IST – METADATA DRIVEN STATISTICAL COLLECTION AND PRODUCTION SOLUTION ALIGNED WITH GSBPM

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About SORS

Introduction to SORS:

- The Statistical Office of the Republic of Serbia (SORS) is the central institution for the collection, analysis, and dissemination of statistical data in Serbia.

Mission:

- Our mission is to provide high-quality statistical information that meets the needs of government, businesses, and the general public.

Key Achievements:

- SORS has a long history of innovation in statistical processes, including the development of IST, which has become a cornerstone of our data processing infrastructure.

Global Influence:

- We collaborate with international organizations and other statistical offices to ensure that our methods and tools meet global standards.

What is IST?

Introduction:

- IST is a comprehensive software solution developed by SORS to streamline and standardize statistical data processing across various domains.

Purpose:

- The main purpose of IST is to simplify data management and enhance the value of statistical data through a unified, metadata-driven system.

Key Components:

- IST integrates several key components, including a centralized metadata database, a .NET-based interpreter, and various modules for data entry, validation, and reporting.

The Development Journey

Background:

- The development of IST began in response to the increasing complexity of statistical data processing needs across multiple countries.

Collaborative Effort:

- IST was completely developed by SORS.
- During the past 15 years, IST was implemented in several countries and was improved through collaboration experiences with statistical offices of Kyrgyzstan, Montenegro, Bosnia and Herzegovina, and Albania.

Milestones:

- Key milestones in IST's development include the initial concept in 2006, the first implementation in 2008, and subsequent enhancements to meet evolving statistical requirements.

Continuous Improvement:

- IST is continually improved based on feedback from users and advancements in technology, ensuring that it remains an efficient and modern solution.

Core Objectives of IST

Simplification:

- IST aims to simplify the statistical data processing lifecycle, reducing the complexity of managing various datasets across different domains.

Integration:

- By integrating data processing activities within a single platform, IST ensures consistency and coherence in statistical outputs.

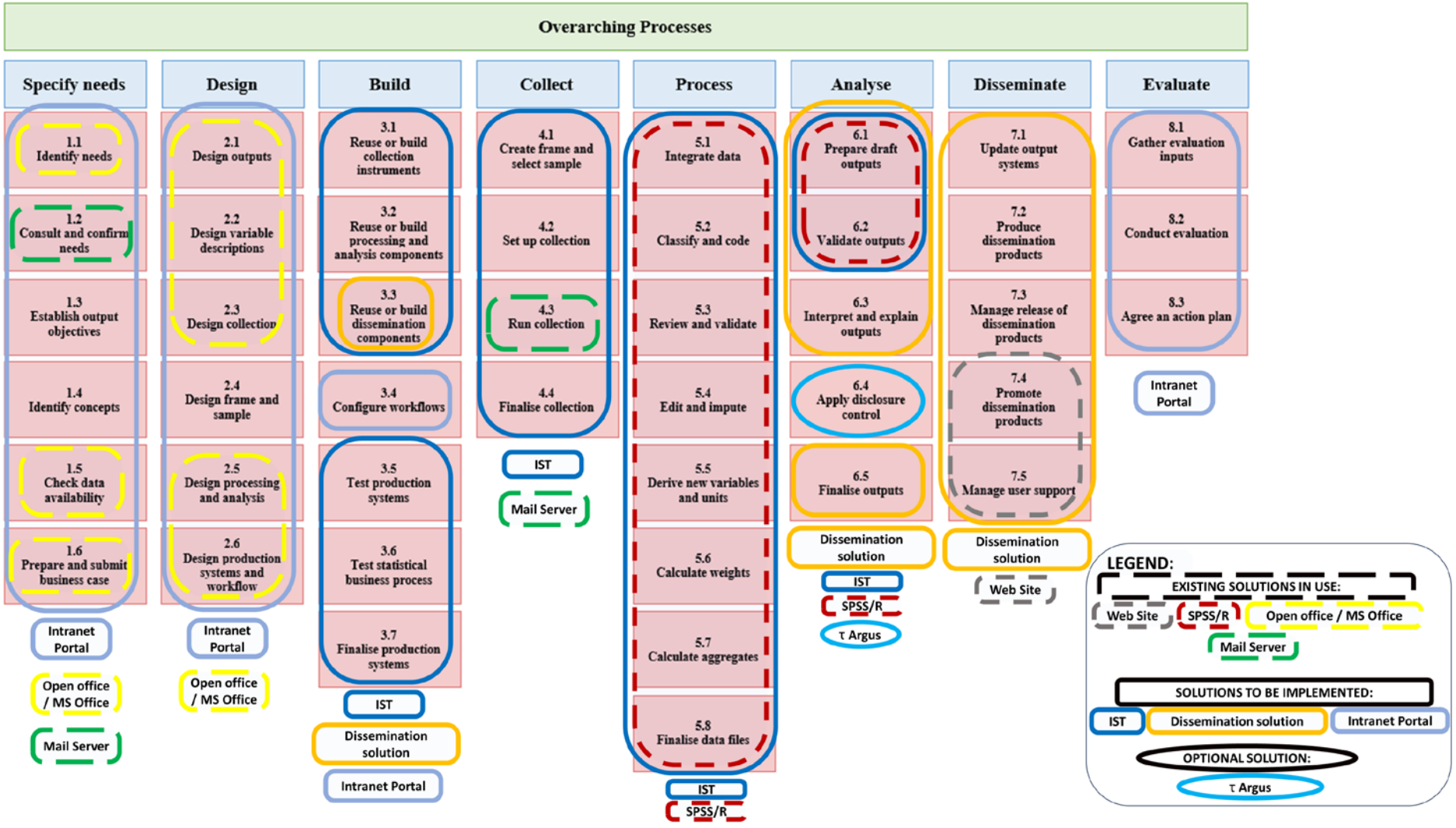
Efficiency:

