TWINNING CONTRACT

JO 21 ENI ST 01 22

Strengthening the capacity of Jordan's Department of Statistics in terms of compilation, analysis and reporting of statistical data in line with International and European best practices

MISSION REPORT

on

Component 1
Roadmap for the development of an integrated administrative data system in Jordan with pilots on Statistical Business registers (SBR) and population statistics

Activity: 1.6.5:
Data Security, confidentiality and statistical disclosure control (SDC)

Mission carried out by
Ms. Annu Cabrera
Ms. Cecilia Catalano

Amman, Jordan
20-23 January 2025

Version: Final

دائرة الإحصاءات العامة
Department of Statistics
STATISTICS DENMARK
Statistisches Bundesamt
Istat
STATISTICS LITHUANIA
STATE DATA AGENCY
Statistics Finland

Authors' names, addresses, e-mails

Ms. Annu Cabrera
Senior Statistician
Statistics Finland
Työpajankatu 13
00580 Helsinki
Finland
Email: annu.cabrera@stat.fi

Ms. Cecilia Catalano
Head of the IT Security Unit at the Division for IT Infrastructure Management
The Italian National Institute of Statistics (ISTAT)
Via C. Balbo, 16
00184 Roma
Italy
Email: cecilia.catalano@istat.it

Table of contents

List of Abbreviations

- BC – Beneficiary Country
- DoS – Department of Statistics
- RTA – Resident Twinning Advisor
- STE – Short-term Expert
- SDC – Statistical Disclosure Control
- NDC – National Data Centre

Executive Summary

During the mission from January 20-24, 2025, Short-term Experts (STE) met with representatives from the Department of Statistics (DoS) and the National Data Center (NDC) to discuss key topics related to data security, confidentiality, and statistical disclosure control (SDC). The mission aimed to provide both theoretical insights and practical guidance on these areas as DoS prepares to use register data more extensively and improve public access to data. Given the increased need for diverse data services, ensuring data security and statistical data confidentiality is critical for building trust among data providers.

Regarding data security, particularly the role of cryptography in ensuring confidentiality, integrity, and authentication of data was emphasized. Various cryptographic concepts were introduced, such as symmetric and asymmetric cryptography, digital signatures, and hash functions. Also, security measures to be applied at the different stages of data handling were presented, with a focus on cryptographic techniques for pseudonymisation of personal data.

The second part of the mission focused on the principles and practices of Statistical Disclosure Control (SDC). The main goals and stages of SDC were outlined, stressing its importance in protecting sensitive information while making data available for public use. The relationship between SDC, data protection, and security was discussed, along with methods for assessing disclosure risks for tabular data and microdata. Practical exercises allowed participants to apply these methods, reinforcing the theoretical concepts covered during the sessions.

An essential part of the discussions revolved around organizational roles and responsibilities in implementing SDC. It was emphasized that successful SDC is not the responsibility of a single department but requires collaboration across the organization. Key stakeholders, including management, statisticians, IT professionals, and methodology experts, must work together to ensure the proper handling of confidential data. The importance of clear documentation of confidentiality policies and regular staff training was highlighted as part of best practices for maintaining strong SDC processes.

Finally, the software τ-ARGUS was introduced to the participants, demonstrating how it can be used to apply SDC methods to tabular data. Participants had the opportunity to use the tool in hands-on exercises, which helped them gain practical experience with the software's features for protecting tabular data.

1. General comments

This mission report was prepared within the Twinning Project "*Strengthening the capacity of Jordan's Department of Statistics in terms of compilation, analysis and reporting of statistical data in line with International and European best practices".* This Mission related to the following Mandatory Results (MR) and indicators:

"MR 1.6: MR 1.6 A governance roadmap for decisions makers data access and use of a National Data Center (NDC) for model based analyses in Jordan prepared

- **Indicator 1.6.A:** Best international practices for NDC's outlined
- **Indicator 1.6.B:** Stakeholder awareness raised and needs from stakeholder mapped
- **Indicator 1.6.C:** Organizational structure and required skills for staffing the National Data Center outlined.
- **Indicator 1.6.D:** Requirements and standards for data and metadata layer outlined

The purpose of this activity was to provide the participants with an overview of principles and means of security measures and statistical confidentiality, and Statistical Disclosure Control (SDC) theory and methods related to tabular data protection and microdata protection, as well as the respective software. During the Mission the following topics were introduced, demonstrated and discussed.

