and frameworks.	
Non-Functional	8.17	Should support various triggering conditions such as value change, value greater than, value greater than or equal, data begins with, data ends with, etc.	When defined value of target is reached or goal is fulfilled Management will be notified.

Use Case Title:	**Strategy Management – Adding Goals and Targets**				
ID:	**004**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • Statistics Management Team • Statistics Management Team (Director) - Director • Strategies Management Office					
Overall description:					
Use case describes actions taken in order to create new goals and targets linked with existing strategy.					
Business that triggers use case / frequency:					
• DG Office: approves new strategy. • UC 001 - Adding new strategy					
Inputs and Outputs:					
Inputs: Existing in the system data about new strategy. **Outputs:** New goals and targets linked with strategy.					
Use case description (step by step):					
1. Statistics Management Team: Receives notification from the system about new added strategy. 2. Statistics Management Team: Logs in to StatStart's Strategy Management Module. 3. Statistics Management Team: Finds using filtering options specific strategy. 4. Statistics Management Team: Clicks 'Details' button next to the strategy. 5. Statistics Management Team: Clicks 'Add Goal' and defines new Goals. 6. Statistics Management Team: Defines new Targets for each Goal. 7. Statistics Management Team: Links target with specific indicator.					

8. Statistics Management Team (Director): Review changes. If any corrections are needed to go to step 5.
9. Strategies Management Office: Review changes: strategies, goals and targets. If any corrections are needed to go to step 5.

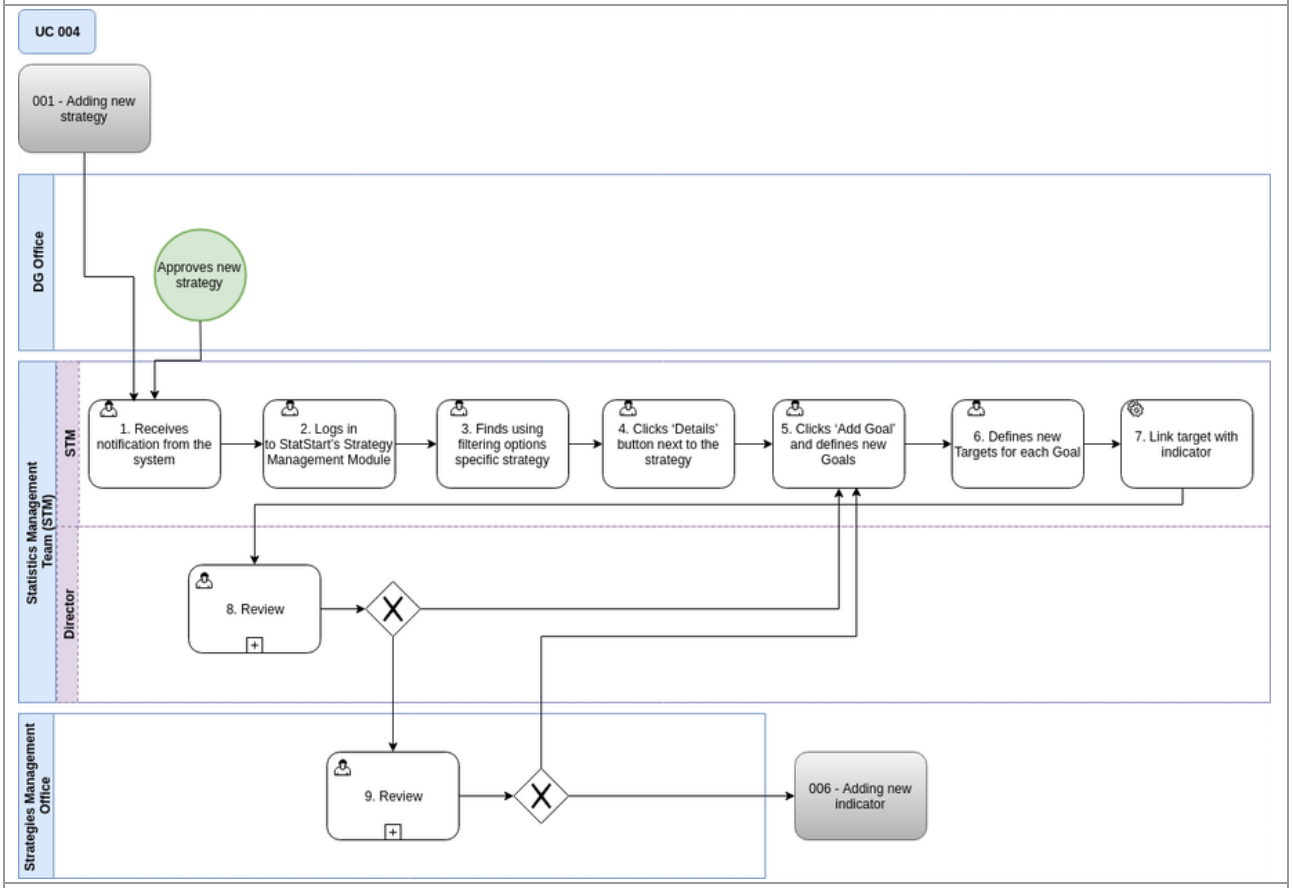
After step 9:

- UC 006 - Adding new indicator

Alternative flow:

In step 7 – only when there is a need to introduce new indicator to the system. If so then after step 7 should be Adding new indicator (UC 006).

BPMN diagram (optional):



Notes:

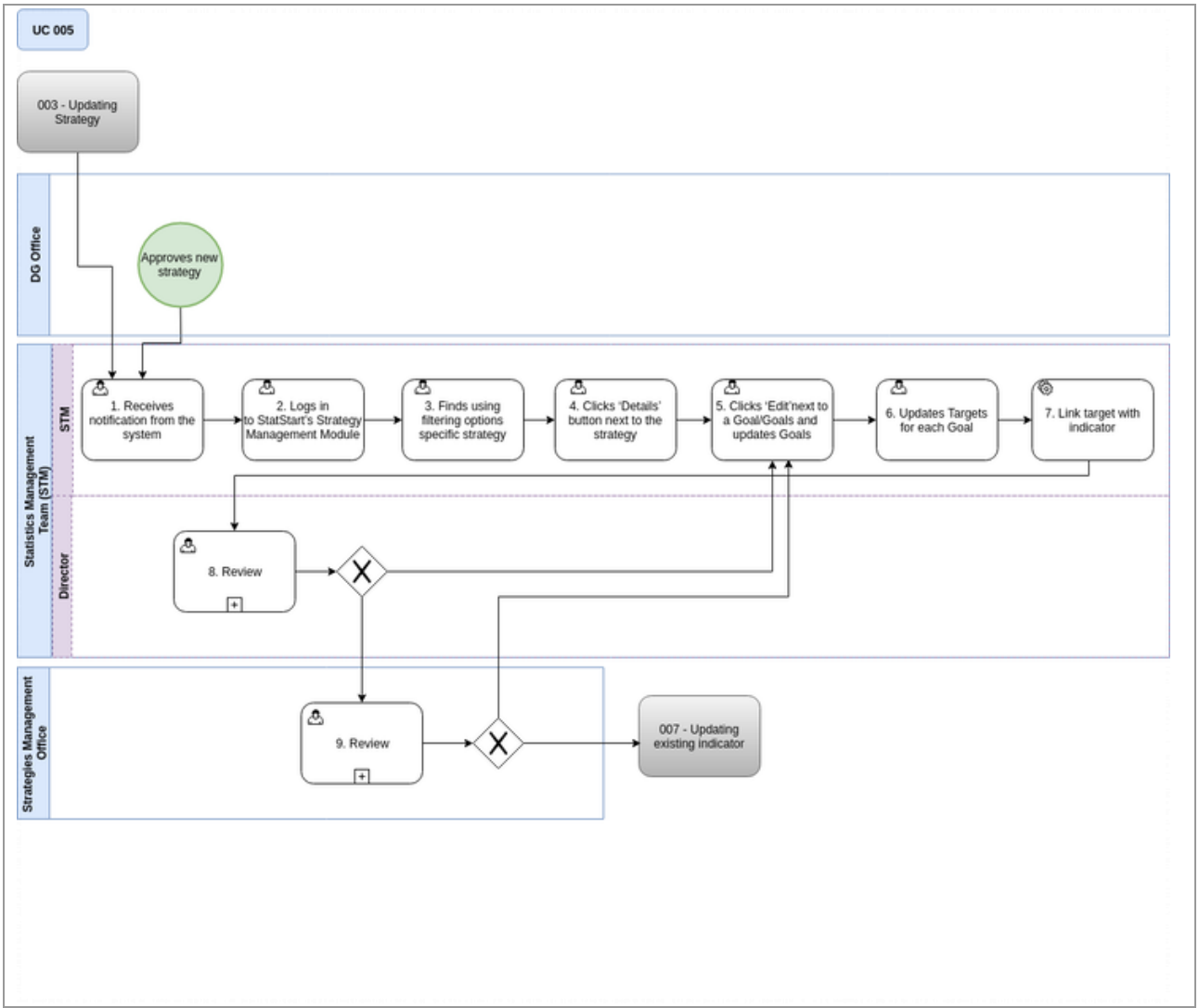
Adding Goals and Targets can involve:

- Adding goals and its properties
- Adding targets and its properties
- Sometimes defining new indicators for measuring targets

Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Fuctional	7.2	Ability to define each strategy indicators for analysis.	
Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	
Functional	7.5	Ability to automatically initiate adding new indicators related to new strategy added or objectives changed.	
Functional	7.6	Ability to define the relationships mapping between different strategies/ policies and frameworks.	
Non-Functional	8.17	Should support various triggering conditions such as value change, value greater than, value greater than or equal, data begins with, data ends with, etc.	When defined value of target is reached or goal is fulfilled Management will be notified.

Use Case Title:	**Strategy Management – Updating Goals and Targets**				
ID:	**005**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • Statistics Management Team • Statistics Management Team (Director) - Director • Strategies Management Office					
Overall description:					
Use case describes actions taken in order to update goals and targets linked with existing strategy.					
Business that triggers use case / frequency:					
• DG Office: approves updated strategy. • UC 003 - Updating Strategy					
Inputs and Outputs:					
Inputs: New data about goals and targets that needs to introduce to the system for update. **Outputs:** New goals and targets linked with strategy.					
Use case description (step by step):					
1. Statistics Management Team: Receives notification from the system about updated strategy. 2. Statistics Management Team: Logs in to StatStart's Strategy Management Module. 3. Statistics Management Team: Finds using filtering options specific strategy.					

4. Statistics Management Team: Clicks 'Details' button next to the strategy. 5. Statistics Management Team: Clicks 'Edit' next to a Goal/Goals and updates Goals. 6. Statistics Management Team: Updates Targets for each Goal. 7. Statistics Management Team: If target uses existing indicator then the target it is linked with indicator. 8. Statistics Management Team: Links target with specific indicator. 9. Statistics Management Team (Director): Review changes. If any corrections are needed to go to step 5. 10. Strategies Management Office: Review changes: strategies, goals and targets. If any corrections are needed to go to step 5. **After Step 10:** • UC 007 - Updating existing indicator
Alternative flow:
In step 7 – only when there is a need to introduce new indicator to the system. If so then after step 7 should be Adding new indicator (UC 006).
BPMN diagram (optional):



Notes:

Adding Goals and Targets can involve:

- Adding goals and its properties
- Adding targets and its properties
- Sometimes defining new indicators for measuring targets

Related requirements:

Req. type	ID	Description	Comment
Fuctional	7.2	Ability to define each strategy indicators for analysis.	
Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	

Functional	7.5	Ability to automatically initiate adding new indicators related to new strategy added or objectives changed.	
Functional	7.6	Ability to define the relationships mapping between different strategies/ policies and frameworks.	
Non-Functional	8.17	Should support various triggering conditions such as value change, value greater than, value greater than or equal, data begins with, data ends with, etc.	When defined value of target is reached or goal is fulfilled Management will be notified.

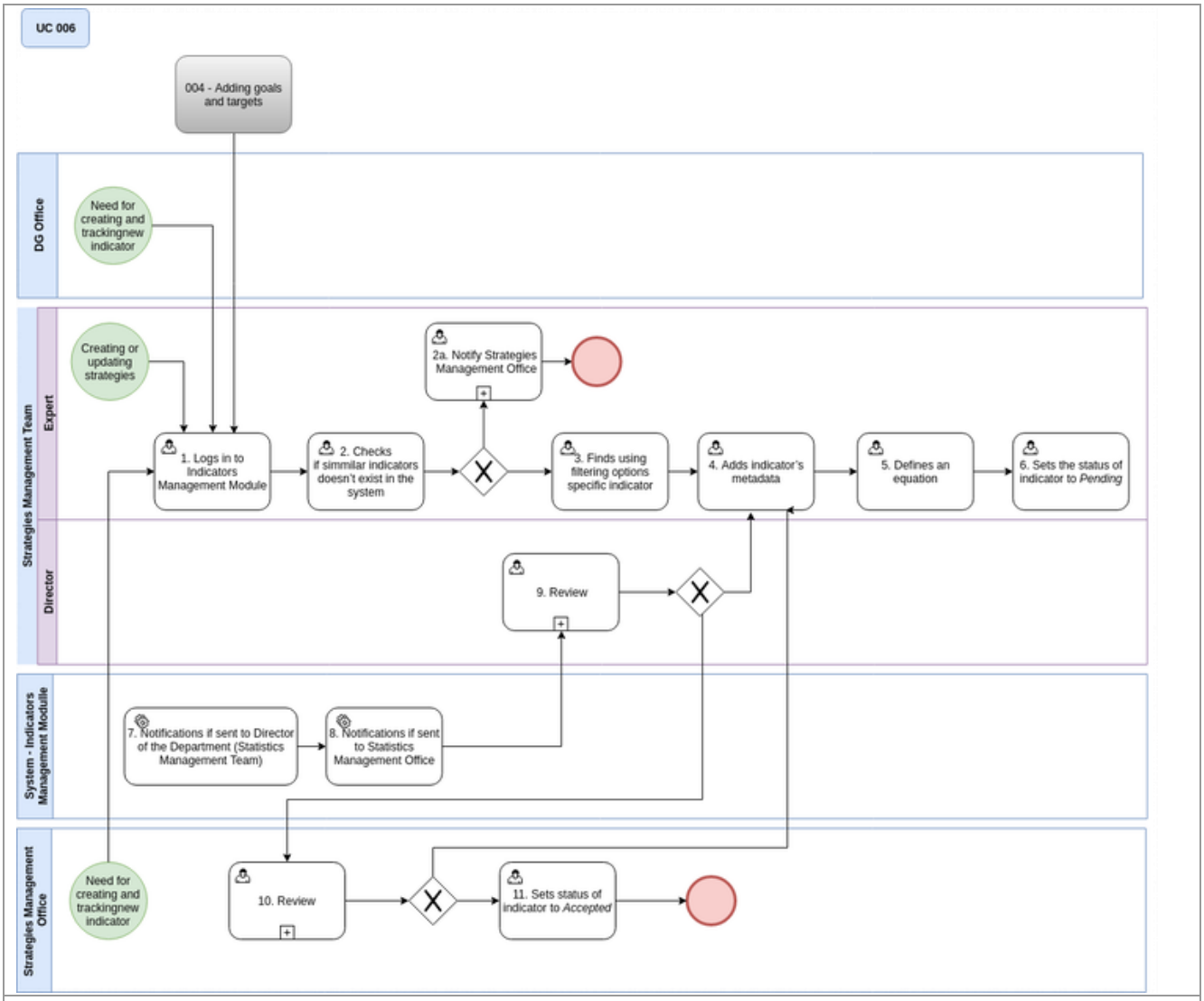
Use Case Title:	**Indicators Management - Adding new indicator**				
ID:	**006**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Statistics Management Team (Expert) - Expert • Statistics Management Team (Director) - Director • System - Indicators Management Module • Strategies Management Office					
Overall description:					
Use case describes the process of creating new indicator in MARSA system via StatStart - focal point application for managing GCC-Stat's Indicators.					
Business that triggers use case / frequency:					
• Strategy Management Team (Expert): Creating or updating strategies target which must be tracked by specific indicator. • DG Office: need for creating and tracking new indicator values in order to report it to external parties e. g. IMF. • Strategies Management Office: need for creating and tracking new indicator values in order to report it to external parties e. g. IMF. • UC 004 - Adding goals and targets					
Inputs and Outputs:					
Inputs: Prepared required data for defining new indicator and formula for indicator. **Outputs:** New indicator in MARSA system.					
Use case description (step by step):					
1. Statistics Management Team (Expert): Logs in to Indicators Management Module.					

2. Statistics Management Team (Expert): Checks using filtering options if simmilar indicators doesn't exist in the system. If there is one notify Strategies Management Office.
3. Statistics Management Team (Expert): Clicks 'Add indicator' button.
4. Statistics Management Team (Expert): Adds indicator's metadata:
    - code,
    - name,
    - description,
    - requirements,
    - priority (value from range 1 to 10),
    - final rating (value from range 1 to 10),
    - final classification (from dictionary),
    - unit (from dictionary),
    - indicator type (from dictionary),
    - indicator tier (from dictionary),
    - data provider (from dictionary),
    - geographic area (from dictionary),
    - domain/subdomain (from dictionary, many),
    - tag (from dictionary, many),
    - Scheduler (from dictionary).
5. Statistics Management Team (Expert): Defines an equation (formula) based on existing variables, existing indicators, mathematical functions and operators using a text or graphical editor.
6. Statistics Management Team (Expert): Sets the status of indicator to *Pending*.
7. System: Notifications if sent to Director of the Department (Statistics Management Team)
8. System: Notifications if sent to Statistics Management Office.
9. Statistics Management Team (Director): Review and validation of newly defined indicator. If any corrections are needed to go to step 4.
10. Strategies Management Office: Review. If any corrections are needed to go to step 4.
11. Strategies Management Office: Sets status of indicator to *Accepted*.

Alternative flow:

In step 2 if proper indicator already exist workflow should end in notification to Strategies Management Office.

BPMN diagram (optional):



Notes:

At the moment of saving the indicator in the system, the application will check whether there is a need to recalculate already calculated indicators. In a situation when the calculated values for a given indicator already exist in the system, the system will notify the user about the necessity to recalculate them.
In MARSA system expert will need to have proper privileges to add new indicators.

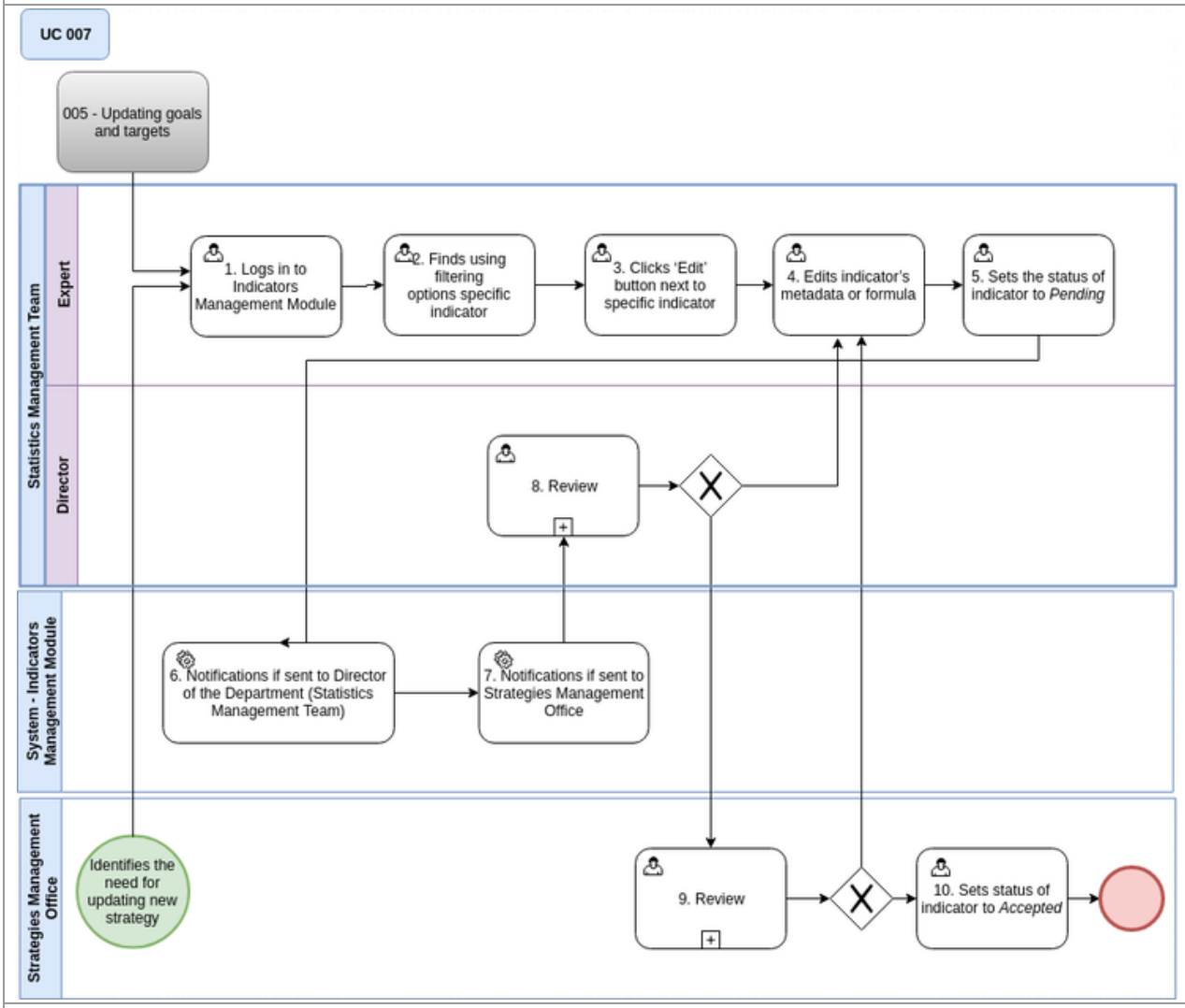
Related requirements:

Req. type	ID	Description	Comment
Functional	6.1	Ability to register new indicators with defined attributes.	
Functional	6.2	Ability to define the equation and variables related to enrolled indicators.	

Functional	6.3	Ability to define the indicators polarity, leading and lagging.	Ability to flag/tag indicators.
Functional	6.4	Ability to map indicators to strategies.	
Functional	6.5	Ability to control and manage indicators changes through workflow.	
Non-Functional	7.14	Ability to show linked indicators across strategies.	

Use Case Title:	**Indicators Management - Updating existing Indicator**				
ID:	**007**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Statistics Management Team – Expert • Statistics Management Team - Director • Strategies Management Office • System - Indicators Management Module					
Overall description:					
Use case describes the process of updating indicator in MARSA system via StatStart - focal point application for managing GCC-Stat's Indicators.					
Business that triggers use case / frequency:					
• Strategies Management Office (SMO): identifies the need for updating new strategy to the system (e.g. annual review). • UC 005 - Updating goals and targets					
Inputs and Outputs:					
Inputs: New data about existing indicator. **Outputs**: Updated MARSA system.					
Use case description (step by step):					
1. Statistics Management Team (Expert): Logs in to Indicators Management Module. 2. Statistics Management Team (Expert): Finds using filtering options specific indicator. 3. Statistics Management Team (Expert): Clicks 'Edit' button next to specific indicator. 4. Statistics Management Team (Expert): Edits indicator's metadata or formula. 5. Statistics Management Team (Expert): Sets the status of indicator to *Pending*. 6. System - Indicators Management Module: Notifications if sent to Director of the Department (Statistics Management Team). 7. System - Indicators Management Module: Notifications if sent to Strategies Management Office. 8. Statistics Management Team (Director): Review and validation of newly defined indicator. If any corrections are needed to go to step 4. 9. Strategies Management Office: Review. If any corrections are needed to go to step 4. 10. Strategies Management Office: Sets status of indicator to *Accepted*.					

Alternative flow:
Only when approval process will introduce some corrections in existing indicator. Then proper updated and review process should be introduced.
BPMN diagram (optional):



Notes:
When editing the indicator, the system will block the ability to change some of the attributes associated with metadata.
Related requirements:

Req. type	**ID**	**Description**	**Comment**
Functional	6.2	Ability to define the equation and variables related to enrolled indicators.	

Functional	6.3	Ability to define the indicators polarity, leading and lagging.	Ability to flag/tag indicators.
Functional	6.4	Ability to map indicators to strategies.	
Functional	6.5	Ability to control and manage indicators changes through workflow.	
Non-Functional	7.14	Ability to show linked indicators across strategies.	

Use Case Title:	**Statistics Calendar Planning - Adding new Calendar item**				
ID:	**008**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- DG Office
- Strategies Management Office
- Statistics Management Team - Director
- System - Statistics Calendar Module

Overall description:

Use case describes planning new Statistics Calendar for upcoming year and linking with processes in Process Maker.

Business that triggers use case / frequency:

- DG Office: delegates the task of starting to work on new calendar item.

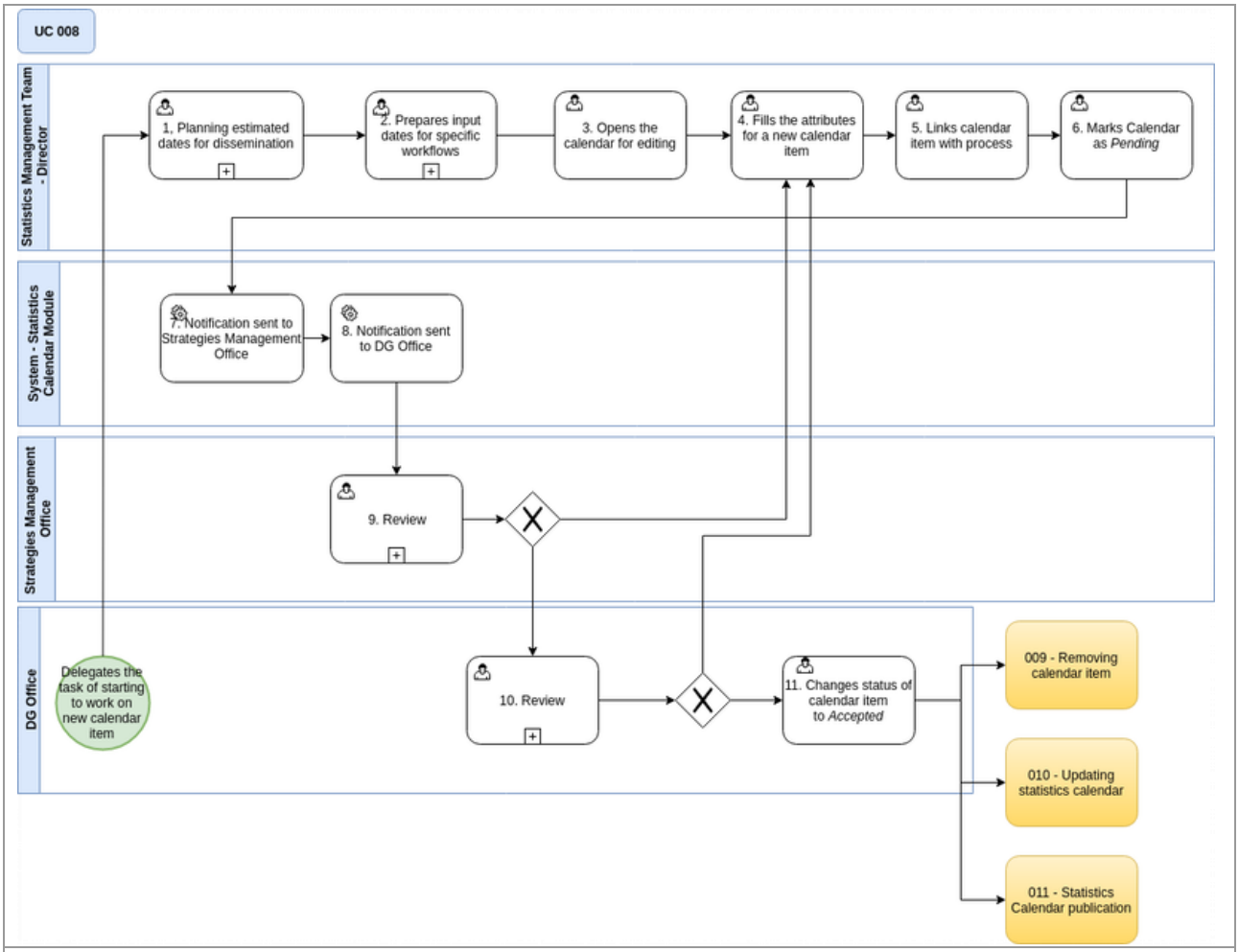
Inputs and Outputs:

Inputs: -
Outputs: Approved Statistics Calendar.

Use case description (step by step):

1. Strategies Management Office: Planning estimated dates for dissemination of various statistical products e.g. yearly reports.
2. Statistics Management Team (Director): Prepare input dates for specific premade and existing in the system repeatable workflows in GCC-Stat e.g. parameterized publication of any report.
3. Statistics Management Team (Director): Opens the calendar for editing (In Statistics Calendar Module) for a given statistical year.
4. Statistics Management Team (Director): Fills the attributes for a new calendar item/task:
    - name,
    - description,
    - business process (from Process Maker),
    - parameters for process (from Process Maker) - includes dates necessary for running date-related processes,
    - category (one from dictionary),

• domain (one from dictionary), • priority. 5. Statistics Management Team (Director): Parameters filled in the previous step are linked with proper process in Process Maker by selecting premade workflows in a dropdown menu. 6. Statistics Management Team (Director): Mark Calendar as *Pending*. 7. System - Statistics Calendar Module: Notification about new calendar entry sent to Strategies Management Office. 8. System - Statistics Calendar Module: Notification about new calendar entry sent to DG Office. 9. Strategies Management Office: Review proposed calendar. If any corrections are needed go to step 4. 10. DG Office: Review and approval. If any corrections are needed go to step 4. 11. DG Office: Changes status of calendar item to *Accepted*. After Step 11: • UC 009 - Removing calendar item • UC 010 - Updating statistics calendar • UC 011 - Statistics Calendar publication
Alternative flow:
Only when approval process will introduce some corrections in new calendar item. Then proper updated and review process should be introduced.
BPMN diagram (optional):



Notes:

For the task/item, the start date and time, as well as the end date and time is needed to be specified. It will be possible to specify multiple dates (occurrences) for one task, this provides the ability to create cyclic events over time.
For tasks/items from the accepted statistical year, at the moment of occurrence of the date determining the start of the event, a request will be sent to Process Maker, which will start the business process.

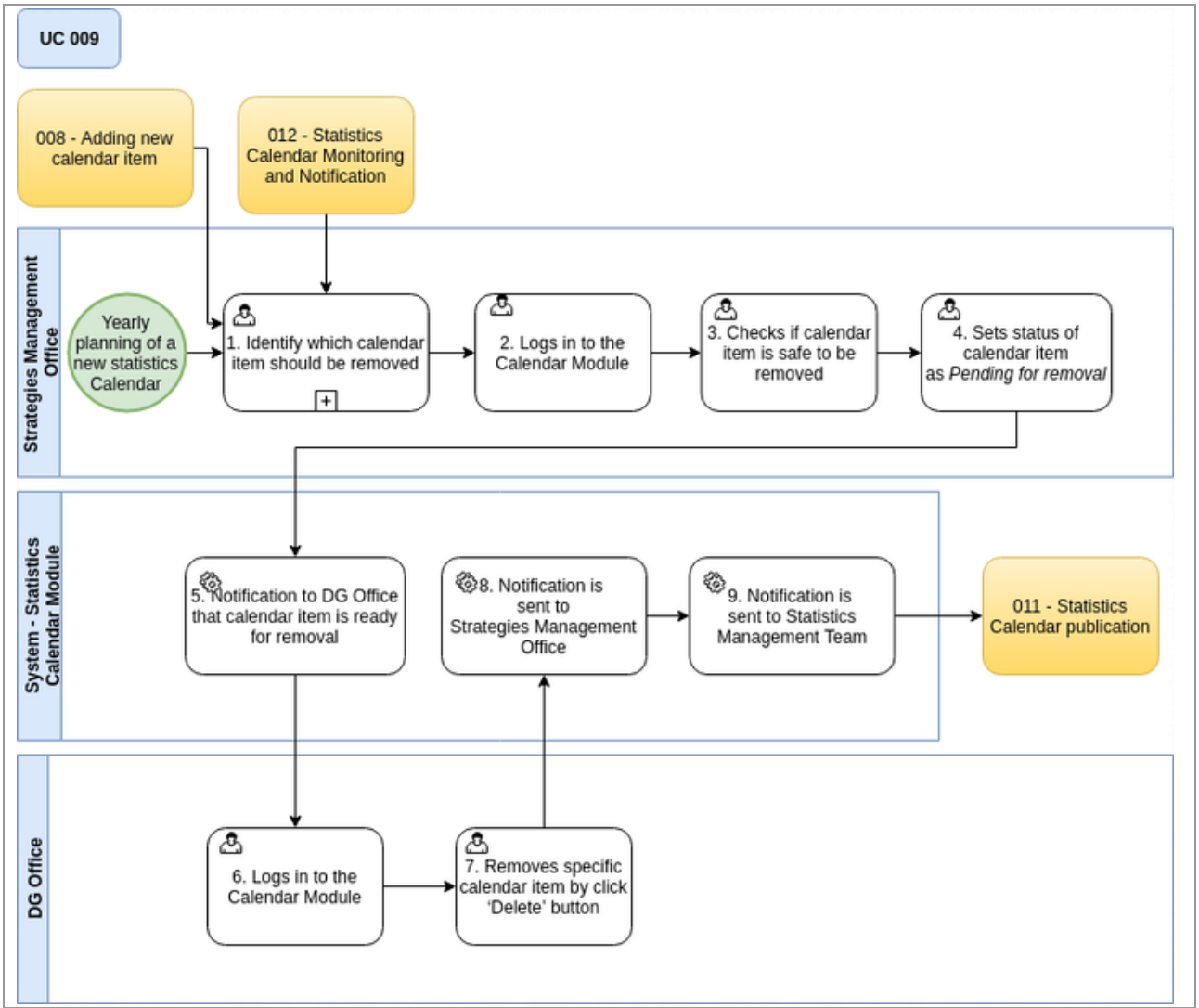
Related requirements:

Req. type	ID	Description	Comment
Functional	2.151	Ability to create Tasks (saved set of actions on set of data)	Tasks in general – regarding any processes – Process Maker.
Functional	2.152	Schedule or automate Tasks.	Creating and running tasks in Process Maker. Calendar item is linked with task in Process Maker.

Functional	5.1	Ability to define the statistics calander that covers all GCC-STAT planned events.	
Functional	5.2	Ability to trigger workflow for data collection based on the defined event within the calander.	Linking calendar item with process in Process Maker. The process will trigger data gathering notifications.
Functional	5.5	Ability to add an event to the calander through a process.	
Functional	8.12	The system to have the ability to schedule the data submission periods based on agreed time frames with other GCC national statistics organizations covering different timeslots for different domains within each organization.	

Use Case Title:	**Statistics Calendar Planning - Removing Calendar item**				
ID:	**009**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Strategies Management Office • System - Statistics Calendar Module • DG Office					
Overall description:					
Use case describes removal of Statistics Calendar item for upcoming year.					
Business that triggers use case / frequency:					
• Strategy Management Office (SMO): Yearly planning of a new Statistics Calendar – review. • Stop of a running task. • UC 008 - Adding new calendar item • UC 012 - Statistics Calendar Monitoring and Notification					
Inputs and Outputs:					
Inputs: - **Outputs**: Approved Statistics Calendar.					
Use case description (step by step):					
1. Strategies Management Office: Identifies which calendar item should be removed.					

2. Strategies Management Office: Logs in to the Calendar Module. 3. Strategies Management Office: Checks if calendar item is safe to be removed. 4. Strategies Management Office: Sets status of calendar item as *Pending for removal*. 5. System - Statistics Calendar Module: Notification to DG Office that calendar item is ready for removal. 6. DG Office: Logs in to the Calendar Module. 7. DG Office: In Calendar Module removes specific calendar item by click 'Delete' button and then confirm action. 8. System - Statistics Calendar Module: Notification about removal of calendar item is sent to Strategies Management Office. 9. System - Statistics Calendar Module: Notification about removal of calendar item is sent to Statistics Management Team. After Step 9: • UC 011 - Statistics Calendar publication
Alternative flow:
-
BPMN diagram (optional):



Notes:

With proper privileges and with certain roles (administrator) removal of Calendar Item during calendar year can be done. In such case Process Maker will try to stop any running task which linked with this calendar item.

Related requirements:

Req. type	ID	Description	Comment
Functional	5.1	Ability to define the statistics calendar that covers all GCC-STAT planned events.	
Functional	5.6	Ability to modify an event that is defined in the calendar.	

Use Case Title:	Statistics Calendar Planning - Updating Calendar item				
ID:	**010**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- Strategies Management Office (Director) - Director
- Statistics Management Team
- DG Office
- System - Statistics Calendar Module

Overall description:

Use case describes updating Statistics Calendar for upcoming year and linking with processes in Process Maker.

Business that triggers use case / frequency:

- Strategies Management Office (SMO): Yearly planning of a new Statistics Calendar e.g. review process.
- Statistics Management Team - Ad hoc modification of a running task e.g. as a result of review.
- UC 008 - Adding new calendar item
- UC 012 - Statistics Calendar Monitoring and Notification

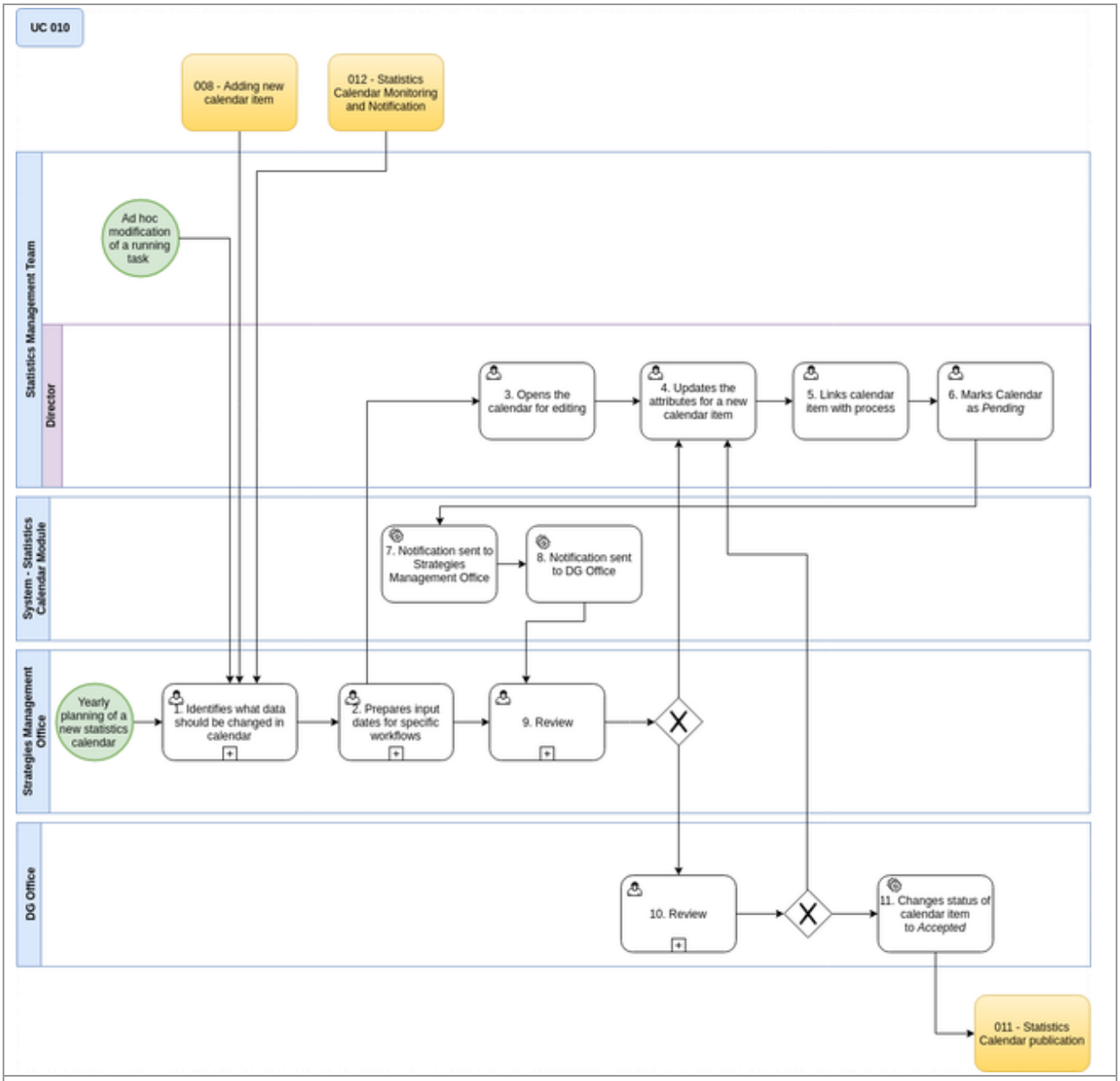
Inputs and Outputs:

Inputs: Outdated existing calendar item.
Outputs: Approved Statistics Calendar.

Use case description (step by step):

1. Strategies Management Office: Identifies what data should be changed in calendar.
2. Statistics Management Team (Director): Prepare input dates for specific premade and existing in the system repeatable workflows in GCC-Stat e.g. parameterized publication of any report.
3. Statistics Management Team (Director): Opens the calendar for editing (In Statistics Calendar Module) for a given statistical year.
4. Statistics Management Team (Director): Updates the attributes for a new calendar item/task:
    - name,
    - description,
    - business process (from Process Maker),
    - parameters for process (from Process Maker) - includes dates necessary for running date-related processes,
    - category (one from dictionary),
    - domain (one from dictionary),
    - Priority.
5. Statistics Management Team (Director): Parameters filled in the previous step are linked with proper process in Process Maker by selecting premade workflows in a dropdown menu.
6. Statistics Management Team (Director): Mark Calendar as *Pending*.
7. System - Statistics Calendar Module: Notification about new calendar entry sent to Strategies Management Office.
8. System - Statistics Calendar Module: Notification about new calendar entry sent to DG Office.

9. Strategies Management Office: Review proposed calendar. If any corrections are needed go to step 4. 10. DG Office: Review and approval. If any corrections are needed go to step 4. 11. DG Office: Changes status of calendar item to *Accepted*. After Step 11: • UC 011 - Statistics Calendar publication
Alternative flow:
Only when approval process will introduce some corrections in existing calendar item. Then proper updated and review process should be introduced.
BPMN diagram (optional):



Notes:			
With proper privileges and with certain roles (administrator) modification of Calendar Item during calendar year can be done. In such case modification must be done with care and sometimes running instances on tasks in Process Maker must be stopped.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**

Functional	5.1	Ability to define the statistics calander that covers all GCC-STAT planned events.	
Functional	5.6	Ability to modify an event that is defined in the calendar.	
Functional	8.12	The system o have the ability to schedule the data submission periods based on agreed time frames with other GCC national statistics organizations covering different timeslots for different domains within each organization.	

Use Case Title:	**Statistics Calendar Publication**				
ID:	**011**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- System Administrator
- System - Statistics Calendar Module

Overall description:

Use case describes user story about dissemination of **approved** and verified Statistics Calendar. The event will be trigger from Statistics Calendar Module in StatStart – focal point application for MARSA system.

Business that triggers use case / frequency:

- DG Office: approves Statistics Calendar.
- UC 008 - Adding new calendar item
- UC 009 - Removing calendar item
- UC 010 - Updating statistics calendar

Inputs and Outputs:

Inputs: -
Outputs: Updated Statistics Calendar in GCC-Stat Main Page and Open Data Portal.

