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: 1.4.5:
(DMC) II –System Design

Mission carried out by
Mr. Niels Jespersen

Amman, Jordan
19-22 February 2024

Version: Final

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

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List of Abbreviations

- BC – Beneficiary Country
- DMC – Data Management Center
- DoS – Department of Statistics
- MS – Member State
- PL – Project Leader
- RTA – Resident Twinning Advisor
- STE – Short-term Expert

1. General comments

During the mission a number of workshops and demonstrations were given in order to facilitate the completion of the technical and governance specification for the Data Management Center (DMC) in DoS. With the following topics covered:

- Presentation of DMC in MS (examples from multiple MS)
- Introduction to the most used software in DMC systems
- Technical design of a DMC in Jordan including pro and cons.
- Drafting a system design based on requirement specification outlined under 1.4.4
- Databases and database structure in the DMC
- Security in DMC and access right and logging etc.
- The Use of IT programming tools (.NET) and other tools inside the DMC in relation to among others server Linces
- Capacity analysis's (low level)

2. Assessment and results

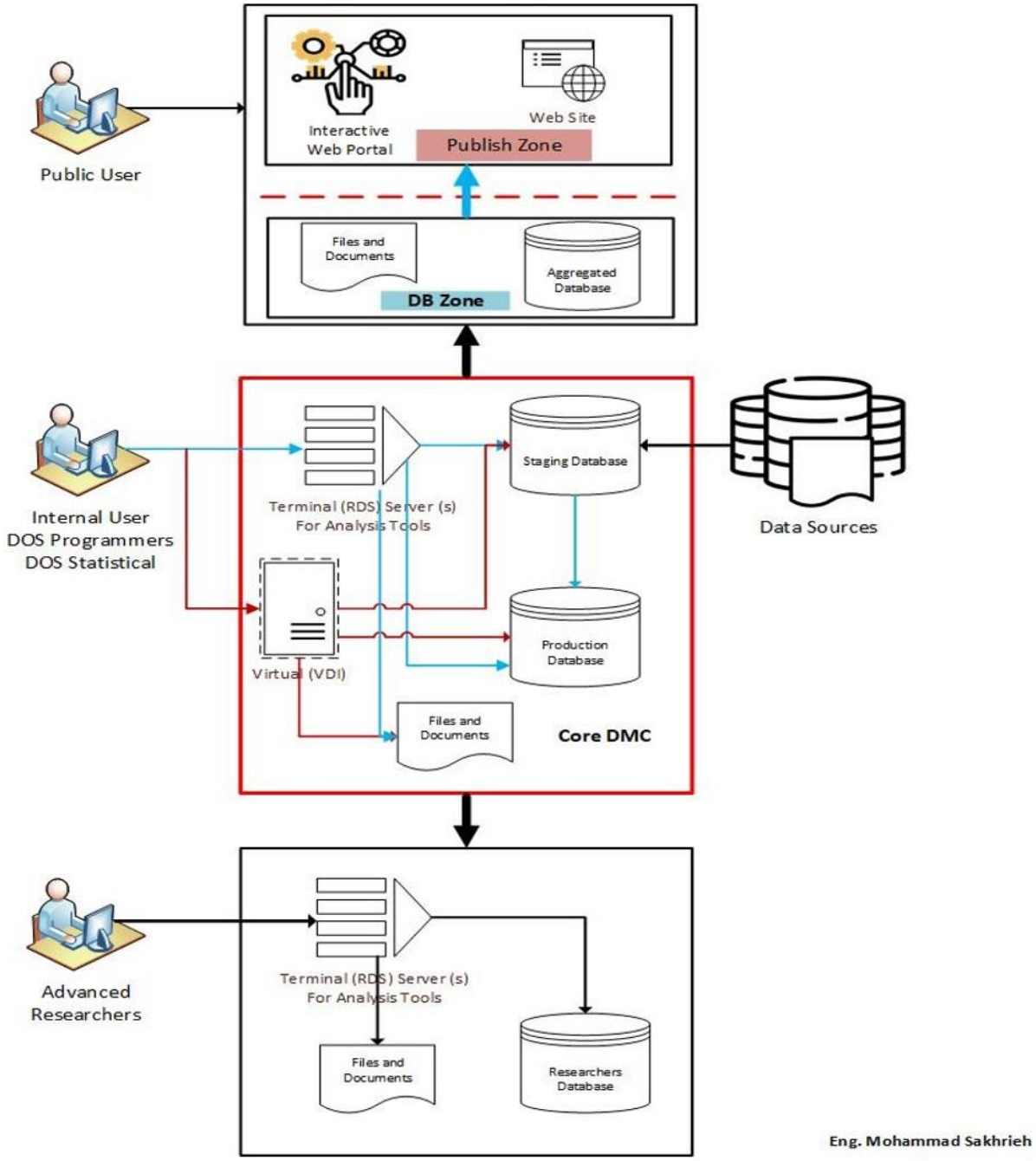
The overall assessment is that this mission was a very successful mission with fruitful outcomes and a common understanding between DoS and with the Twinning STE of the vision, path and functional and security needs of the DMC and related topics.