- **Data Security**
  - Cyber security and infrastructure protection
  - Network security and authentication
  - Security at the different stages of data handling
  - Cryptography
  - Data Protection using cryptography
- **Confidentiality and SDC**
  - Main principles and concepts of confidentiality and statistical disclosure control (SDC)
  - Examples of confidentiality policies in MS
  - Methods of tabular data protection
  - Methods of microdata protection
  - Software for tabular data protection
  - Practical exercises

The consultants would like to express their sincere thanks to all officials and individuals met for the kind support and valuable information which they received during the online sessions which highly facilitated their work. The views and observations stated in this report are those of the consultants and do not necessarily correspond to the views of EU, Statistics Finland or ISTAT.

2. Assessment and results

During the mission, the STEs met with representatives from the Department of Statistics (DoS) and the National Data Center (NDC) over a four-day period from January 20-24, 2025. The meetings were primarily centred on pre-prepared presentations by the STEs, which covered the topics outlined in the Terms of Reference (ToR). These presentations included theoretical framework, practical examples and organisational aspect regarding data security, data confidentiality and statistical disclosure control (SDC). The participants actively contributed to the discussions, asking questions to the STEs and engaging in discussions among themselves.

At the start of the mission the current status for security and SDC control in DoS was explained by the RTA Charlotte Nielsen. The importance of the mission was underscored by the fact that DoS will increasingly use register data in the future and is promoting improved access to data for decision-makers and the general public. The need for less aggregated statistical information and diverse data services for users is increasing. In the new organisation of DoS the NDC has recently started working under the Director General of DoS. It is crucial that register owners (data providers) can trust that DoS handles their data with care and in compliance with the confidentiality requirements set by statistical law. Therefore, data security and SDC are key issues.

In agreement with the representatives, the order of the topics on the provisional agenda was changed.

DATA SECURITY

The topic of data security was introduced, starting with the goals of information security: confidentiality, integrity, availability, authentication and non-repudiation. Then, the main concepts of cryptography were presented, which are the basis of the most important technical security measures for data security. In particular, the two types of cryptography, symmetric and asymmetric, and the concepts of digital signatures, digital certificates, and cryptographic hash functions were described and demonstrated using a web tool.

With the knowledge of how cryptography works, it was possible to discuss a list of security measures, some of which involve the use of cryptographic techniques. During the presentation, it was emphasized how data security requirements may change depending on the different stages of data handling (collection, storage, processing, dissemination), and consequently, the security measures to be applied. Then, a list of some of these security measures was presented, with a focus on pseudonymization and cryptographic techniques used to pseudonymise personal data.

The importance of cryptography was also highlighted, analyzing the security measures appropriate for the collection stage, where cryptography is used to ensure confidentiality and integrity during the transmission of personal data. The HTTPS protocol was described using the DoS website as an example.

CONFIDENTIALITY AND SDC

Main principles of SDC, disclosure risk assessment and methods

On the first day, after the general introduction by the RTA, confidentiality and SDC were discussed. The relationship between the concepts of SDC, data protection, and data security was briefly presented, and the goal of SDC along with its five key stages were discussed. Finally, the concept of statistical disclosure and the methods for assessing it (both in general and for tabular data and microdata) were introduced.

On the afternoon of the second day, the most popular SDC methods for tabular data and microdata were presented. The methods were discussed on a theoretical level. The concept of anonymisation was also briefly introduced.

On the last day of the mission, participants were doing exercises in small groups, the purpose of which was to summarize the theory covered regarding disclosure risk assessment and SDC methods.

Roles and responsibilities within the organisation, and best practices

Already on the first day, the participants initiated an important discussion about the roles and responsibilities within the organisation related to the implementation of SDC. This discussion was continued on the third day of the mission. Statistics Finland's guidelines on the protection of aggregated data were presented. It was highlighted in the presentation and the discussion that followed that SDC cannot be a responsibility of only one group or department within the statistical office. To have successful SDC practices, several members of the organisation needs to be involved in some way: management, statisticians responsible for production and dissemination, methodology experts, IT professionals, and lawyers. The confidentiality policy (including responsibilities) and guidelines should be well-documented and at least partially public. Documenting SDC practices and keeping the documentation up to date is one of the best practices. Regular staff training and skill maintenance are also important.