Use case description (step by step):

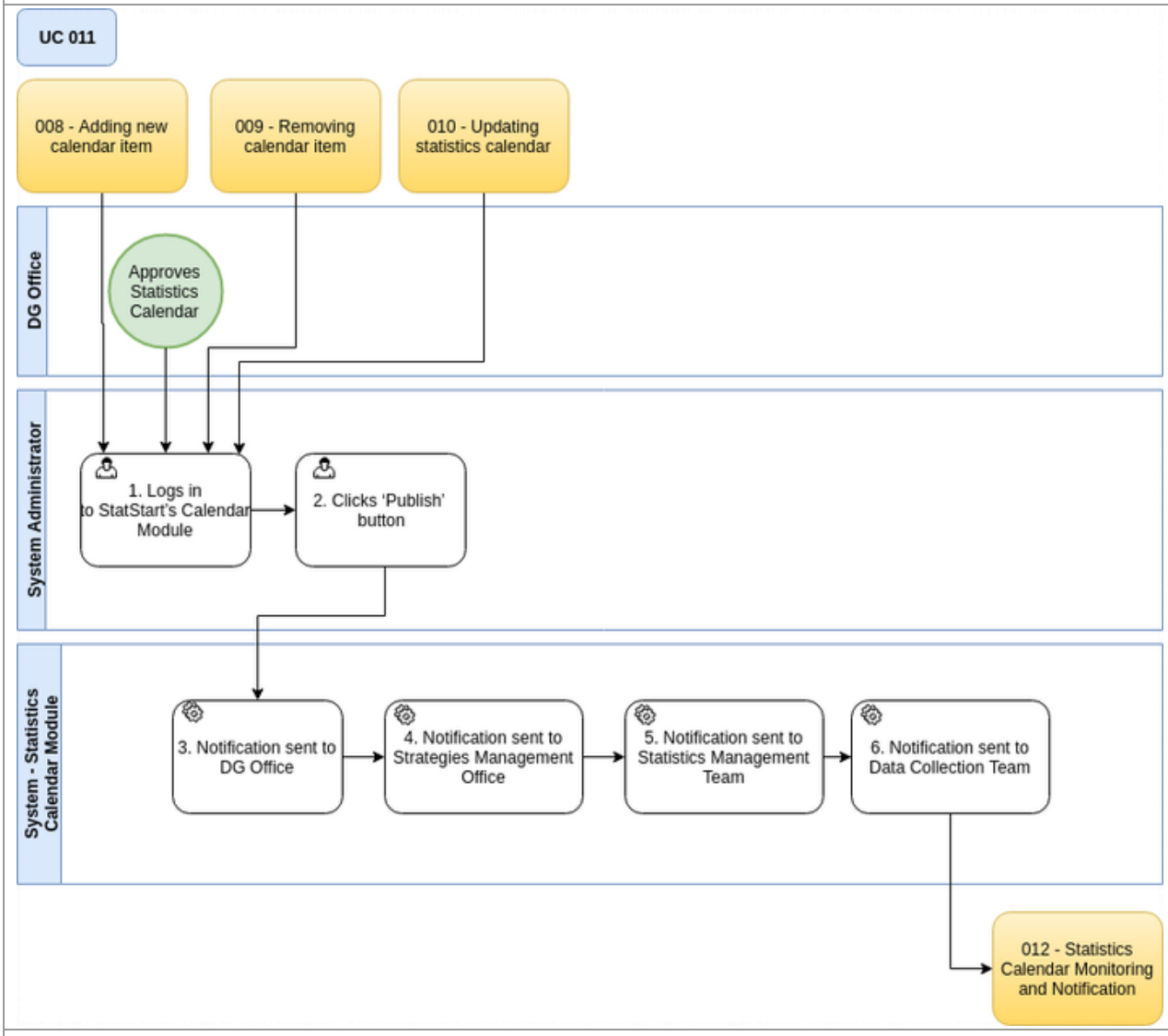
1. System Administrator: Logs in to StatStart's Calendar Module with proper privileges.
2. System Administrator: Clicks 'Publish' button in the Statistics Calendar which is in the state *Approved*.
3. System - Statistics Calendar Module: Notification sent to DG Office about Statistics Calendar publication.
4. System - Statistics Calendar Module: Notification sent to Strategies Management Office about Statistics Calendar publication.
5. System - Statistics Calendar Module: Notification sent to Statistics Management Team about Statistics Calendar publication.
6. System - Statistics Calendar Module: Notification sent to Data Collection Team.

After Step 6:

- UC 012 - Statistics Calendar Monitoring and Notification

Alternative flow:

BPMN diagram (optional):



Notes:

After clicking 'Publish' the system will publish using API Statistics Calendar to:

- Open Data Portal
- Main Page of GCC-Stat

The same way updating of Statistics Calendar will work.

Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	8.12	The system to have the ability to schedule the data submission periods based on agreed time frames with other GCC national statistics organizations covering different timeslots for different domains within each organization.	When calendar is approved the Process Maker will start monitoring processes regarding data collection, dissemination etc.

Use Case Title:	**Statistics Calendar Monitoring and Notification**				
ID:	**012**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- System - Statistics Calendar Module
- Strategies Management Office

Overall description:

Use case or a functionality of the system to notify relevant users about progress and errors concerning tasks which are part of Statistics Calendar workflows.

Business that triggers use case / frequency:

- System: starts the workflow linked with calendar item.
- UC 011 - Statistics Calendar publication

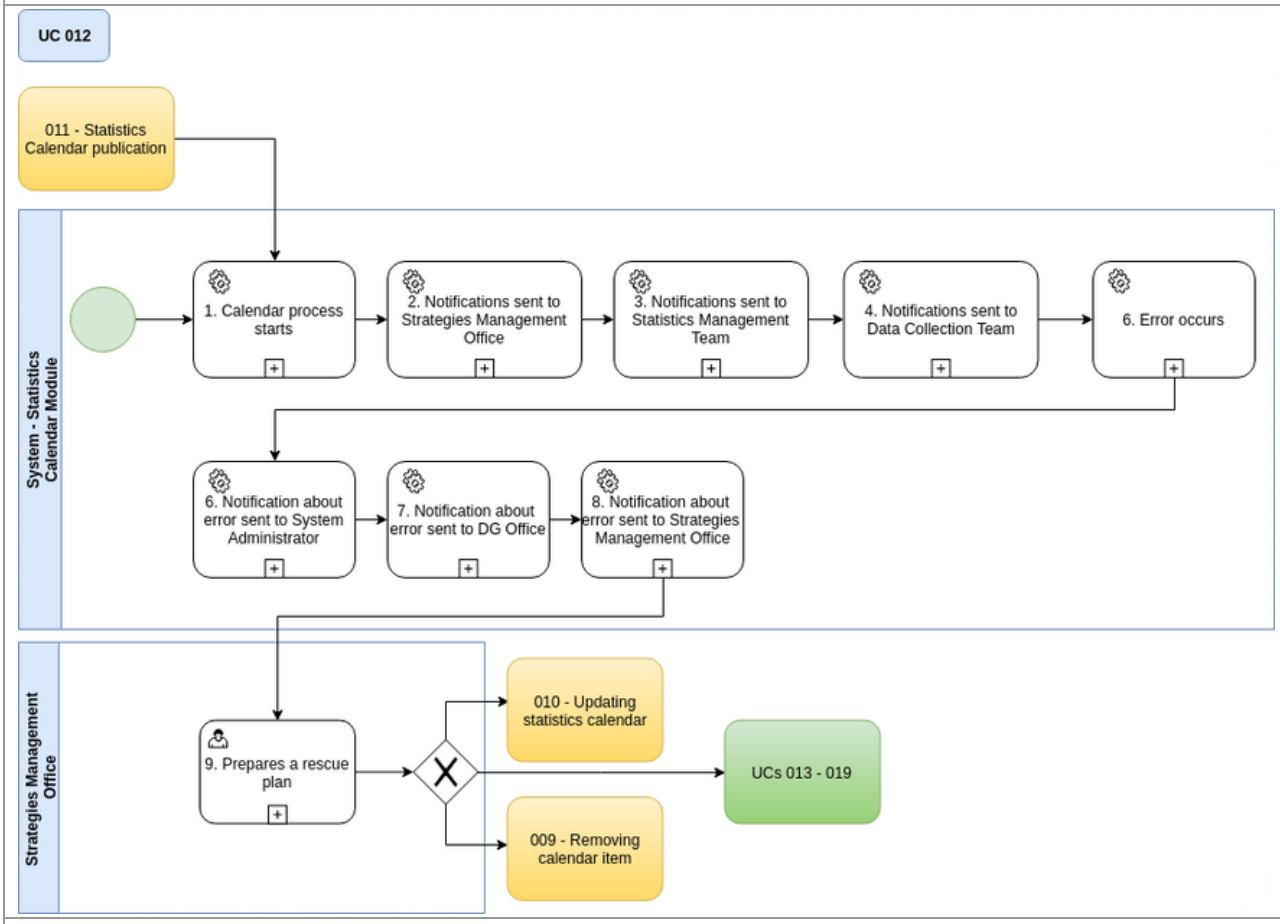
Inputs and Outputs:

Inputs: Proper parameters for Statistics Calendar item.
Outputs: Notifications for users in the system.

Use case description (step by step):

1. System - Statistics Calendar Module: Based on the parameters and dates the process in Process Maker linked with Calendar item starts.
2. System - Statistics Calendar Module: Notifications sent to Strategies Management Office about finished steps and progress of tasks.
3. System - Statistics Calendar Module: Notifications sent to Statistics Management Team about finished steps and progress of tasks.
4. System - Statistics Calendar Module: Notifications sent to Data Collection Team about finished steps and progress of tasks.
5. System - Statistics Calendar Module: Error occurs.
6. System - Statistics Calendar Module: Notification about error sent to System Administrator.
7. System - Statistics Calendar Module: Notification about error sent to DG Office.
8. System - Statistics Calendar Module: Notification about error sent to Strategies Management Office.
9. Strategies Management Office: Prepares a rescue plan.
10. Strategies Management Office: Remove/update Calendar Item: UC 009 or UC 010.

Alternative flow:
BPMN diagram (optional):



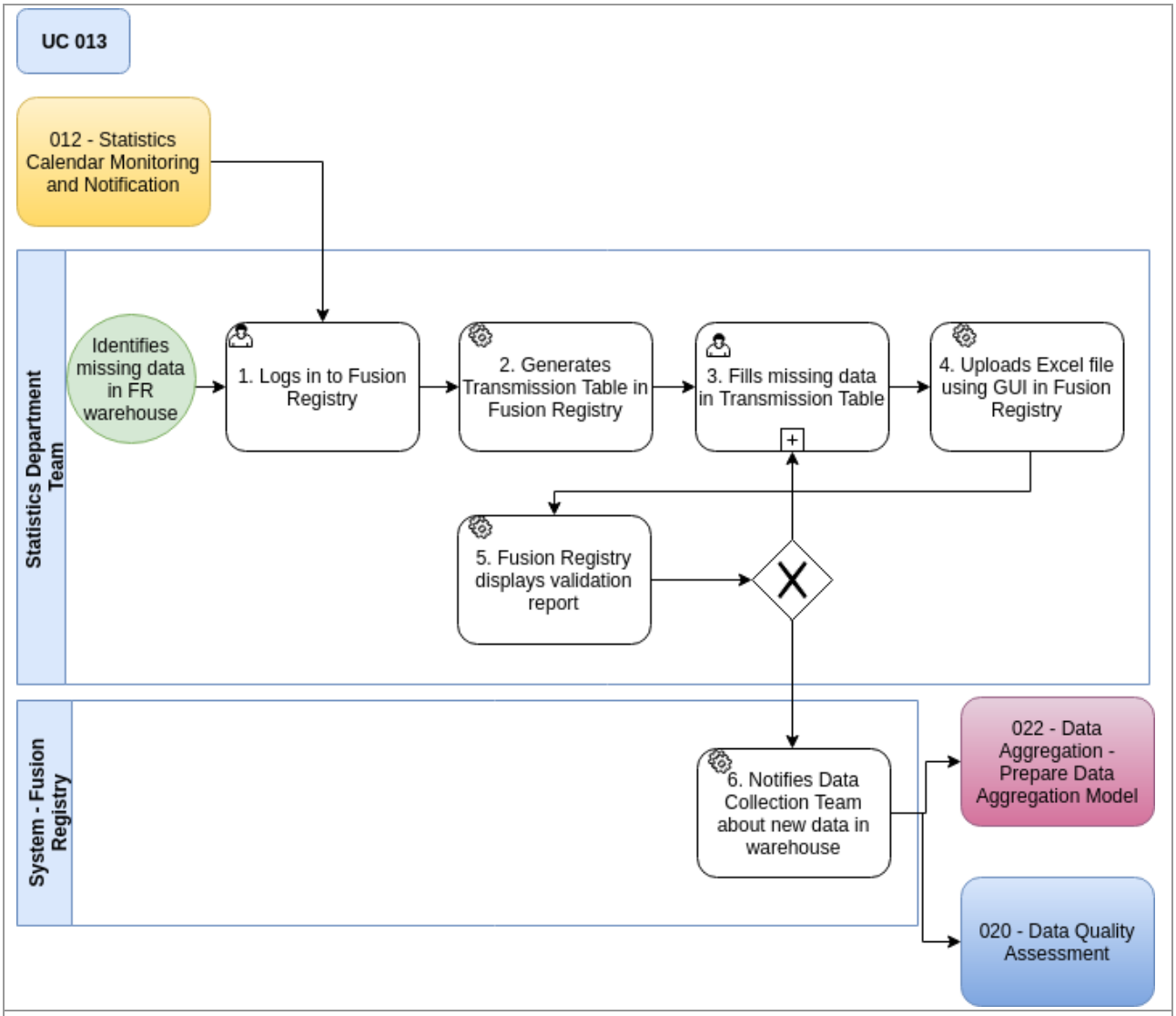
Notes:
Default platform for notification is the user workspace in StatStart focal point application. Notifications system will deliver live notifications to the user who is logged in to the system. When user is not logged in to the system notification will be pending in the system and will be sent by e-mail. Critical errors will be displayed in form of a red pop-up to the administrator in StatStart. If administrator is not online errors will be sent via e-mail.
Related requirements:

Req. type	**ID**	**Description**	**Comment**
Functional	5.3	Ability to send notifications regarding data gathering triggered through the calendar.	

Functional	5.7	Ability to update all event related stakeholders regarding milestones to be achieved.	
Non-Functional	8.11	Should support event-based triggers and time-based triggers.	
Non-Functional	8.12	Should support dynamic messaging content to generate any type of notification and support different notification types such as SMS, e-mail, etc.	Via e-mail and in-system notifications.
Non-Functional	8.15	The system should support automatic notification regarding issues.	
Non-Functional	8.19	Should provide the capability for notifications sent to user (s) to be automated (have the ability to be triggered by certain configurable events) or manual (used by customers on demand) and they are stored at the user level.	
Non-Functional	8.20	Should provide support for 2 types of notifications: - Priority Notifications: will appear as a pop-up when the user logs in - Normal Notifications: will appear in the user inbox when the user logs in.	

Use Case Title:	**Data Collection – Data Upload by GCC-Stat employees**				
ID:	**013**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Statistics Department Team • System - Fusion Registry					
Overall description:					
Scenario describes upload of missing data by GCC-Stat employees					
Business that triggers use case / frequency:					
• Statistic Department Team: Identifies missing data in Fusion Registry warehouse. • UC 012 - Statistics Calendar Monitoring and Notification					
Inputs and Outputs:					
Inputs: -					

Outputs: New data in MARSA system.
Use case description (step by step):
1. Statistics Department Team: Logs in to Fusion Registry. 2. Statistics Department Team: Generates Transmission Table in Fusion Registry. 3. Statistics Department Team: Fills missing data in Transmission Table. 4. Statistics Department Team: Uploads Excel file using GUI in Fusion Registry. 5. Statistics Department Team: Fusion Registry displays validation report. If data is not valid then go to step 3. 6. System - Fusion Registry: Notifies Data Collection Team about new data in warehouse. After step 6: • 020 - Data Quality Assessment • 022 - Data Aggregation - Prepare Data Aggregation Model
Alternative flow:
NSO should check the data and introduce changes when there are validation errors.
BPMN diagram (optional):



Notes:

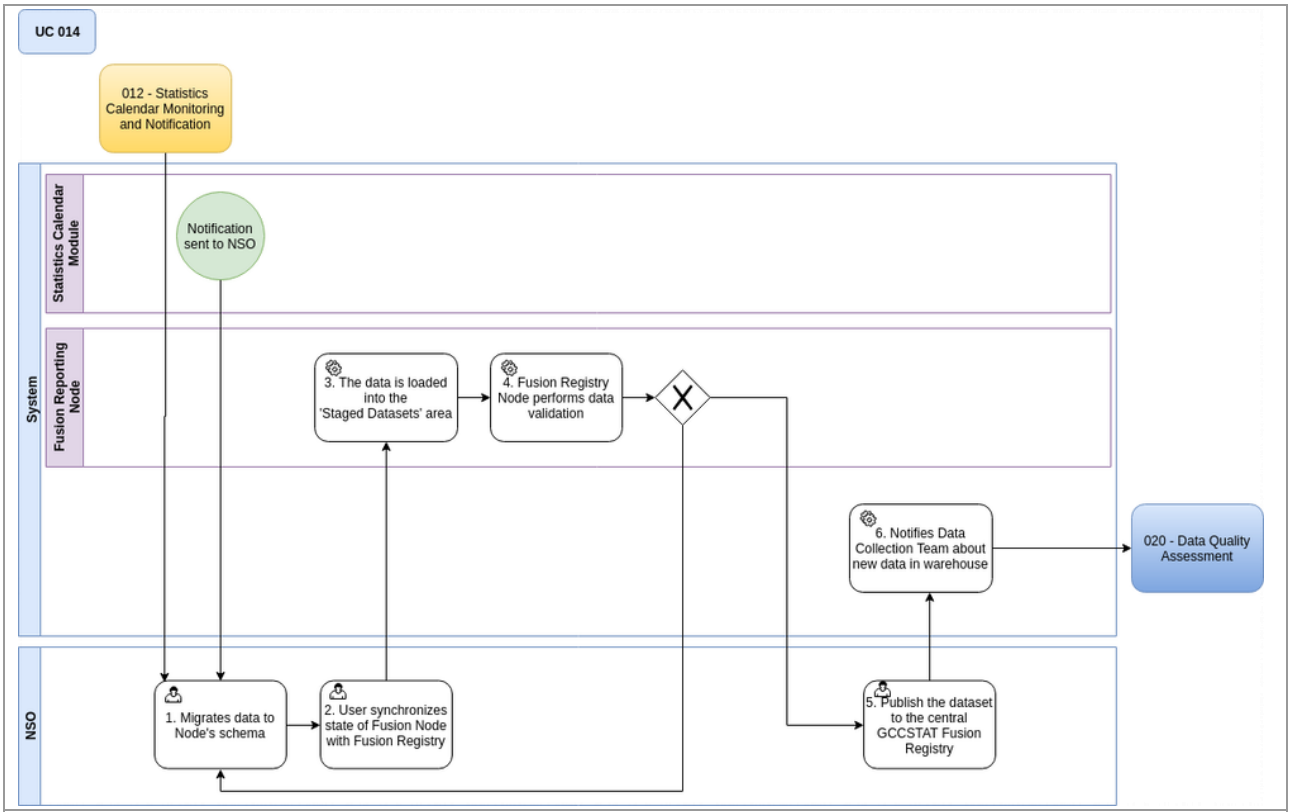
Privileged users from NSO will need to have an account in MARSA.
Transmission Table can be generated to input data for specific time period e.g. only data for 2019 year. This is most favorable approach since historical data wont clutter Excel file.

Related requirements:

Req. type	ID	Description	Comment
Functional	1.13	Ability to read EXCEL files, and read data from any sheet	Excel files with specific structure readable by Fusion Registry.
Functional	1.25	Ability to process and validate the data.	As a part of Fusion Registry automatic validation.

Functional	1.26	Ability to process and validate the data representation (Numerical, Text, Time,).	As a part of Fusion Registry automatic validation.
Functional	1.27	Ability to process and validate the data structure - against DSD	As a part of Fusion Registry automatic validation.
Functional	1.28	Ability to process and validate the data constraints	As a part of Fusion Registry automatic validation.
Functional	1.29	Ability to process and validate the data against validation rules.	As a part of Fusion Registry automatic validation.
Functional	1.30	Ability to process and detect duplicate observations/series.	As a part of Fusion Registry automatic validation.
Functional	1.31	Ability to process and verify the existence of mandatory attributes.	As a part of Fusion Registry automatic validation.
Functional	1.33	Ability to report violation, errors or success through GUI.	As a part of Fusion Registry automatic validation.
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	
Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	Data Collection – Scenario #1: Using Fusion Reporting Nodes				
ID:	**014**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• NSO • System - Statistics Calendar Module • System – Fusion Reporting Node					
Overall description:					
Use case regarding uploading statistical data into Fusion Registry using Nodes.					
Business that triggers use case / frequency:					
• System - Statistics Calendar Module: sends notification to the NSO about deadline for data submission. • UC 012 - Statistics Calendar Monitoring and Notification					
Inputs and Outputs:					
Inputs: Statistical data. **Outputs:** New data in MARSA system.					
Use case description (step by step):					
1. NSO: Migrates updated data to schema which can be accessed by Fusion Reporting Node. 2. NSO: User synchronizes state of Fusion Node with Fusion Registry by clicking button 'Database Sync' to load from the database schema. 3. System - Fusion Reporting Node: The data is loaded into the 'Staged Datasets' area. 4. System - Fusion Registry Node: Performs data validation. If any problems occur go to step 1. 5. NSO: Publish the dataset to the central GCCSTAT Fusion Registry by choosing the valid dataset in the Staged Datasets area and click 'Publish'. 6. System: Notifies Data Collection Team about new data in warehouse. After step 6: • 020 - Data Quality Assessment					
Alternative flow:					
-					
BPMN diagram (optional):					



Notes:

Automatic data validation performed by Fusion Registry or Fusion Reporting Node.

Each time there is a request to upload data to Fusion Registry or Fusion Reporting Node automatic validation is triggered.

Fusion Registry and Fusion Reporting Node use the same mechanism for validation and check exactly the same rules.

Automatic validation consists of several steps checking different aspects of data uploaded to warehouse. These steps are as follows:

- Semantically Compliant checks - Checks the datatypes of fixed fields for example fields in the header of the message must be of expected type. Ensures the underlying data format is consistent with the specification.
- Structurally Compliant checks - The dataset must conform to the structure as defined by the Data Structure Definition (DSD). The DSD defines the Dimensions and Attributes in a dataset. If the dataset is not structurally compliant then it indicates that these are either invalid Dimensions, or invalid Attributes i.e. the Dimension or Attribute Id in the dataset is not defined in the DSD.
- Valid Representation checks - The reported values in a dataset must conform to the allowable values which are defined by the Data Structure Definition (DSD). Each component

(dimension/attribute) defined by a DSD can additionally define an enumeration of allowed values (Codelist), or a component may provide restrictions on the content such as content type (String/Integer/Boolean), content length, etc. If any of the reported values do not conform to the values allowed by the DSD then the representation will be invalid.

- Valid Constraint checks - The allowable content of a dataset may be further constrained by one or more Constraints. A Constraint can define allowed and/or restricted values for each data structure component. Constraints can also define allowed and/or restricted series/partial series. Constraints can be applied to a Data Structure, Dataflow, Data Provider, or Provision Agreement. The rules of a constraint will cascade, so if a Constraint which restricts valid frequencies to Monthly or Annual is applied to a Dataflow, and another restricting valid countries to France is applied to a Data Provider, then the resultant restriction for the data provider loading data for the dataflow is "Monthly or Annual data for France".
- Valid Calculations checks - If Validation Rules exist for the structure defined by the data, then these will be evaluated against the data for correctness (e.g. equations and mathematical rules).
- Duplicate Observations checks - The dataset may contain duplicate observations or series. The validation process will attempt to merge duplicates to create a consolidated dataset. If the merge process finds duplicates which are in conflict with each other, for example two observations for the same time period, reporting different observation values, then this will be reported as a duplicate error.
- Mandatory Attributes Present checks - A Data Structure Definition (DSD) can define attributes which hold additional information about the dataset, series, or observation. An attribute may be optional or mandatory. The absence of mandatory attributes does not necessarily mean the dataset is invalid, as the dataset may be reporting additional information about an existing dataset, series, or observation. A dataset may also be used with a delete action, in which case only subsets of the dataset are required.

Related requirements:

Req. type	ID	Description	Comment
Functional	1.25 - 1.31, 1.33		As a part of Fusion Registry automatic validation.
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	
Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both	

		respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	**Data Collection – Scenario #2: Using transmission tables**				
ID:	**015**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- NSO
- System
- System - Statistics Calendar Module
- System – Fusion Registry

Overall description:

Scenario using transmission tables uploaded by NSOs as mean of feeding the system with required statistics data.

Business that triggers use case / frequency:

- System - Statistics Calendar Module: sends notification to the NSO about deadline for data submission.
- UC 012 - Statistics Calendar Monitoring and Notification

Inputs and Outputs:

Inputs: Filled transmission table.
Outputs: New data in MARSA system.

Use case description (step by step):

1. NSO: User logs in to Fusion Registry.
2. NSO: Downloads reporting template as an Excel file.
3. NSO: Fills the transmission table with required data.
4. NSO: Uploads Excel file using GUI in Fusion Registry.
5. System - Fusion Registry: Fusion Registry displays validation report. If data is not valid then go to step 3.
6. System: Notifies Data Collection Team about new data in warehouse.

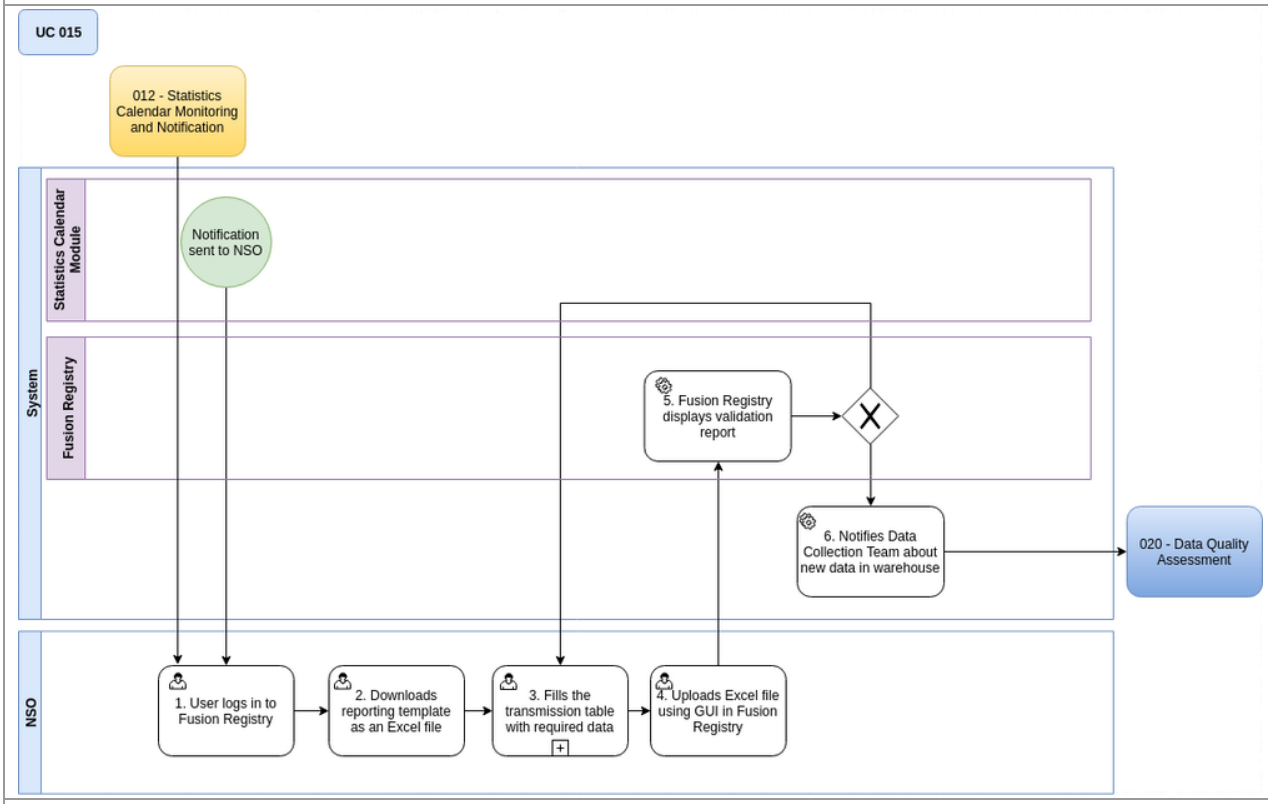
After step 6:

- 020 - Data Quality Assessment

Alternative flow:

NSO should check the data and introduce changes when there are validation errors.

BPMN diagram (optional):



Notes:

Privileged users from NSO will need to have an account in MARSA.
Transmission Table can be generated to input data for specific time period e.g. only data for 2019 year. This is most favorable approach since historical data wont clutter Excel file.
Step 5 – Performing automatic data validation. For more information please refer to **Notes section in UC 014.**

Related requirements:

Req. type	ID	Description	Comment
Functional	1.13	Ability to read EXCEL files, and read data from any sheet	Excel files with specific structure readable by Fusion Registry.
Functional	1.25 - 1.31, 1.33		As a part of Fusion Registry automatic validation.
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	

Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	**Data Collection – Scenario #3: Using FusionXL plugin for MS Excel**				
ID:	**016**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• NSO • System - Statistics Calendar Module • System - Fusion Registry • System					
Overall description:					
Scenario using prepared by Metadata plugin for MS Excel which connects directly with Fusion Registry.					
Business that triggers use case / frequency:					
• System - Statistics Calendar Module: sends notification to the NSO about deadline for data submission. • UC 012 - Statistics Calendar Monitoring and Notification					
Inputs and Outputs:					
Inputs: Data ready to be uploaded. **Outputs:** New data in MARSA system.					
Use case description (step by step):					
1. NSO: User logs in to the system by clicking *Setup Connection* in Excel Ribbon. Using a form user will paste link to GCC-Stat's FR and establish a connection. 2. NSO: User logs in to the system (via FusionXL plugin) in order to validate and upload data.					

3. NSO: User chooses a proper Dataflow to which data should be uploaded.
4. NSO: User fills Transmission Table generated by FusionXL with valid statistical data.
5. NSO: When table is filled user uploads data by clicking *Publish Data* and submitting credentials.
6. System – Fusion Registry: After data upload Fusion Registry will display a status validation report. If data is not valid then go to step 4.
7. System: Notifies Data Collection Team about new data in warehouse.

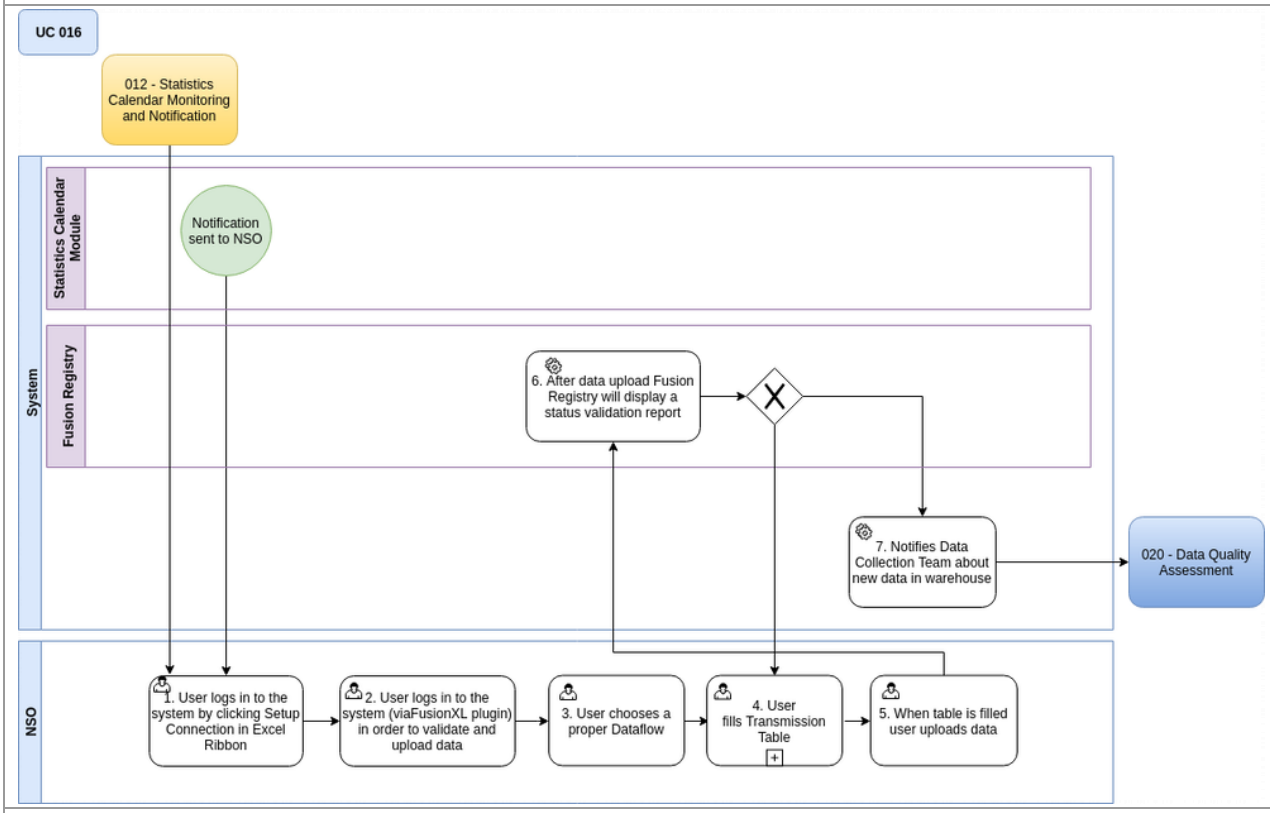
After step 7:

- 020 - Data Quality Assessment

Alternative flow:

-

BPMN diagram (optional):



Notes:

In order to use FusionXL user must have an account in MARSA system.

Step 6 – Performing automatic data validation. For more information please refer to **Notes section in UC 014**.

Related requirements:

Req. type	ID	Description	Comment

Functional	1.25 - 1.31, 1.33		As a part of Fusion Registry automatic validation.
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	
Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	**Data Collection – Scenario #4: Using raw SDMX files**				
ID:	**017**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• NSO • System • System - Statistics Calendar Module • System - Fusion Registry					
Overall description:					
Use case regarding uploading statistical data in raw SDMX format into Fusion Registry.					
Business that triggers use case / frequency:					
• System - Statistics Calendar Module: sends notification to the NSO about deadline for data submission. • UC 012 - Statistics Calendar Monitoring and Notification					
Inputs and Outputs:					

Inputs: Data ready to be uploaded in SDMX format.
Outputs: New data in MARSA system.

Use case description (step by step):

1. NSO: User logs in to the Fusion Registry with specific account with permission to upload data.
2. NSO: User prepares a file in SDMX format and chooses specific Dataflow.
3. NSO: User uploads data using a feature of choosing a file from disk or url.
4. System – Fusion Registry: Validation report display from Fusion Registry. If data is not valid then go to step 2.
5. NSO: User chooses data publish mode: append or replace.
6. System: Notifies Data Collection Team about new data in warehouse.

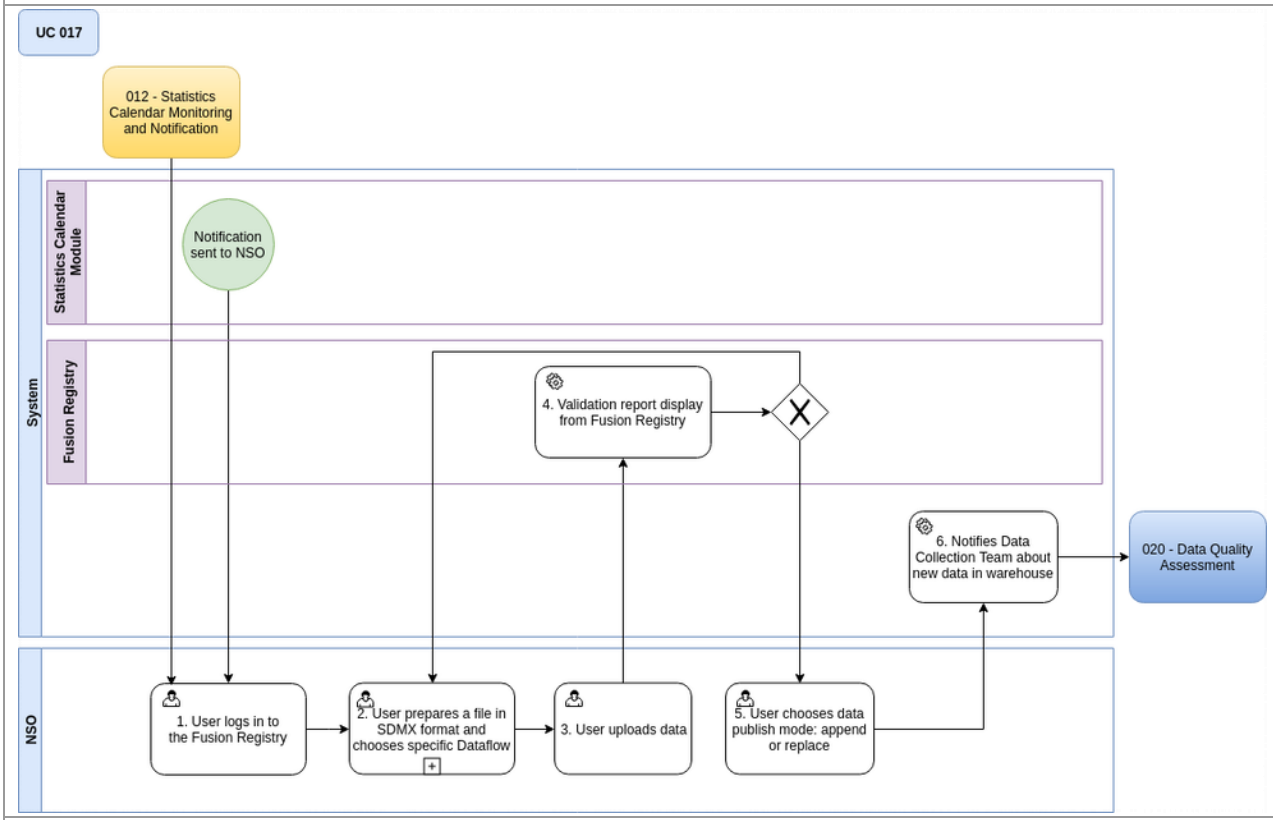
After step 6:

- 020 - Data Quality Assessment

Alternative flow:

-

BPMN diagram (optional):

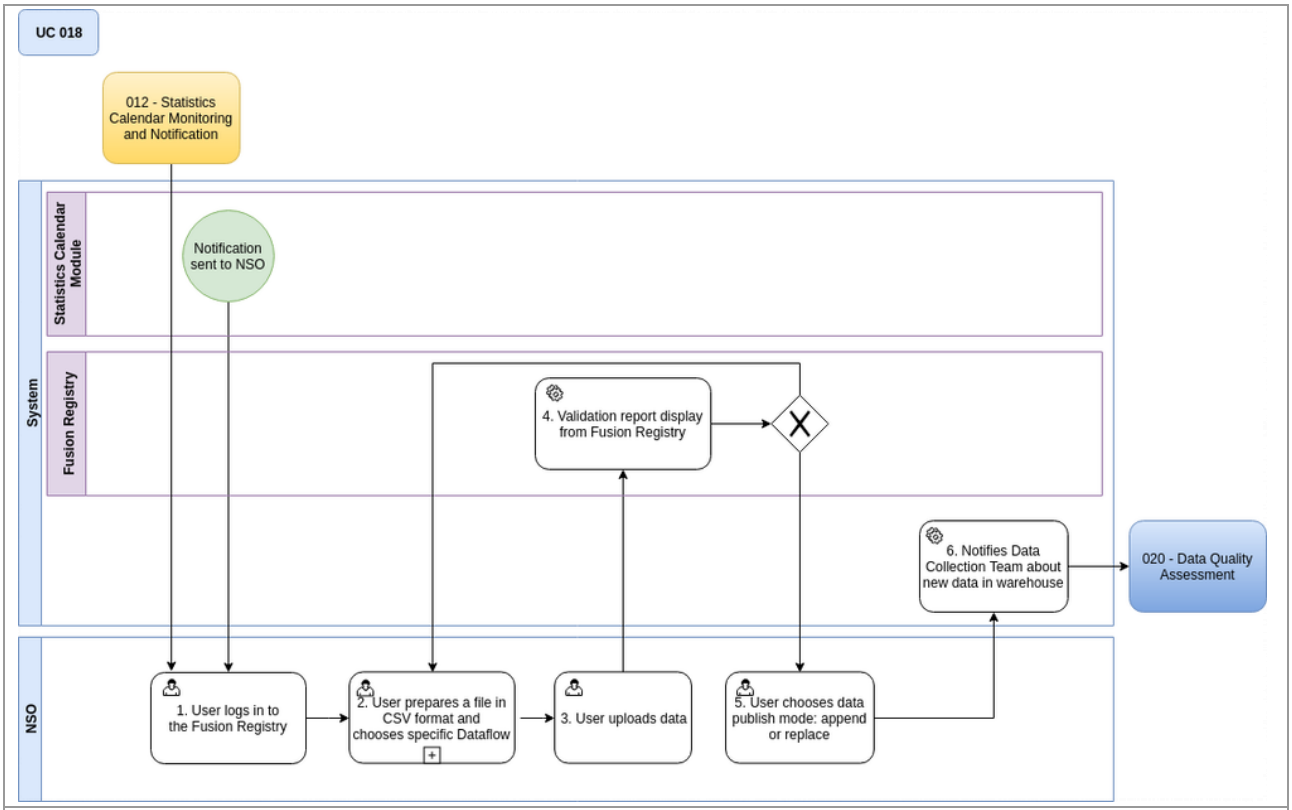


Notes:

In order to push SDMX data into the system user from NSO needs to have account with proper privileges in MARSA system. Step 4 – Performing automatic data validation. For more information please refer to **Notes section in UC 014**.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	1.12	Ability to read SDMX files.	
Functional	1.25 - 1.31, 1.33		As a part of Fusion Registry automatic validation.
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	
Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	**Data Collection – Scenario #5: Using CSV file**				
ID:	**018**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• NSO • System - Statistics Calendar Module • System - Fusion Registry					

Overall description:
Use case regarding uploading statistical data in popular CSV format into Fusion Registry.
Business that triggers use case / frequency:
• System - Statistics Calendar Module: sends notification to the NSO about deadline for data submission. • UC 012 - Statistics Calendar Monitoring and Notification
Inputs and Outputs:
Inputs: Data ready to be uploaded in SDMX format. **Outputs:** New data in MARSA system.
Use case description (step by step):
1. NSO: User logs in to the Fusion Registry with specific account with permission to upload data. 2. NSO: User prepares a file in CSV format and chooses specific Dataflow. 3. NSO: User chooses a file from disk or url and uploads data. 4. System – Fusion Registry: Validation report display from Fusion Registry. If data is not valid then go to step 2. 5. NSO: User chooses data publish mode: append or replace. 6. System: Notifies Data Collection Team about new data in warehouse. After step 6: • 020 - Data Quality Assessment
Alternative flow:
-
BPMN diagram (optional):



Notes:

In order to push CSV data into the system user from NSO needs to have account with proper privileges in MARSA system.

Step 4 – Performing automatic data validation. For more information please refer to **Notes section in UC 014**.

Related requirements:

Req. type	ID	Description	Comment
Functional	1.14	Ability to read CSV files, and parse any generic delimiter (, | [tab] …).	Supported by Fusion Registry.
Functional	1.25 - 1.31, 1.33		As a part of Fusion Registry automatic validation.
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	

Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	**Data Collection – Scenario #6: API/web services**				
ID:	**019**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• NSO • System - Statistics Calendar Module • System – Fusion Registry					
Overall description:					
Use case regarding uploading statistical data in popular formats into Fusion Registry using web service.					
Business that triggers use case / frequency:					
• System - Statistics Calendar Module: sends notification to the NSO about deadline for data submission. • UC 012 - Statistics Calendar Monitoring and Notification					
Inputs and Outputs:					
Inputs: Data ready to be uploaded in SDMX/Excel format. **Outputs:** New data in MARSA system.					
Use case description (step by step):					
1. NSO: Uses custom software or a client app to connect to FR Web Service API 2. NSO: Prepares data for upload.					

3. NSO: Using software from step 1 NSO sends a HTTP POST request to proper WS endpoint */ws/secure/data/publish.*
4. System – Fusion Registry: Receives response from WS about data validation and upload to FR. If data is not valid then go to step 2.
5. System: Notifies Data Collection Team about new data in warehouse.