- The system is designed to increase efficiency by automating routine tasks, allowing staff to focus on higher-value activities.

Standardization:

- IST promotes the standardization of data processing methods, monitoring key Quality Indicators, enabling statistical offices to comply with international standards such as GSBPM.

IST Alignment with GSBPM 5.1



Key Features

Metadata-Driven:

- IST is a metadata-driven system, meaning that it uses metadata to control and manage the entire data processing workflow.

Modular Architecture:

- The system's modular architecture allows it to be flexible and scalable, with independent modules handling different phases of the statistical process.

Real-Time Processing:

- IST supports real-time data entry, validation, and processing, ensuring that data is accurate and up-to-date.

Advanced Reporting:

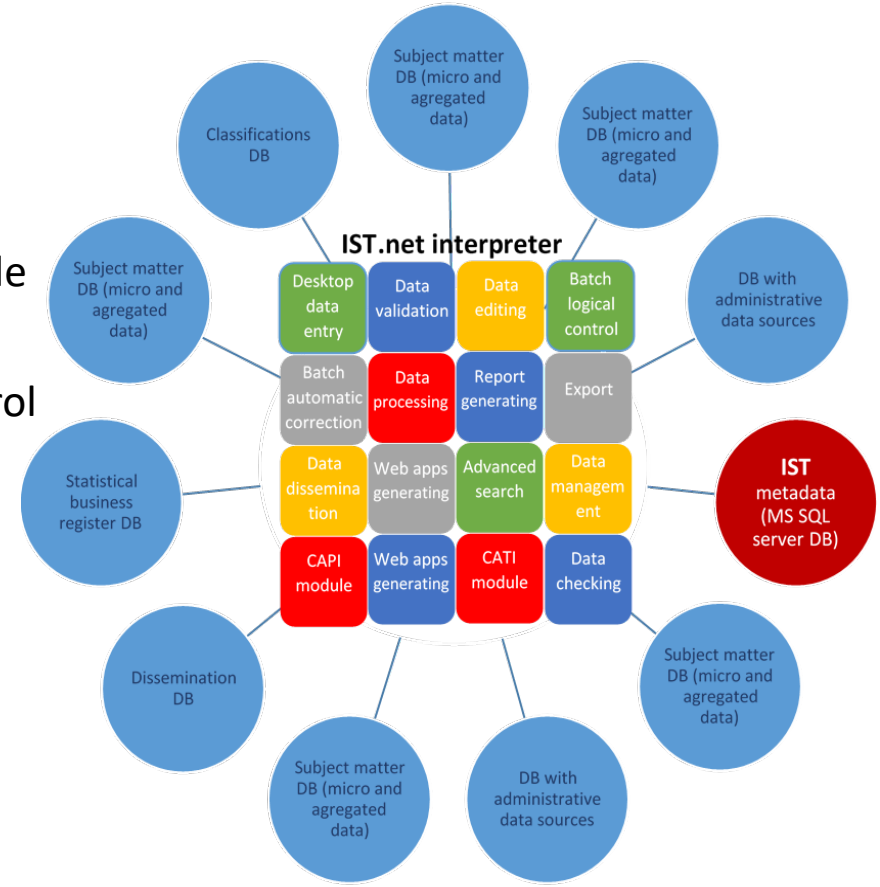
- The system includes advanced reporting capabilities, enabling the generation of reports in various formats, including Excel, JSON, and XML.

Secure Data Handling:

- IST incorporates robust security features from MS SQL DB to protect sensitive statistical data, ensuring compliance with national and international data protection regulations.