SDC Tools

A demonstration of τ-ARGUS took place on the third day of the mission. Basic features of the software were presented using a fictional dataset. On the last day of the mission, the participants from the BC had the opportunity to try out the software by themselves with a set of exercises.

Output checking

Output checking issues were not addressed during the mission, as it was decided to prioritise discussions on organisational aspects and the practical application of SDC. As a result, some of the more theory-heavy content was excluded from the agenda in favor of dedicating more time to exploring the roles and responsibilities within the organisation, as well as hands-on SDC implementation practices. Output checking will be discussed in later stage of the twinning project.

3. Conclusions and recommendations

Action	Deadline	Responsible person
Ensure clear roles and responsibilities regarding SDC within the organization		
Draft a Confidentiality Policy		
Train staff on SDC procedures		
Analyse and publish the Information Security Policy, and have it endorsed by management		
Implement pseudonymisation		
Implement encryption		

Annex 1. Terms of Reference

Terms of Reference

EU Twinning Project JO 21 ENI ST 01 22

Component 1:
Roadmap for the development of an integrated administrative data system in Jordan with pilots on Statistical Business registers (SBR) and population statistics

Activity 1.6.5:
Data Security, Confidentiality and statistical disclosure control (SDC)

Dates: 20 – 23 January 2025

Content

List of abbreviations

BC Beneficiary Country
DoS Department of Statistics
ESS European Statistical System
MS Member State
RTA Resident Twinning Advisor
SDC Statistical Disclosure Control
SDMX Statistical Data and Metadata eXchange
STE Short Term Expert
ToR Term of References

1. Objective and Mandatory Results for the component

1.1 Objective of the component from the Fiche

To prepare a roadmap for the development of an integrated administrative data system for Jordan, and conduct pilot projects on creating an SBR and strengthening population statistics.

1.2 Mandatory results and indicators for achievement for each sub-component

Component 1 is sub-divided in five sub-components each with a Mandatory Results (MR) and two to four indicators of achievements associated with the sub-component (Table 1)

Table 1: *Mandatory results and indicators for achievement (IA) for each sub-components within Component 1: an integrated administrative data system for Jordan*

MR from the Twinning Fiche	**Indicator**
MR 1.1: Compile an inventory of administrative data on business and households and an indicative roadmap for inclusion in an integrated system	● **Indicator 1.1.A:** Inventory of administrative data variables and detailed supporting metadata prepared; ● **Indicator 1.1.B:** Tentative roadmap prepared for inclusion of data in integrated system;
MR 1.2: Pilot project to develop strategy for integrating administrative data sources for the purposes of creating an SBR	● **Indicator 1.2.A:** Administrative data sources identified and assessed and plan developed for integrating these with Census of Establishments (CoE) information in an SBR; ● **Indicator 1.2.B:** Documentation prepared on database structures and compliance with statistical standards, classifications (e.g. ISIC, Rev 4) etc. and use of common identifiers etc.; ● **Indicator 1.2.C:** Explore how SBS can benefit other statistical domains in the DoS;
MR 1.3: Undertake pilot project on how administrative records can be used to strengthen population statistics and inform framing of the 2025 CoP questionnaire	● **Indicator 1.3.A:** Inventory of data sources prepared and assessed and action plan for incorporation in DoS statistics developed; ● **Indicator 1.3.B:** Methodology developed for incorporating administrative data ● **Indicator 1.3.C:** Documentation prepared on statistical standards, classifications, identifiers, mapping etc.; ● **Indicator 1.3.D:** Review of how administrative data can assist in developing the COP 2025 questionnaires
MR 1.4: Develop strategy for ensuring flows of data between the DoS and counterpart institutions are established on an ongoing basis for pilot projects above	● **Indicator 1.4.A:** Review of technical infrastructure for data transfers and action plan prepared based on 1.1 and 1.2 above; ● **Indicator 1.4.B:** MoUs agreed between DoS and partner institutions; ● **Indicator 1.4.C:** Agreement on statistical standards, classifications, identifiers etc. between DoS and partner institutions; ● **Indicator 1.4.D:** Review of data flows within the DoS;
MR 1.5: Implement training programs and develop training materials both within DoS and with partner institutions on the use of administrative records for	● **Indicator 1.5.A:** Detailed documentation on statistical standards, classifications, identifiers etc. developed; ● **Indicator 1.5.B:** Comprehensive training programs and workshops provided for DoS staff and partner institutions; ● **Indicator 1.5.C:** DoS leadership role in ensuring proper statistical standards applied across the Jordanian statistical system reinforced;