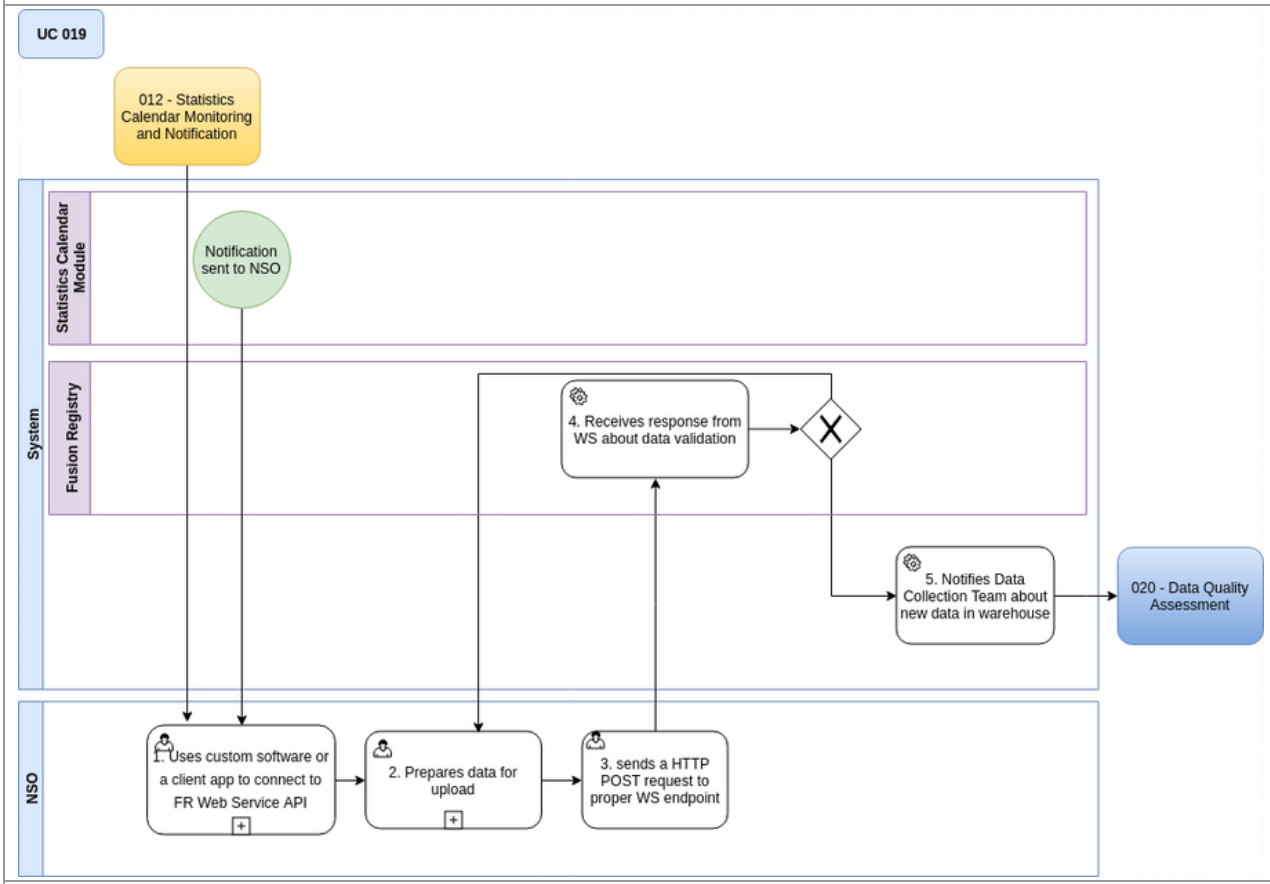
After step 5:

- 020 - Data Quality Assessment

Alternative flow:

-

BPMN diagram (optional):



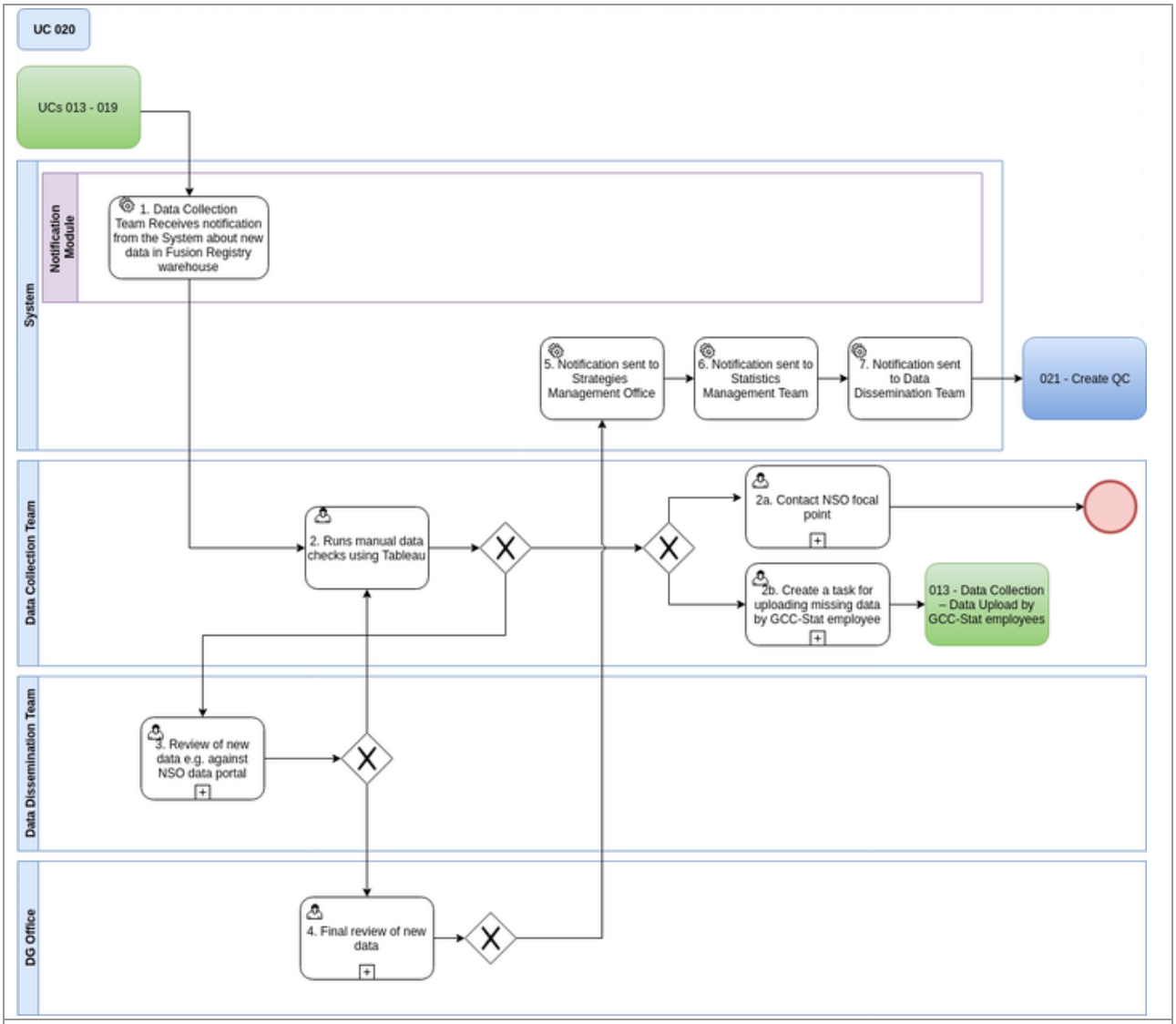
Notes:

Fusion Registry exposes passive WS endpoint to perform basic operations according to WS SDMX specification. In order to use this API NSO should create a client app for connecting to this Web Service. It can be a custom software made for NSO specifically for NSO needs or a simple client for HTTP communication.
Once this app is done it can be reused in order to connect to Fusion Registry API.

In order to push data into the system user from NSO needs to have account with proper privileges in MARSA system. *Accept* parameter of POST method must be set to specific data type: CSV, XLSX, SDMX. Step 4 – Performing automatic data validation. For more information please refer to **Notes section in UC 014**.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	1.25 - 1.31, 1.33		As a part of Fusion Registry automatic validation.
Functional	1.34	Ability to report violation, errors or success through API	
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	
Functional	4.3	The system should allow to administer different data approval rules and procedures for different data sets.	
Functional	4.9	The system should be able to identify and escalate any issues related to uploaded and imported data completeness, validity and compliance to data requirements. Escalation should be performed for both respective GCC-Stat professionals and data owners/users, who uploaded, imported or updated data.	
Functional	4.10	The system should have the capability to reject any data submission due to data fields completeness and validity issues.	

Use Case Title:	**Data Quality Assessment**				
ID:	**020**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • Data Collection Team • Data Dissemination Team • System • System – Notification Module					

Overall description:
Use case describing process of data quality checks – both manual and using BI Tool.
Business that triggers use case / frequency:
• UCs 13 – 19 – Data uploads
Inputs and Outputs:
Inputs: Statistical data. **Outputs:** Validated data in MARSA system.
Use case description (step by step):
1. System – Notification Module: Data Collection Team receives notification from the System about new data in Fusion Registry warehouse. 2. Data Collection Team: Runs manual data checks on uploaded dataset using Tableau and it's BI tools. If there are any problems or missing data: a. contact NSO focal point. OR b. Create a task for uploading missing data by GCC-Stat employee **(UC 013)** 3. Data Dissemination Team: Review of new data e.g. against NSO data portal. If there are any problems with data then go to Step 2. 4. DG Office: Final review of new data. If there are any problems with data then go to Step 2. 5. System: Notification about data approval sent to Strategies Management Office. 6. System: Notification about data approval sent to Statistics Management Team. 7. System: Notification about data approval sent to Data Dissemination Team. After Step 7: • UC 021 – Create QC
Alternative flow:
Alternative flow is introduced in Step 2 in case when missing data will be filled by GCC-Stat employee. Possible options are steps 2a and 2b.
BPMN diagram (optional):



Notes:

Occurred errors or problems during manual data validation are covered in separate use cases.

Step 2 – Manual data checks using BI Tools

In practice Step 2 is a set of tasks which goals is to perform a set of tests that usually cannot be automated or conducted in 100% by IT tool. In this process knowledge and expertise of a skilled statistician is required in order to identify gaps and incorrect data.

Those steps include:

Level 1: Checking consistency with other data sets within the same domain and within the same data source:

- New data referring to a new time period is not an outlier (does not vary by more than 10% compared to data from the previous time period)
- Annual data is consistent with data from corresponding quarterly datasets.

Level 2: Checking consistency within the same domain between different data sources (mirror checks):

- Check e.g. that the export declared by country A to country B is the same as the import declared by country B from country A.

Level 3: Checking consistency between separate domains in the same data provider:

- Check e.g. that the number of enterprises and employees in SBS and Business demography are consistent for the same time period.

Level 4: Checking consistency with data of other data providers

- Check e.g. that country datasets are consistent with the data available in another data source.

Using sophisticated BI Tool as Tableau user can easily implement and work with different Statistical approaches/scenarios for data validation:

Local realistic range detection

The local realistic range gives values that are usually observed in a specific measurement site and ensures that the measurements fall within established limits.

The limits of the range are set and adjusted gradually using available information and former knowledge. It can also be defined as the 95% or 99% confidence interval of the observed values.

Tolerance band method

In order to detect “outliers”, which are observations that appear to deviate markedly from most observations. A smoothed curve is firstly generated based on the last measurement values. The deviations of the actual readings from the smoothed curve are then identified.

The tolerance band becomes narrower with higher measurement accuracy. The tolerance band is centered on the smoothed curve and its local width is equal to the average deviation of the measurements from the

smoothed curve multiplied by a tolerance factor which is usually in the range from 3 to 5. When a measured value lies outside of the tolerance band, it is classified as an outlier.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	4.1	The system should be able to perform automated checks of imported or uploaded data completeness, validity and compliance to data requirements.	As a part of using FR automatic validation data checks.
Non-Functional	3.1	System to have the ability to perform basic mathematical operations.	As a part of using Tableau for data checks.
Non-Functional	3.2	Time series calculations, such as percent change (period-over-period, year-over-year, annualized), logarithmic difference, lead and lag, moving averages and sums, truncation, extrapolation, and splicing.	As a part of using Tableau for data checks.
Non-Functional	3.3	Cross-frequency operations, including collapse and interpolation.	As a part of using Tableau for data checks.
Non-Functional	3.6	Aggregation, for aggregate data across regions, industries, sectors, and so on.	As a part of using Tableau for data checks.
Non-Functional	3.9	Analyze the components of any built-in function or formula to identify anomalies or large revisions in the component data.	As a part of using Tableau for data checks.

Use Case Title:	**Create QC**				
ID:	**021**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Data Collection Team • Data Dissemination Team • DG Office					
Overall description:					
Use case describing process of preparing data quality checks report and taking corrective actions if necessary.					
Business that triggers use case / frequency:					

- Manual verification of new data.
- UC 020 - Data Quality Assessment

Inputs and Outputs:

Inputs: Statistical data.
Outputs: QC report.

Use case description (step by step):

1. Data Collection Team: Based on predefined form with listed step-by-step actions quality check list of necessary tasks is created.
2. Data Collection Team: Manual data verification using Tableau BI features
3. Data Collection Team: Prepares quality check report
4. Data Collection Team: If any problems occur fills the part of the report regarding:
    - which corrective actions should be performed
    - by who
    - by what date
5. Data Dissemination Team: Review of new data e.g. against NSO data portal. Add new data to QC report.
6. Data Dissemination Team: Complete QC report is submitted to the DG Office.
7. DG Office: Review. If there are any problems with data delegate task to Data Collection Team to take corrective actions

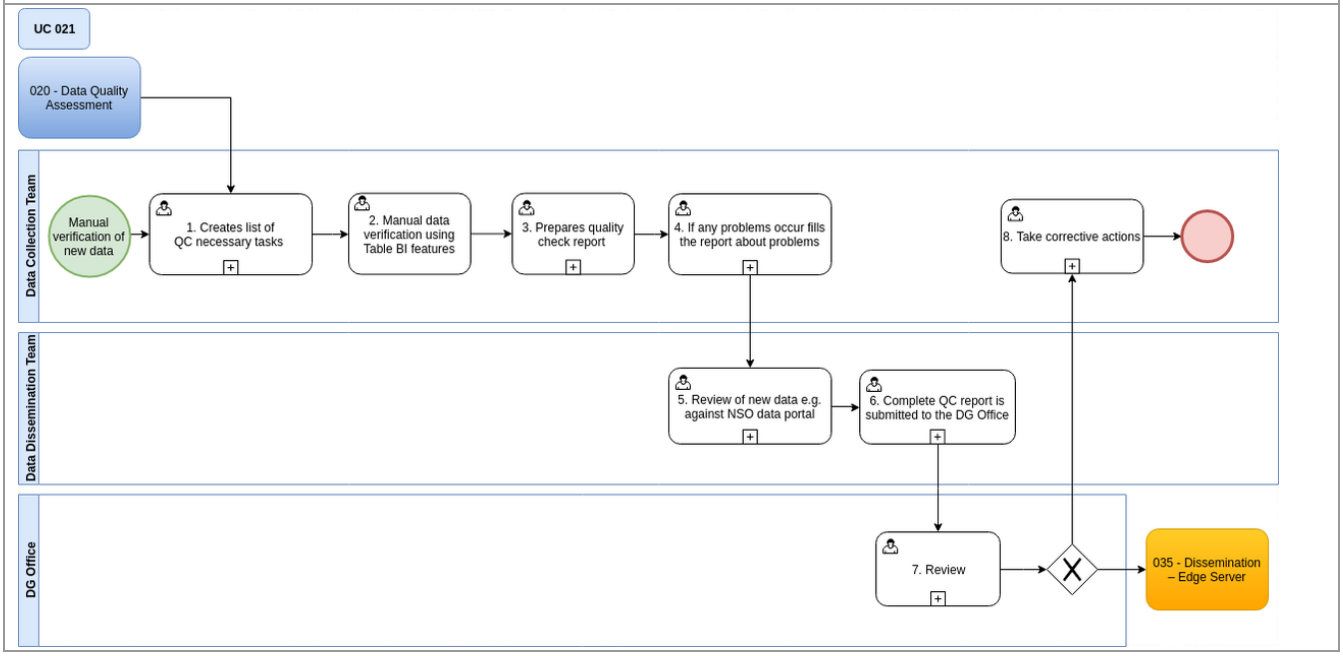
After Step 7:

- UC 035 - Dissemination – Edge Server

Alternative flow:

-

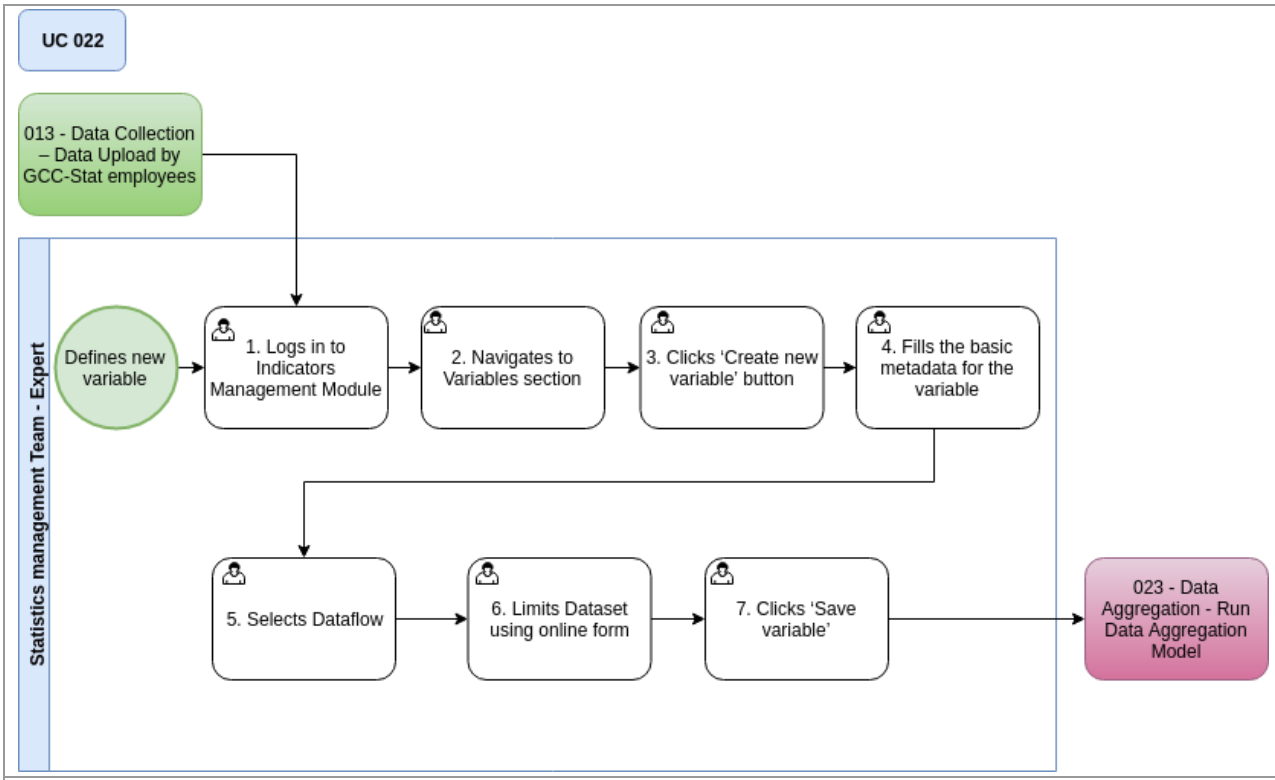
BPMN diagram (optional):



Notes:			
For each statistical domain and department proper procedures and list of tasks in QC should be developed. Step 2, Step 3 - Performing manual data validation. For more information please refer to **Notes section in UC 020**.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Non-Functional	3.1	System to have the ability to perform basic mathematical operations.	As a part of using Tableau for data checks.
Non-Functional	3.2	Time series calculations, such as percent change (period-over-period, year-over-year, annualized), logarithmic difference, lead and lag, moving averages and sums, truncation, extrapolation, and splicing.	As a part of using Tableau for data checks.
Non-Functional	3.3	Cross-frequency operations, including collapse and interpolation.	As a part of using Tableau for data checks.
Non-Functional	3.6	Aggregation, for aggregate data across regions, industries, sectors, and so on.	As a part of using Tableau for data checks.
Non-Functional	3.9	Analyze the components of any built-in function or formula to identify anomalies or large revisions in the component data.	As a part of using Tableau for data checks.

Use Case Title:	**Data Aggregation - Prepare Data Aggregation Model**				
ID:	**022**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Statistical Management Team - Expert					
Overall description:					
Use case describes the process of defining a variable which is the representation of a single observation value or aggregated portion of values based on dimension and time period which can be used in formulas and indicators definitions.					
Business that triggers use case / frequency:					
• Statistical Management Team (Expert): Defines new variable. • UC 013 - Data Collection – Data Upload by GCC-Stat employees					
Inputs and Outputs:					
Inputs: Statistical data in data warehouse (Fusion Registry). **Outputs:** New variable in the system.					
Use case description (step by step):					

1. Statistical Management Team (Expert): Logs in to the StatStart application and navigates to Indicators Management Module. 2. Statistical Management Team (Expert): Navigates to Variables section. 3. Statistical Management Team (Expert): Clicks 'Create new variable' button. 4. Statistical Management Team (Expert): Fills the basic metadata for the variable: • variable name, • aggregation method, • frequency, • geographic area, • data provider, • many statistical domains/subdomains, • tags. 5. Statistical Management Team (Expert): Selects Dataflow (a set of selectable Dataflows is downloaded each time from the Fusion Registry system). 6. Statistical Management Team (Expert): Based on selected Dataflow fills a dynamic dimensional form (parameters are downloaded in real time from the Fusion Registry system). The user has the ability to limit the data set from Dataflow using a generated form. 7. Statistical Management Team (Expert): Clicks 'Save variable'. After Step 7: • UC 023 - Data Aggregation - Run Data Aggregation Model
Alternative flow:
-
BPMN diagram (optional):



Notes:

At the base level aggregates are represented by variables. A variable is a time aggregated portion of data from the Fusion Registry system. Users of the system can define any number of variables. Each variable is based on a single Dataflow from the Fusion Registry system. One Dataflow can be used in many variables. The user can limit the data for one variable using dimensions that are specified for a given Dataflow in the Fusion Registry (e.g. Geographical area, age, gender, etc.). At the moment of creating a variable, the frequency for which data are grouped and aggregated is specified. The data aggregation method is defined from the list of aggregation functions (e.g. SUM, AVG, etc.).

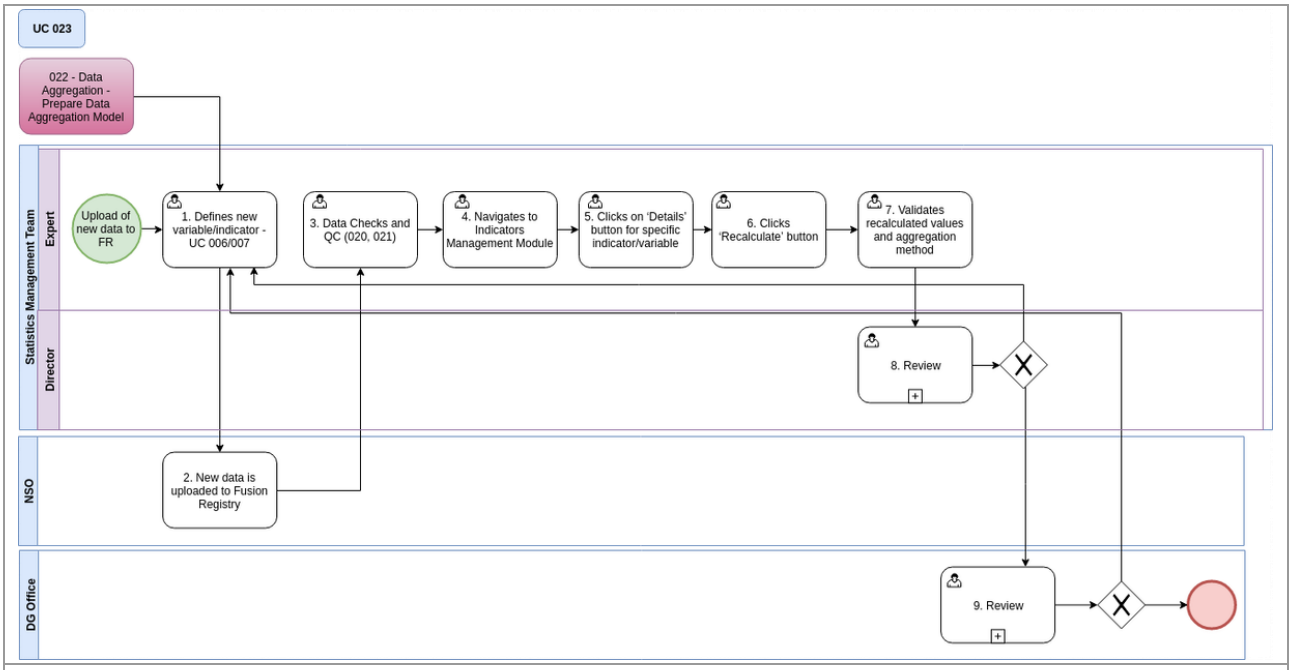
Step 7: After saving the variable, the user will be able to download the data on demand from the Fusion Registry. The data will be presented in the form of a table containing two columns (time and value) and N-rows. The data from the Fusion Registry system for the variable will be collected periodically, depending on the use of the variable in the indicators.

Related requirements:

Req. type	ID	Description	Comment
Functional	6.2	Ability to define the equation and variables related to enrolled indicators.	

Use Case Title:	Data Aggregation - Run Data Aggregation Model

ID:	023	Version:	1.0	Last update:	05-06-2019
Actors:					
• Statistics Management Team - Expert • NSO • Statistics Management Team - Director • DG Office					
Overall description:					
Use cases describes the process of calculating by the system aggregates defined as variables and indicators.					
Business that triggers use case / frequency:					
• Statistics Management Team (Expert): Upload of new data to Fusion Registry. • UC 023 - Data Aggregation - Run Data Aggregation Model					
Inputs and Outputs:					
Inputs: Statistical data in the system. **Outputs:** Recalculated values of variables and indicators.					
Use case description (step by step):					
1. Statistical Management Team (Expert): Defines/updates variable/indicator (UC 006/007). 2. NSO: Uploads data (UC 013 - 019). 3. Data Checks and QC (020, 021). 4. Statistical Management Team (Expert): Navigates to Indicators Management Module. 5. Statistical Management Team (Expert): Clicks on 'Details' button for specific indicator/variable. 6. Statistical Management Team (Expert): Clicks 'Recalculate' button. 7. Statistical Management Team (Expert): Validates recalculated values and aggregation method. 8. Statistical Management Team (Director): Review of new variable/indicator. If any corrections are needed go to step 1. 9. DG Office: Review of new variable/indicator. If any corrections are needed go to step 1.					
Alternative flow:					
-					
BPMN diagram (optional):					



Notes:

The system allows manual or automated calculation of the indicator value. Both manual and automatic calculation of the indicator values causes:

- Download from the Fusion Registry, aggregate and calculate the values of variables and related indicators based on defined frequency for indicator and variable
- Change and refresh of all the stored values of this indicator in the database of the Indicator Management system.
- Achieving goals targets check in active strategies that depends on the indicators that have been recalculated.
- Depending on whether or not the goal value in the strategy is reached, the system sends notification to the users concerning fulfillment of the target (sending notifications from the notification system).

Step 3 - Performing manual data validation. For more information please refer to **Notes section in UC 020**.

Related requirements:

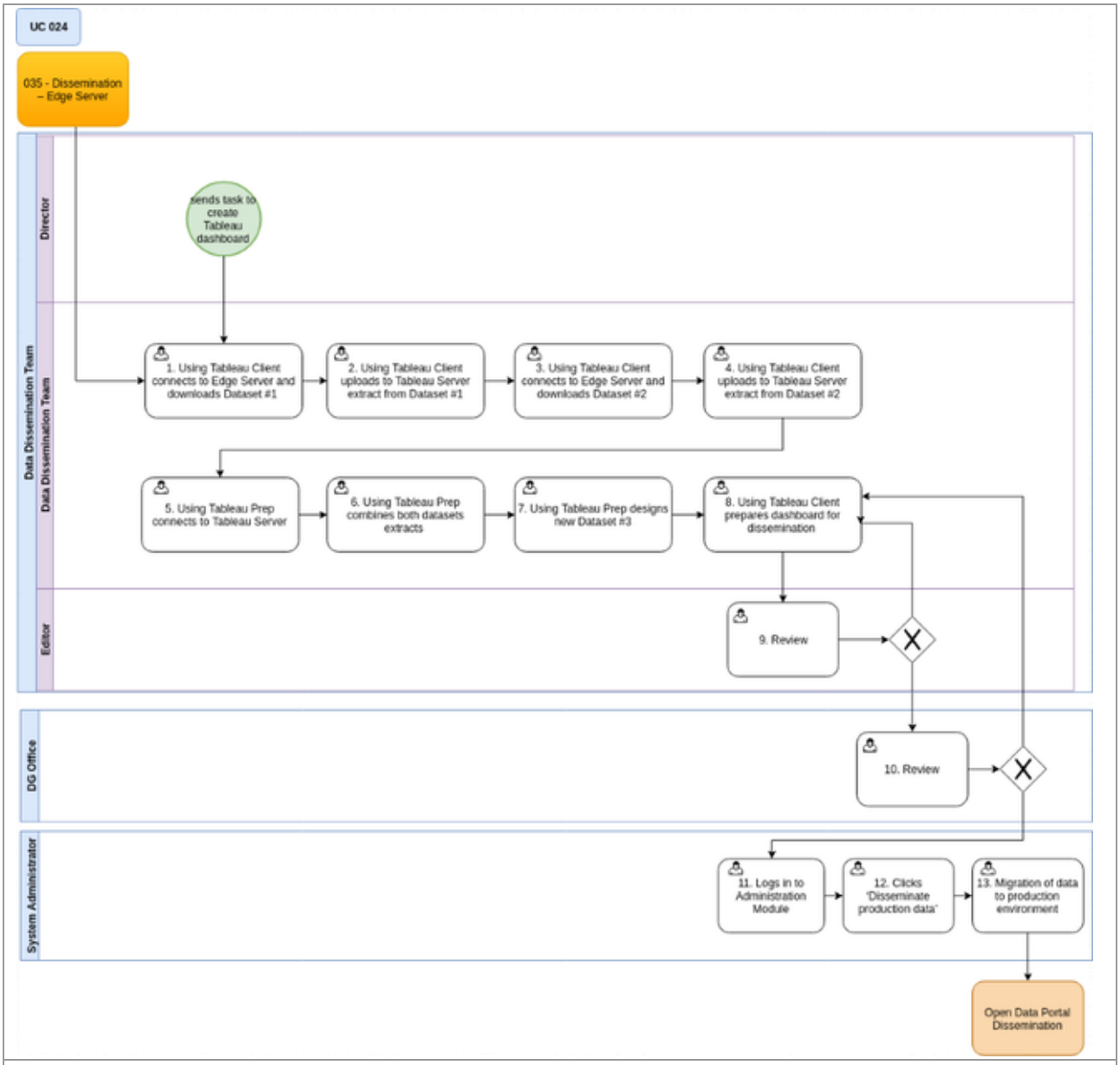
Req. type	ID	Description	Comment
Functional	6.2	Ability to define the equation and variables related to enrolled indicators.	

Use Case Title:	Presenting Different Frequency Time Series Together				
ID:	024	Version:	1.0	Last update:	05-06-2019

Actors:

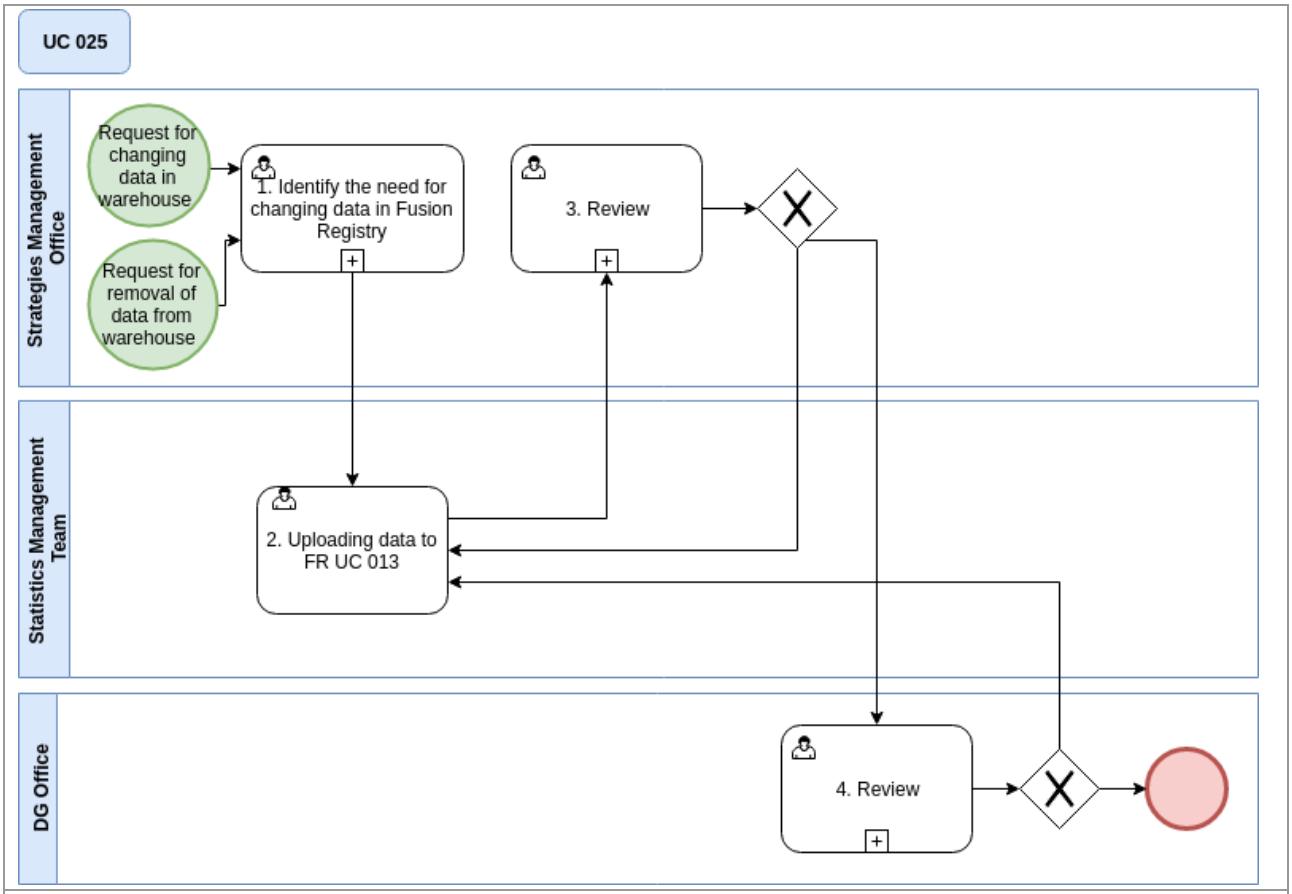
- Data Dissemination Team
- Data Dissemination Team (Editor in Chief) - Editor

• Data Dissemination Team - Director • DG Office • System Administrator
Overall description:
Use case describes the process of combining data from different datasets in one Tableau dashboard.
Business that triggers use case / frequency:
• Data Dissemination Team – Director: sends task to create Tableau dashboard combining data with different frequency series from separate datasets. • UC 035 - Dissemination – Edge Server
Inputs and Outputs:
Inputs: Datasets in SDMX format in Fusion Registry. **Outputs:** Dashboard in Open Data Portal.
Use case description (step by step):
1. Data Dissemination Team: Using Tableau Client connects to Edge Server and downloads Dataset #1 2. Data Dissemination Team: Using Tableau Client uploads to Tableau Server extract from Dataset #1 3. Data Dissemination Team: Using Tableau Client connects to Edge Server and downloads Dataset #2 4. Data Dissemination Team: Using Tableau Client uploads to Tableau Server extract from Dataset #2 5. Data Dissemination Team: Using Tableau Prep connects to Tableau Server be setting up the connection 6. Data Dissemination Team: Using Tableau Prep combines both datasets extracts from Tableau Client using Tableau Prep features 7. Data Dissemination Team: Using Tableau Prep designs new Dataset #3 combined of extract of Dataset #1 and Dataset #2 8. Data Dissemination Team: Using prepared dataset #3 in Tableau Client prepares dashboard for dissemination 9. Data Dissemination Team (Editor in Chief): Review. If any changes are needed in the dashboard go to step 8. 10. DG Office: Review. If any changes are needed in the dashboard go to step 8. 11. System Administrator: Logs in to Administration Module. 12. System Administrator: Clicks ‘Disseminate production data’. 13. System Administrator: Migration of data to *production* environment. After Step 13: • Open Data Portal Dissemination
Alternative flow:
-
BPMN diagram (optional):



Notes:			
Steps 1-8 take place in *test* environment. Tableau Prep is a custom application integrated with Tableau which is available for use as part of a licensing plan for GCC-Stat.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Non-Functional	3.7	Perform cross-dataset, cross-frequency, and cross-version analysis and query.	Using Tableau Prep.

Use Case Title:	Change data value in Fusion Registry				
ID:	**025**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • Strategies Management Office • Statistics Management Team					
Overall description:					
Use case describing versioning and managing statistical data in Fusion Registry and ad hoc need for changing or updating data in Fusion Registry by GCC-Stat.					
Business that triggers use case / frequency:					
• Strategy Management Office (SMO): Request for change data in Warehouse or remove data.					
Inputs and Outputs:					
Inputs: - **Outputs:** Updated data in Fusion Registry.					
Use case description (step by step):					
1. Strategies Management Office: Identify the need for changing data in Fusion Registry. 2. Statistics Department Team: Uploading data to FR by GCC-Employee (UC 013). 3. Strategies Management Office: Review of uploaded data. If any changes are required go to step 2. 4. DG Office: Review of uploaded data. If any changes are required go to step 2.					
Alternative flow:					
System Administrator: When data needs to be deleted • In Fusion Registry go to Dataflow and choose proper Dataflow • Chooses *Run Query* next to a Dataflow • On observation value left click with mouse and choose 'Delete Observation'					
BPMN diagram (optional):					

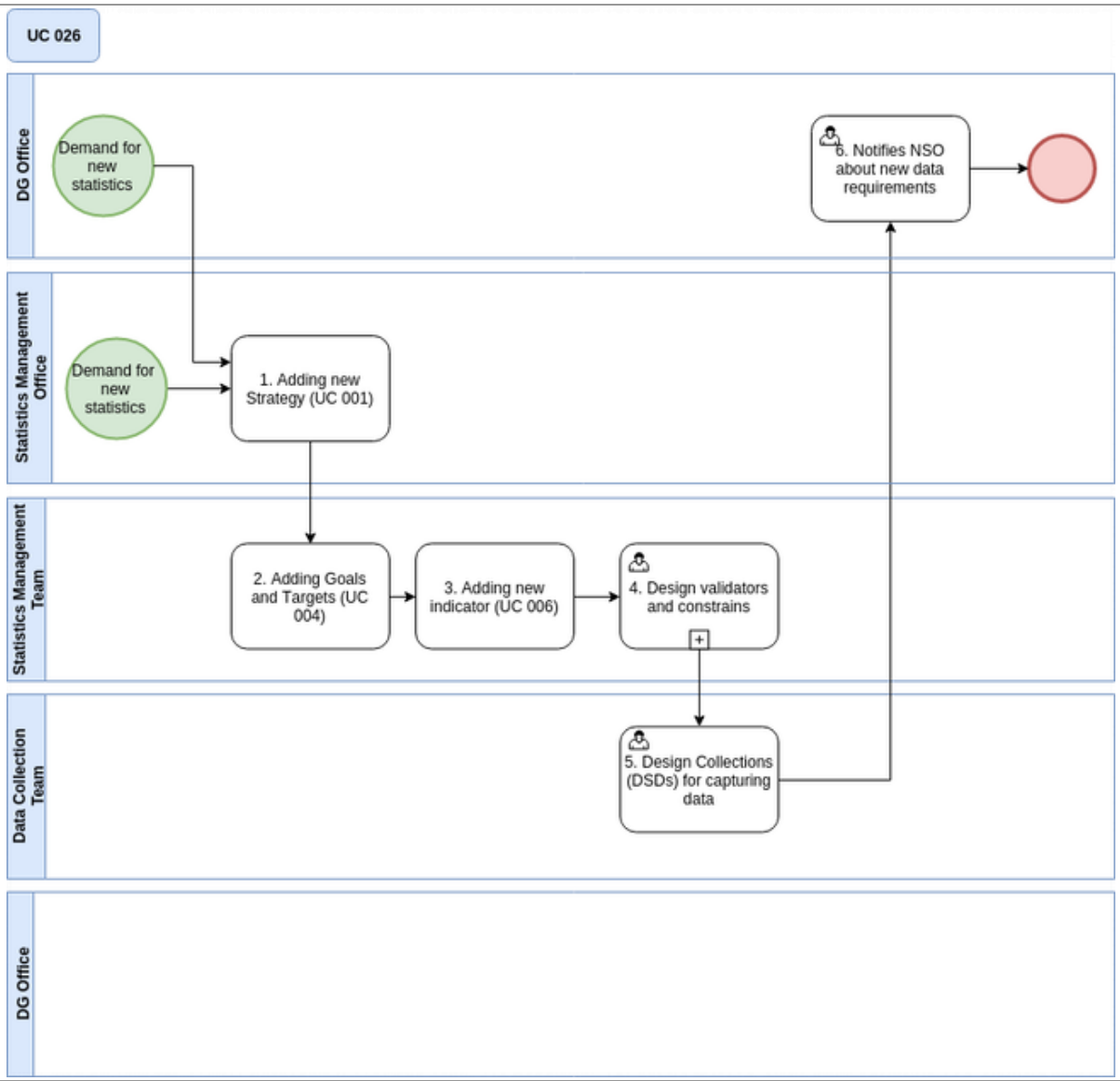


Notes:
In this scenario deleting data is described in case there is a need to delete a single observation value. In case deleting data flows or series it can be done without query to Fusion Registry using FR GUI. Data update is done by re-uploading data that needs to be changed in *override* mode in Fusion Registry.
Related requirements:

Req. type	**ID**	**Description**	**Comment**

Use Case Title:	**Ad hoc Demand - New Statistics**				
ID:	**026**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Statistics Management Team • Data Collection Team • DG Office					
Overall description:					

This use case is about the process to initiate and approve a new demand/publication/delivery from GCC-STAT.
Business that triggers use case / frequency:
• Statistic Management Office: Demand for new statistics. • DG Office: Demand for new statistics
Inputs and Outputs:
Inputs: - **Outputs**: New type of artifacts in Fusion Registry.
Use case description (step by step):
1. Statistic Management Office: Adding new Strategy (UC 001). 2. Statistics Management Team: Adding Goals and Targets (UC 004). 3. Statistics Management Team: Adding new indicator (UC 006). 4. Statistics Management Team: Design validators and constrains. 5. Data Collection Team: Design Collections (DSDs) for capturing data. 6. DG Office: Notifies NSO about new data requirements.
Alternative flow:
-
BPMN diagram (optional):



Notes:

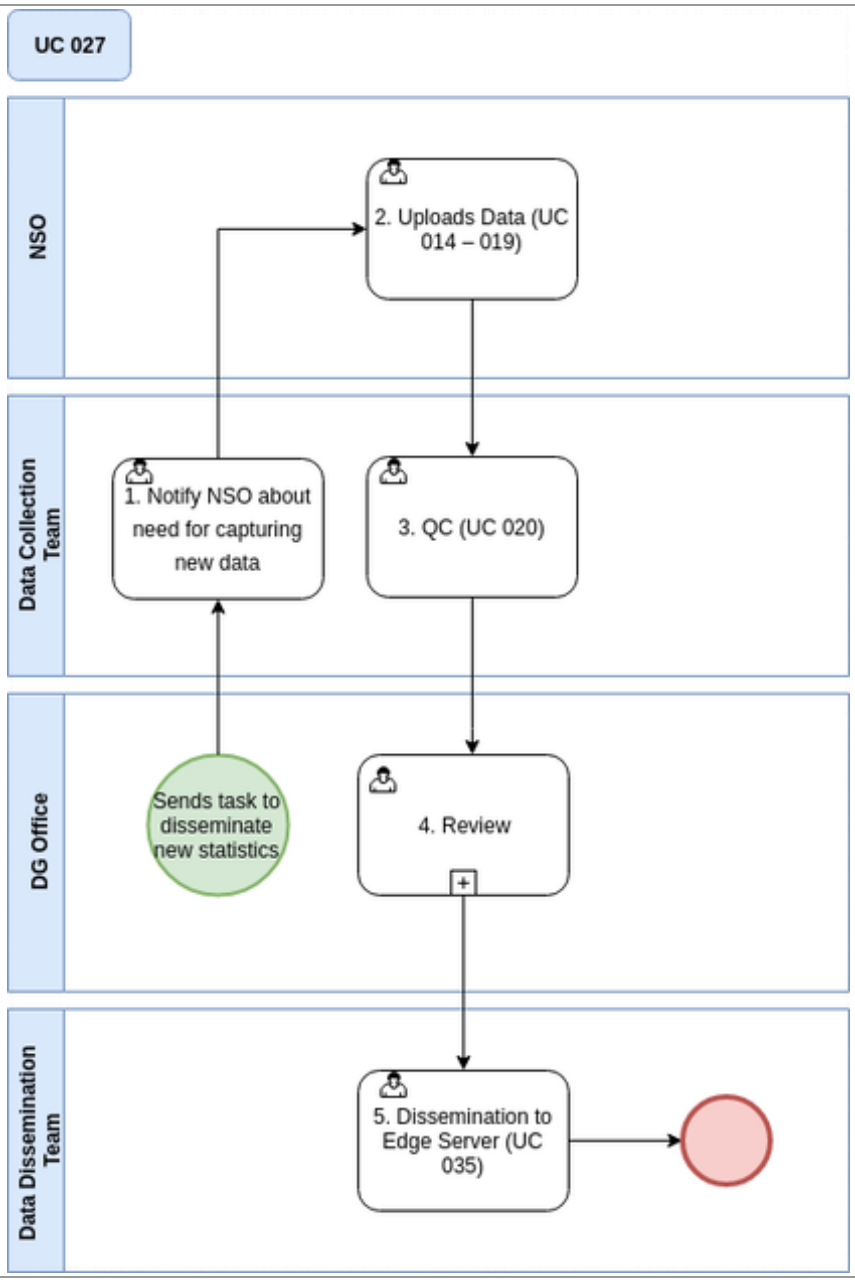
Related requirements:

Req. type	ID	Description	Comment
Functional	7.1	Ability to enroll new GCC Domain strategies/ GCC policies/ GCCSTAT Strategy and international statistical domains frameworks with define goals.	