It was found during the mission that DOS has progressed the design of the internal DMC substantially in the period of time since mission 1.4.4. It is clear that there is a sound understanding of the vision for the DMC and the overall steps needed in order to implement a solution.

Since mission 1.4.4 in september 2023, DOS has been in dialogue with several vendors for procuring the neccessary hardware for implementing the DMC.

During this mission the specific offers were discussed in detail. Overall, the suggestions will fit the needs for the DMC and for a computing platform that DOS can build its business on for years to come.

A lot of attention sof the mission was given to discussing different types of solutions for advanced users. A presentation of the classes of solutions in the European Union is available as annex 6. Before doing detailed design, it is important that the users' needs be analyzed in contect of the different types of solution. The following diagram illustrates the separation of the internal DMC and the one for advanced users. Also, the direction of dataflows are clearly indicated (data always flows from the core DMC).


Public User
Interactive Web Portal
Web Site
Publish Zone
Files and Documents
Aggregated Database
DB Zone
Internal User
DOS Programmers
DOS Statistical
Terminal (RDS) Server (s) For Analysis Tools
Staging Database
Data Sources
Virtual (VDI)
Production Database
Files and Documents
Core DMC
Advanced Researchers
Terminal (RDS) Server (s) For Analysis Tools
Files and Documents
Researchers Database
Eng. Mohammad Sakhrieh

3. Conclusions and recommendations

The recommendations from the Danish STE are:

- When designing the Data Management Center for advanced users it is crucial that DOS before detailed design discuss what type of data is provided for the users, and what type of access and tools are provided. The type of solution decided will have great impact on the detailed design of the system. Also the type of solution will impact the type of value that users can derive from accessing the system. If DOS is not clear, which environment will provide best use for users in the short term, there is a risk that efforts are focused in a less than ideal way. For types of solutions, see Annex 6.

- It is recommended that the efforts in DOS to build a DMC is coordinated closer with the World Bank effort. There is a risk of confusion and efforts that contradict each other if knowledge and thoughts are not shared between initiatives,

- It is recommended that DOS decide to use Open Source Postgresql as the strategic database solution for all uses. Oracle Database, on the other hand, should be considered legacy, which means that no new applications should be built on Oracle Database. Vendors that offer applications for DOS, should be made aware of this strategic choice. New applications that are offered to DOS with a requirement to use Oracle Database sshoul be looked upon with great skepticism and replaced by alternatives supporting Postgres.

- It is recommended that DOS initiate learning procees in order to get critical mass of skills in using Postgres. This includes all aspects of using Postgres, DBA's, Application developers, Analysts and more.

- When doing ETL (Extract, Transform, Load) it is recommended to standardize on using Postgres and Python (including a selected set of Python related data engineering tools (e.g Apache Airflow, Apache Dagster and others). Vendors will probably try to sell commercailt ETL tools to DOS, but this STE firmly believes that an investment in Python and Postgres skills can be a better foundation for an organization such as DOS (and other NSI's).

- When receiving data from external parties, it is important to receive data even if there are errors in the data. You cannot inspect and analyse for errors if you rejected the data during transit. Raw data should be kept for some time in order to be able to find problems in data delivered. even after processing the data into production.

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 1.4.6:
(DMC) II –System Design

Dates: 19 – 22 February 2024

Content

List of abbreviations

BC	Beneficiary Country
DoS	Department of Statistics
ESS	European Statistical System
MS	Member State
RTA	Resident Twinning Advisor
STE	Short Term Expert
ToR	Term of References

0. Objective and Mandatory Results for the component

Objective

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.

As the development of a fully integrated administrative data system is a long-term project. The main focus of the Twinning project will be on specific pilot projects where the use of administrative records can address key challenges currently faced by the DoS. These pilot projects will constitute the first steps in rolling out a roadmap for the Jordanian statistical system by providing a template for expanding the use of administrative data across the wider statistical system over time. Specifically, the pilots for the Twinning project will focus on the development of a statistical business register (SBR) and improving the quality of population statistics.