statistical purposes, based on pilot projects above	
MR 1.6: A governance roadmap for decisions makers data access outlined	• **Indicator 1.6.A:** Best international practices for NDC's outlined • **Indicator 1.6.B:** Stakeholder awareness raised and needs from stakeholder mapped; • **Indicator 1.6.C:** Organizational structure and required skills for staffing the National Data Center outlined; • **Indicator 1.6.D:** Requirements and standards for data and metadata layer outlined;

2. Purpose of the activity

The purpose of this activity is to provide the participants with an overview of priciples of statistical confidentiality, Statistical disclosure theory and methods related to tabular data protection and microdata protection, as well as the respective software. Participants will be asked to bring case studies that will be discussed in the training.

- **Security**
  - Cyber security
  - Infrastructure protection
  - Network security /authentication
  - Data protection
  - Encryption /cryptography
  - Practical measure for Encryption /cryptography

- **Confidentiality and SDC**
  - Main principles for confidentiality;
  - Examples of confidentiality policies in MS;
  - Main theoretical principles of statistical disclosure control (SDC) concerning tabular data and microdata protection and output checking;
  - Methods of tabular data protection;
  - Methods of microdata protection;
  - Output checking issues;
  - Software SDC tabular data and microdata protection;
  - Practical case studies;

3. Expected output of the activity

- Activity report;
- Common understanding of measures to ensure security obtained;
- Better understanding obtained of the theory, methods and software used in statistical disclosure for tabular data and microdata protection;
- Practical training in SDC;

4. Participants

4.1 MS Short Term Experts (STE's)

- **Ms. Annu Cabrera,** Researcher in statistical disclosure control (SDC) methods, Statistics Finland (FI). Ms. Annu Cabrera have worked at Statistics Finland as Senior Statistician for more than a decade, specializing in Statistical Disclosure Control (SDC). Her role focuses on ensuring data confidentiality, and supporting the statistical production process and researcher services in addressing issues and challenges related to SDC. Ms. Annu Cabrera also have experience as a trainer, having conducted staff trainings on SDC at Statistics Finland and co-led two ESTP courses on SDC alongside two other trainers over multiple years. Email: annu.cabrera@stat.fi

- **Ms. Cecilia Catalano**, in charge of IT Security Management at the Division for IT Infrastructure Management, The Italian National Institute of Statistics (Istat). Ms. Cecilia Catalano has more than 25 years of working in the field of IT security; in depth knowledge and understanding of network security and authentication and authorization infrastructure; proven experience in information security governance and in design and implementation of IT security, communication and collaboration systems; teaching experience in IT security, computer science and programming languages. Email: cecilia.catalano@istat.it

COMPONENT LEADER

- Mr. Jaffar Ababneh, Director of Data Management Directorate

Jafaar.Ababneh@DOS.GOV.JO

- Mr. Nabil Abu Sall, Director of the Interactive Data Center in DoS
  Nabil.Abusall@dos.gov.jo

More staff members from DoS is in the process of members allocated based on input from Mr. Director of the Interactive Data Center in DoS and Dr. Ali Ashebli, Operations Assistant of DG, DoS:

- *National Data Center team – a DoS is expected to be established medio November 2024*

- *Data Management team*

- *Members from the Statistical Units*

- *IT Dissemination Unit - Participants will be selected by Ms. Ahlam Al-Rosan, Director of Electronic Transformation and Information Technology*

- *The Quality Unit*

4.3 Participants for opening and closing sessions:

- HE General Director Dr. Haidar Fraihat
dg.of.dos@DOS.GOV.JO
- Dr. Ali Al-Shibli, Operational Assistant to the Director General
Ali.Shebli@DOS.GOV.JO
- Dr. Tayseer Muqdadi, Technical Assistant to the Director General
Tayseer.Megdady@DOS.GOV.JO
- Dr. Fozan Alhurout, Administrative and Financial Affairs Assistant to the Director General
Fozan.Hrout@DOS.GOV.JO
- Ms. Ahlam Al Rosan, Director of Electronic of Transformation and Information Technology Ahlam.AlRosan@DOS.GOV.JO