Fuctional	7.2	Ability to define each strategy indicators for analysis.	
Functional	7.3	Ability to update any defined strategy and accordingly identify related affected indicators.	
Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	
Functional	7.5	Ability to automatically initiate adding new indicators related to new strategy added or objectives changed.	
Functional	7.6	Ability to define the relationships mapping between different strategies/ policies and frameworks.	

Use Case Title:	**Ad hoc demand for dissemination of new statistics**				
ID:	**027**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • NSO • Data Collection Team • Data Dissemination Team					
Overall description:					
Ad hoc adding new strategy and data dissemination.					
Business that triggers use case / frequency:					
• DG Office: Task to disseminate new statistics.					
Inputs and Outputs:					
Inputs: New data from NSO. **Outputs**: New data in Edge Server.					
Use case description (step by step):					
1. Data Collection Team: Notify NSO about need for capturing new data. 2. NSO: Uploads Data (UC 014 – 019). 3. Data Collection Team: QC (UC 020). 4. DG Office: Review of data. 5. Data Dissemination Team: Dissemination to Edge Server (UC 035).					
Alternative flow:					
-					

BPMN diagram (optional):



Notes:

Related requirements:

Req. type	ID	Description	Comment
Functional	7.1	Ability to enroll new GCC Domain strategies/ GCC policies/ GCCSTAT	

		Strategy and international statistical domains frameworks with define goals.	
Functional	7.2	Ability to define each strategy indicators for analysis.	
Functional	7.3	Ability to update any defined strategy and accordingly identify related affected indicators.	
Functional	7.4	Ability to control and manage strategies changes and enrollment through automatic workflow.	
Functional	7.5	Ability to automatically initiate adding new indicators related to new strategy added or objectives changed.	
Functional	7.6	Ability to define the relationships mapping between different strategies/ policies and frameworks.	

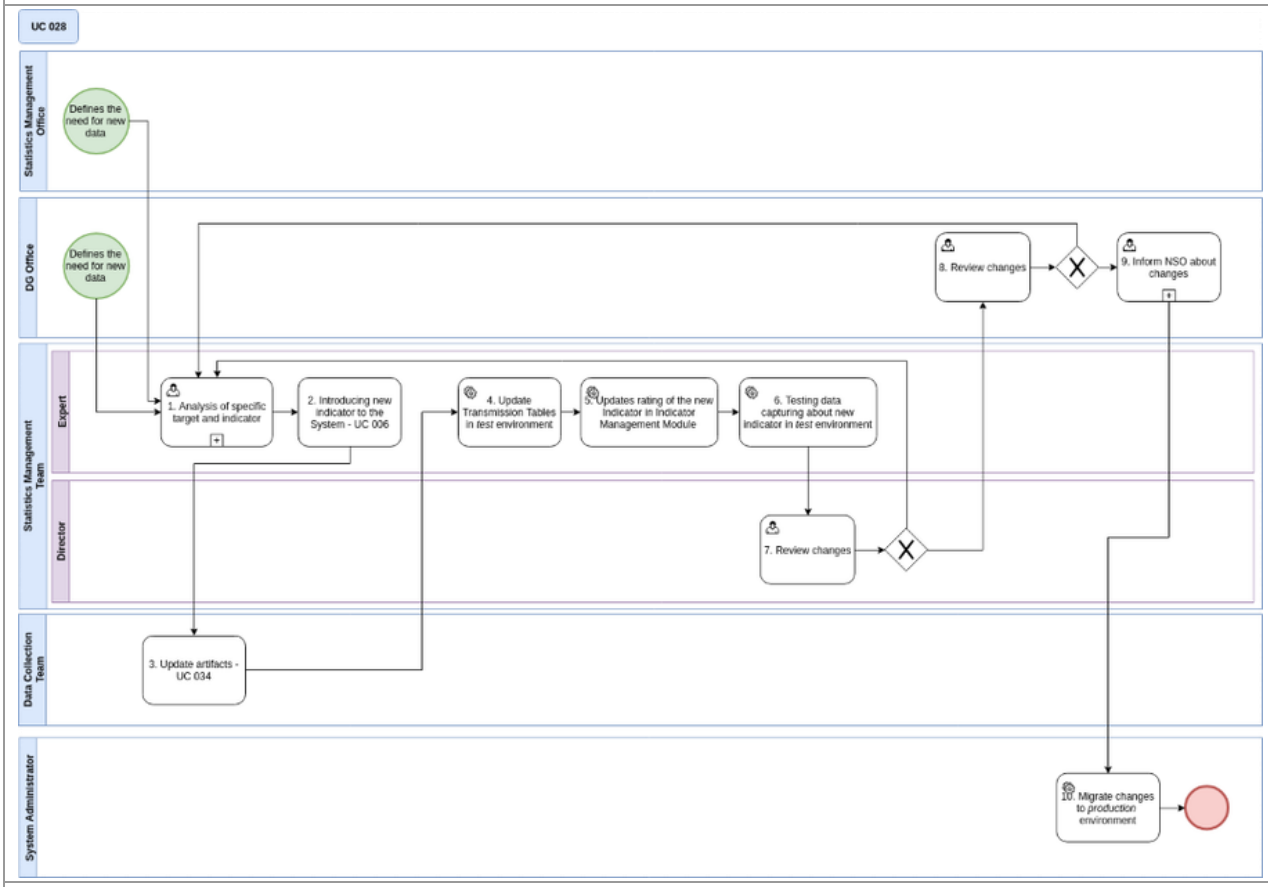
Use Case Title:	**Build new process for new Indicators**				
ID:	**028**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Statistics Management Team (Expert) - Expert • Statistics Management Team (Director) - Director • Strategies Management Office • System Administrator • Data Collection Team • DG Office					
Overall description:					
Use case describes the process for introducing new indicator to the MARSA system along with preparing system for capturing data about new indicator.					
Business that triggers use case / frequency:					
• DG Office: Defines the need for new data • Strategies Management Office: Defines the need for new data					
Inputs and Outputs:					
Inputs: - **Outputs**: New process in the system.					
Use case description (step by step):					
1. Statistics Management Team (Expert): Analysis of specific target and indicator connected with this target. 2. Statistics Management Team (Expert): Introducing new indicator to the System (UC 006)					

3. Data Collection Team: If new data is required to be obtained from NSO (e.g. to capture new variables or data) update artifacts (UC 034)
4. Statistics Management Team (Expert): Transmission Tables regarding updated DSDs should be updated in *test* environment.
5. Statistics Management Team (Expert): Updates rating of the new Indicator in Indicator Management Module.
6. Statistics Management Team (Expert): Testing data capturing about new indicator in *test* environment
7. Statistics Management Team (Director): Review changes. If any changes are needed go to step 1
8. DG Office: Review changes. If any changes are needed go to step 1.
9. DG Office: Inform NSO about changes in Transmission Tables and required data.
10. System Administrator: Migrates changes to *production* environment.

Alternative flow:

-

BPMN diagram (optional):

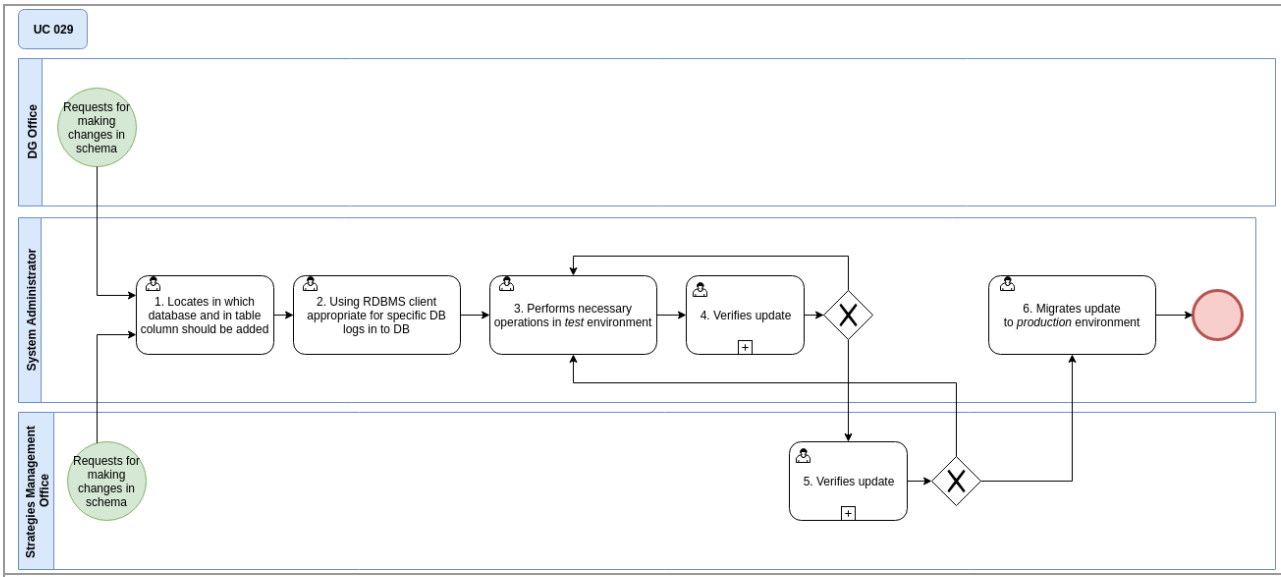


Notes:

Related requirements:

Req. type	ID	Description	Comment
Functional	6.1	Ability to register new indicators with defined attributes.	
Functional	6.2	Ability to define the equation and variables related to enrolled indicators.	
Functional	6.3	Ability to define the indicators polarity, leading and lagging.	Ability to flag/tag indicators.
Functional	6.4	Ability to map indicators to strategies.	
Functional	6.5	Ability to control and manage indicators changes through workflow.	

Use Case Title:	**Data Warehouse Management – Versioning and Revisions**				
ID:	**029**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • System Administrator • Strategies Management Office					
Overall description:					
Use case describes process of making modifications to a database by adding extra column to existing table.					
Business that triggers use case / frequency:					
• DG Office: Request for making changes in schema. • Statistics Management Office: Request for making in schema.					
Inputs and Outputs:					
Inputs: - **Outputs**: Modified DB.					
Use case description (step by step):					
1. System Administrator: Locates in which database and in table column should be added. 2. System Administrator: Using RDBMS client appropriate for specific DB logs in to DB. 3. System Administrator: Performs necessary operations in *test* environment. 4. System Administrator: Verifies update. If any corrections are needed to go to step 3. 5. Statistics Management Office: Verifies update. If any corrections are needed to go to step 3. 6. System Administrator: Migrates update to *production* environment.					
Alternative flow:					
Only when approval process will introduce some corrections database schema. Then proper updated and review process should be introduced.					
BPMN diagram (optional):					



Notes:

This use case is not only specific for adding extra column. Any low-level work with DBs can be done by Administrators e.g.

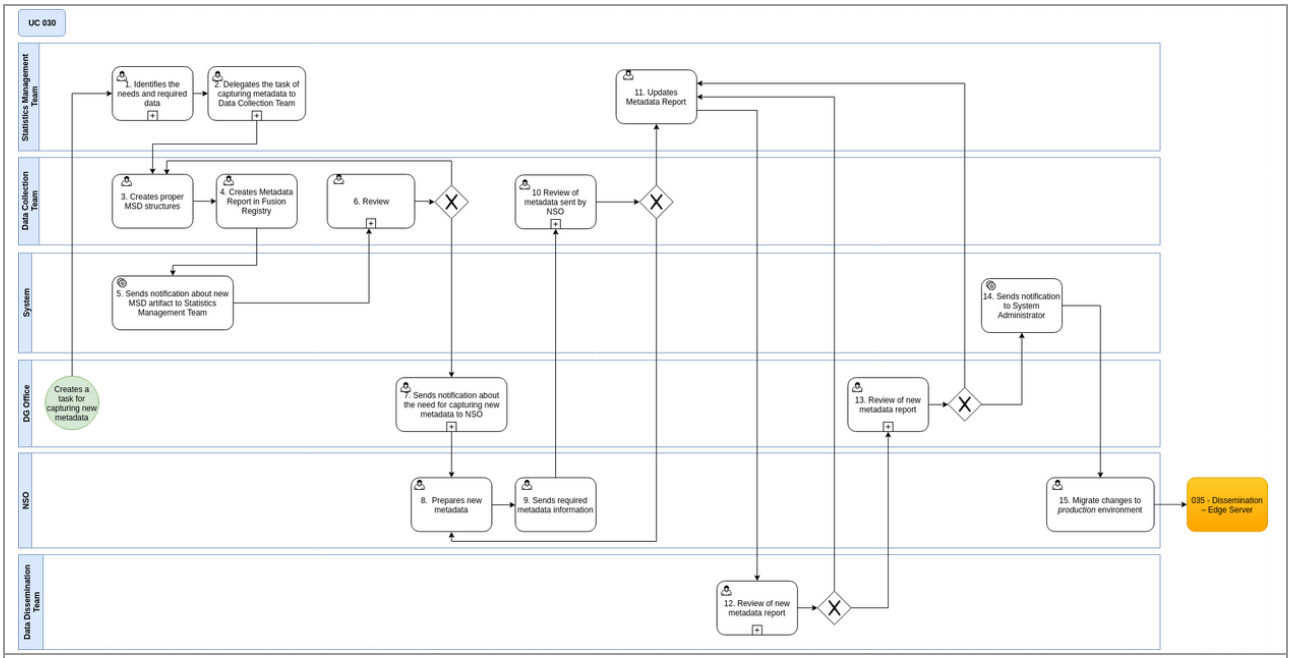
- Adding new views from the existing datasets
- Safe guarding the data through Backup/Restore policy

Related requirements:

Req. type	ID	Description	Comment
Non-Functional	4.1	Should be supporting the customization of data schema and model.	
Non-Functional	4.2	Enables multidimensional data management covering structured and unstructured data.	
Non-Functional	4.3	Can capture different data attributes.	
Non-Functional	4.11	Should provide to ability to easily modify the schema.	

Use Case Title:	**Metadata Management – Reference Metadata at Dataset level**				
ID:	**030**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • Statistics Management Team					

• System • NSO • Data Collection Team • Statistics Management Team • System Administrator
Overall description:
Use case describes the process of adding new Reference Metadata into the system.
Business that triggers use case / frequency:
• DG Office: creates a task for capturing new metadata.
Inputs and Outputs:
Inputs: - **Outputs**: New reference Metadata captured in the MARSA system.
Use case description (step by step):
1. Statistics Management Team: Identifies the needs and required data. 2. Statistics Management Team: Delegates the task of capturing metadata to Data Collection Team. 3. Data Collection Team: Creates proper MSD structures for capturing new Metadata in *test* environment. 4. Data Collection Team: Creates Metadata Report in Fusion Registry which is linked with MSD in *test environment.* 5. System: Sends notification about new MSD artifact to Statistics Management Team. 6. Statistics Management Team: Review. If any changes are needed go to step 3. 7. DG Office: Sends notification about the need for capturing new metadata to NSO. 8. NSO: Prepares new metadata. 9. NSO: Sends required metadata information. 10. Data Collection Team: Review of metadata sent by NSO. If any changes are need go to step 8. 11. Statistics Management Team: Updates Metadata Report with data acquired form NSO in *test* environment. 12. Data Dissemination Team: Review of new metadata report. If any changes are needed go to step 11. 13. DG Office: Review of new metadata report. If any changes are needed go to step 11. 14. System: Sends notification to System Administrator about accepted request of data migration to *production*. 15. System Administrator: Migrate changes to *production* environment. After Step 15: • UC 035 - Dissemination – Edge Server
Alternative flow:
-
BPMN diagram (optional):



Notes:

New metadata doesn't have to be in a form of unified metadata structure. It is possible and more diverse to just send a link to NSO's document describing metadata. This link can be added in Metadata Report and disseminated as external metadata source.

Related requirements:

Req. type	ID	Description	Comment
Functional	2.120	Ability to store the Reference metadata in Oracle database.	
Functional	2.121	Ability to store the Reference metadata in MySQL database.	This type of data persistence is chosen for this project.
Functional	2.122	Ability to store the Reference metadata in MSSQL database.	
Functional	2.129	Ability to import the Reference metadata from SDMX file, version 2.1.	As one of the options of upload.
Functional	2.130	Ability to import the Reference metadata from EXCEL file.	As one of the options of upload.
Functional	2.131	Ability to import the Reference metadata from CSV file with customized delimiter.	As one of the options of upload.
Functional	2.132	Ability to import the Reference metadata from RESTful APIs.	As one of the options of upload.

Use Case Title:	**Metadata Management – Reference Metadata at observation level**

ID:	031	Version:	1.0	Last update:	05-06-2019

Actors:

- Director General
- Head of the Department
- Statistics Expert
- System Administrator
- NSO

Overall description:

Use case describes the process of adding new Reference Metadata at observation level.

Business that triggers use case / frequency:

- DG Office: creates a task for capturing metadata at observation level.

Inputs and Outputs:

Inputs: -
Outputs: New reference Metadata at observation level.

Use case description (step by step):

1. Statistics Management Team: Identifies the needs and required data.
2. Statistics Management Team: Delegates the task of capturing metadata ad observation level to Data Collection Team.
3. Data Collection Team: Creates Proper MSD structures for capturing new Metadata in *test* environment.
4. Data Collection Team: Creates Metadata Report in Fusion Registry which is linked with MSD in *test environment.*
5. System: Sends notification about new MSD artifact to Statistics Management Team
6. Statistics Management Team: Review. If any changes are needed go to step 3.
7. DG Office: Sends notification about the need for capturing new metadata to NSO.
8. NSO: Prepares new metadata in SDMX format.
9. NSO: Sends required metadata information.
10. Data Collection Team: Review of metadata sent by NSO. If any changes are need go to step 8.
11. Statistics Management Team: Updates Metadata Report with data acquired form NSO in *test* environment.
12. Data Dissemination Team: Review of new metadata report. If any changes are needed go to step 11.
13. DG Office: Review of new metadata report. If any changes are needed go to step 11.
14. System: Sends notification to System Administrator about accepted request of data migration to *production*.
15. System Administrator: Migrate changes to *production* environment.

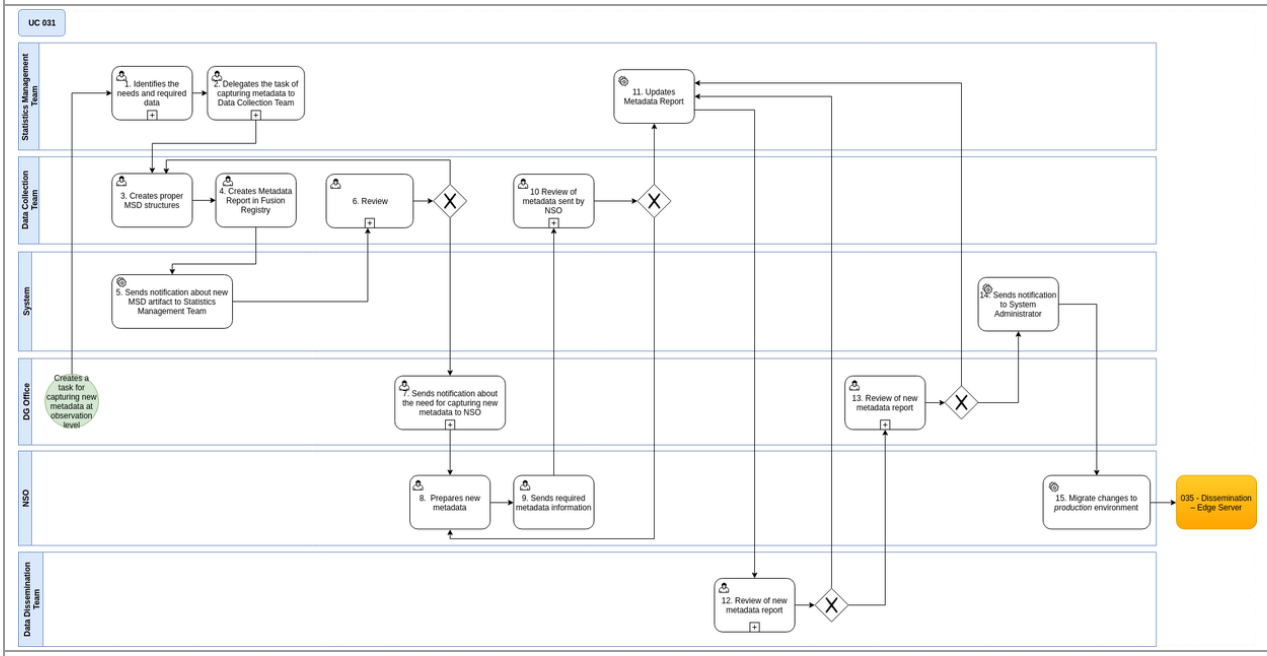
After Step 15:

- UC 035 - Dissemination – Edge Server

Alternative flow:

-

BPMN diagram (optional):

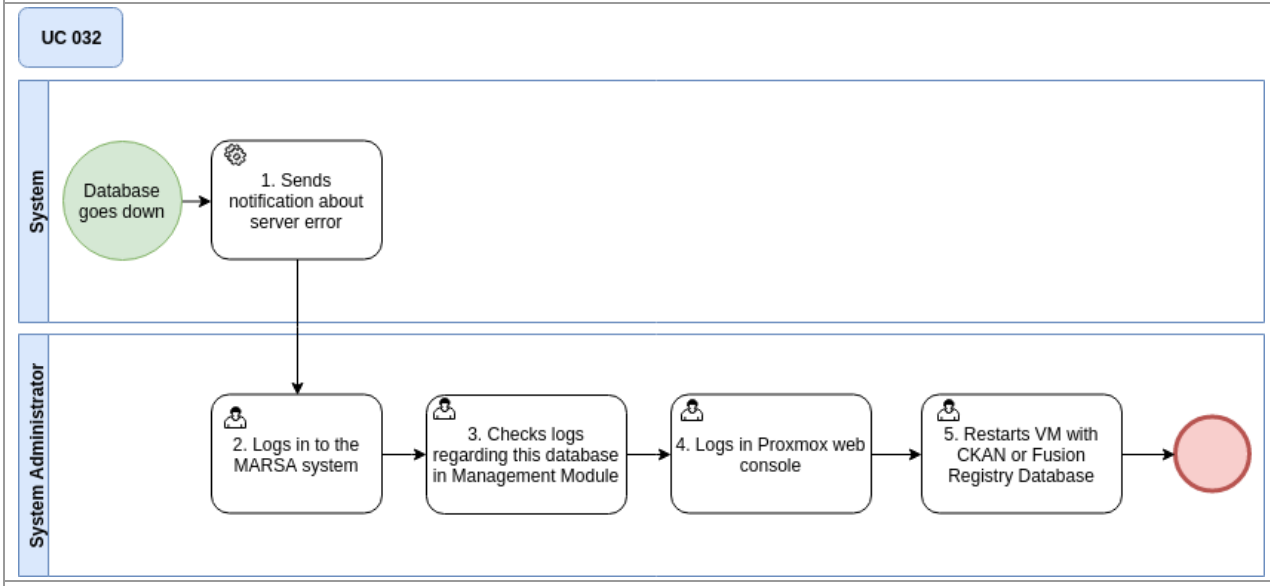


Notes:

New metadata on series or observation value level can be uploaded into the system using Reporting Templates.
Proper metadata at observation level can be investigated in Fusion Registry data bowser when displaying a table with statistical data.

Related requirements:

Req. type	ID	Description	Comment
Functional	2.120	Ability to store the Reference metadata in Oracle database.	
Functional	2.121	Ability to store the Reference metadata in MySQL database.	This type of data persistence is chosen for this project.
Functional	2.122	Ability to store the Reference metadata in MSSQL database.	
Functional	2.129	Ability to import the Reference metadata from SDMX file, version 2.1.	As one of the options of upload.
Functional	2.130	Ability to import the Reference metadata from EXCEL file.	As one of the options of upload.
Functional	2.131	Ability to import the Reference metadata from CSV file with customized delimiter.	As one of the options of upload.
Functional	2.132	Ability to import the Reference metadata from RESTful APIs.	As one of the options of upload.

Use Case Title:	Data Warehouse Administration				
ID:	**032**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• System Administrator • System					
Overall description:					
Use case describing processes regarding databases maintenance.					
Business that triggers use case / frequency:					
• System: Database goes down.					
Inputs and Outputs:					
Inputs: - **Outputs**: -					
Use case description (step by step):					
1. System: Sends notification about severe error of CKAN or Fusion Registry Database going down. 2. System Administrator: Logs in to the MARSA system. 3. System Administrator: Checks logs about database in Administration Module. 4. System Administrator: Logs in to Proxmox web console. 5. System Administrator: Restarts VM with CKAN or Fusion Registry Database.					
Alternative flow:					
-					
BPMN diagram (optional):					
					
Notes:					

Proxmox is a VM management tool which gives administrator the ability to manage Virtual Machines. System Administrator will have access to the MARSA system and Proxmox based on defined GCC-Stat policy.

Related requirements:

Req. type	ID	Description	Comment
Non-Funnctional	8.15	The system should support automatic notification regarding issues.	

Use Case Title:	Managing data access and confidentiality				
ID:	**033**	**Version:**	1.0	**Last update:**	05-06-2019

Actors:

- System Administrator
- DG Office
- System

Overall description:

Use case describing creating new users and authentication in MARSA system.

Business that triggers use case / frequency:

- DG Office: Identifies the need for adding new external user to the system who can upload data into Fusion Registry. User can only have specific permissions.

Inputs and Outputs:

Inputs: Data about the new user
Outputs: Generated password for new user

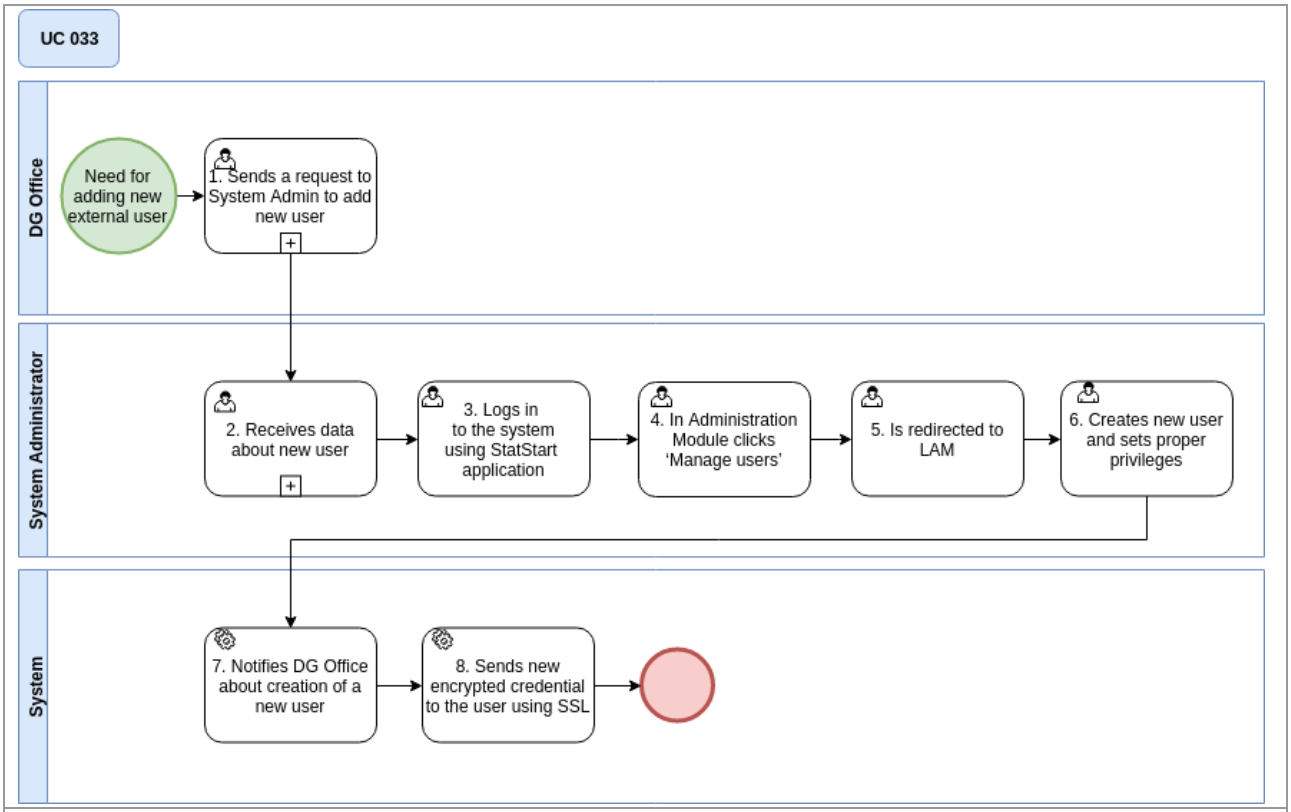
Use case description (step by step):

1. DG Office: Sends a request to System Admin to add new user.
2. System Administrator: Receives data about new user: e-mail, name, surname, request for performing specific actions in the system.
3. System Administrator: Logs in to the system using StatStart application.
4. System Administrator: In Administration Module clicks ‘Manage users’.
5. System Administrator: Is redirected to LAM.
6. System Administrator: Creates new user and sets proper privileges.
7. System: Notifies DG Office about creation of a new user.
8. System Administrator: Sends new encrypted credential to the user using SSL.

Alternative flow:

-

BPMN diagram (optional):



Notes:

In order to safely send new credentials to the user secure connection should be established e.g. exchange of public keys or certificates.
All accounts will be created in central LDAP to which all components of the system will be connected.

Related requirements:

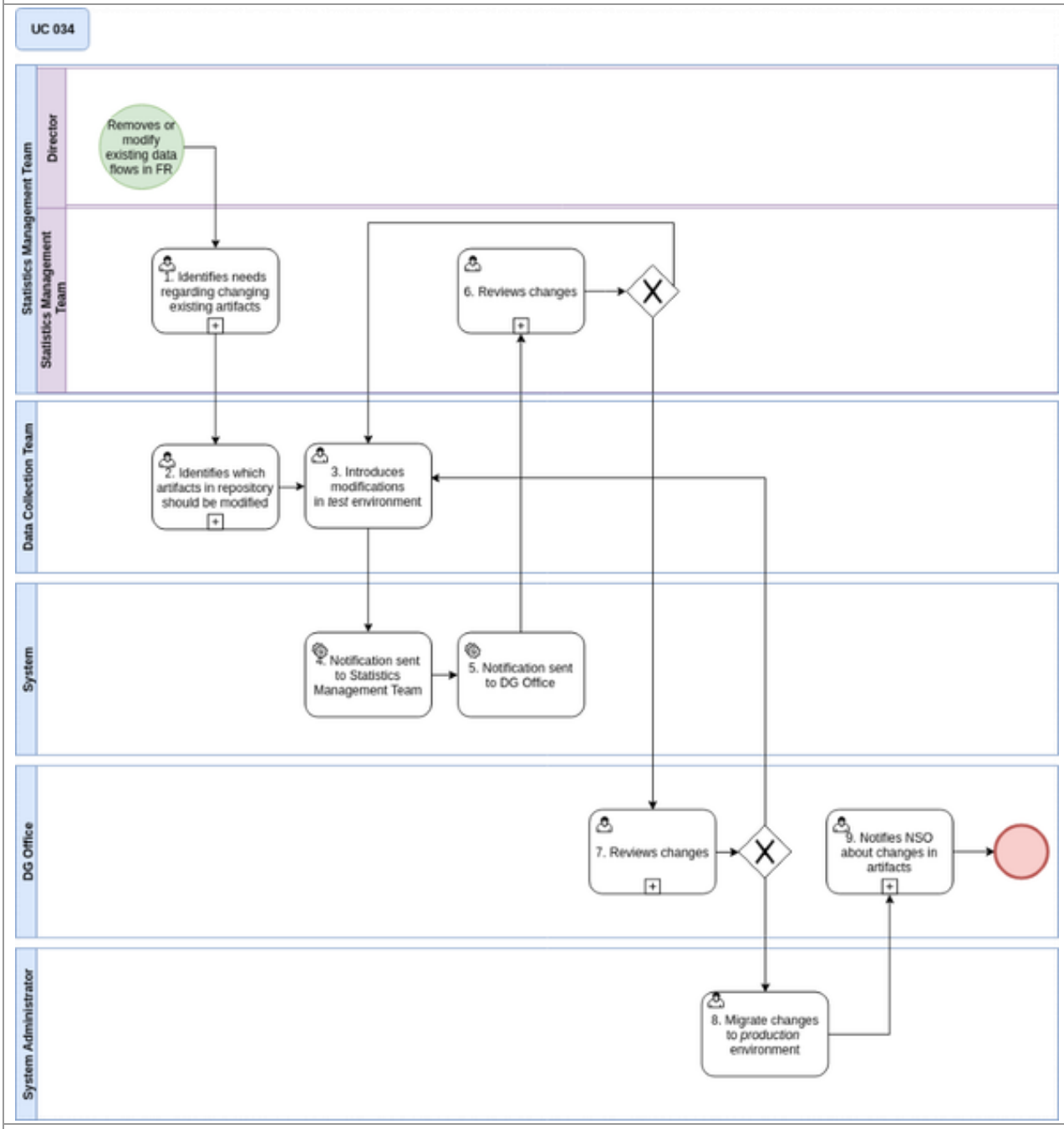
Req. type	ID	Description	Comment
Non-Functional	8.34	Should provide the capability to manage access to the proposed Platform by internal and external users.	Managed on the user level in LAM.
Non-Functional	8.35	Should provide a centralized and policy based access control mechanism for authentication.	Single point of authentication – LDAP. All users are created in one system.
Non-Functional	8.37	Should support cross domain identity management functionality to authenticate and authorize individuals of internal and external entities into the system, determine their permissions, and control access to the resources accordingly.	All components are linked with single user management system.

Non-Functional	8.38	Should support LDAP based mechanisms for storing and accessing user credentials, access rights, and user profile information.	Supported out of the box in this solution.
Non-Functional	8.42	Should provide fine grained authorization services to determine access rights for users and user groups to control performing specific operations and access specific resources within the services operating across the proposed solution including applications, portals, databases, etc.	Supported out of the box in this solution.
Non-Functional	8.43	Should provide encryption and data integrity functionality (symmetric & asymmetric signatures) to maintain secure messaging across the platform and should support various encryption and signature standards.	Supported out of the box in this solution.
Non-Functional	8.47	Should support Transport Layer Security (TLS) and Secure Socket Layer cryptographic protocols for providing cryptography and message reliability.	Supported out of the box in this solution. Sending data, password and other informations regarding security.
Non-Functional	8.48	Should be able to expose all the Security Management component services (authentication, authorization, encryption, data integrity) as web services.	Supported out of the box in this solution.
Non-Functional	8.49	Should provide an easy to use administration console and a security monitoring tool.	Supported out of the box in this solution by LAM.
Non-Functional	8.51	System should be able to provide flexible access control configuration.	Supported out of the box in this solution by LAM.
Non-Functional	8.60	Should provide an easy to use tool that allows for managing policies throughout their lifecycle (defining, publishing, enforcing, and updating).	Supported out of the box in this solution by LAM.
Non-Functional	8.62	Should support security policy management standards such as XACML and directory access protocols such as LDAP.	In this solution LDAP is chosen.

Non-Functional	8.63	Should be able to expose all the Policy Manager component services as web services that can be accessed through an API.	Supported out of the box in this solution

Use Case Title:	**Artifacts Management**				
ID:	**034**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• Data Collection Team • DG Office • System Administrator • Statistics Management Team • Statistics Management Team - Director • System					
Overall description:					
Use case describes process of artifacts management in Fusion Registry: creating, deleting, updating.					
Business that triggers use case / frequency:					
Statistics Management Team – Director: removes or modify existing data flows in Fusion Registry					
Inputs and Outputs:					
Inputs: Information about new requirements from Head of the Department. **Outputs:** Approved changes in artifact repository (Fusion Registry).					
Use case description (step by step):					
1. Statistics Management Team: Identifies needs regarding changing existing artifacts: provision agreements, data flows, constraints, validation rules. 2. Data Collection Team: Identifies which artifacts in repository should be modified to complete supervisor requirements. 3. Data Collection Team: Introduces modifications in *test* environment by selecting proper artifact (e.g. code list, DSD etc.) by selecting proper artifact structure and choosing proper modification option in Fusion Registry from top-left menu. 4. System: Notification about changes introduced in Fusion Registry Artifacts sent to Statistics Management Team. 5. System: Notification about changes introduced in Fusion Registry Artifacts sent to DG Office. 6. Statistics Management Team: Reviews changes in *test* environment. If any changes are needed go to step 3. 7. DG Office: Review changes in *test* environment. If any changes are needed go to step 3. 8. System Administrator: Migrates changes from *test* environment to *production* environment. 9. DG Office: Notifies NSO about changes in artifacts.					
Alternative flow:					
-					

BPMN diagram (optional):



Notes:

In order to properly validate existing artifacts and introduce proper changes employee should be trained in SDMX technology and Fusion Registry.

Related requirements:

Req. type	ID	Description	Comment

Functional	2.1 - 2.107	CRUD Operations	
Functional	2.111	Ability to store the data in Oracle database.	
Functional	2.112	Ability to store the data in MySQL database.	This type of persistence chosen for this project.
Functional	2.113	Ability to store the data in MSSQL database.	
Functional	2.153	Ability to versionize SDMX artefacts' structure.	
Functional	2.154	Ability to review old versions of SDMX artefacts' structure OR data.	
Functional	2.155	Ability to roll-back older versions of SDMX artefacts' structure OR data.	
Functional	2.157	Ability to annotate on any object in the system.	
Functional	8.10	Solution to have the ability to manage different data sets versions.	

Use Case Title:	**Dissemination – Edge Server**				
ID:	**035**	**Version:**	1.0	**Last update:**	05-06-2019
Actors:					
• DG Office • System Administrator • System • System – Statistics Calendar Module					
Overall description:					
Use case describes dissemination of data to production environment – Edge Server.					
Business that triggers use case / frequency:					
• System – Statistics Calendar Module: Notification about deadline for publication of new data. • UC 021 - Create QC • UC 030 - Metadata Management – Reference Metadata at Dataset level • UC 031 - Metadata Management – Reference Metadata at observation level					
Inputs and Outputs:					
Inputs: Reviewed and approved new data in the System. **Outputs:** New data in Edge Server.					
Use case description (step by step):					
1. DG Office: Gives approval for disseminating new data.					

2. System Administrator: Logs in to the StatStart application and goes to Statistic Module.
3. System Administrator: Clicks button 'Disseminate Data'.
4. System Administrator: Gets report in modal window about success or errors during Dissemination to Edge Server.
5. System: Sends notification about dissemination of new data to DG Office.
6. System: Sends notification about dissemination of new data to Statistics Management Team.
7. System: Sends notification about dissemination of new data to Data Dissemination Team.

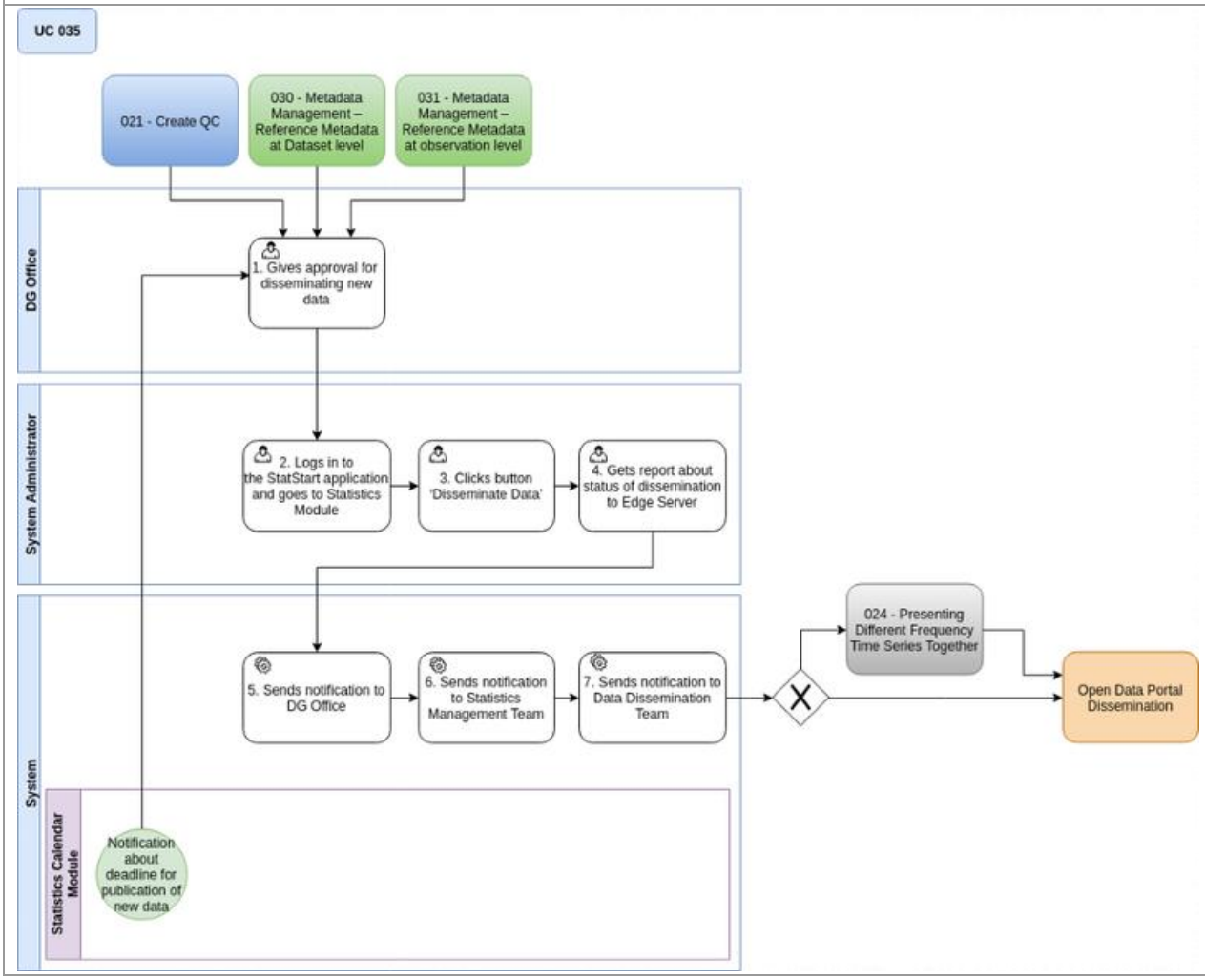
After Step 7:

- UC 024 - Presenting Different Frequency Time Series Together
- Open Data Portal Dissemination

Alternative flow:

-

BPMN diagram (optional):



Notes:			
Button 'Disseminate Data' will only be accessible by System Administrators. The process of creating a bundle with Fusion Registry's data and uploading to the Edge Server will be fully automated. Data disseminated to the Edge Server are treated like production data.			
Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	2.117	Ability to export the data into SDMX file, version 2.1.	
Functional	2.118	Ability to export the data into EXCEL file.	
Functional	2.119	Ability to export the data into CSV file with customized delimiter.	
Functional	2.126	Ability to export the Reference metadata into SDMX file, version 2.1.	
Functional	2.127	Ability to export the Reference metadata into EXCEL file.	
Functional	2.128	Ability to export the Reference metadata into CSV file with customized delimiter.	