In addition to improving population estimates, administrative data can also contribute to refining the scope of the 2025 General Population and Housing Census (COP) questionnaire, thereby freeing up resources in the DoS.

However, in order to integrate new administrative data sources the necessary technical infrastructure and security needs to be enhanced in order to better facilitate data transfers on an ongoing basis as well as ensure trust from data providers from partner institutions. Additionally, the internal data flow within the DoS will be reviewed, and recommendations will be made, as appropriate.

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. It is expected that one of the measures that will be taken is to transform Jordan's Department of Statistics (DoS) into an interactive National Statistical Center (NSC).

Component 1 is sub-divided in five sub-components each with a Mandatory Results (MR) with indicators of achievements associated with the sub-component. This current mission is related MR 1.4.

Mandatory results and indicators for achievement for each sub-component

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 programmes and develop training materials both within DoS and with partner institutions on the use of administrative records for statistical purposes, based on pilot projects above	**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.

2. Purpose of the activity

The purpose of this activity is:

- Presentation of DMC in MS (examples from multiple MS)
- Introduction to the most used software in DMC systems
- Technical design of a DMC in Jordan including pro and cons.
- Drafting a system design based on requirement specification outlined under 1.4.4
    - Databases and database structure in the DMC
    - Security in DMC and access right and logging etc.
    - The Use of IT programming tools (.NET)
    - Capacity analysis's (low level)
- Outline technical construction of the DMC in Jordan;

3. Expected output of the activity

- Activity report;
- Proposal for the technical design of a DMC in Jordan;

4. Participants

MS Short Term Expert (STE)

- **Mr. Niels Jespersen,** Chief Adviser, Strategy, Architecture, Governance and IT Security (DK)

DoS experts

- **Mr. Hussam Abu Shukur**, Head of Electronic Dissemination
- **Mr. Mohammad Sakhrieh**, Network Engineer
- **Mr. Mohammad Shatnawi**, Programmer
- **Mr. Yasir Nasrallah**, Head of Technical Support Division;
- **Mr. Ayman Elholoul**, Developer
- **Ms. Razan Mahfouz,** Programmer Assistant
- **Ms. Montaha Sawahrah,** Computer technician
- **Ms. Amal Karajeh,** Developer
- **Ms. Samia Zeidan**, Programmer Assistant
- **Ms. Sana Duraidi**, Developer

Twinning team

- **Eng. Mohammad Khalaf,** Director of Sustainable Development Unit, Department of Statistics (DoS), Jordan (RTA Counterpart)
- **Dr. Charlotte Nielsen** (RTA)
- **Ms. Zaina Amireh** (Language Assistant)
- **Ms. Thekra Altorah** (RTA Assistant)

5. Resources

Translation and interpretation will be provide throughout the activity. Translation will be provided as sequential translation. Therefore, please keep frequent pauses when presenting and talking allowing our project translator to provide as accurate a translation as possible.

All material will provided in both English and Arabic before, under and after the Mission. However, this means that any background material and presentation should be mailed to RTA (cln@ds.dk) no later than a week before the week before the mission take place

The venue will the Meeting room at DoS.

Annex 2: Programme for the mission

Monday:

- Welcome and presentation of the mission
- Revsiting the requrement specification for the DMC produced during mission 1.4.4
- Discussion current status in DOS, including progress made since missipn 1.4.4

Tuesday:

- Discussing database use in DOS now and in the future.
    - Licensing
    - Support
    - Capabilities
- Security structure in the DMC and logging

Wednesday :

- Presentation of DMC in MS (examples from multiple MS)
- Introduction to the most used software in DMC systems
- Detailed discussion of suggested vendor solutions

Thursday

- Presentation of pseudonymization and hometaking in danish solutions for advanced users.
- Presenting and discussing findings and conclusions

Annex 3. Persons met

DoS experts

- Mr. Hussam Abu Shukur, Head of Electronic Dissemination
- Mr. Mohammad Sakhrieh, Network Engineer
- Mr. Mohammad Shatnawi, Programmer
- Mr. Yasir Nasrallah, Head of Technical Support Division;
- Mr. Ayman Elholoul, Developer
- Ms. Razan Mahfouz, Programmer Assistant
- Ms. Montaha Sawahrah, Computer technician
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