4.4 The Twinning Team

- Eng. Mr. Tamer AlRosan, Head of plant Statistics Division Jordan (RTA Counterpart), Tamer.AlRosan@DOS.GOV.JO
- Dr. Charlotte Nielsen (RTA), cln@dst.dk
- Ms. Zaina Amireh (Language Assistant), zainaamireh3@gmail.com
- Ms. Thekra Altorah (RTA Assistant), thekra.twinning.rtaa@gmail.com

5. Overall agenda

- **Day 1:**
  - **BC:** Welcome and introduction
  - **BC:** Current status for security in DoS
  - **MS:** Introduction to security by Ms. Cecilia Catalano
    - Cyber security
    - Infrastructure protection
    - Network security /authentication
    - Data protection
    - Encryption /cryptography

- **Day 2:**
  - **MS:** Introduction to the main principles for confidentiality by Ms. Annu Cabrera
    - Primary disclosure (The microdata rule; The threshold rule, The dominance rule, Group disclosure rule
    - Secondary disclosure:

- **Day 3:**
  - **MS:** Practical examples and demonstrations on:
    - Methods of tabular data protection
    - Methods of microdata protection
    - Methods for other data output type e.g. graphs, models etc
    - Output checking;

- **Day 4:**
  - **MS:** Exercises for SDC – Group I
  - **MS:** Software for Cryptography
  - **BC and MS**: Follow up and conclusion

6. Background information

Current status for Security policy and confidentiality policy in Jordan
In January 2024 STE's from Italy and Lithuania worked jointly with DoS on drafting an updated Security policy for DoS. The main observation and conclusion by the STE's is provided in the Mission Report from the Mission (Annex A) and the drafted policy in annexed to this ToR (Annex B). The status in terms of the drafted Security policy is that no update has been made on the policy since January 2024 due to other prioritized obligations in DoS and the policy has thus not been adopted in DoS. Currently no official confidentially policy exist in DoS besides what is stated in the General Statistics Law no. 12 (2012) where Article 11 state: "*All individual information and data submitted to the Department and related to any survey or census shall be considered confidential and the Department or any of the persons working therein may not, subject to legal responsibility, reveal to, or allow any person or public or private body to view same, totally or partly, or use same for any purpose other than the preparation of statistical tables.*

In general statistical tables are currently not provided at a more granular level than on Governorate level. In total Jordan is divided into 12 Governorate.

The General Law on Statistics in preparation[1]
Dos is currently working on revising their current Genral Law on statistics. The following obligations and tasks are worth highlighting in relation to the current Twinning activity:

- *Article 4, section f* states that that DoS has the obligation to establish an interactive National Data Center to collect, link and analyze data from electronic sources statistically and support production and supply International indicators and comparisons and data dissemination for decision makers and other users.
- *Article 11D* state that National Interactive Data Centre shall take measures to protect data collected and stored in places and media where security and safety conditions are met.
- *Article 14* state that DoS may provide any requesting entity with available raw data for the purposes of the research and scientific analysis, but only under the following conditions:

a. To submit an undertaking committing itself to these purposes
b. The data or tables derived from it must not contain any micro data for confidentiality.

Need for disaggregated statistics and diverse data services for users:
Official statistical producers operate in a rapidly changing landscape, where the pace of change accelerates annually. Increasingly complex societal issues demand more timely, disaggregated statistics and diverse data services. Adoption of new data sources like administrative and big data poses challenges in analysis methods, data access, ethics, and privacy. Amidst competition from other data providers, statistical organizations must enhance product communication and brand advocacy for trustworthiness. To tackle these challenges, statistical organizations must invest in modernization, staff capabilities, and technology. Despite limited resources, efficiency improvements are crucial to ensure adaptability and resilience in the dynamic data ecosystem.

[1] Link to the Law in Arabic.

Jordan Economic Modernization Vision 2030:

Recently the Jordan Economic Modernization Vision 2030 was launched and "Smart Jordan" was identified as one of the eight Growth Drivers to implement the Economic Modernization Vision. The 'Smart Jordan Driver' includes seven sectors where data is one of them. This indicates the national interest to ensure constant and reliable data sources, and robust statistical systems that contribute to timely and informed policy making. One of the measures that will be taken is to establish an Interactive National Statistical Center (NSC) that will provide data to all users groups according to their need including microdata to decision makers and researcher in a secure manner that ensure privacy.