Use Case Title:	**GIS - Create maps and atlases for publications**				
ID:	**036**	**Version:**	1.0	**Last update:**	11-06-2019
Actors:					
GIS Section: • Statistical Management Team (Director) - Head of the GIS Section • Statistical Management Team (Specialist) - GIS specialist					
Overall description:					
Use case describes how GIS Section will prepare geostatistical publications, such as maps or atlases, in ArcGIS Desktop (ArcMap) environment using statistical data from the main data warehouse.					
Business that triggers use case / frequency:					
• Statistics Management Office: New geostatistical publication is required and needs to be prepared by the GIS Section. There are two types of publications: scheduled (regular) and on-demand publications. • DG Office: New geostatistical publication is required and needs to be prepared by the GIS Section. There are two types of publications: scheduled (regular) and on-demand publications.					
Inputs and Outputs:					

Inputs:

- Geographical country boundaries (in shapefile, File Geodatabase or ArcGIS Server feature class) with unique country codes (e.g. ISO 3166-1 alfa-3),
- Statistical data from the main statistical data warehouse (Fusion Registry)
- Auxiliary spatial data (e.g. background maps, reference layers: roads, cities etc)

Outputs:

- Static map document in ArcGIS format (MXD)
- Static map exported to PDF (e.g. for further graphical editing)

Use case description (step by step):

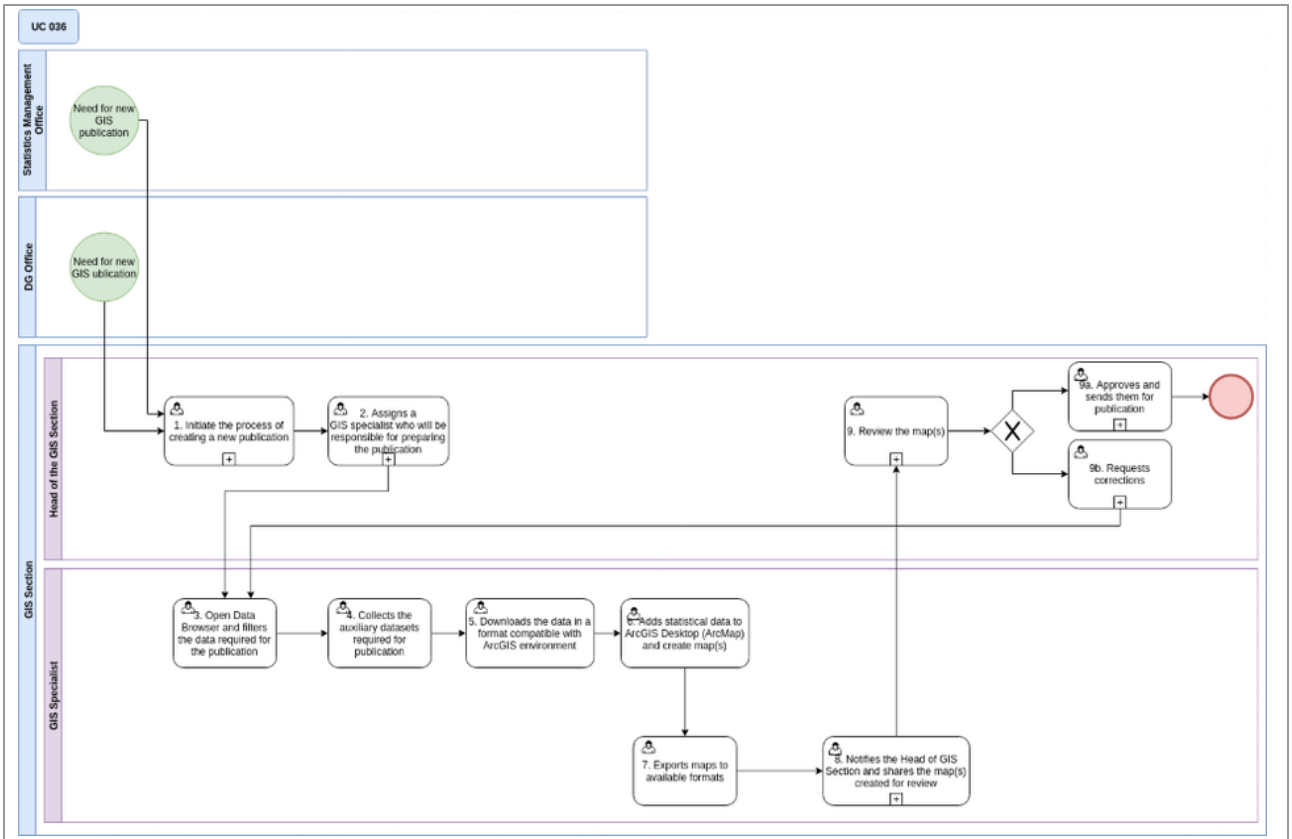
1. Head of GIS Section: Initiate the process of creating a new publication.
2. Head of GIS Section: Assigns a GIS specialist who will be responsible for preparing the publication.
3. GIS specialist: Open Data Browser (part of the Open Data Portal) and filters the data required for the publication.
4. (optional step) GIS specialist: Collects the auxiliary datasets required for publication (e.g. reference layers, base maps, auxiliary statistics).
5. GIS specialist: Downloads the data in a format compatible with ArcGIS environment (e.g. XLS, CSV or directly in a geospatial format, e.g. shapefile or GeoJSON).
6. GIS specialist: Adds statistical data to ArcGIS Desktop (ArcMap) and create map(s).
7. GIS specialist: Exports maps to PNG, PDF or other formats available.
8. GIS specialist: Notifies the Head of GIS Section and shares the map(s) created for review.
9. Head of GIS Section: Review the map(s) and:
    a. Approves and sends them for publication,
    b. Requests corrections and sends the comments to the GIS specialist (back to step 3)

Alternative flow:

Instead of using ArcGIS Desktop, alternatively GIS specialist may use the following alternative flows:

1. Create geospatial dashboards using Tableau (see Use Case no XXX)
2. Create maps or atlases using other desktop or web-based GIS tools (e.g. QGIS, ArcGIS Online etc.)

BPMN diagram (optional):

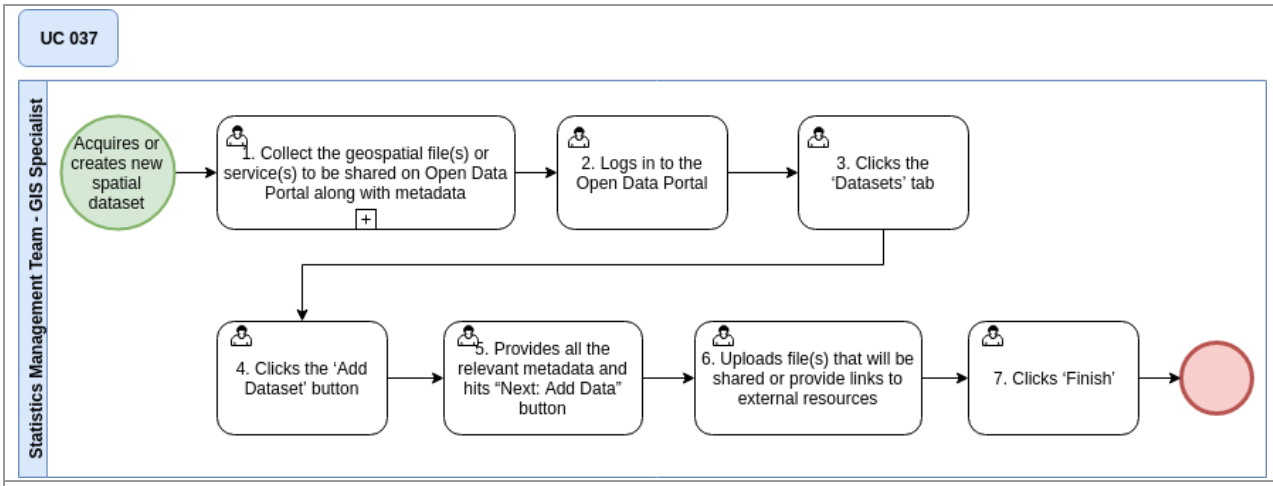


Notes:

Related requirements:			
Req. type	**ID**	**Description**	**Comment**
Functional	8.8	Ability to integrate with GIS - current version is 10.6 ARCGIS ESRI through Geo Enabled Services	
Non-Functional	1.10	Proposed portal to be integrated with current GCCSTAT GIS to provide multiple layers of statistics presented on maps.	

Use Case Title:	**GIS - Publish geospatial datasets to Open Data Portal**				
ID:	**037**	**Version:**	1.0	**Last update:**	11-06-2019
Actors:					

• Statistical Management Team (Specialist) - GIS specialist from GIS Section
Overall description:
Use case describes how GIS Section will publish geospatial datasets to the Open Data Portal.
Business that triggers use case / frequency:
• GIS Section acquires or creates a new spatial dataset that needs to be published on Open Data Portal.
Inputs and Outputs:
Inputs: • Geospatial dataset in one of the following formats: shapefile, GeoJSON, KML, web map service (WMS), web feature service (WFS) or Esri ArcGIS Server (Feature Layer or Map Service) **Outputs:** • New dataset added to the Open Data Portal
Use case description (step by step):
1. GIS specialist: Collect the geospatial file(s) or service(s) to be shared on Open Data Portal along with metadata. 2. GIS specialist: Logs in to the Open Data Portal. 3. GIS specialist: Clicks the 'Datasets' tab. 4. GIS specialist: Clicks the 'Add Dataset' button. 5. GIS specialist: Provides all the relevant metadata, such as title, description, tags etc. and hits "Next: Add Data" button. 6. GIS specialist: Uploads file(s) that will be shared or provide links to external resources. 7. GIS specialist: Clicks 'Finish'.
Alternative flow:
BPMN diagram (optional):



Notes:

Related requirements:

Req. type	ID	Description	Comment
Functional	8.8	Ability to integrate with GIS - current version is 10.6 ARCGIS ESRI through Geo Enabled Services	
Non-Functional	1.10	Proposed portal to be integrated with current GCCSTAT GIS to provide multiple layers of statistics presented on maps.	

Use Case Title:	**Manual statistical product publication on the Data Portal (DP)**				
ID:	038	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Data Dissemination Team (DDT) - the user with administrator privilege

Overall description:

The use case describes manual creation of new statistical product publication on Data Portal. The use case describes manual process handled by the administrator.

Business event that triggers use case / frequency:

- Accepted request for data publication from DDT
- Calendar event for manual publication

Inputs and Outputs:

Inputs: **File with data or Fusion Registry dataflow ID and predefined query name if required, metadata about the data.**
Outputs**: New DP page with publication or new resource file on existing page.**

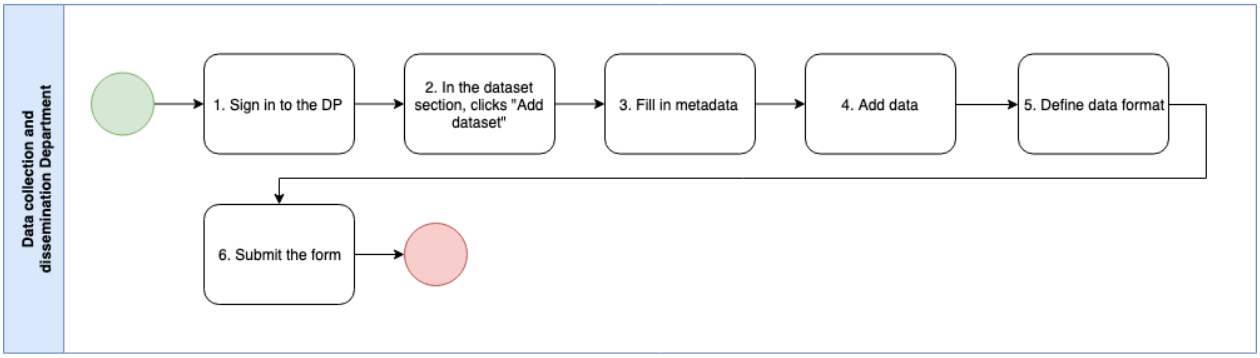
Use case description (step by step):

- **DDT receives new publication task in workflow engine (Process Maker) or via email.**
- DDT sign in to the DP with his credentials.
- DDT selects datasets from the menu
- DDT clicks “Add dataset” for new publication, for update see alternative flow.
- DDT adds metadata about the publication, I.e.: title, description, tag-s, etc. And click next button.
- DDT now can upload a file or add a link to a dataset.
- DDT adds information about the resource (the file or the link) and defines its format.
- DDT clicks “add” button**.**

Alternative flow:

- DDT looks for dataset for update
  - .1. If DDT knows the name of the dataset he/she can use search engine
    - .1.1. DDT puts name of the dataset into search field
    - .1.2. DDT gets list of the datasets related to the text in the search field
    - .1.3. DDT selects dataset
  - .2. If new resource has to be added, Admin clicks “Manage” on dataset page
    - .2.1. DDT checks if metadata requires update if yes he/she updates the form on the screen.
    - .2.2. DDT selects resources tab and clicks “add new resource” button
    - .2.3. DDT can upload a file or add a link to online resource based on requirement.
    - .2.4. DDT defines data format and add description of the resource.
    - .2.5. DDT clicks “add” button.
  - .3. If new version of existing resource has to be added Admin clicks “Explore/Edit” right next to the listed resource
    - .3.1. DDT click remove in the input with existing file and repeats steps for adding new resource.
    - .3.2. DDT clicks “Update resource”, new revision is created.

BPMN diagram (optional):



Notes:

Related requirements:

Req. type	ID	Description	Comment
Functional	3.1	Ability to build and manage data portals	The Admin can manage data portal publications
Functional	3.2	Ability to create unlimited number of pages	There are no limits for the number of pages
Functional	3.5	Ability to set a page as a Dashboard, Query, Map, Search, Static Content or Mixing	Ability to add dataset page
Functional	8.10	Solution to have the ability to manage different data sets versions	CKAN provides resource id by default, for whole datasets versioning ckan ext-dataset versions extension will be used.
Non-functional	1.5	Proposed portal to have the ability to support online smart search covering both structured and unstructured content	
Non-functional	1.14	Proposed portal to have easy to use and flexible administration functionalities covering users, settings, applications and publications	Covers publications

Use Case Title:	**New dashboard/dashlet publication on the Data Portal (DP)**				
ID:	039	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Data Dissemination Team (DDT) - the user with administrator privilege

Overall description:

The use case describes dashboard configuration.

Business event that triggers use case / frequency:

- Accepted request for dashboard publication from Admins supervisor.

Inputs and Outputs:

Inputs:
DP category, Tableau Viz name - visualization identifier from Tableau Cloud, Sheet name – name of the sheet from Tableau Cloud.
Output: New dashboard entry for defined category**.**

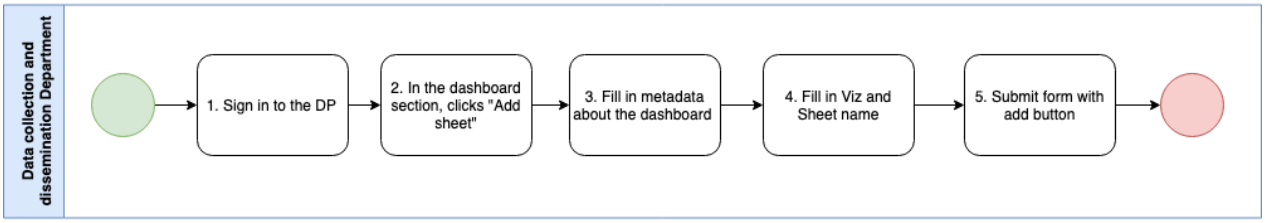
Use case description (step by step):

1. DDT receives new dashboard publication task in workflow engine (Process Maker) or via email.
2. DDT sign in to the DP with his credentials.
3. DDT selects dashboards from menu.
4. DDT clicks “Add sheet” to add new dashlet, for update see alternative flow.
5. DDT adds metadata about the dashboard, i.e.: title, description, category, etc.
6. DDT adds Viz name and Sheet name.
7. DDT clicks “add” button.
8. The dashboard entry appears in defined category**.**

Alternative flow:

1. DDT looks for dashboard.
2. DDT clicks “Manage” on dashboard page.
3. DDT updates requested information, title, description, Viz name, Sheet name.
4. DDT clicks “Update”.

BPMN diagram (optional):



Notes:
Related requirements:

Req. type	ID	Description	Comment
Functional	3.5	Ability to set a page as a Dashboard, Query, Map, Search, Static Content or Mixin	Ability to add dashboard page
Functional	3.8	Ability to create as many dashlets as required in a dashboard	There are no limits for dashboard entries

Use Case Title:	**New CMS entry on the Data Portal (DP)**				
ID:	040	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Data Dissemination Team (DDT) - the user with administrator privilege

Overall description:

The use case describes new portal content publication. The use case is related to text content, not statistical products.

Business event that triggers use case / frequency:

- Accepted request for content publication from Admins supervisor.

Inputs and Outputs:

Inputs:
article content
Outputs:
new article on the DP

Use case description (step by step):

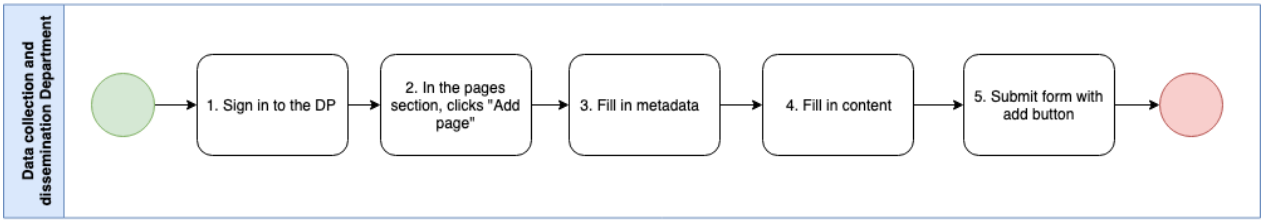
1. DDT receives new dashboard publication task in workflow engine (Process Maker) or via email.
2. DDT sign in to the DP with his credentials.
3. DDT selects “pages” from menu.
4. DDT clicks “Add page” to add new article, for update see alternative flow.
5. DDT puts title, publish date, visibility of the article (private/public), position in the menu.
6. DDT adds content using WYSWIG editor.

7. DDT clicks “Add”.

Alternative flow:

1. DDT browse list of the articles.
2. DDT clicks proper article.
3. DDT clicks “Edit”.
4. DDT updates content
5. DDT clicks “Save**”.**

BPMN diagram (optional):

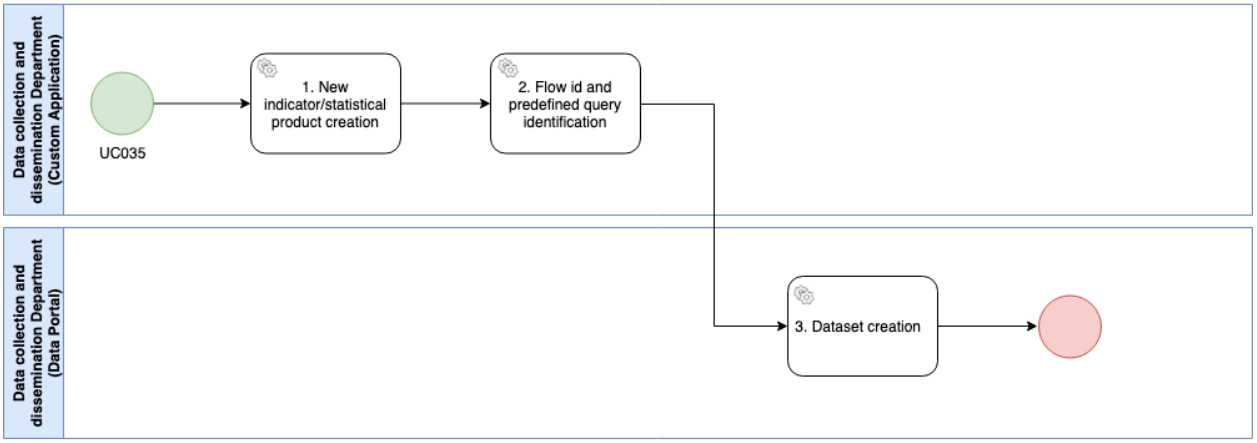


Notes:

Related requirements:

Req. type	ID	Description	Comment
Functional	3.6	Ability to position the content of each page in any desirable space in the page	For CMS entries the functionality is limited to the position of the article in the menu
Non-functional	1.3	Proposed portal to be supported with content management solution that can create semantic relationships between pieces of content	The internal anchor functionality of pages supports internal relationships

Use Case Title:	**Automated dataset publication**				
ID:	**041**	**Version:**	1.1	**Last update:**	2019-07-30
Actors:					
• Data Dissemination Team (DDT) - the user with access to Custom Applications and Data Portal					

Overall description:
The use case describes how new, automated publication is processed.
Business event that triggers use case / frequency:
• New statistical product (usually new indicator) is added to Custom Applications/Edge Server (UC035).
Inputs and Outputs:
Inputs: new data flow id and predefined query id **Outputs:** new dataset with resources is created
Use case description (step by step):
1. The custom applications administrator creates new indicator/statistical product. 2. The administrator identifies dataflow id and pre-defined query that holds the data. 3. The application calls Data Portal API and creates new dataset or dataset with resource.
Alternative flow:
BPMN diagram (optional):

Notes:
Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	The user search for a dataset on the portal				
ID:	**042**	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Client - Data Portal User

Overall description:

The use case describes search feature from final Data Portal user.

Business event that triggers use case / frequency:

- Client enters the site and starts looking for a dataset.

Inputs and Outputs:

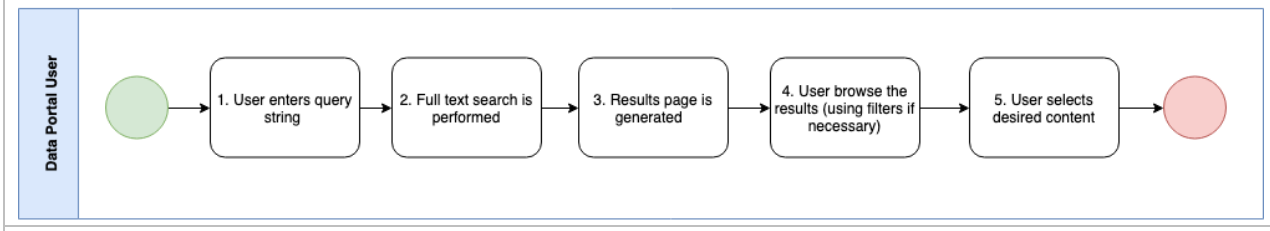
Inputs: users query
Outputs: list of datasets.

Use case description (step by step):

1. The Client enters a query string into search field on the main screen or on the dataset list screen
2. DP is doing full text search through all attributes
3. The search results can be additionally filtered by: organization, category, tags and formats
4. The Client selects datasets and checks details

Alternative flow:

BPMN diagram (optional):



Notes:

Related requirements:

Req. type	ID	Description	Comment
Functional	3.93	Ability to search in all or some datasets/data flows/databases	

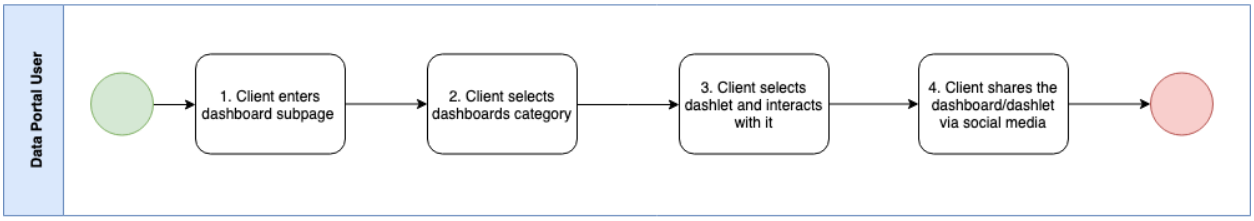
Functional	3.94	Ability to search in all or some provision agreements	
Functional	3.95	Ability to search in all or some data providers	
Functional	3.96	Ability to have complex search commands, e.g. AND | OR | NOT | () | …	
Non-functional	1.5	Proposed portal to have the ability to support online smart search covering both structured and unstructured content	CKAN provides a rich search experience which allows for quick 'Google-style' keyword search as well as faceting by tags and browsing between related datasets. Search on all dataset attributes, everything from title to tags to publisher name. Full-text search – search full-text fields. Fuzzy-matching – option to search for closely matching terms instead of exact matches.

Use Case Title:	**The user browse dashboards on the server**				
ID:	**043**	**Version:**	1.1	**Last update:**	2019-07-30
Actors:					
• Client - Data Portal User					
Overall description:					
The use case describes Data Portal User browsing pre-defined dashboards					
Business event that triggers use case / frequency:					
• Client enters the site and starts looking for a dashboard.					
Inputs and Outputs:					
Inputs: User action – "Dashboard" link click. **Outputs:** list of dashboards and dashlets.					
Use case description (step by step):					
1. The Client clicks on Dashboard link in the main menu					

2. The Client sees a list of dashlets with side menu that let him/her filter the dashboards/dashlets
3. The Client can select category of the dashboard
4. After choosing selected dashlet the user can use it's interactive features
5. The Client can share the dashboard/dashlet link via social media with "Share" button

Alternative flow:

BPMN diagram (optional):



Notes:

The dashboard/dashlets are Tableau objects embedded in the Data Portal. The interactive features are part of the Tableau.

Related requirements:

Req. type	ID	Description	Comment
Functional	3.37	Ability to share a dashlet with social media, e.g. twitter, Facebook, Google+,…	
Functional	3.38	Ability to send a link of a dashboard or a dashlet	

Use Case Title:	**The user query the data**				
ID:	**044**	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

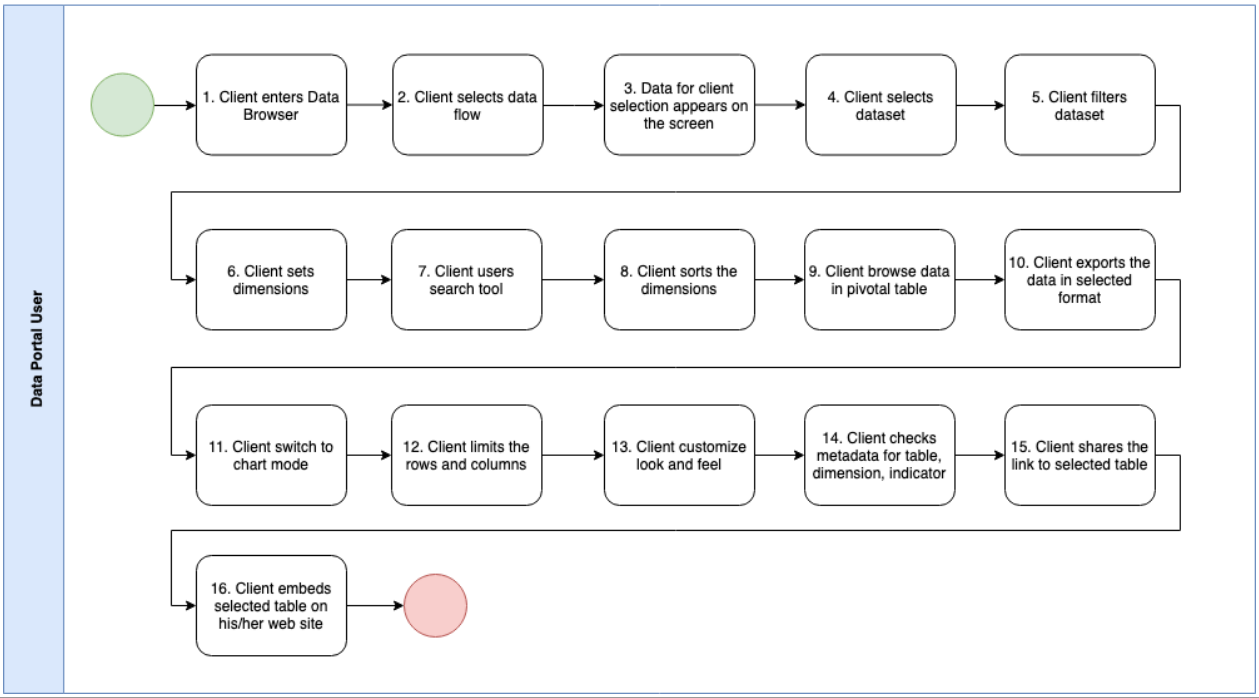
- Client - Data Portal User

Overall description:

The use case describes Data Portal User querying the data.

Business event that triggers use case / frequency:

• Client enters the site and clicks “Data Browser” link in the main menu.
Inputs and Outputs:
Inputs: Client action – "Data browser” link click. **Outputs:** Pivotal Table with data, Charts or Maps.
Use case description (step by step):
1. Client clicks on "Data browser” link in the main menu 2. Client selects dataflow/database while browsing by category, by data provider or alphabetically 3. For each Client selection set of data is displayed 4. For each dataflow/database, Client selects a datasets (subset of category) 5. Client filters the data by limiting the options in columns and rows 6. Client sets dimensions to rows or columns and move them between to change their location 7. While selecting dataset dimensions and filters client uses search tool, if necessary, the user selects/deselects all options at once 8. Client sorts the dimensions alphabetically, by their codes 9. Client browse the data into pivot table 10. Client exports the datable into one of the selected formats: PDF, MS Word, MS Excel, SDMX 11. Client switch to chart mode or turns on both 12. Client limits the rows and columns by setting up a condition on its value 13. Client customize look and feel of the table and number formats 14. Client checks the metadata for the table, dimensions, indicator values etc. 15. Client shares the link to the table 16. Client embeds the table on his/her web site
Alternative flow:
BPMN diagram (optional):



Notes:

Fusion Registry uses it's own set of terms, i.e.: dataflow corresponds with database, predefined query with dataset.

Related requirements:

Req. type	ID	Description	Comment
Functional	3.42	Ability to list datasets/dataflows/databases by category	
Functional	3.43	Ability to list datasets/dataflows/databases by data providers	
Functional	3.44	Ability to list datasets/dataflows/databases Alphabetically	
Functional	3.45	Ability to list a subset of datasets/databases, e.g. list for some categories only	
Functional	3.46	Ability to query from a dataset, dataflow or a database	

Functional	3.47	Ability to query from multiple datasets/dataflows/databases	
Functional	3.48	Ability to set the dimensions into columns, rows and filters	
Functional	3.49	Ability to move any dimension between a column, a row or a filter	
Functional	3.50	Ability to search within dimension's elements when making a selection	
Functional	3.57	Ability to display the elements of a dimension by their codes	
Functional	3.51	Ability to select/deselect all elements within a dimension at once	
Functional	3.61	Ability to sort dimension's elements Alphabetically	
Functional	3.62	Ability to sort dimension's elements by their codes	
Functional	3.63	Ability to sort dimension's elements as been input originally	
Functional	3.64	Ability to display the table, the result of a query, and pivot it (crosstab/contingency)	
Functional	3.68	Ability to export table as MS Excel	
Functional	3.69	Ability to export table as SDMX-ML (XML)	
Functional	3.70	Ability to export table as SDMX-JSON	
Functional	3.71	Ability to switch between table mode or chart mode or have both	
Functional	3.86	Ability to display an indicator beside under a table when there's metadata	
Functional	3.87	Ability to display structure metadata	
Functional	3.88	Ability to display reference metadata	
Functional	3.89	Ability to preserve the status of a customized table, and share it as link, and the table should be displayed exactly the same whenever that link is visited	
Functional	3.90	Ability to embed a table in other websites	

Functional	3.91	Ability to customize a reference of a table that's embedded in foreign websites	

Use Case Title:	**Starting the application**				
ID:	**045**	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Client - The mobile application user

Overall description:

The use case describes action of starting the application.

Business event that triggers use case / frequency:

- Client clicks application icon from his/her mobile phone

Inputs and Outputs:

Inputs: Client action.

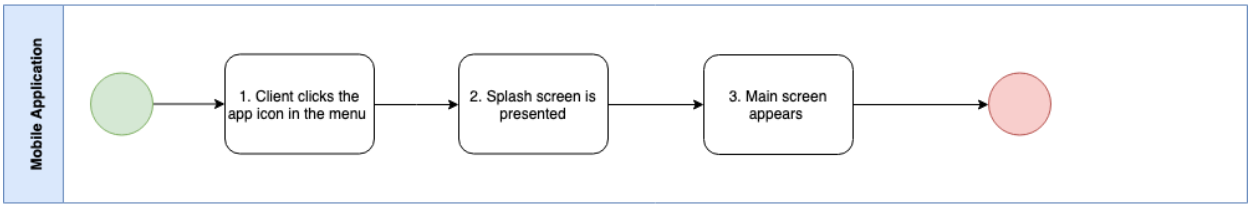
Outputs: Application started.

Use case description (step by step):

1. Client clicks on the icon of the application in the main menu of the phone.
2. The splash screen appears with information about the application.
3. The main screen appears.

Alternative flow:

BPMN diagram (optional):



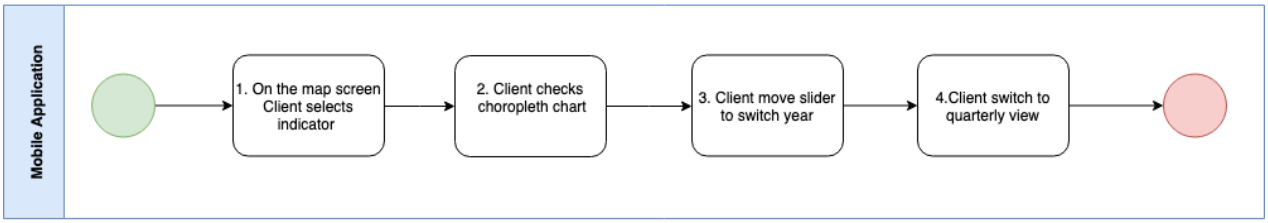
Notes:

- IOS and Android platforms.
- Application icon will be designed and discussed with GCC-Stat during the design stage

• **Splash screen** - shows up at the application startup when data is loading • Main screen can be selected at any point.
Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	**Display statistical data on a map**				
ID:	**046**	**Version:**	1.1	**Last update:**	2019-07-30
Actors:					
• Client - the mobile application user					
Overall description:					
Use case for data presentation on the map.					
Business event that triggers use case / frequency:					
• Client clicks map view icon in the app.					
Inputs and Outputs:					
Inputs: Client action. **Outputs:** Proper view started.					
Use case description (step by step):					
1. On the map screen client selects the indicator with indicator selection component (see MA03). 2. Client sees choropleth or pie chart on the map for the latest dataset. 3. Client switch between years using slider on the bottom of the screen. 4. For quarterly view Client click data filter button.					
Alternative flow:					
BPMN diagram (optional):					



Notes:

- IOS and Android platforms.
- User can zoom in, zoom out and move map.
- Client can display legend

Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	**Indicator selection component**				
ID:	**047**	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Client - the mobile application user

Overall description:

With this component the user can configure current visualization.

Business event that triggers use case / frequency:

- Client clicks proper icon/button.

Inputs and Outputs:

Inputs: Clients action.

Outputs: Indicator selection component appears.

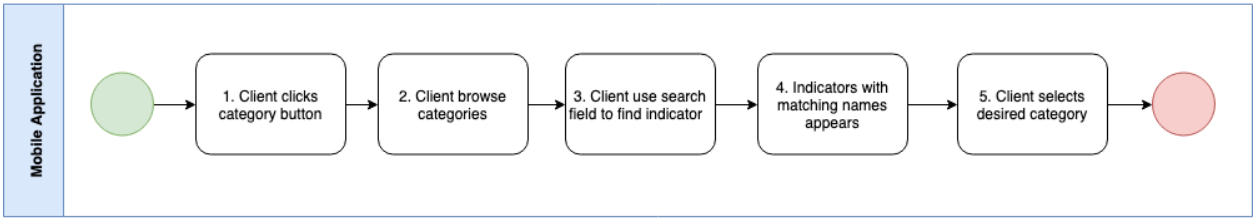
Use case description (step by step):

1. Client clicks category button and sees indicators selector screen.
2. Client browse categories but can't find the desired indicator.
3. Client put name of the indicator into search field.
4. The indicators with name most similar to the text appears bellow on the screen.

5. Client selects indicator

Alternative flow:

BPMN diagram (optional):



Notes:

- The user can use other filters like year or area together with categories and search tool
- IOS and Android platforms.

Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	Tabular view screen operations				
ID:	**048**	**Version:**	1.1	**Last update:**	2019-07-30

Actors:

- Client - the mobile application user

Overall description:

Data visualization in table.

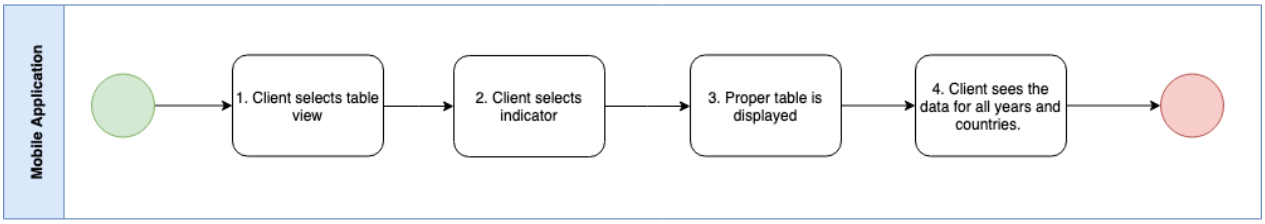
Business event that triggers use case / frequency:

- Client clicks proper icon/button.

Inputs and Outputs:

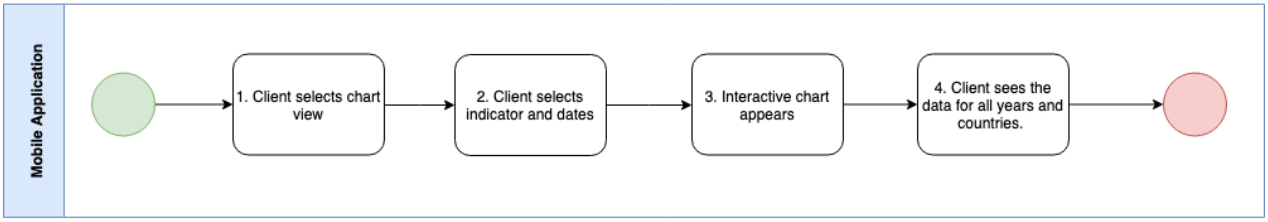
Inputs: Client action.

Outputs: Tabular view appears.

Use case description (step by step):
1. Client selects the table view. 2. Client selects desired indicator. 3. The proper table appears. 4. Client sees the table consist data for the indicator for all years and countries.
Alternative flow:
BPMN diagram (optional):

Notes:
• IOS and Android platforms. • Table visualization has to be adjusted to small screen sizes. Some functionality of web portal has to be skipped as it's usage on the mobile phone is impossible due to screen size limitations.
Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	**Chart view screen**				
ID:	**049**	**Version:**	1.1	**Last update:**	2019-07-30
Actors:					
• Client - the mobile application user					
Overall description:					
Data visualization in chart.					
Business event that triggers use case / frequency:					
• Client clicks proper icon/button.					

Inputs and Outputs:
Inputs: Clients action. **Outputs:** Tabular view appears.
Use case description (step by step):
1. Client selects the chart view. 2. Client selects indicator and dates. 3. The interactive chart appears. 4. ź
Alternative flow:
BPMN diagram (optional):

Notes:
• IOS and Android platforms. • The user can display bar chart, pie chart, line chart.
Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	**Side menu**				
ID:	**050**	**Version:**	1.1	**Last update:**	2019-07-30
Actors:					
• Client - the mobile application user					
Overall description:					
Side menu is responsible for navigation between main sections of the application.					

Business event that triggers use case / frequency:

- Client clicks on the menu icon.

Inputs and Outputs:

Inputs: Client action

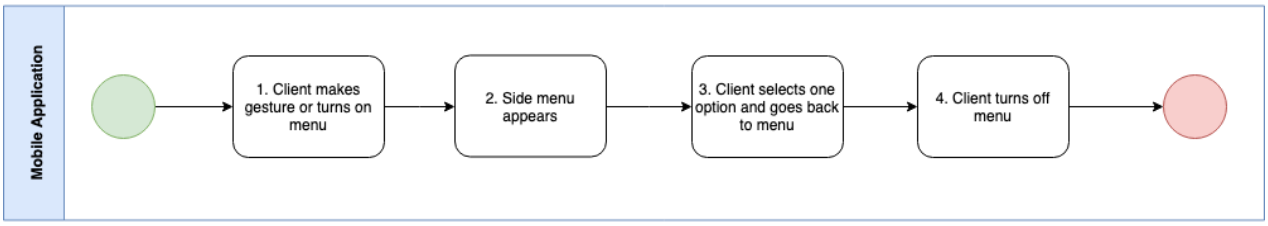
Outputs: Side menu

Use case description (step by step):

1. Client turn on side menu by gesture or with the bottom
2. Client sees the GCC-Stat logo and list of options
3. Client selects about option and sees information about the application.
4. Client goes back and turns on the settings page.
5. Client goes back and turns off the menu

Alternative flow:

BPMN diagram (optional):



Notes:

- IOS and Android platforms.
- The user can display bar chart, pie chart, line chart.

Related requirements:

Req. type	ID	Description	Comment

Use Case Title:	Navigation menu				
ID:	051	Version:	1.1	Last update:	2019-07-30

Actors:

- Client - the mobile application user

Overall description:

Navigation menu is responsible for switching different visualization types.

Business event that triggers use case / frequency:

- Client clicks on the navigation menu.

Inputs and Outputs:

Inputs: Clients action

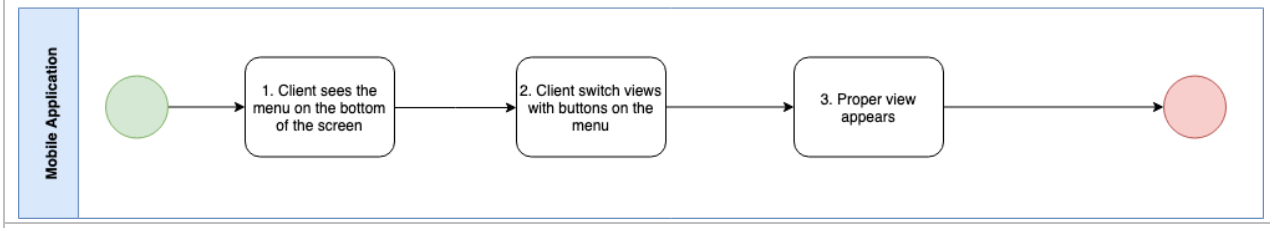
Outputs: Side menu

Use case description (step by step):

1. Client sees the navigation menu on the screen.
2. The menu let Client to switch between tabular, chart, map, dashboard screens.