Interactive National Statistical Center:

The NDC will be built around the following four pillars

I. **A Data Management Center (DMC)** that will support all internal operations and production of statistics in accordance with best international practices with a high level of security to protect data

II. **Governance tools** e.g. such management, organizational structure, security and confidentiality policies etc.

III. **Data dissemination ecosystem platform (DDC) –** One entrance for all users. User accredenetials will control wich data can be accessed.

IV. **A platform for uploading external data** to the DDC e.g. administrative data owner in Jordan, NSI's from other countries as well as International organizations – the platform will be build around the SDMX standard

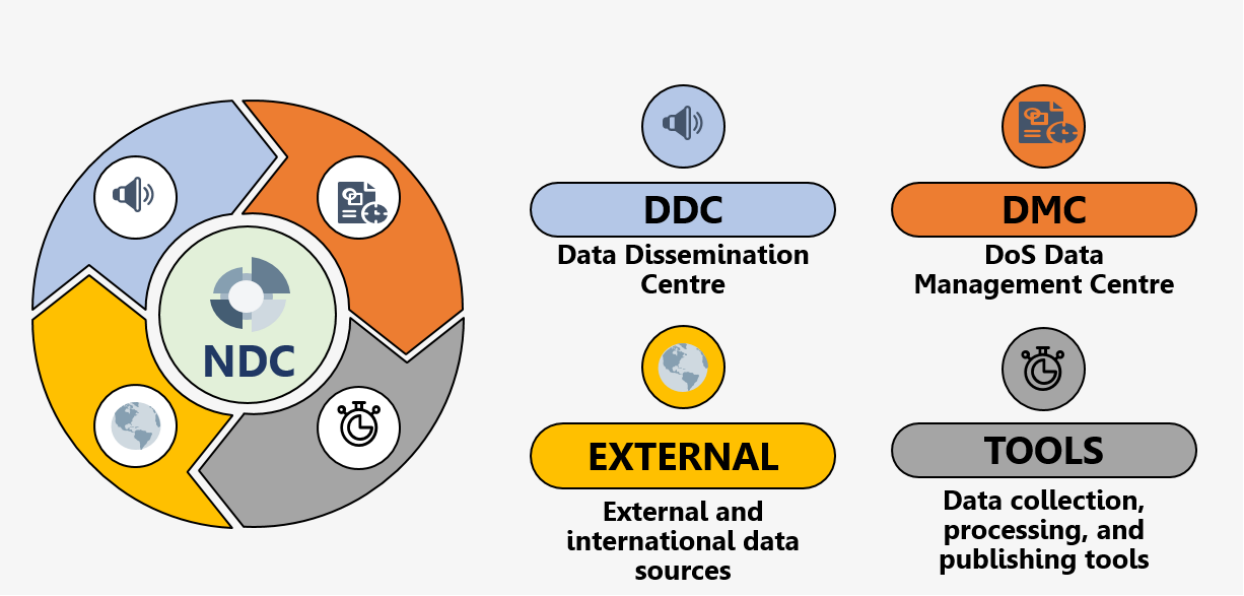

Fig. 1: *Illustration of the four pillars of the the future Internaticer National Data Center (NDC). Figure kindly provided by the NDC team in DoS.*

Implementation steps of the NDC

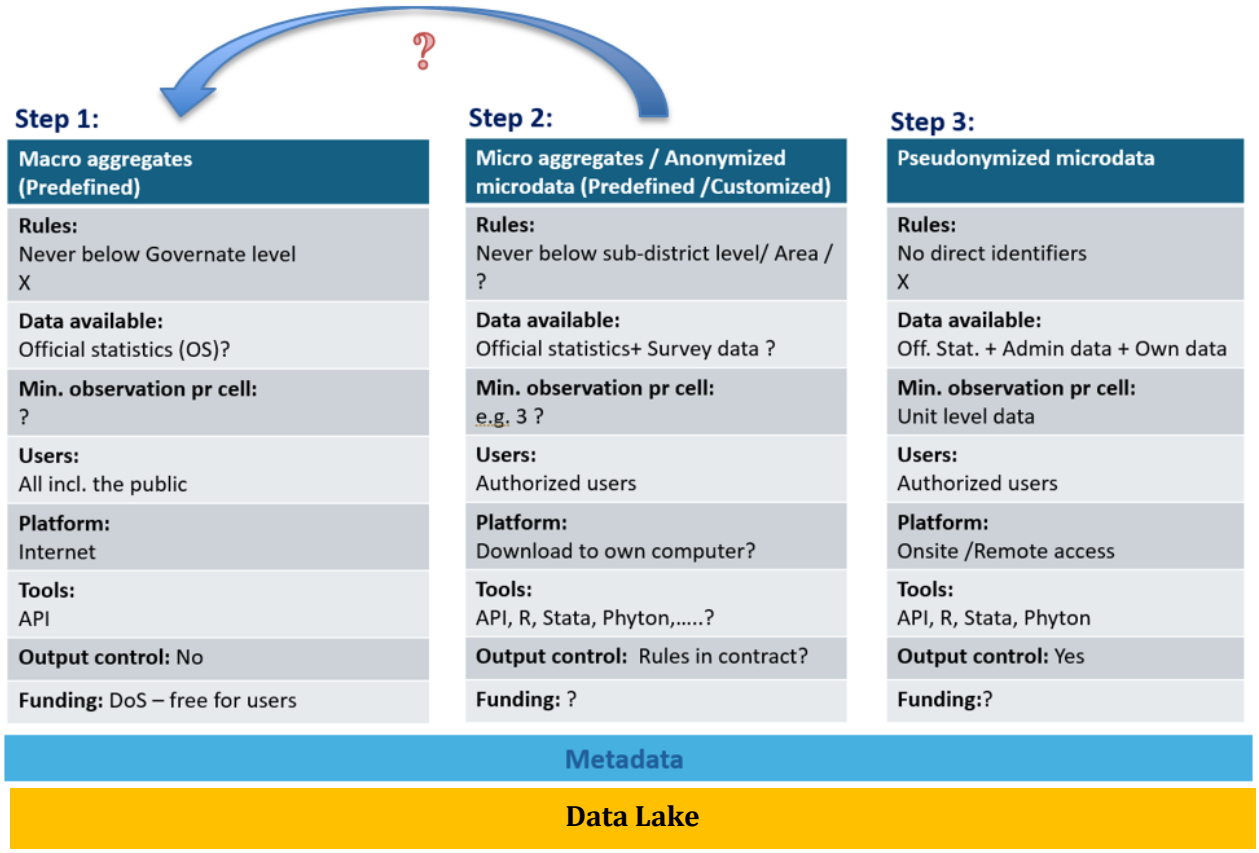

Fig 2: *Potential future NDC data service as presented by the NDC team in Jordan that will be available in three steps over time. They were (1) Macro–aggregates for the public users, (2) Micro–aggregates for authorized selected authorized users and (3) Pseudonymized microdata for authorized decision makers. It has to be noted that for all steps careful analysis and rules and products need to be agreed on and carefully described – based on user needs .At SD and SF both macro and micro-aggregates are provided for the public. It is unclear whether legislation will allow such an option in Jordan. This need to be further explored*