Alternative flow:

BPMN diagram (optional):



Notes:

- IOS and Android platforms.
- Feature available on both platform but the layout and gestures might be different, proper for each operating system.

Related requirements:

Req. type	ID	Description	Comment

10 PROPOSED SOLUTION ARCHITECTURE

We propose GCC-STAT Integration Platform high-level software architecture as follows:

Future system will be organized into 2 major zones. Each zone will cover major tools and applications as follows:

A. **Private Zone** - it consists of solutions and software components not accessible from outside of the system. The purpose of this set of tools is to organize and manage work inside the system and assure proper communication between all components.

1. **User workspace** - Fully separated custom application for every-day work management for internal GCC-Stat employees. It is a central hub for work with different modules of the system with notification system, administrative tools and functionalities of the system.
2. **ID Management** - LDAP-based authorization system. A central place for managing users and their permissions. Only accessible by administrators and trained personnel. Administrators will gain easy to use GUI for managing users in a form of LAM application.
3. **Fusion Registry** – Central part of the system responsible for uploading statistical data, validation, managing, authoring and storing statistical data in FR's warehouse. Fusion Registry will store statistical data in MySQL database. Statistical data will be available for only members with specific permissions. No data in Fusion Registry (statistical data, reference metadata, artifacts) will be public.
4. **Custom Applications** – **StatStart** main application which will be entry point and a workspace for every employee of GCC-Stat in new MARSA system. It will encompass vital modules the system and provide notifications authentications and set of tools necessary for everyday work. Major modules of **StartStart** platform are:
    - Indicators Management Module
    - Strategy Management
    - Statistical Calendar Management
    - Administration Module
    - Statistics Module
    - Processes Module
    - Notifications

    We propose to set of web browser which **StatStart** application will support:

Web browser name	Version
Windows Edge	42.17 +, HTML Engine version 17+
Google Chrome	7.4 +
Firefox	67.0 +

5. **Process Maker -** Professional BPMN tool which will be responsible for automation of major workflows and tasks. It is the main application for implementing Business Processes and proposed workflows in the

System. Also Process Maker is responsible for majority of notification about process status, progress and needed actions to be taken by involved employees.

6. **Tableau -** Main Business Intelligence tool which will be used by statisticians for logical data validation and preparing charts, graphs, dashlets and dashboards which will be disseminated in Data Portal.

7. **Log system -** Focal point and central system for monitoring system and its components. It will gather logs from all parts of the system, custom application and integrated tools: Fusion Registry, Process Maker, Tableau, databases and servers.

B. **Public Zone** - zone composed of tools and software which will be accessible both by internal and external users.

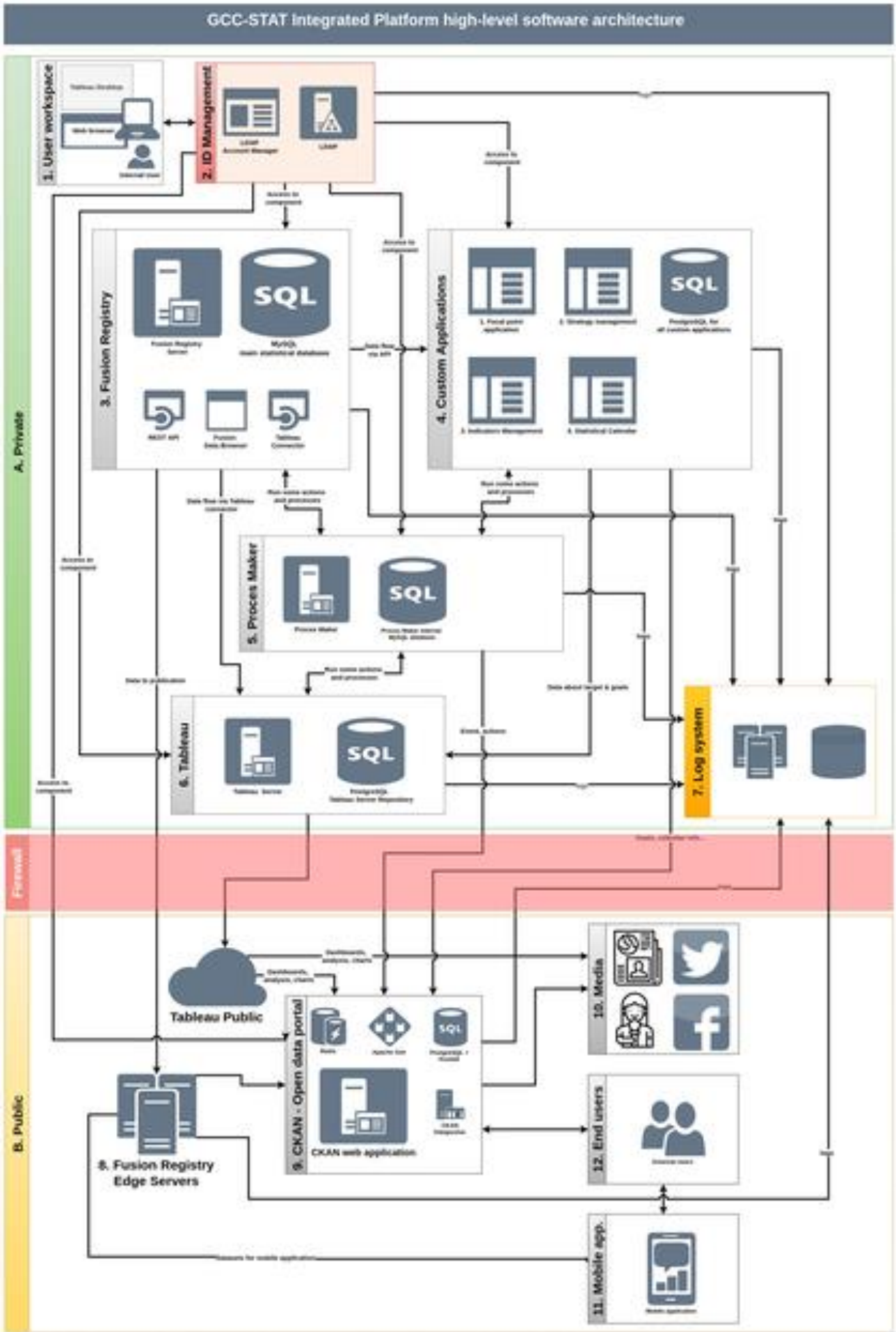
8. **Fusion Registry Edge Server -** This part of the system will perform a role of **Production Environment**. Statistical data is accessed using Web Service API as Edge Server is a high performance tool for data dissemination in SDMX format. After approval of data in Staging Environment (Fusion Registry (3)) data will be automatically migrated to Edge Server where it will be ready for dissemination. Fusion Edge Server is public and data production data can be accessed by external parties.

9. **CKAN – open data portal -** Is the go-to standard for implementation of Open Data Portals. It will perform a role of final dissemination platform where most of the Statistical Data will be published and exposed to external users. CKAN will use Production Data for which the source will be Fusion Edge Servers (8).

   Tableau (6) can also be connected with the source of production data (Edge Servers (8)) in order to prepared advanced dashlets and dashboard will be uploaded to CKAN directly from Tableau Server.

10. **Media -** Media represents external dissemination tools and options (e.g. Social Media) which will use GCC-Stat's production environment (8) as a source of production data for dissemination.

- **Mobile App –** Mobile App that will provide features to browse data, indicators and dissemination products of the MARSA system.
- **End users –** Client of Open Data Portal: citizens, employees, specialist and scientists all interested in browsing, tracking and studying dissemination products.


GCC-STAT integrated Platform high-level software architecture
A. Private
1. User workspace
2. ID Management
3. Fusion Registry
SQL
4. Custom Applications
SQL
5. Proces Maker
SQL
6. Tableau
SQL
7. Log system
Firewall
B. Public
Tableau Public
9. CKAN - Open data portal
CKAN web application
10. Media
12. End users
8. Fusion Registry
Edge Servers
11. Mobile app.

11 DATA PORTAL

CKAN is a powerful data management system that makes data accessible – by providing tools to streamline publishing, sharing, finding and using data. CKAN is aimed at data publishers (national and regional governments, companies and organizations) wanting to make their data open and available.

Key CKAN features:

CKAN's Action API is a powerful, RPC-style API that exposes all of CKAN's core features to API clients.

Datastore - The CKAN DataStore extension provides an ad hoc database for storage of structured data from CKAN resources.

Extensions - CKAN allows you to pick and choose which features you want to use for your data portal. Or, you can easily develop your own by following the extending guide!

Federate. Federation because CKAN's harvesting functionality can be used to pull in metadata from other data portals, CKAN can be used to create a federated network of data portals which share data between each other.

Filestore. FileStore allows users to upload data and image files.

Geospatial. Geospatial CKAN has advanced geospatial features, covering data preview, search, and discovery.

Metadata. A CKAN portal provides a rich set of metadata for each dataset.

Publish and manage data. An intuitive web interface allows publishers and curators to easily register, update and refine datasets.

Search and discovery. CKAN provides a rich search experience which allows for quick 'Google-style' keyword search as well as faceting by tags and browsing between related datasets.

Themable. You can customize the appearance of your CKAN portal buy following the theming guide.

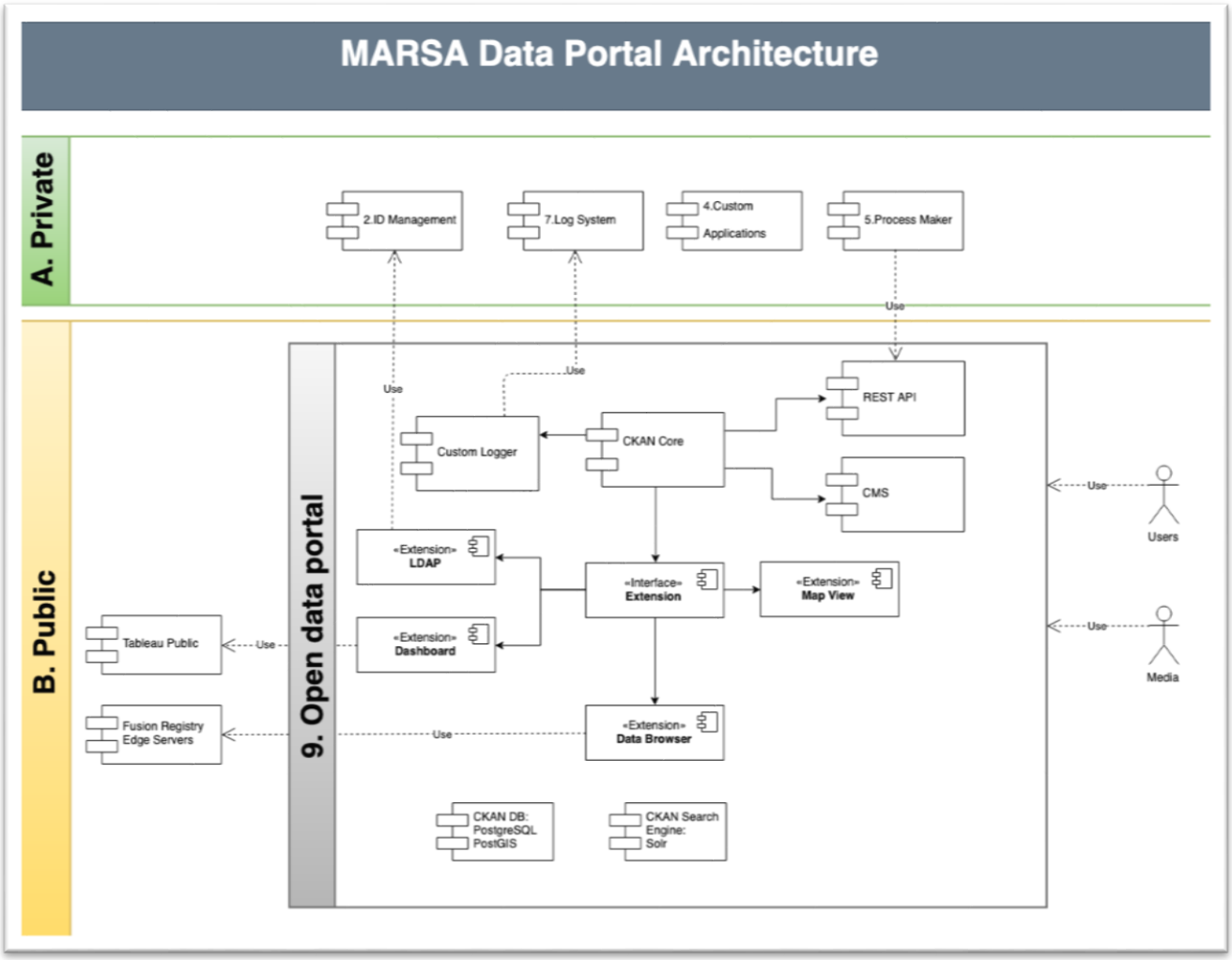
Visualization. CKAN's data previewing tool has a host of powerful features for previewing data stored in the DataStore.

Despite long list of CKAN core features not all requirements are covered. That is why additional extensions are going to be provided. For common functionality 3rd party extension will be provided:

- CMS extension – for content management system.
- LDAP extension – for user authentication and authorization.

Custom extensions will be provided for integration with external system:

1. Dashboard extension – for integration with Tableau Public.
2. Data Browser extension – for integration with Fusion Registry.
3. Map View extension – for integration with GIS systems.
4. Custom Logger module – for integrated logging functionality.

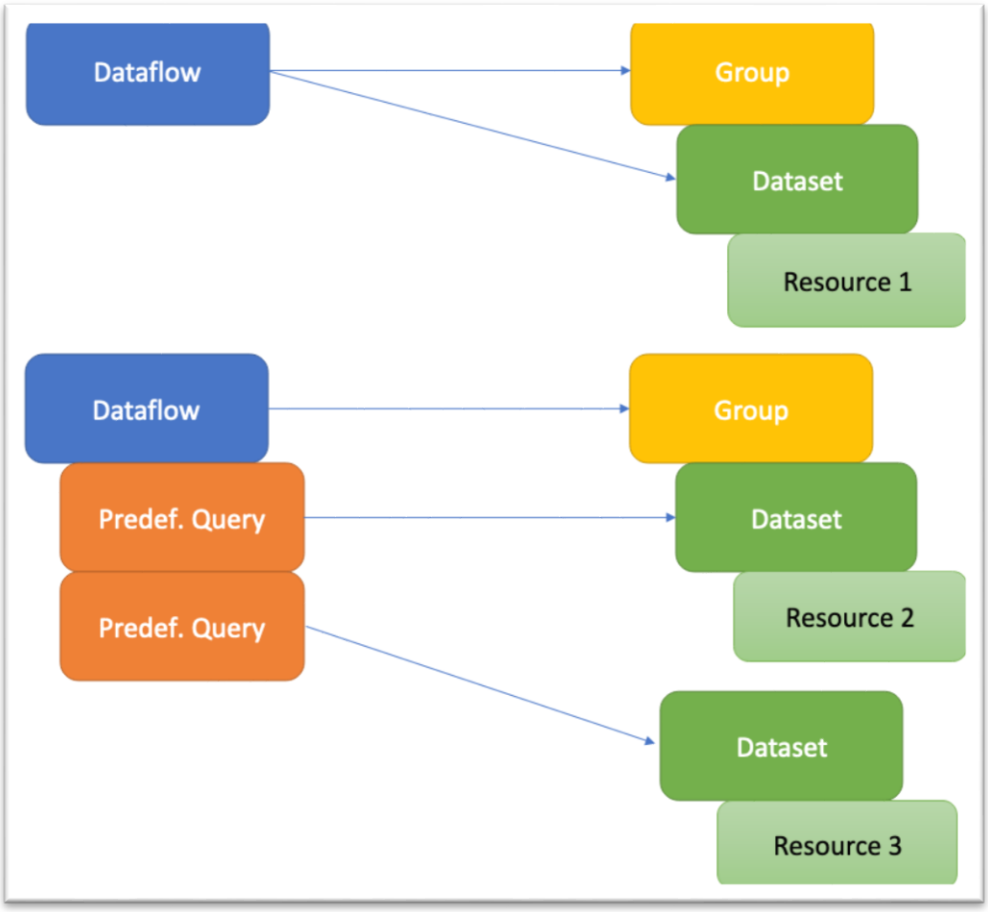


11.1 DATA PORTAL – FUSION REGISTRY INTEGRATION

CKAN integrates with Fusion Registry Edge Servers in order to present available datasets to the external users or media. The data stays on Edge Servers, CKAN holds only metadata. Dedicated extension handles communication between two systems and let user add Groups/Datasets and Resources based on Edge Server API queries.

The Fusion Registry (and finally Edge Servers) groups data info Dataflow and let user access them directly to everything or through predefined queries. In terms of Prognoz, current GCCStat Data Portal, Dataflows are equivalent to Databases and Predefined Queries to Data Categories within the Data Browser.

Following mapping between Fusion Registry and CKAN structures are proposed:



For each Dataflow in FR a Group in CKAN is created.

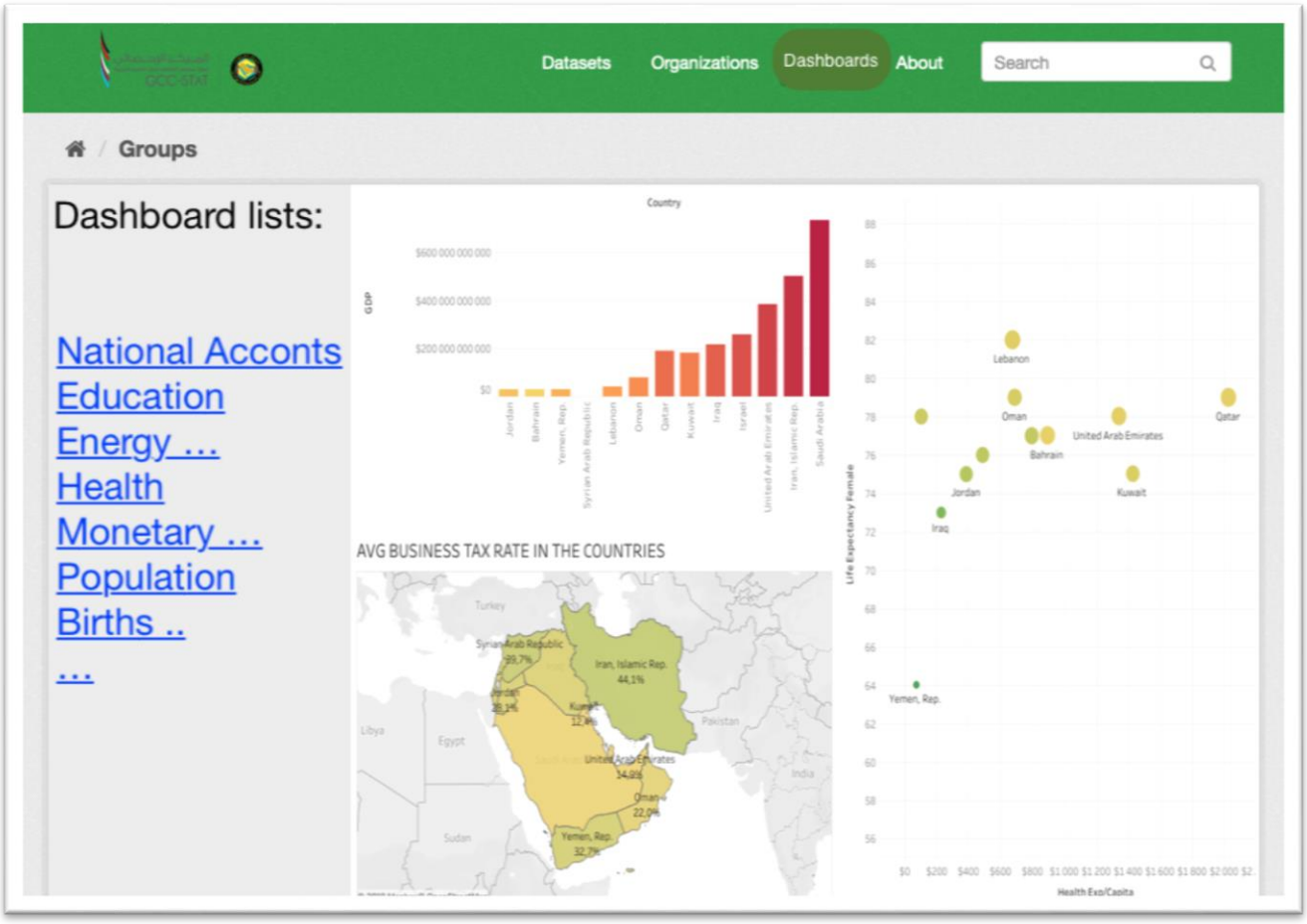
11. If Dataflow has no Predefined Queries we create Dataset in CKAN for the Dataflow and attach it to the Group with the same name.
12. If Dataflow has Predefined Queries, a Datasets in CKAN is created for each Predefined Query, each dataset is added to the Group representing the Dataflow.
13. For each Dataset or Predefine Query the following Resources are added automatically: JSON, CSV, SDMX.
14. Resources are URLs to specific Fusion Registry / Edge Server API endpoints.
15. Each Resource points out to the same data, but in different formats.

11.2 DATA PORTAL – TABLEAU INTEGRATION

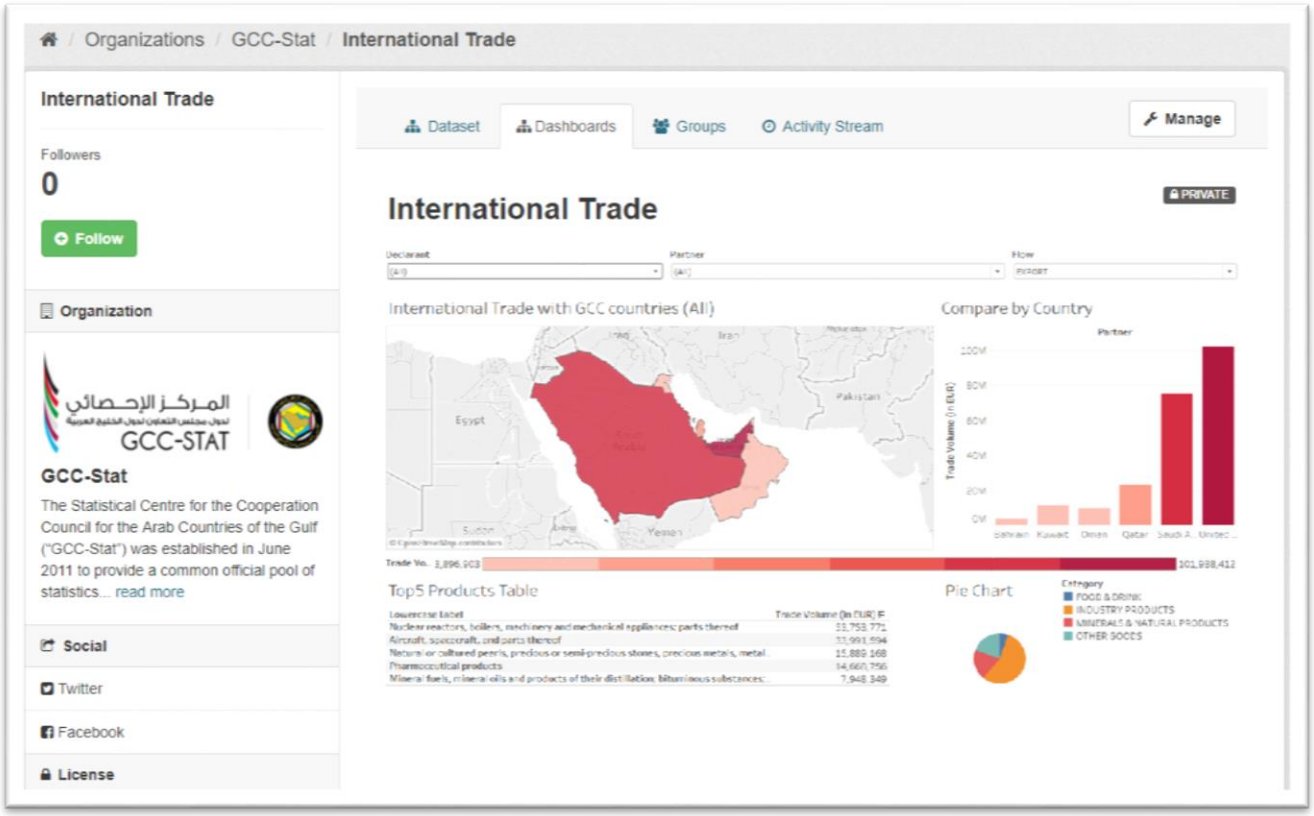
CKAN extension for Tableau let administrator embed easily publicly available, interactive dashboards.

Two options are considered, dedicated section for dashboards (following current Data Portal) vs embedding dashboards as an integral part of the Dataset view.

1. **Dedicated section** – contains list of available dashboards grouped by Dataflows.



2. **Extended dataset view** – if there is a dashboard for dataset it can be embedded on the Dataset view.



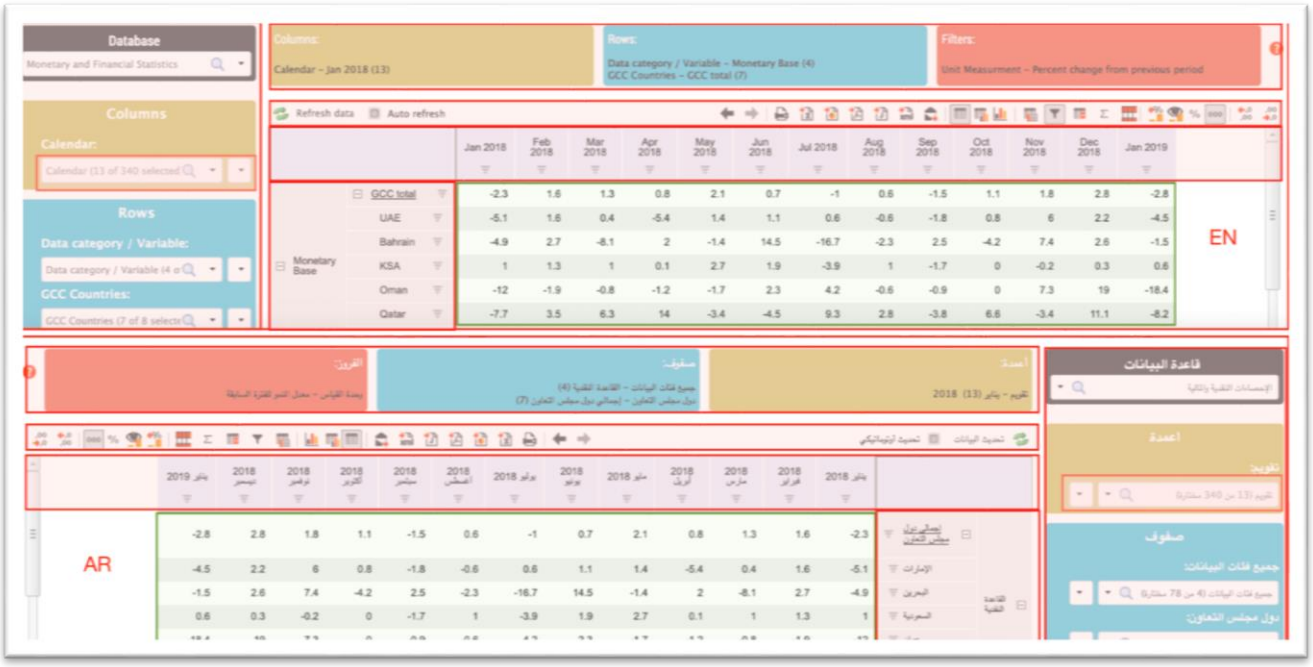
11.3 REQUIREMENTS CLARIFICATIONS

Arabic vs English version.

Requirement Type	#	Requirement Description
Functional	3.4	Ability to change the direction of a page or its content, i.e. RTL for Arabic
Non-functional	1.7	Proposed portal to be implemented with Arabic and English based menu and content

CKAN has limited support for Arabic language, that is why dedicated layout will be provided. The solution will support:

- the location of the menus,
- the order of the buttons, the order of the menu elements,
- texts from right to left,
- table entries stay the same,
- for charts the legend layout has to be RTL, the chart looks the same.



The layout of the English and Arabic page based on existing portal

The layout of the English and Arabic version of chart

11.4 PORTAL REQUIREMENTS

Requirement Type	#	Requirement Description
Functional	3.3	Ability to customize the look and feel of each page
Functional	3.6	Ability to position the content of each page in any desirable space in the page

Users visiting the portal identifies look and feel on the first page they are landing on, usually it is the home page. Browser between portal pages should be intuitive for the user so all pages should share some common navigation and look & feel styles. Each page should be customizable but within some boundaries defined by the web page designers, i.e.: all dataset group should follow the same navigation and layout rules but icon of the group should be customizable. The rules will be defined during web design.

Requirement Type	#	Requirement Description
Functional	3.5	Ability to set a page as a Dashboard, Query, Map, Search, Static Content or Mixin

After detailed analysis of this requirement following possibilities will be provided within Data Portal:

1. Datasets can be attached to groups or tagged.
2. CMS content can be grouped into categories.
3. Dashboards browser can be placed in one place on the web site but dashboards are going to be organized into categories.
4. Query can be element of a dataset.
5. Map – datasets with spatial reference can be viewed on the map.
6. Search – will be located on a single place defined by web designer.

Requirement Type	#	Requirement Description
Non-functional	1.19	Proposed portal to support the integration with 3rd party widgets

CKAN is an Open Source solution with strong community that build different plugins for the core system. The community calls them extensions. Provided extensions updates the UI but also adds some core functionalities as well. Extensions have larger scope than widgets and can replace them.

11.5 PORTAL COMPLIANCE AND COMPATIBILITY

Requirement Type	#	Requirement Description
Non-functional	1.12	Proposed portal implementation to be aligned and verified for W3C compliance

CKAN at this point is not W3C compliant but the developers try to maintain HTML5 compatibility and this compliance will be provided.

Requirement Type	#	Requirement Description
Non-functional	1.13	Proposed portal to be responsive with full support to different browsers on mobiles

The number of different web browsers is quite large but all of them use one of two possible engines: Chrome or WebKit. The portal will support both engines.

11.6 CONTENT MANAGEMENT SYSTEM (CMS)

Requirement Type	#	Requirement Description
Non-functional	1.3	Proposed portal to be supported with content management solution that can create semantic relationships between pieces of content

By semantic relationships between pieces of content we understand links between CMS pages, this feature will be provided.

Requirement Type	#	Requirement Description
Non-functional	1.8	Proposed CMS as part of the portal to have the ability of creating flexible repositories and managing open APIs

CKAN implements flexible repository concept with datasets, groups and tags.

"A dataset is a parcel of data - for example, it could be the crime statistics for a region, the spending figures for a government department, or temperature readings from various weather stations. When users search for data, the search results they see will be individual datasets."[1]

Each dataset contains:

- Metadata about the data. For example, the title and publisher, date, what formats it is available in, what license it is released under, etc.
- A number of "resources", which hold the data itself. CKAN does not mind what format the data is in. A resource can be a CSV or Excel spreadsheet, XML file, PDF document, image file, linked data in RDF format, etc. CKAN can store the resource internally, or store it simply as a link, the resource itself being elsewhere on the web. A dataset can contain any number of resources. For example, different resources might contain the data for different years, or they might contain the same data in different formats.

Datasets can be organized into groups or tag-ed.

For each dataset CKAN provides an open API.

There are no limits for datasets or groups.

Requirement Type	#	Requirement Description
Non-functional	1.9	Proposed CMS as part of the portal to have the ability of managing content personalization and permissions

The Data Portal offers content personalization for registered users by following mechanism.

Permission within Data Portal are organized in organizations and roles. Each dataset can belong to a single organization, and each organization controls access to its datasets. Datasets can be marked as public or private. Public datasets are visible to everyone. Private datasets can only be seen by logged-in users who are members of the dataset's organization. Private datasets are not shown in general dataset searches but are shown in dataset searches within the organization.

When a user joins an organization, an organization admin gives them one of three roles: member, editor or admin.

A member can:

- View the organization's private datasets.

An editor can do everything as member plus:

- Add new datasets to the organization;
- Edit or delete any of the organization's datasets;

[1] *Source: https://docs.ckan.org/en/latest/user-guide.html*

- Make datasets public or private.

An organization admin can do everything as editor plus:

- Add users to the organization, and choose whether to make the new user a member, editor or admin;
- Change the role of any user in the organization, including other admin users;
- Remove members, editors or other admins from the organization;
- Edit the organization itself (for example: change the organization's title, description or image);
- Delete the organization.

When a user creates a new organization, they automatically become the first admin of that organization.

Requirement Type	#	Requirement Description
Non-functional	1.16	Proposed solution to be equipped with effective collaboration features

Thanks to permission system users can collaborate on datasets within their own organizations. Editors can create new datasets or edit details of existing once.

11.7 DATA PORTAL – GIS INTEGRATION

Requirement Type	#	Requirement Description
Functional	8.8	Ability to integrate with GIS - current version is 10.6 ARCGIS ESRI through Geo Enabled Services
Non-Functional	1.10	Proposed portal to be integrated with current GCCSTAT GIS to provide multiple layers of statistics presented on maps

Both requirements regarding GIS integration will be fulfilled by providing advanced support for GIS standards to the Data Portal that will ensure the compliance with OGC (Open Geospatial Consortium) guidelines as well as other web GIS standards and good practices.

Specifically, the following GIS integration capabilities will be provided:

1. **Adding spatial data** to the Data Portal the following types of geospatial data as Resources:
    - **Web Map Services (WMS)** – Data Portal will be able to handle WMS layers be added. They can be shared with a wide range of Internet users, as this data format can be read by most popular Open Source and commercial desktop applications,
    - **Geography Markup Language (GML) files** – Data Portal will be able to handle GML files that delivers raw vector data, either directly or through WFS (Web Feature Service) layers,

- **GeoJSON files** – Data Portal will be able to handle GeoJSON files, which is one of the most popular web GIS standards. GeoJSON files are used by Leaflet JavaScript mapping framework, which makes it perfect open GIS standard for web and mobile GIS development,
- **Web Feature Service (WFS),**
- **KML files** – popular files used by Google Earth and Google Maps,
- **ArcGIS REST API** – allowing direct integration of spatial data from GCC-Stat ArcGIS Server.

2. **Geospatial search capabilities** – Data Portal will be capable of understanding a location associated with a dataset and use this to offer geospatial search capabilities via the web interface and API. A user searching for datasets can filter the results by geographical location, specifying a bounding box to limit the area are interested in. Data Portal will understand different co-ordinate geometries and parses location information accordingly.

3. **Map preview** in the **Data Browser** component. This will allow users to preview selected indicators and map them using choropleth map. Due to the fact that only one value for each country can be mapped at the same time, appropriate filters will need to be applied.

11.8 Data Portal – Data Browser

Requirement Type	#	Requirement Description
Functional	3.47	Ability to query from multiple datasets/dataflows/databases

The proposed solution is based on Fusion Registry which uses dataflows. The dataflow is equivalent to database in current portal. Since dataflow place central role in SDMX this feature is not compatible with it (at least with v2.1 version). The query from multiple dataflows is possible with Tableau. The results can be saved as a dashboard or exported as a dataset and published on Data Portal.

Requirement Type	#	Requirement Description
Functional	3.52	Ability to select/deselect all descendants of an element at once
Functional	3.53	Ability to select/deselect all elements of the same level at once
Functional	3.54	Ability to expand entire hierarchy of a dimension's elements
Functional	3.55	Ability to collapse entire hierarchy of a dimension's elements
Functional	3.56	Ability to display the elements of a dimension by their names/titles

These feature are incompatible with Fusion Registry.

Requirement Type	#	Requirement Description
Functional	3.58	Ability to display the elements of a dimension by their mapped codes, e.g. a dimension called "Country", its elements can be displayed by the country names, ISO Alpha-2 or ISO Alpha-3 (Mapped Code list) or ISO Numeric (Mapped Code list)
Functional	3.59	Ability to display the elements of a dimension by a combination of all of above.
Functional	3.60	Ability to display the elements of a dimension by a combination and customize the format, e.g. "(<ISO Alpha-2>)-<Name>#<ISO Numeric>" => BH-Bahrain#048
Functional	3.65	Ability to export table as PDF
Functional	3.66	Ability to export table as MS Word
Functional	3.79	Ability to display attribute(s) on a table/dataset
Functional	3.80	Ability to display attribute(s) on a series in a table
Functional	3.81	Ability to display attribute(s) on a observation in a table
Functional	3.82	Ability to display attribute(s) on a group series in a table
Functional	3.83	Ability to customize the format of observation level attribute(s) when displayed beside the observation
Functional	3.84	Ability to display an indicator beside an observation when there's metadata
Functional	3.85	Ability to display an indicator beside a series when there's metadata

The requirements will be satisfied with future Fusion Registry release

Requirement Type	#	Requirement Description
Functional	3.61	Ability to sort dimension's elements Alphabetically

The functionality will be available for user watching the data in the table view.

Requirement Type	#	Requirement Description
Functional	3.72	Ability to conditionally filter some values of the table
Functional	3.73	Ability to conditionally format/color some values of the table
Functional	3.77	Ability to customize the look and feel of a table
Functional	3.78	Ability to format the values of a table, e.g. the number of decimal places, currency, …

This requirements are incompatible with Fusion Registry and Metadata has no plans to implement this.
For end users, the simplest approach is to download to Excel and use its formatting features. A planned enhancement (FR-3309) is to allow pivot tables to be exported to Excel exactly as they are displayed on the web page which will support this use case.
For content publishers, the Publication Tables will be a better choice.

Requirement Type	#	Requirement Description
Functional	3.86	Ability to display an indicator beside under a table when there's metadata
Functional	3.91	Ability to customize a reference of a table that's embedded in foreign websites

Extended description required from GCC-Stat, if possible with example.

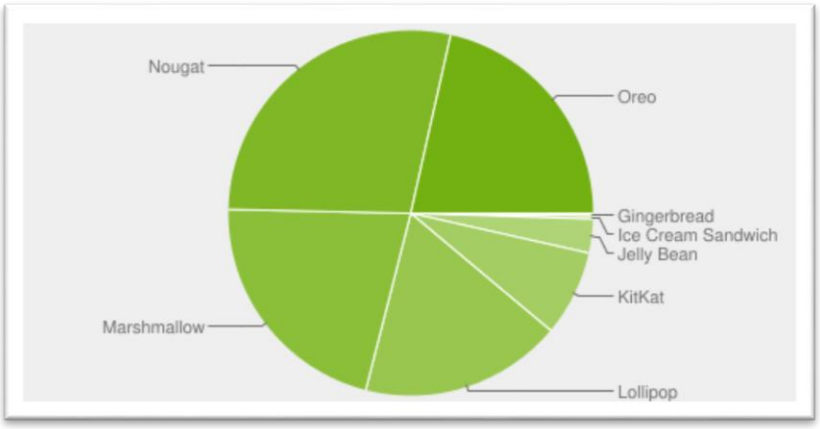
12 MOBILE APPLICATIONS

A. Platform:

Based on the popularity of mobile operating system it is recommended to develop two applications for the following mobile operating systems:

- Android - version 5.1+
- iOS - version 10.0+

Android is the most popular mobile platform. Because of its popularity many device providers use different platform versions on their devices. They provide updates in different times due to there is a range of versions on the market. Below is presented data about version of the Android platform shared by Google.

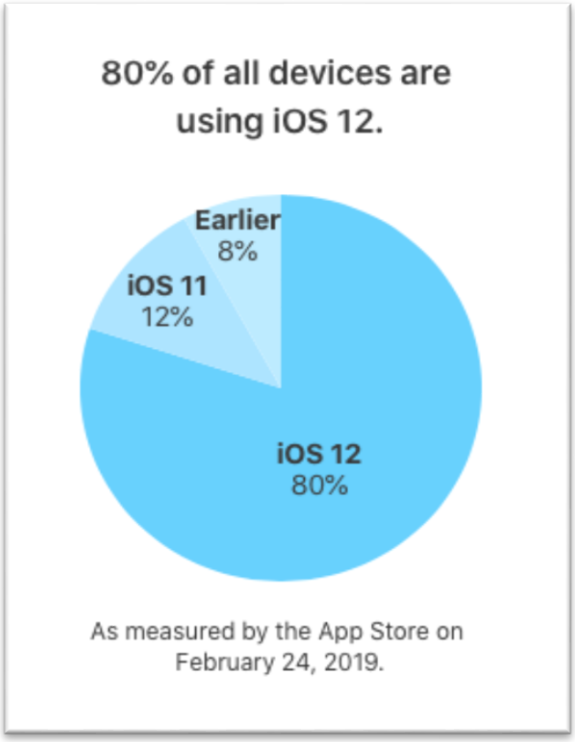


Version	Codename	API	Distribution
2.3.3 - 2.3.7	Gingerbread	10	0.2%
4.0.3 - 4.0.4	Ice Cream Sandwich	15	0.3%
4.1.x	Jelly Bean	16	1.1%
4.2.x		17	1.5%
4.3		18	0.4%
4.4	KitKat	19	7.6%
5.0	Lollipop	21	3.5%
5.1		22	14.4%
6.0	Marshmallow	23	21.3%
7.0	Nougat	24	18.1%
7.1		25	10.1%
8.0	Oreo	26	14.0%
8.1		27	7.5%

Table 1: The table presents popularity of Android platform versions. Data collected during a 7-day period ending on October 26, 2018, Source: https://developer.android.com/about/dashboards

The above table shows that the Android platform is becoming popular since 5.1 version. What's more, Android provides more and more libraries and tools with newer versions, thanks to which application is more modern and adapted to the latest standards.

On iOS market, there is only one hardware provider, Apple. It reduces significantly number of different types of mobile phones. That is why it is much easier to update handsets to the newest operating system. As we can see on the chart below shared by Apple, a significant number of users use iOS 12. Such a large number is a consequence of Apple company policy that tries to keep as many devices up to date as possible. Much less uses version 11, but generally it is assumed that applications should be published in at least iOS 10, because it is the last version which is available on iPhone 5.



Source: https://developer.apple.com/support/app-store/

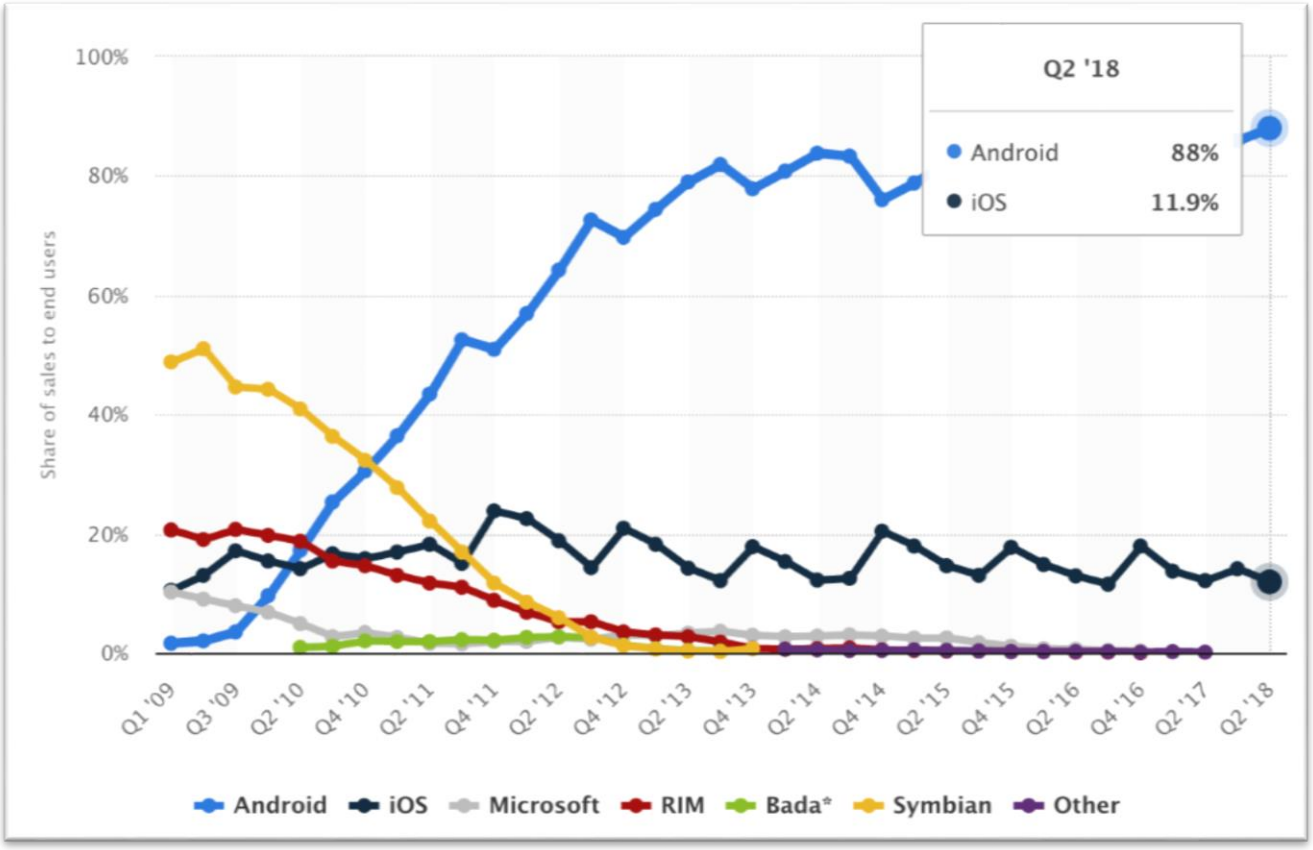
As per the discussions during the requirement gathering stage, the development of the Windows application will not be considered due to limited number of potential users.

Below are basic statistics about the popularity of mobile operating systems:

Source, portal name	Android [%]	iOS [%]	Windows [%]
Netmarketshare	70,31	28,21	0,09
IDC (2018Q3)	86,8	13,2	0
Global Stats	74,15	23,28	0,29

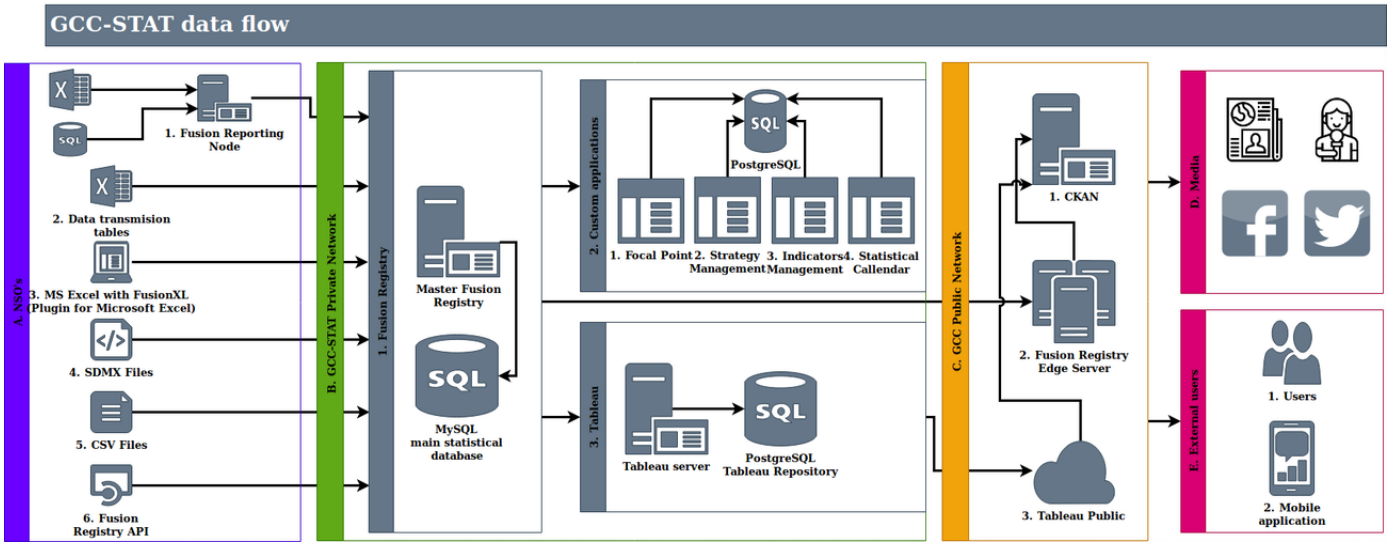
Statista	88	11,9	0,03

Table 2: The table presents popularity of mobile operating systems according to different sources. All data were gathered at 2nd April 2019.



Source: https://www.statista.com/statistics/266136/global-market-share-held-by-smartphone-operating-systems/

12.1 PROPOSED WORKFLOWS OF DATA UPLOAD TO THE FUTURE SYSTEM



12.1.1 Scenario 1 – Using Fusion Reporting Nodes

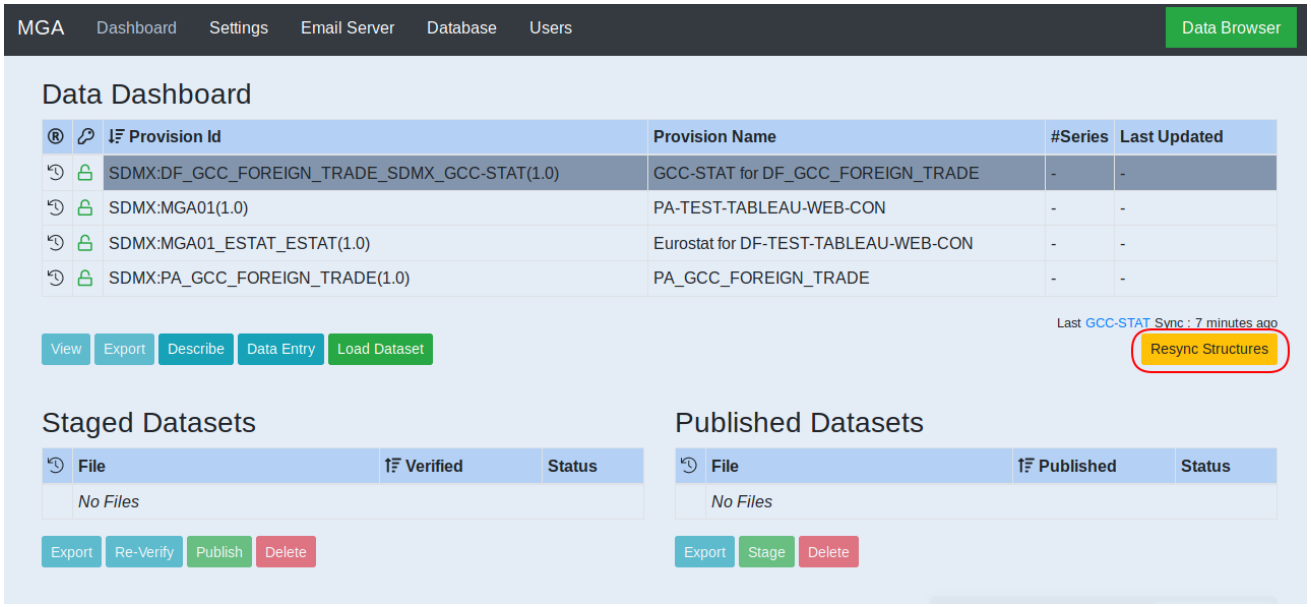
This scenario introduces a part of full Fusion Registry technology stack – a Fusion Reporting Node.

The Fusion Reporting Node is run locally by data providers to report data to a central HUB. The Node exposes SDMX compliant web services for the HUB to obtain data on demand. The Node can connect to a local database to load data into the Node on demand.

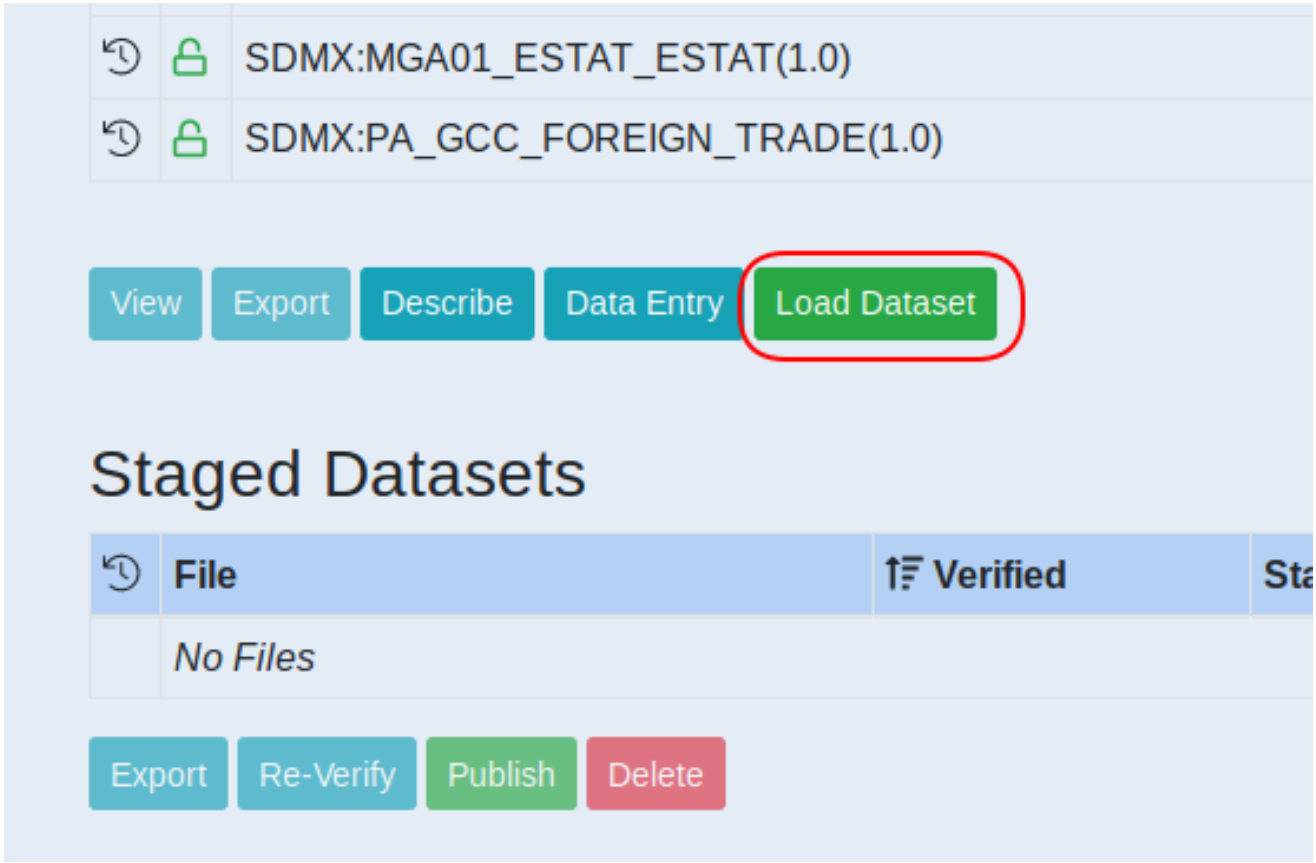
When Fusion Reporting Node is deployed in NSO's environment a privileged user can log-in to Node's GUI.

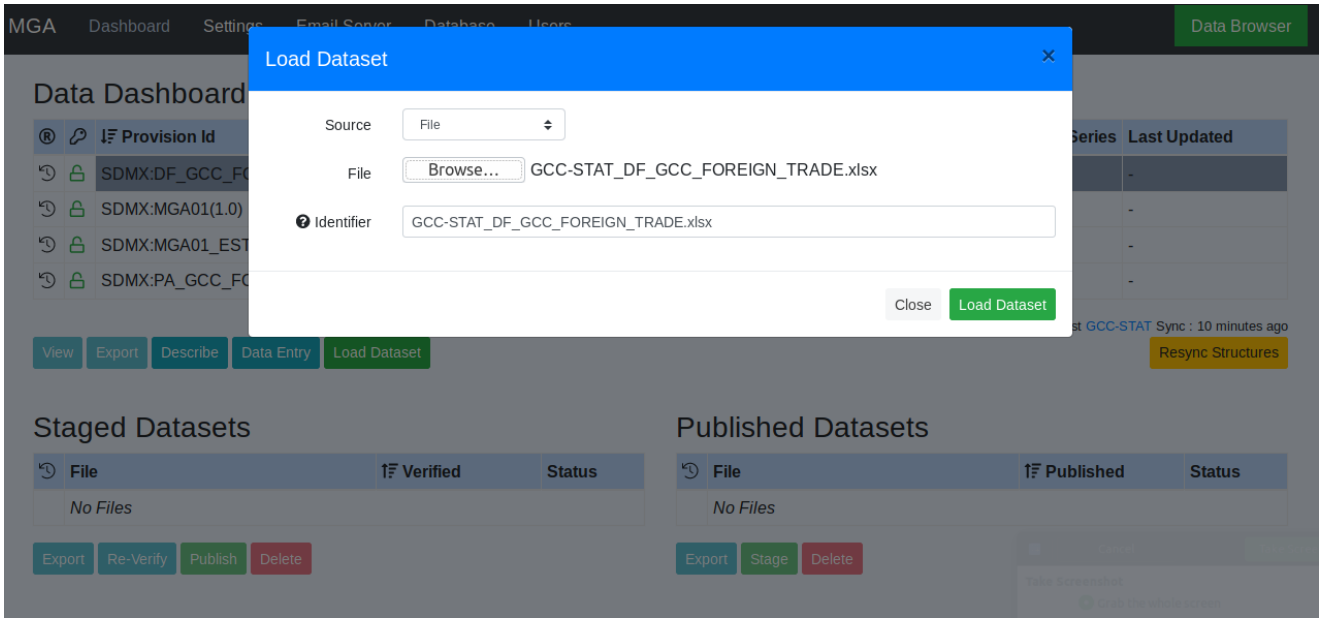
Proposed workflow:

1. NSO: User logs into Fusion Node.
2. NSO: User synchronizes state of Fusion Node with Fusion Registry by clicking yellow button `Resync Structures`.

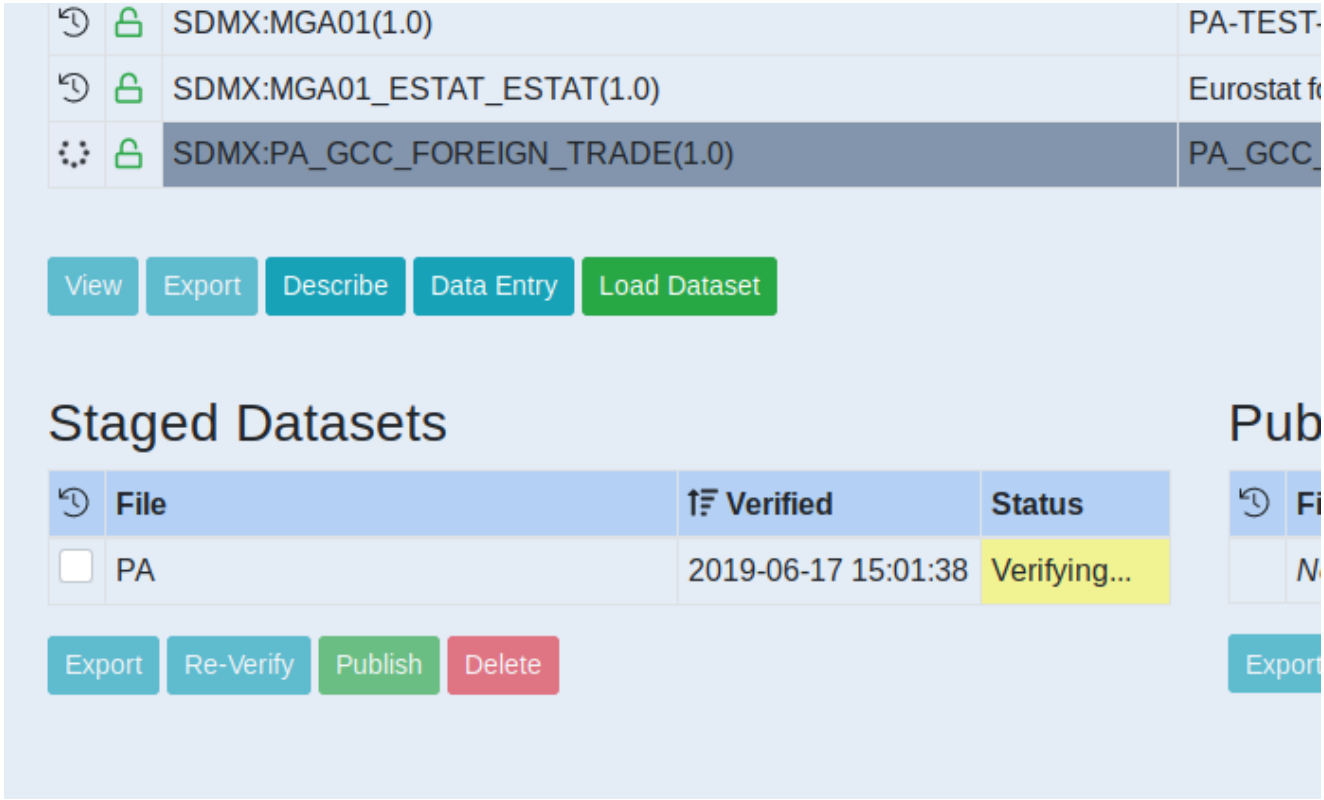


3. NSO: Fills Transmission Table with data.
4. NSO: User chooses a dataflow to which NSO wants to upload data.
5. NSO: User clicks green button ‘Load Dataset’ and uploads filled Transmission Table.





6. NSO: Edge server displays validation report. If data is not valid then go to step 3.
7. NSO: Dataset becomes *Staged.*



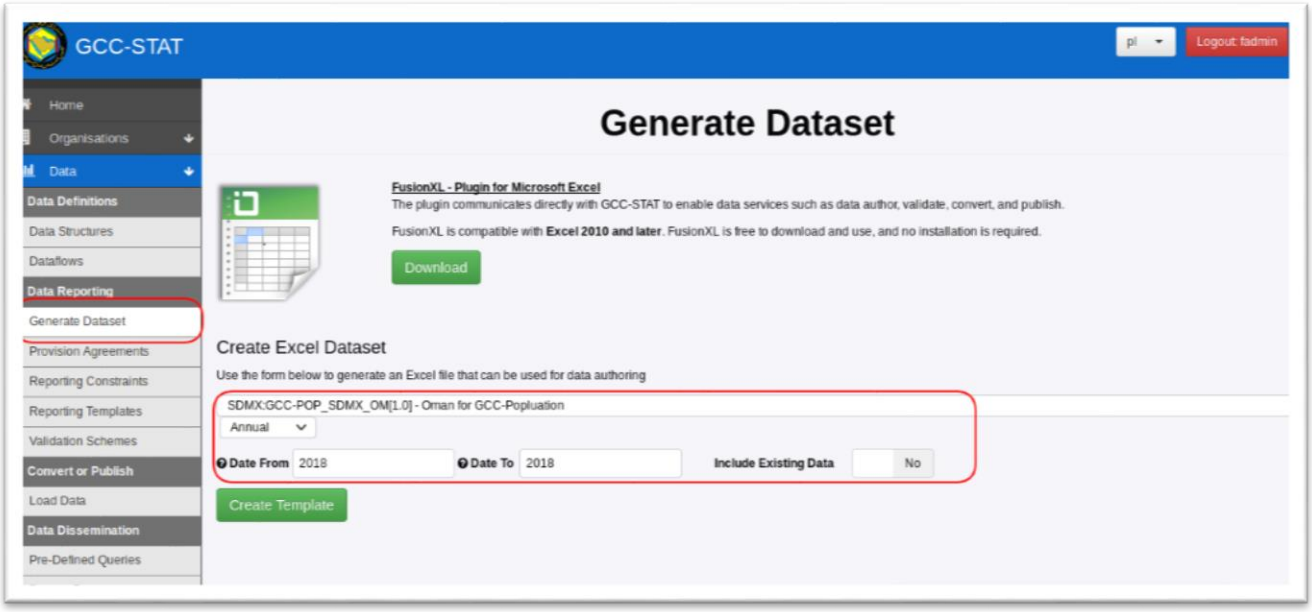
8. NSO: After approval user publishes Dataset into Fusion Registry green button ‘Publish’.

12.1.2 Scenario 2 – Using transmission tables

This scenario enforces usage of transmission tables generated in Excel for data upload to Fusion Registry's warehouse. Transmission tables in Fusion Registry can be generated in two ways:

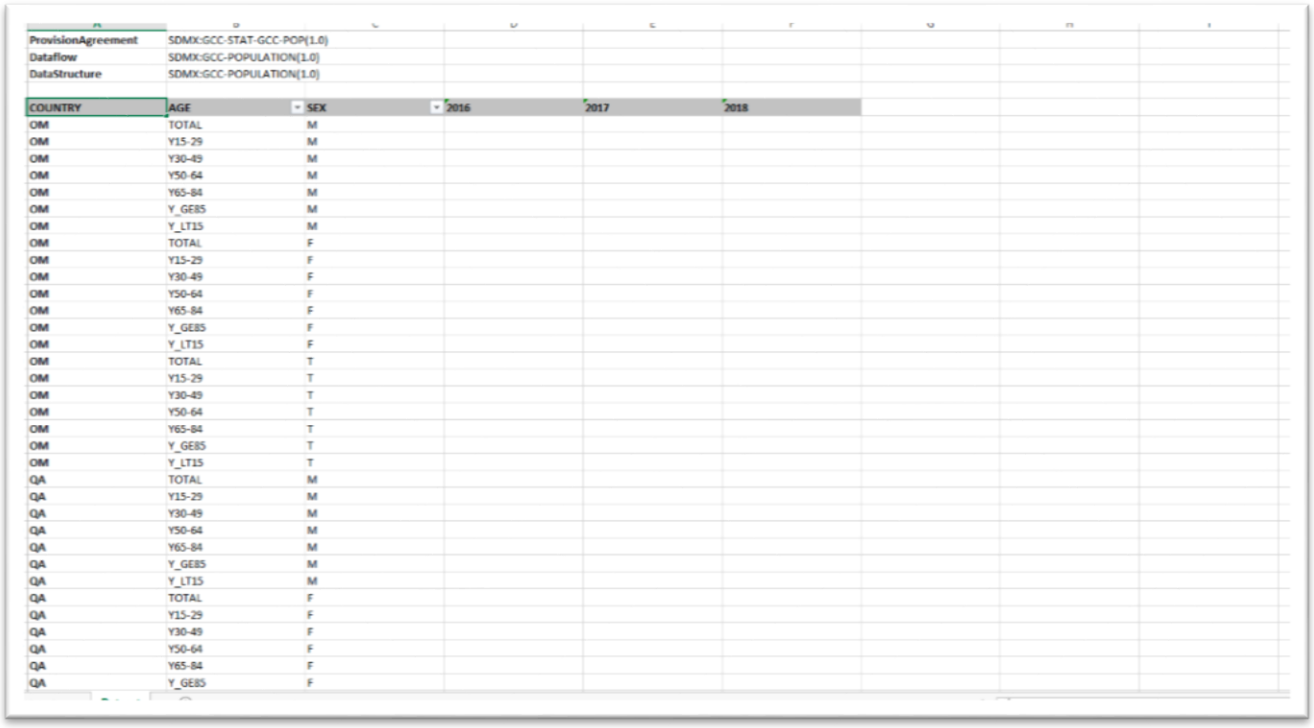
Type 1

Using simpler and quicker mechanism by generating Dataset in Fusion Registry.



By choosing this option user can generate simple transmission table based on dataflow and specify date range for which dataset will be prepared. In general transmission tables only for current missing data should be prepared in order to not to clutter excel file with historical values.

Below is the example of generated Transmission Table of Type 1.

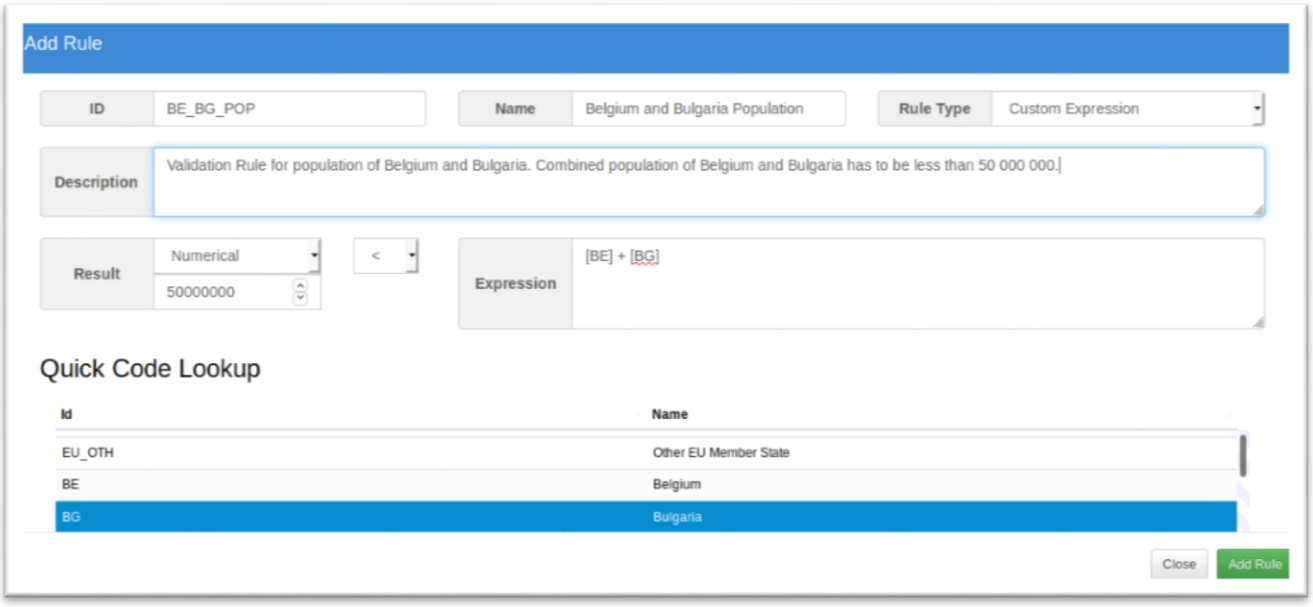


ProvisionAgreement	SDMX:GCC-STAT-GCC-POP(1.0)				
Dataflow	SDMX:GCC-POPULATION(1.0)				
DataStructure	SDMX:GCC-POPULATION(1.0)				
COUNTRY	AGE	SEX	2016	2017	2018
OM	TOTAL	M			
OM	Y15-29	M			
OM	Y30-49	M			
OM	Y50-64	M			
OM	Y65-84	M			
OM	Y_GE85	M			
OM	Y_LT15	M			
OM	TOTAL	F			
OM	Y15-29	F			
OM	Y30-49	F			
OM	Y50-64	F			
OM	Y65-84	F			
OM	Y_GE85	F			
OM	Y_LT15	F			
OM	TOTAL	T			
OM	Y15-29	T			
OM	Y30-49	T			
OM	Y50-64	T			
OM	Y65-84	T			
OM	Y_GE85	T			
OM	Y_LT15	T			
QA	TOTAL	M			
QA	Y15-29	M			
QA	Y30-49	M			
QA	Y50-64	M			
QA	Y65-84	M			
QA	Y_GE85	M			
QA	Y_LT15	M			
QA	TOTAL	F			
QA	Y15-29	F			
QA	Y30-49	F			
QA	Y50-64	F			
QA	Y65-84	F			
QA	Y_GE85	F			

Type 2

By designing a Reporting Template which is a more advanced version of simpler transmission table generated by Fusion Registry. By preparing Reporting Template user can design more advanced transmission tables which support:

- Validation schemes – mathematical and logical formulas combining values in fields in transmission table in custom expressions. The result of the expressions can be compared with expected value using logical comparison operators: <, >, >=, <=, <>, =. Expressions can be build using popular mathematical operators like +, -, /, *.

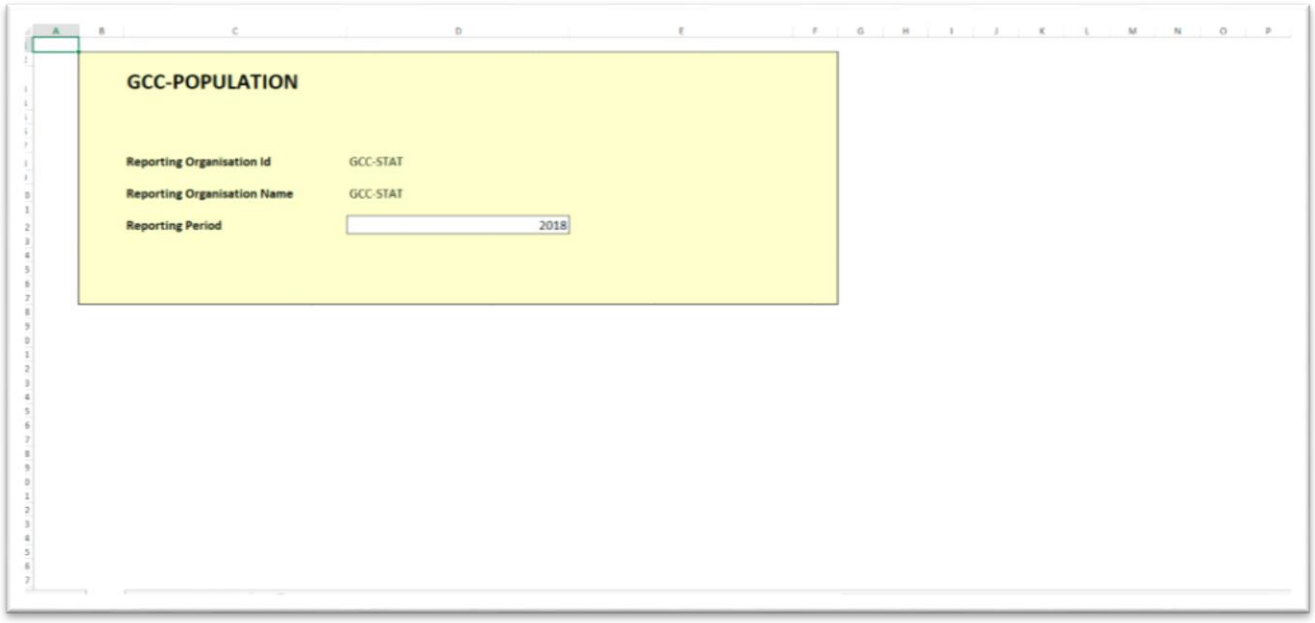


- Reporting constrains – which allow to design and introduce constrains on series level and codelist level.
- Ability to set default values for data values and data attributes.
- Ability to mark data attributes in a cell using colors.
- Ability to exclude attributes from template.
- Ability to fix data attribute.
- Ability to introduce attribute value which is conditional on other reported data.
- Ability to specify only for which dimensions we want to gather data.
- Ability to specify which data dimension will be placed in a row or column.
- Upload Data for multiple data flows.

Both types of transmission tables have advantages. Type 1 is quick to generate and do not require much knowledge about FR.

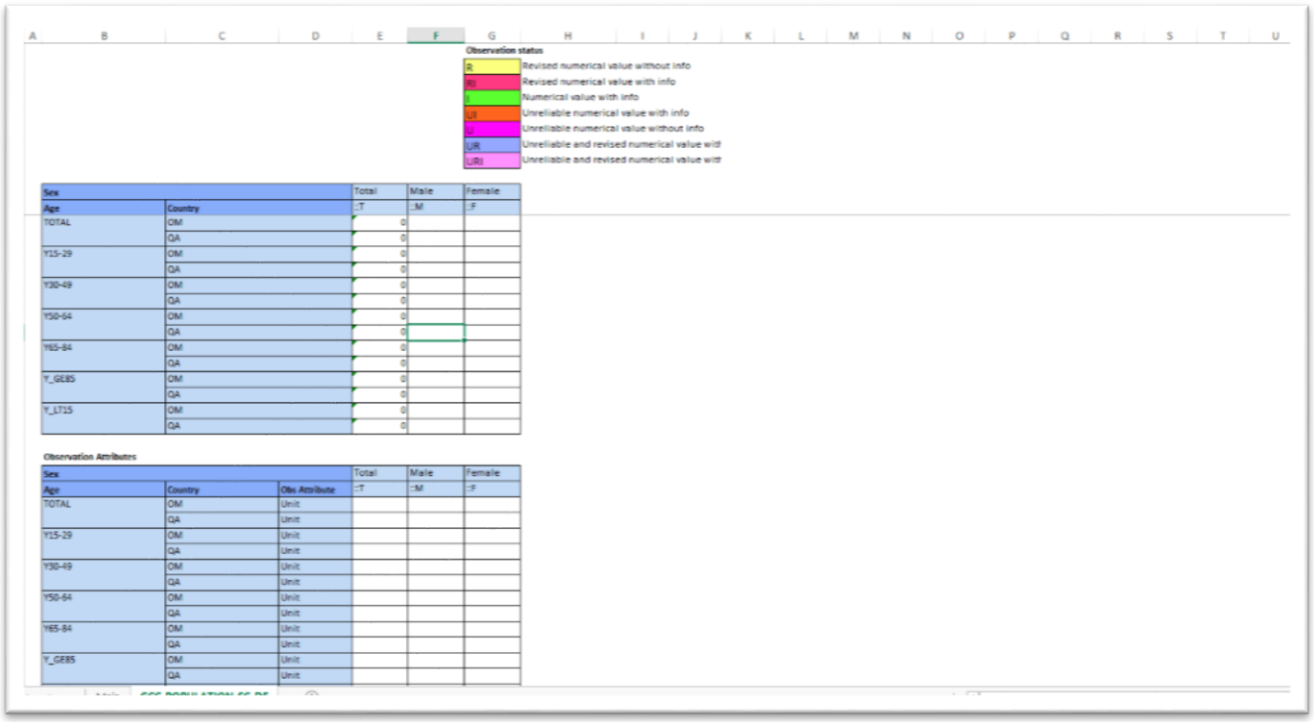
Type 2 is more advanced and trained user must prepare the design which is an object called Reporting Template. Fusion Registry EE delivers out of the box wizard for creating templates.

Example of more advance Reporting Template performing a role of Transmission Tables is shown below.



GCC-POPULATION

Reporting Organisation Id	GCC-STAT
Reporting Organisation Name	GCC-STAT
Reporting Period	2018



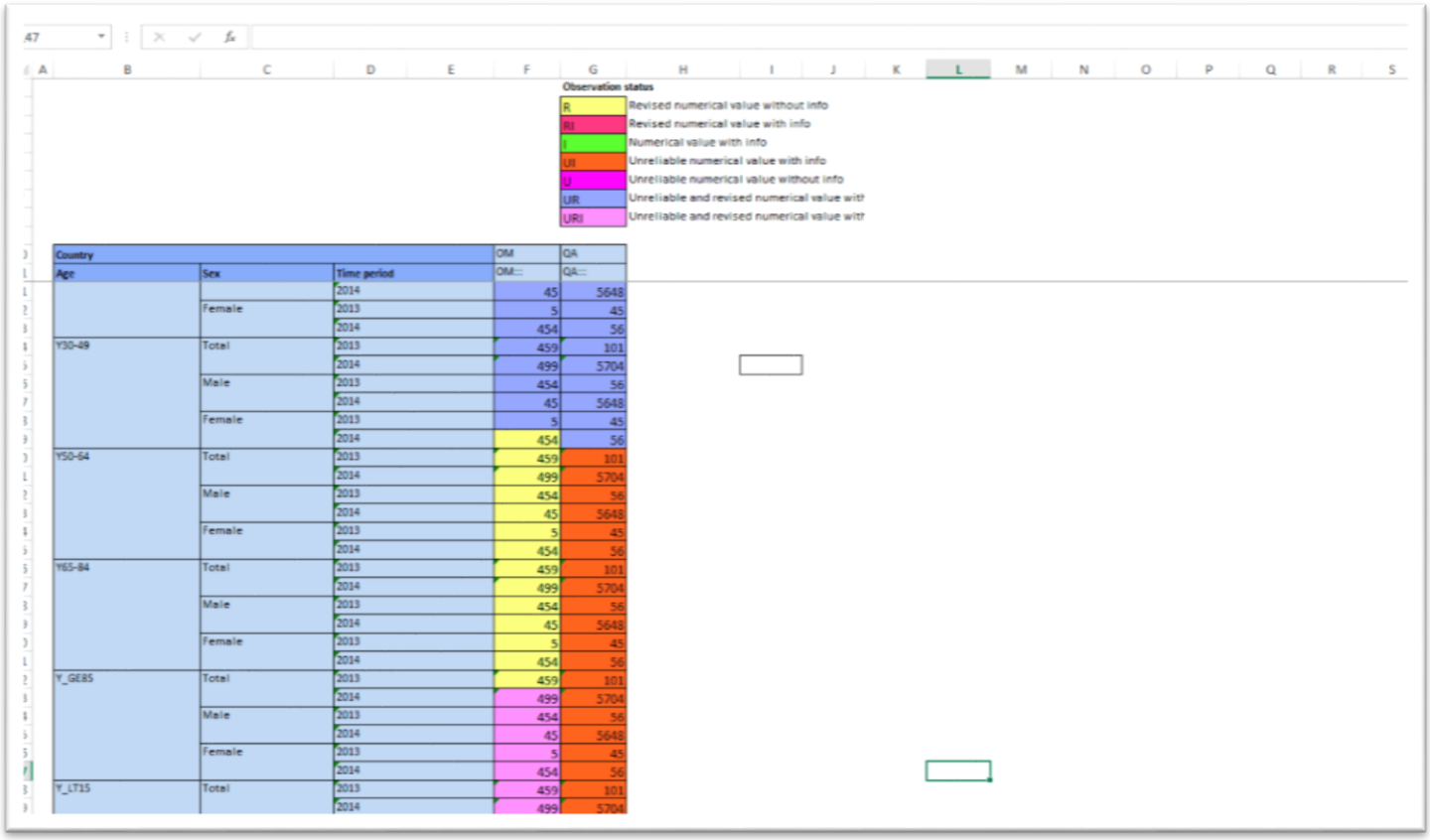
Observation status

R	Revised numerical value without info
RI	Revised numerical value with info
I	Numerical value with info
UI	Unreliable numerical value with info
U	Unreliable numerical value without info
UR	Unreliable and revised numerical value with
URI	Unreliable and revised numerical value with

Sex		Total	Male	Female
Age	Country	:T	:M	:F
TOTAL	OM	0		
	QA	0		
Y15-29	OM	0		
	QA	0		
Y30-49	OM	0		
	QA	0		
Y50-64	OM	0		
	QA	0		
Y65-84	OM	0		
	QA	0		
Y_GE85	OM	0		
	QA	0		
Y_LT15	OM	0		
	QA	0		

Observation Attributes

Sex			Total	Male	Female
Age	Country	Obs Attribute	:T	:M	:F
TOTAL	OM	Unit			
	QA	Unit			
Y15-29	OM	Unit			
	QA	Unit			
Y30-49	OM	Unit			
	QA	Unit			
Y50-64	OM	Unit			
	QA	Unit			
Y65-84	OM	Unit			
	QA	Unit			
Y_GE85	OM	Unit			
	QA	Unit			



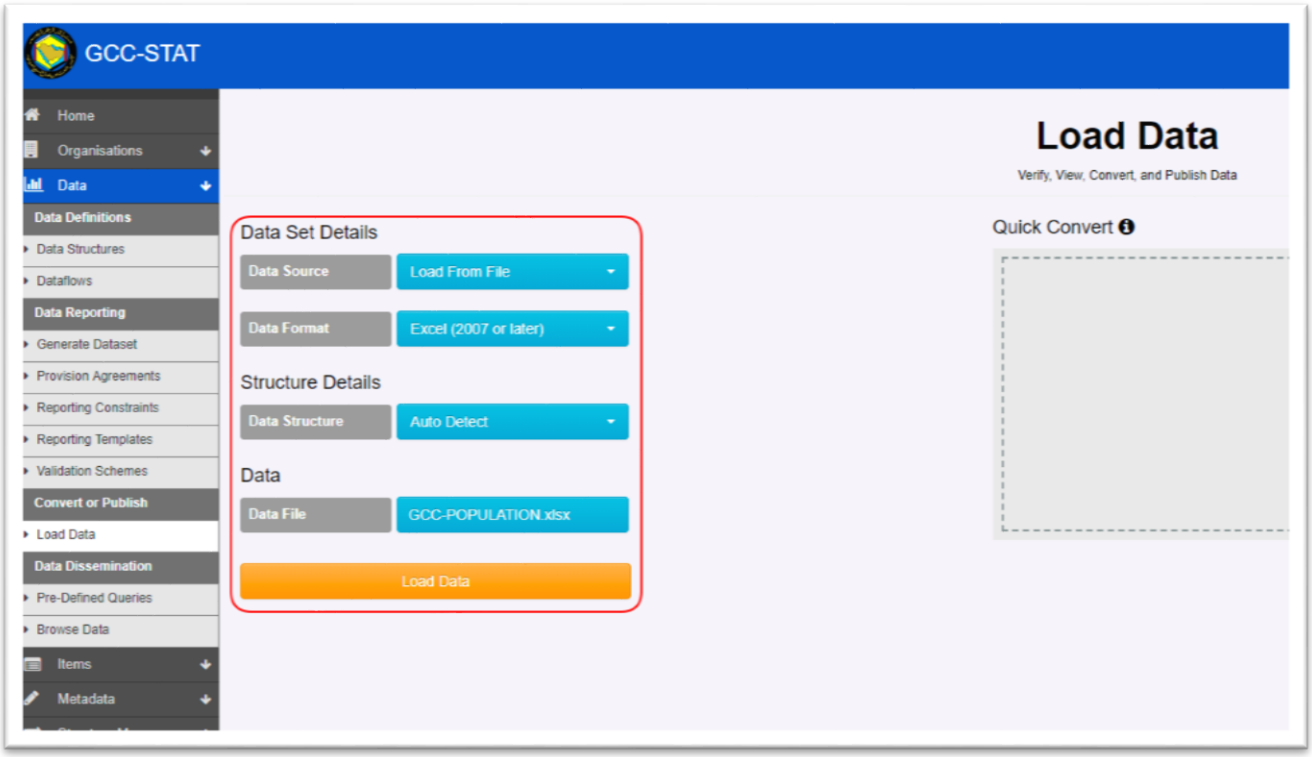
Observation status

R	Revised numerical value without info
RI	Revised numerical value with info
I	Numerical value with info
UI	Unreliable numerical value with info
U	Unreliable numerical value without info
UR	Unreliable and revised numerical value with
URI	Unreliable and revised numerical value with

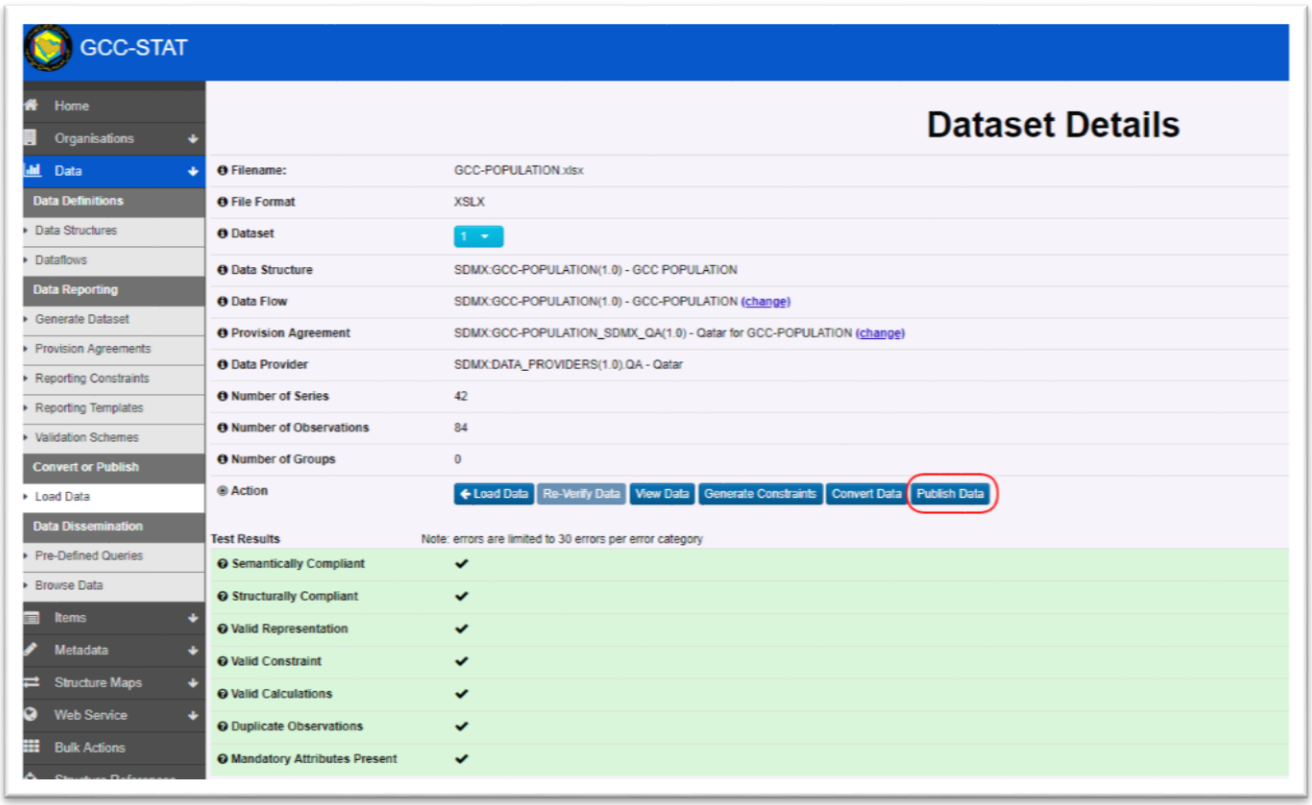
Country			OM	QA
Age	Sex	Time period	OM:::	QA:::
		2014	45	5648
	Female	2013	5	45
		2014	454	56
Y30-49	Total	2013	459	101
		2014	499	5704
	Male	2013	454	56
		2014	45	5648
	Female	2013	5	45
		2014	454	56
Y50-64	Total	2013	459	101
		2014	499	5704
	Male	2013	454	56
		2014	45	5648
	Female	2013	5	45
		2014	454	56
Y65-84	Total	2013	459	101
		2014	499	5704
	Male	2013	454	56
		2014	45	5648
	Female	2013	5	45
		2014	454	56
Y_GE85	Total	2013	459	101
		2014	499	5704
	Male	2013	454	56
		2014	45	5648
	Female	2013	5	45
		2014	454	56
Y_LT15	Total	2013	459	101
		2014	499	5704

Proposed workflow:

4. Privileged users from NSO will have an account in the new system which will allow them to log in to Fusion Registry and download reporting template as an Excel file.
5. Transmission Table can be generate to input data for specific time period e.g. only data for 2019 year. This is most favourable approach since historical data wont clutter Excel file.
6. Reporting template will be domain and data uploader specific. It means that for a specific reporting template data provider will be only required to fill in cells which are available to him.
7. After filling transmission table data provider will be able to log in to Fusion Registry and upload Excel file using GUI.