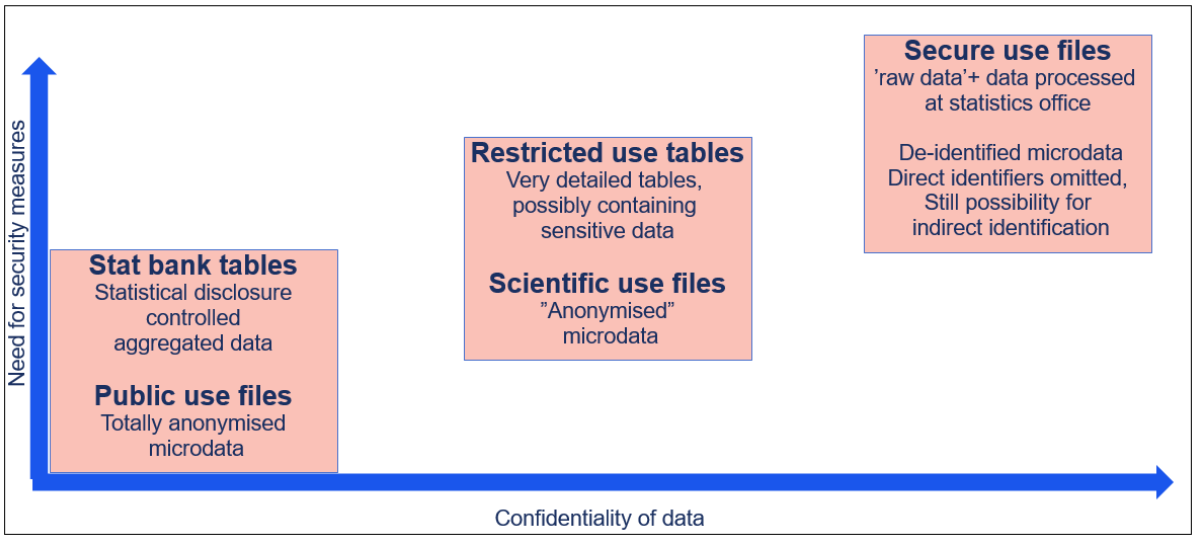

Fig 3: *Relationship between data confidentiality level and need for security measures according to service provided.*

Information Security policy for DoS - draft

As part of the Twinning project a draft for a new Information Security policy for DoS was jointly drafted between DoS and experts from Italy and Lithuania. The observations made at the Mission and draft for an updated policy is provided as Annex's to this ToR. Due to other obligations and priorities in DoS no further work has been carried out since the Mission in January 2024.

Literature

- Statistical Disclosure Control (2012) by A. Hundepool, J. Domingo-Ferrer, L. Franconi, S. Giessing, E. Schulte Nordholt, K. Spicer and P.P. de Wolf, Wiley Series in Survey Methodology, ISBN 978-1-1199-7815-2;
- Tau Argus manual;
- Manuals and software libraries are available on: https://github.com/sdcTools

Annex 2. Programme for the mission

Abbreviations:
MS *= EU Member State (Denmark, Germany, Italy, Lithuania, Finland);*
DoS *= Department of Statistics, Jordan*

Annex 3. Persons met

NATIONAL DATA CENTER DIRECTORATE (NDC):

- **Mr. Nabil Abu Sall,** Director of NDC

Email: Nabil.AbuSall@dos.gov.jo

- **Mr. Mohammad Al-Hiary**, External consultant of the NDC

Email: Mohammad.Alhiary@dos.gov.jo

- **Mr. Ayman Athamneh,** , External consultant of the NDC

Email: Ayman.Athamneh@dos.gov.jo

- **Mr. Qusai Hamdan**, Data Scientist, Data Engineering and AI Division

Email: qusai.hamdan@dos.gov.jo

- **Mr. Suhaib Ananbeh** , Data Scientist, Data Engineering and AI Division

Email: suhaibennab@dos.gov.jo

- **Mr. Zaid Abu Rasheid**, Data Scientist, Data Engineering and AI Division

Email: zaid.abuRashheid@dos.gov.jo

- **Mr. Jafaar Ababneh**, Director, Administrative Registers Division
  Email: Jafaar.Ababneh@dos.gov.jo

- **Mr. Mohammad Al-Omari,** Staff member, Administrative Registers Division

Email: Mohammad.Omari@dos.gov.jo

- **Mr. Abdelwahed Al-Haraizeh,** Staff member, Administrative Registers Division

Email: Abdalwahed.ALharaizeh@dos.gov.jo

- **Ms. Lama Bani Melhem,** Staff member, Electronic Dissemination Division

Email: lama.bnymelhem@dos.gov.jo

- **Ms. Manal Khofash**, Staff Member, Electronic Dissemination Division

Email: Manal.Khuffash@dos.gov.jo

DIGITAL TRANSFORMATION AND INFORMATION TECHNOLOGY DIRECTORATE

- **Mr. Mohammad Shatnawi,** Staff Member, Programming and Statistical Databases Divisoion

Email: shatnawi@dos.gov.jo

- **Ms. Zeena Altal,** Staff Member, Technical Development and Innovation Divison

Email: zeena@dos.gov.jo

- **Ms. Samya Zeidan,** Staff Member, Technical Development and Innovation Divison

Email: samyaz@dos.gov.jo

NATIONAL ACCOUNTS DIRECTORATE

- **Ms. Eman Al-Assaf**, Staff Member, Annual Account

Email: Eman.alassaf@dos.gov.jo

METHODOLOGIES AND STUDIES DIRECTORATE

- **Ms. Roqayah Al-Sanabrah**, Staff member, Quality Division

Email: roqayah.alsanabra@dos.gov.jo