1. At this point Fusion Registry will validate all constrains and integrity of the data.



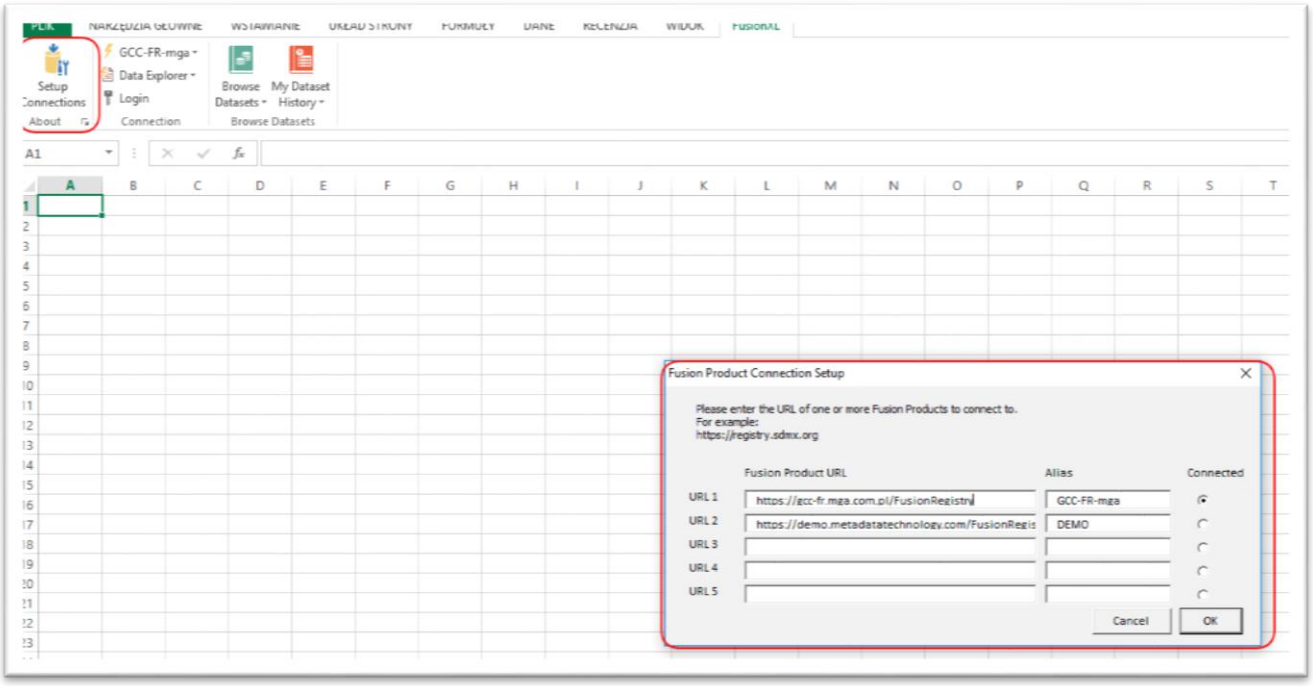
2. After positive data validation file will be uploaded to Fusion Registry by clicking *Publish Data*. Data can be published in one of the two modes: *append mode* and *replace mode*. The *append mode* is most favourable since only the missing and latest data will be uploaded.

12.1.3 Scenario 3 – Using FusionXL plugin for MS Excel

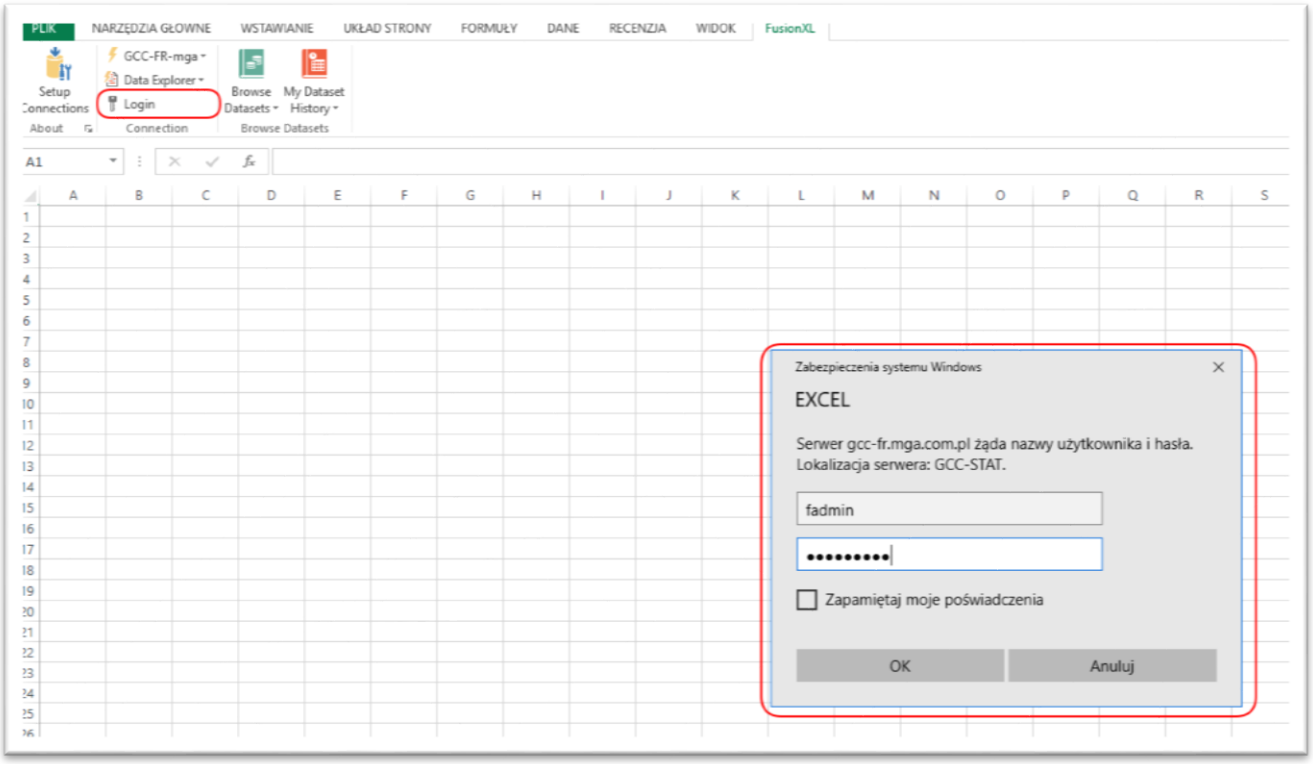
The FusionXL plugin provides a control on the Excel Ribbon for Data Authoring, Data Upload and provides Author Help feature for filling the Excel file with data. It also provides means for Validation, Transformation, and Publishing.

Proposed workflow:

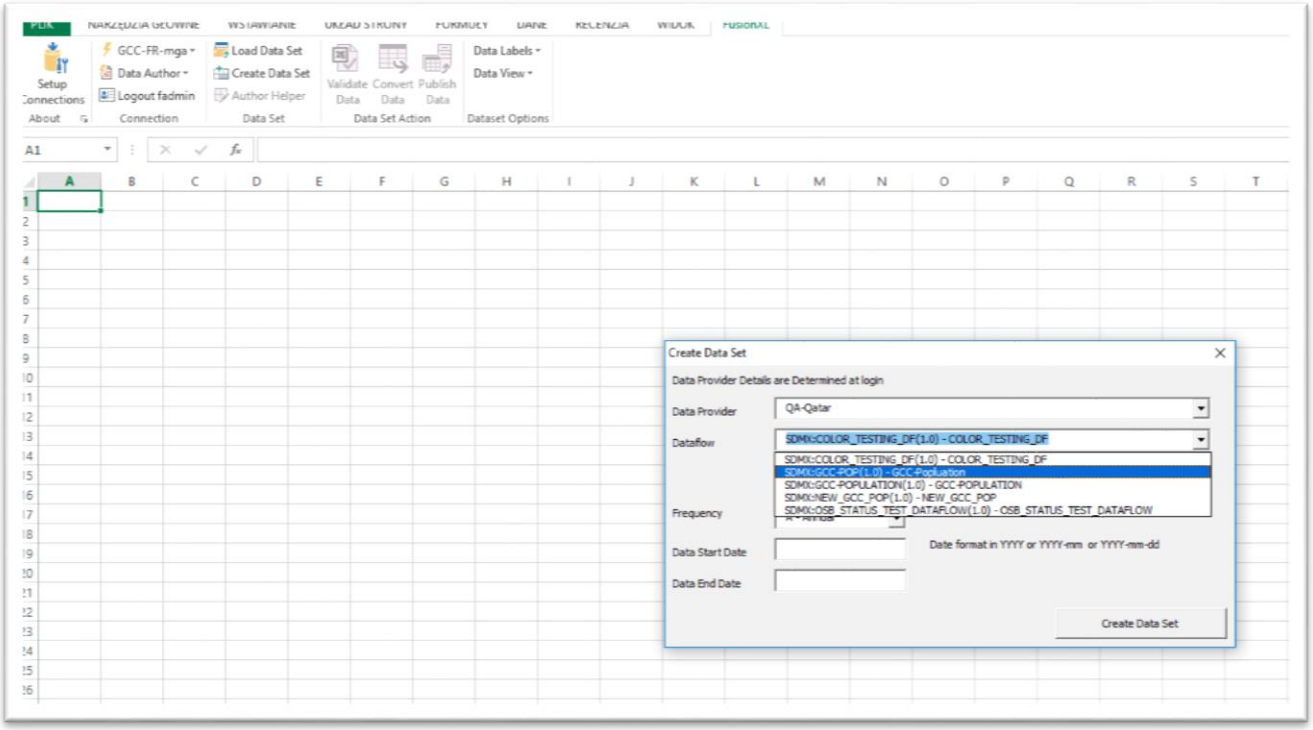
1. User representing external data source (e.g. NSO) logs in to the system by clicking *Setup Connection* in Excel Ribbon. Using a form user will paste link to GCC-Stat's FR and establish a connection.



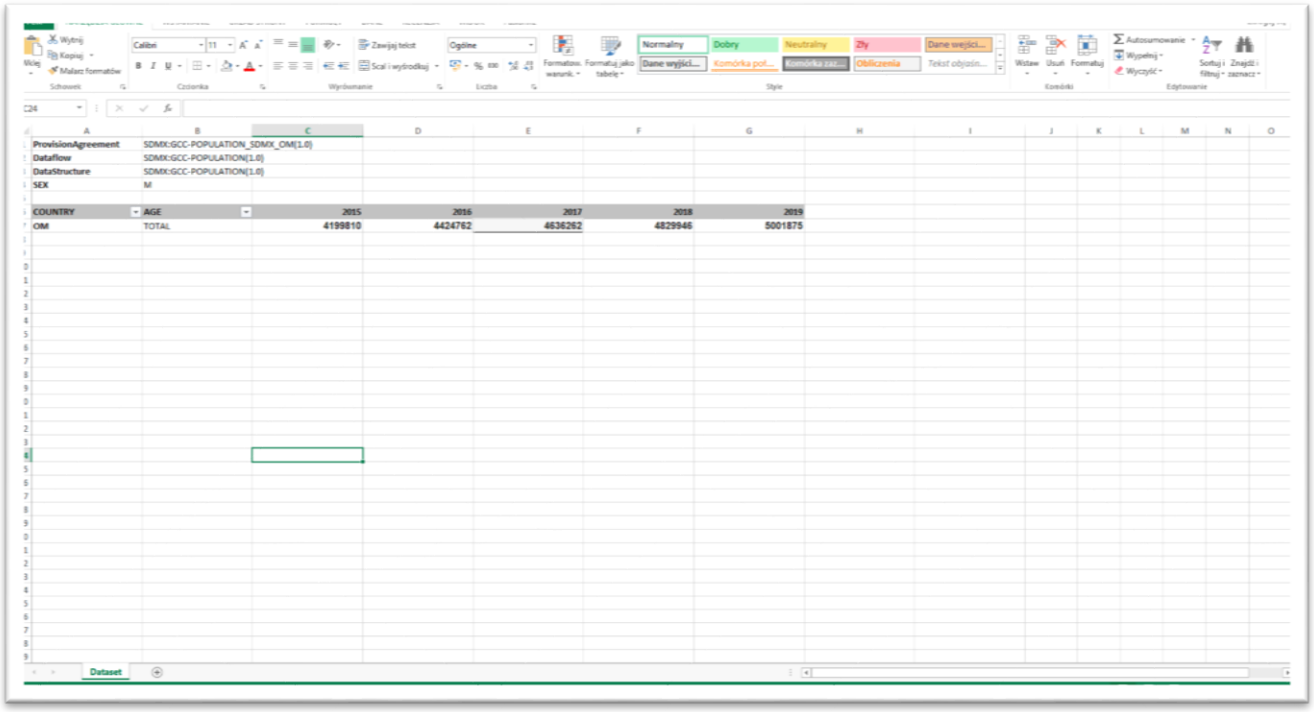
2. User logs in to the system in order to validate and upload data.



3. User must choose a proper Dataflow to which data should be uploaded.



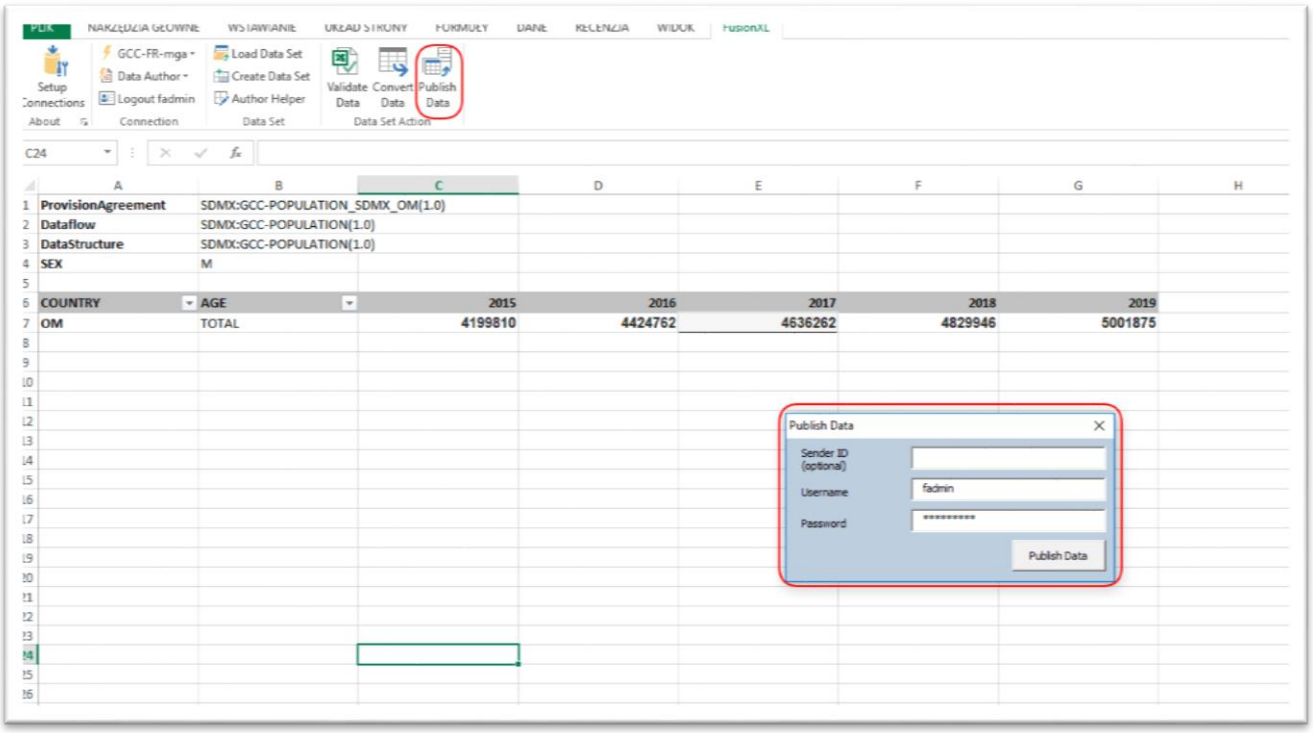
4. User should fill Transmission Table generated by FusionXL with valid statistical data.



ProvisionAgreement	SDMX:GCC-POPULATION_SDMX_OM(1.0)
Dataflow	SDMX:GCC-POPULATION(1.0)
DataStructure	SDMX:GCC-POPULATION(1.0)
SEX	M

COUNTRY	AGE	2015	2016	2017	2018	2019
OM	TOTAL	4199810	4424762	4636262	4829946	5001875

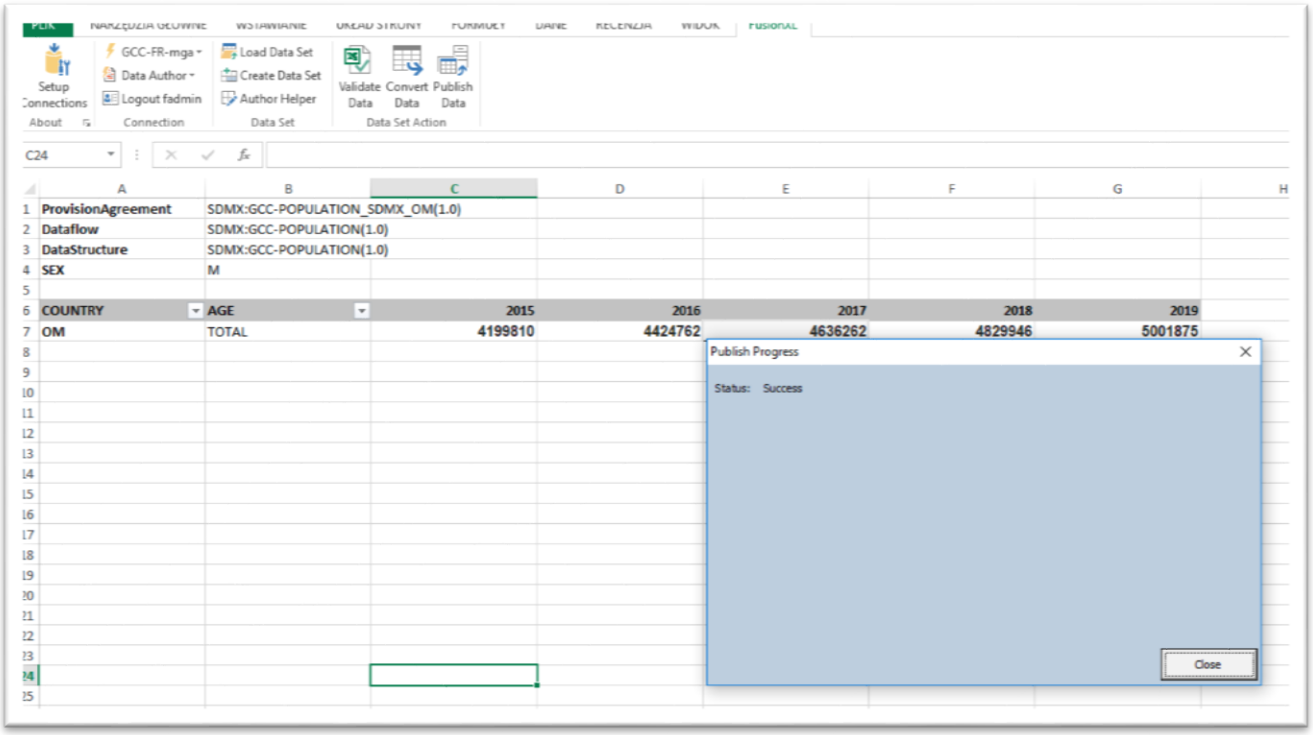
5. When data is filled user can upload data by clicking *Publish Data* and submitting credentials



ProvisionAgreement	SDMX:GCC-POPULATION_SDMX_OM(1.0)
Dataflow	SDMX:GCC-POPULATION(1.0)
DataStructure	SDMX:GCC-POPULATION(1.0)
SEX	M

COUNTRY	AGE	2015	2016	2017	2018	2019
OM	TOTAL	4199810	4424762	4636262	4829946	5001875

6. After data upload Fusion Registry will display a status report



12.1.4 Scenario 4 – Using raw SDMX files

If some data providers have data already in SDMX format System will allow to upload such data in various ways:

- Using GUI after logging in to the system,
- Using Web Service endpoints.

In order to upload data a user has to have an account in the system with proper permissions.

Proposed workflow:

1. User representing external data source (e.g. NSO) logs in to the system with specific account with permission to upload data
2. User can upload data using a feature of choosing a file from disk or url
3. After choosing a file in SDMX format and choosing specific Dataflow data will be validated and validation report will be displayed
4. If data will be validated successfully than data can be published in append or replace mode.

12.1.5 Scenario 5 – Using CSV files

Fusion Registry gives the possibility to upload data in CSV format. Data can be uploaded into the system using FR GUI or Web Service endpoint.

Proposed workflow:

1. User representing external data source (e.g. NSO) logs in to the system with specific account with permission to upload data.

2. User can upload data using a feature of choosing a file from disk or url.
3. After choosing a file in CSV format and choosing specific Dataflow data will be validated and validation report will be displayed.
4. If data will be validated successfully than data can be published in append or replace mode.

12.1.6 Scenario 6 – Via API/web services

Web Service API of Fusion Registry supports upload of data in popular formats: Excel files, SDMX (versions 2.1, 2.0, 1.0 and CSV.

Proposed workflow using Web Service:

1. User representing external data source (e.g. NSO) or external program has to send a POST HTTP request to proper WS endoint */ws/secure/data/publish.*
2. *Accept* parameter of POST method must be set to specific data type: CSV, XLSX, SDMX.
3. WS will validate data and upload data to Fusion Registry data warehouse.

12.2 SDMX ROADMAP

In our future solution and during Stage 5 “Data Migration & Data Cleansing” we propose step-by-step and domain-by-domain regarding introducing DSDs.

SMDX addresses several issues and enhances the exchange of data between the GCC-countries and the overall improving of the quality of official statistics. It supports data processing, analysis and dissemination, particularly of key indicators, such as the 2030 Agenda for Sustainable Development.

By using SDMX, a standardized exchange and dissemination of data and metadata in the GCC-Region could be implemented. For the needs of the implementation, the project is structured in five phases and several steps (or sub-tasks) in each phase.

Phase 1: Preparatory work for the implementation of SDMX

Phase 2: Pilot project and feasibly study in the area of National Accounts (GDP)

Phase 3: Implementation of SDMX of the Pilot project in the whole GCC-Region

Phase 4: Implementation of SDMX in other statistical domains

Phase 5: Maintenance and further development of SDMX

12.2.1 Phase 1: Preparatory work for the implementation of SDMX

Currently, statistics for following fields are available on the data portal platform: Labour, International Trade, Education, National Accounts, Population, Energy, Health, Environmental-water, Marriage and Divorce, Culture, Consumer Price Index (CPI), Monetary.

Re-grouping of several statistics by theme enhances the implementation of SDMX since concepts, definitions and classifications in each statistical domain might be very specific and differ. A theme-oriented grouping facilitates visualization of statistics, eases the access for users and responds better to their needs.

Analysis, Development and documentation of international standards

GCC-Stat together with member countries has to perform the analysis and the state-of-play of the international standards in each domain. Most up to date international standards and guidelines should be adopted.

- Perform a gap analysis for standards in place and the need for improvement and change.
- Overview of international standards used in GCC-region - if needed harmonization of different concepts in order to assure an accurate compilation of the aggregate in the region
- Documentation of current standards
- In a long term planning the GCC- member countries should aim on the implementation of the most update international standards

Analysis, Development and documentation of classifications

GCC-Stat in collaboration with its member country partners should analyse and develop classifications used in the GCC-region.

Stocktaking exercise on following areas: industry, commodity, sector, occupation, harmonized trade system etc.

- Analyse current specifications, classification and codes
- Link regional classifications to international classifications with the use of appropriate bridge tables.
- Documentation of classifications

Analysis, Development and documentation of metadata

The development and documentation of metadata accompanying the data is crucial step:

1. Available metadata is not sufficient and should be elaborated.
2. Preferably, common template for metadata for all NSOs: UAE, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait.
3. Preferably this template should follow some specified standards e.g. ESS Reference metadata, templates for all domains to be presented in a harmonized way.
4. Agreement on content and technical specification.
5. Agreement on exchange of information, consolidation and dissemination.

6. Analysis of methodology and legal basis (if existing); in this analysis all methods and sources should be documented e.g. estimations methods or modelling to derive the aggregates for GCC-region in all statistical domains.
7. Code lists and definitions5, glossaries should be checked upon their coherence with standard code lists and definitions.
8. Additionally differences in codes, definitions, classifications or methodology between the countries should be investigated and documented.
9. Release policy for metadata.

As this exercise is time and resource-intense, it is recommended to start with one statistical domain, which is from relative high importance for the economy of the GCC-region.

Depending on the progress made and the performed analysis, GCC-Stat in collaboration with its member country partners identifies the statistical domain to start with.

Taking into consideration GSS-Stat's requirements and the state of metadata gathering in existing system we agreed on-site during Stage 2 “Business Requirements Gathering” that future metadata will be, for convenience, gathered using **unified template for all dataflows**. This approach will simplify and unify metadata gathering and management. Most of the data in existing GCC-Stat's Data Portal has some metadata but to-be structure (MSD) will cover most of existing gathered metadata and add some fields which will meet existing world-wide standards regarding metadata exchange.

12.2.2 Phase 2: Pilot project and feasibly study in the area of National Accounts (GDP)

For a smooth implementation of SDMX in the GCC-Region, it is recommended to follow a step-by-approach and further on a domain-by-domain approach.

GCC-STAT should prioritize which statistical domain and its main indicators are from low, middle or high importance for the economy of the region and for its policy-makers. The relative importance of the statistical domain in relation to the progress made so far in the development and adoption of new international standards7 is a critical factor.

Statistical domain	**Implementation of new international standards** **yes/no**	**Importance**		
		low	middle	high
National Accounts				x
Health		x		
Water			x	

Agriculture			x	
Foreign trade indicators				x
Culture		x		
Marriage and divorce		x		
Tourism			x	
Employment		x		
Waste statistics		x		
Air statistics		x		
Common market				x
Environmental				x
SDGs				x
CPI			x	
Foreign Trade	yes/no			x
Monetary				x

Pilot and feasibility study in the area of National Accounts

This step is focusing on National Accounts (NA) as GDP is the important main aggregate for the economy and for policy makers. A pilot study in this domain is recommended since the DSD exists for National Accounts. The SDMX site provides a list of the implementation status by domain.

The pilot encompasses the methodological development, alignment and further changes. The NA data collection should be based on 2008 System of National Accounts (2008 SNA) issued by the Statistical Office of the United Nations. In the course of the pilot GCC-Stat has to identify the needs for the adoption of the system from 1993 SNA to 2008 SNA. From the information in the metadata, so far there has not been any transformation of the systems to the new international standards.

Pilot study in the area of National Accounts

- It is recommended to use an existing DSD for a pilot study.
- Perform pilot and feasibility in the area of National Accounts.
- Promoting the use of SDMX among GCC-Stat and its member countries.

12.2.3 Phase 3: Implementation for SDMX of the Pilot project in the whole GCC-Region

As described in phase 2, step 2.3 currently the GCC-region is following the international standards of 1993 SNA.

The following scenarios are proposing a solution for the further implementation of SDMX without any changes in methodology.

- No changes in methodology (1993 SNA), existing DSD for 1993 SNA is used.
- All member of the GCC-region are involved in the SDMX pilot through the Fusion Registry.
- Data and metadata are harmonized through all NSOs thus same data input.
- Use of Fusion Registry from all NSOs in the GCC-region.
- Data sending and data receiving institution need the same architecture.
- Coordination is time-intense and would lead to delays.
- GCC-Stat publishes GDP on the GCC-Stat portal.

Design

The technical specifications for SDMX are available on the official site for the SDMX community. The website provides information on the framework, the information model, on the SDMX/ML schemas as well as on the registry. The Eurostat website provides on the SDMX web services also detailed information.

Additionally, the software tools are available there. Also content-orientated guidelines provide information on each step of the process and the glossary is regularly updated.

This step focusses on the design and on guidelines for the design of the data structure definitions:

- SDMX-compliant data excel files and reference metadata.
- Identify SDMX project standards and templates e.g. depending on the situation in the GCC-region.
- Define the new process.
- Draft DSD.
- Use of SDMX to manage metadata to describe the statistical data sets.
- Matching of information on metadata with the DSDs.
- Define new metadata and codes.
- Define the concept scheme.
- Statistical standards, cross-domain codes.
- Code the concept scheme.
- Define and optimize a DSD matrix, Matching of existing variables and indicators with the DSDs.
- Design, create, modify.

12.2.4 Phase 4: Implementation of SDMX in other statistical domains

SD -availability is given for following domains 12:

- Prioritizing the implementation order of SDMX by the importance for policy and economy.
- Perform a country specific analysis taken into consideration the availability of data.
- Test, review, amend and re-adapt DSDs domain-by-domain.
- The process for implementation should be aligned in all domains.
- Checklist of the implementation of SDMX in each domain to be implemented.

12.2.5 Phase 5: Maintenance and further development of SDMX

For the maintenance and further development and for representing methodological changes in the DSD recommendations are in place.

- Establish and maintain SDMX process.
- Use and maintain registry stored SDMX DSD(s).

12.2.6 GCC-Stat stocktaking exercise

While preparing new SDMX structures some guidelines and international standards should be taken into account. Here are some proposed guidelines to follow:

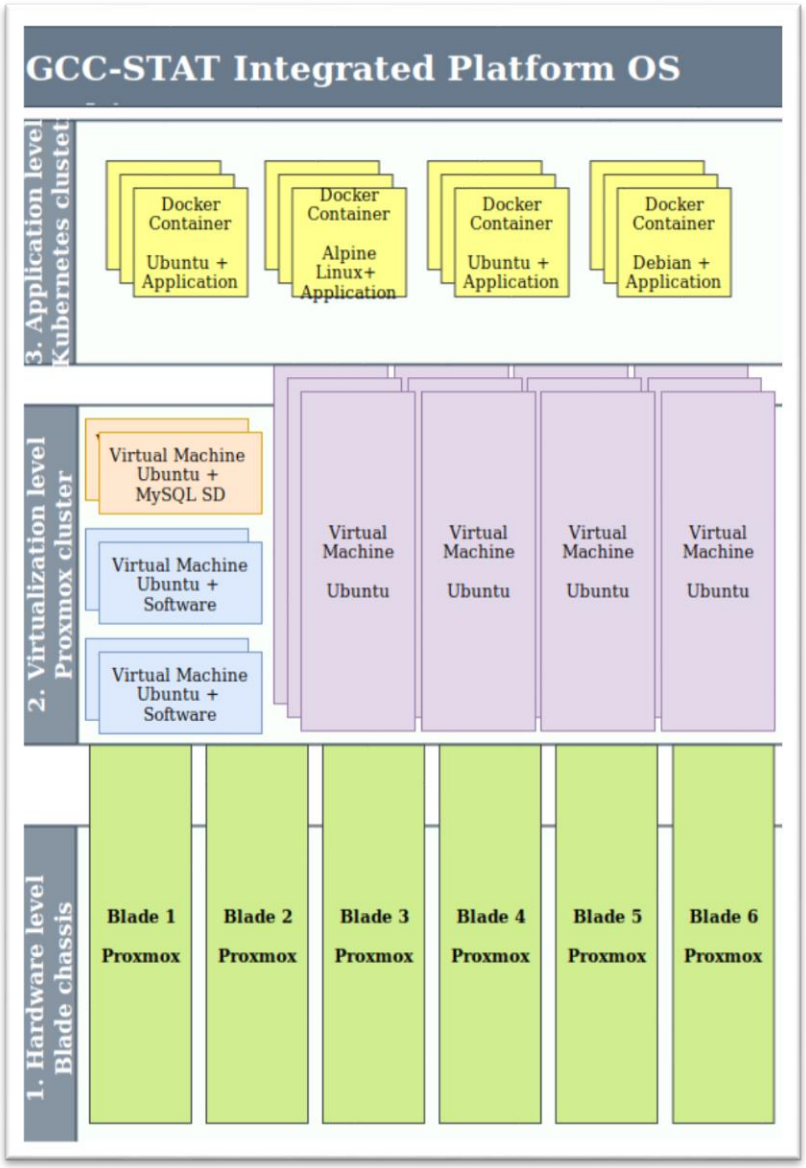
- National accounts - UN System of National Accounts 2008; quarterly national accounts in accordance with the IMF Handbook on Quarterly National Accounts
- Monetary and financial statistics -- IMF Manual on Monetary and Financial Statistics; financial soundness indicators in accordance with IMF Handbook
- Labour market statistics - International Labour Organization standards
- Price statistics - IMF, etc International Guidelines on Consumer Price Index; IMF, etc International Guidelines on Producer Price Indexes
- Production index (indices) - in accordance with GCC standards (to be developed)
- Trade statistics - UN International Recommendations on Merchandise Trade Statistics
- 2020 population census - in accordance with GCC standards (to be developed)
- Millennium Development Goal indicators - as per UN recommendations
- UNDP Human Development Report indicators - as per UNDP recommendations
- Progress indicators - in accordance with GCC standards (to be developed)
- Environment statistics - development in accordance with the UN Framework for the Development of Environment Statistics and the UN System of Integrated Environmental and Economic Accounts (SEEA)
- Energy statistics - in accordance with GCC standards (to be developed)
- Administrative datasets - in accordance with relevant international standards and GCC standards (to be developed). The UN (Draft) Guidelines on Integrated Economic Statistics may be useful.

13 PROPOSED OS ARCHITECTURE

Technology stack in MARSA project will be composed of multiple OS solutions based on virtualization level.

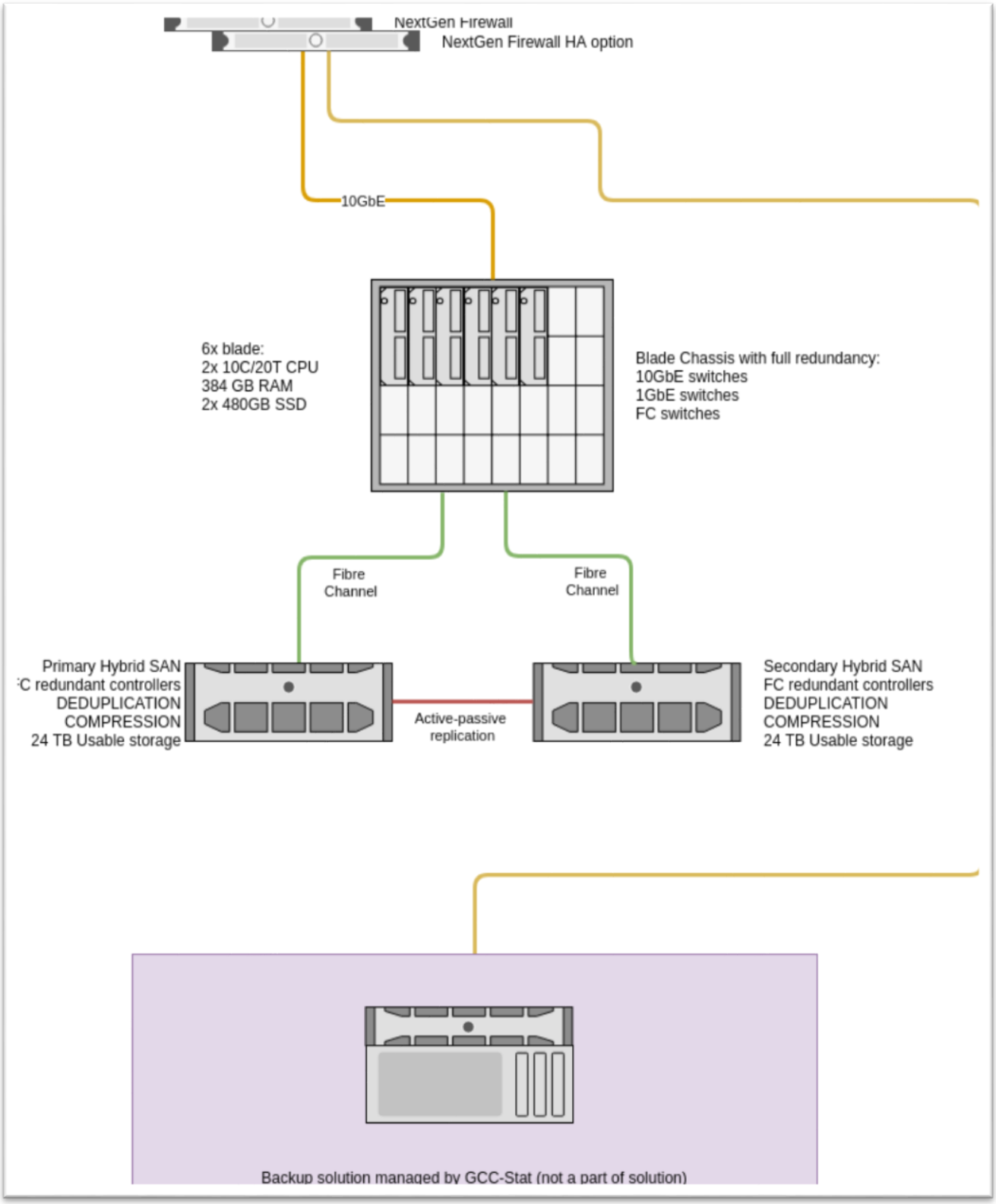
At the hardware level Proxmox is used an OS. In Proxmox cluster each virtual machine will use Ubuntu OS. At the application level Docker Container will be used along with Ubuntu, Alpine and Debian Operating system. Which OS at this level will be chosen (Ubuntu, Alpine or Debian) is based on specific library requirements or OS of a base docker container image selected for specific needs and applications.

Each layer and included OS versions are specified in the diagram below.



14 PROPOSED HARDWARE ARCHITECTURE

Below is the proposed hardware architecture for GCC-Stat Future System. Hardware devices will be delivered with all required parts, including powercords, cables, SFP/SFP+ modules, licenses, data storage devices and other components needed to assemble and deploy system described above. Replication between primary and secondary SAN will happen in active-passive maner and will require manual administrator's action to switch from one to another replica.


NextGen Firewall
NextGen Firewall HA option
10GbE
6x blade:
2x 10C/20T CPU
384 GB RAM
2x 480GB SSD
Blade Chassis with full redundancy:
10GbE switches
1GbE switches
FC switches
Fibre Channel
Fibre Channel
Primary Hybrid SAN
FC redundant controllers
DEDUPLICATION
COMPRESSION
24 TB Usable storage
Active-passive replication
Secondary Hybrid SAN
FC redundant controllers
DEDUPLICATION
COMPRESSION
24 TB Usable storage
Backup solution managed by GCC-Stat (not a part of solution)

14.1 SPECIFIC HARDWARE ARCHITECTURE DETAILS.

Hardware	Specification	Quantity
Blade chassis	• Blade chassis compatible with all servers below • Network interfaces redundancy • Storage interfaces redundancy • Power supply redundancy • Management interface redundancy	1
Virtualization Platform Manager	• 2xCPU 10C/20T • 384GB RAM DDR4 • 2xFC HBA • 2x10GbE ports (SFP+) • 2x1GbE ports (RJ45) • 1GbE IPMI/Remote Management Module • 2x240GB+ SSDs • Hardware RAID0/1 controller	1
Virtualization hosts - production servers	• 2xCPU 10C/20T • 384GB RAM DDR4 • 2xFC HBA • 2x10GbE ports (SFP+) • 2x1GbE ports (RJ45) • 1GbE IPMI/Remote Management Module • 2x120GB+ SSDs • Hardware RAID0/1 controller	3
Virtualization hosts - staging servers	• 2xCPU 10C/20T • 384GB RAM DDR4 • 2xFC HBA • 2x10GbE ports (SFP+) • 2x1GbE ports (RJ45) • 1GbE IPMI/Remote Management Module • 2x120GB+ SSDs • Hardware RAID0/1 controller	2
10GbE switches	10GbE switches will be provided as an internal part of blade chassis	2
Primary SAN	• 24TB of hybrid storage (SSD+SAS Tiering or SSD cache) • 2 independent FC controllers • At least 4xFC ports on each controller • Scalable to at least 500k IOPS • Debian/Ubuntu/Proxmox support • Replication license • Compression and deduplication license optional	1
Secondary SAN	• 24TB of hybrid storage (SSD+SAS Tiering or SSD cache) • 2 independent FC controllers	1

	• At least 4xFC ports on each controller • Scalable to at least 500k IOPS • Debian/Ubuntu/Proxmox support • Replication license • Compression and deduplication license optional	
FC switches	FC switches will be provided as an internal part of blade chassis	2
Next Generation Firewall	• Hardware redundancy • 4x 2,5GbE SFP interfaces • 4x 2,5GbE RJ45 interfaces • 12x GbE RJ45 interfaces • 2USB interfaces • 1x Firewall console management interface • 1x GbE management interface • VLANs support • Link Aggregation • 600Mbps throughput (with antivirus, antispyware, IPS, application control enabled) • VPN throughput 1.5Gbps - using AES encryption, without enabled UTM services, RFC 2544 compliant • Non limited hosts in secured network • Load balancing and failover features • IPS system integrated • SFP modules included	1

15 LIST OF APPENDICES

8. Appendix no 1 – StatStart specification.