IST system modules

- Data entry
  - CAPI module
  - CATI module
  - CAWI module
  - Desktop module
- Data validation
- Batch logical control
- Data editing
- Advanced search
- Reports and procedures
- Graphical user interface



The IST Metadata

Definition of Metadata:

- Metadata in IST refers to the data that describes applications and other data, controlling how data is collected, processed, and reported.

Role of Metadata:

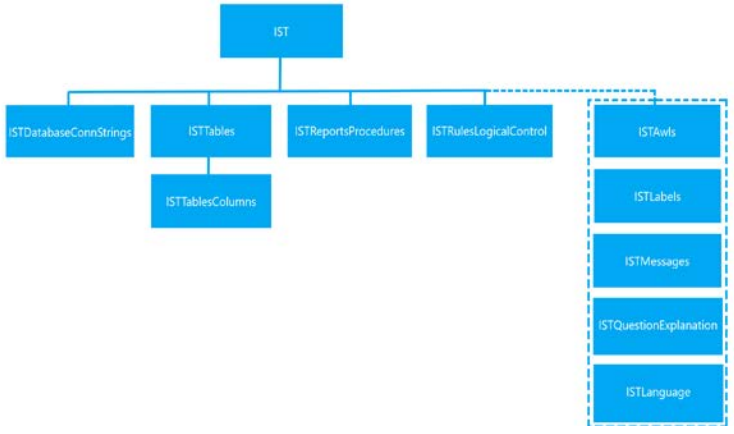
- Metadata drives the entire data processing workflow in IST, ensuring that all processes are standardized and consistent.

Centralized Metadata Repository:

- IST includes a centralized metadata repository that stores all relevant metadata, making it easy to manage and update.

Benefits:

- Using metadata, IST can automate many aspects of data processing, reducing the need for manual intervention and minimizing errors.



IST Interpreter

Introduction to IST Interpreter:

- The IST Interpreter is a .NET-based application that reads metadata from the central repository and dynamically generates applications for data processing.

Dynamic Generation:

- The interpreter dynamically generates applications for tasks such as data entry, validation, and reporting, based on the metadata.

Real-Time Processing:

- IST Interpreter enables real-time data processing, allowing statistical offices to respond quickly to changing data requirements.

Flexibility:

- The interpreter’s flexibility allows it to adapt to different statistical domains and processes, making IST a versatile solution.

Data Security in IST

Robust Security Features:

- IST relies on robust MS SQL Server security features to protect sensitive statistical data from unauthorized access and breaches.
- These features include encryption, access controls, and regular security audits.

Compliance with Security Standards:

- IST is designed to comply with national and international security standards, ensuring that your data remains protected.

User Access Management:

- IST allows granular control over user access, ensuring that only authorized personnel can access and modify data.
- This feature is crucial for maintaining data confidentiality and integrity.

Compliance with Regulations

Regulatory Compliance:

- IST is designed to comply with a wide range of national and international data protection regulations (e.g. Law on Personal Data Protection Republic of Serbia, GDPR EU).
- This ensures that your organization meets its legal obligations when processing personal and sensitive data.

Data Privacy:

- IST includes features to support data privacy, such as anonymization and pseudonymization of sensitive information.
- These features help protect individuals' privacy while enabling the use of data for statistical purposes.

Audit and Reporting:

- IST provides tools for auditing data processing activities, making it easier to demonstrate compliance with regulatory requirements.
- Reports can be generated to show how data is being used and protected.

IST Integration with New Technologies

IST is Integrated with Transformative Technologies:

- Integration of QGIS, ArcGIS, Power BI, and Azure Cloud with IST
- Enhance accuracy, operational efficiency, and real-time data processing

Integration Features:

- QGIS integration with IST provides powerful geospatial insights that enable trends and patterns identifications across various locations
- Real-time data analysis and reporting capabilities with Power Bi and ArcGIS through customizable dashboards for insightful decision-making
- Cloud integration supports large-scale data synchronization, ensures robust encryption and data protection to comply with sensitive data regulations and handles complex ML algorithms efficiently.

IST is Future-proof:

- AI/ML-Ready Architecture – IST provides high quality data ensuring minimal preprocessing required thus reducing the risk of GIGO (Garbage In, Garbage Out)
- IST's role in leading the future of statistical data management:
  - Foundation for Statistical Population Register
  - Enabling data enrichment in specific statistical domains (e.g. Construction)
  - Enabling real time spatial monitoring of Statistical operations (e.g. Post Enumeration Survey in Agriculture Census)

IST in Action

Case Study:

- Example 1: SORS uses IST for 99% of Surveys including Population, Agricultural and Economic Censuses.
- Example 2: NSO Montenegro uses IST for more than 70 Surveys including Price and Agriculture Statistics.
- Example 3: NSO Republic of Srpska uses IST for 99% of Surveys.
- Example 4: NSC Kyrgyzstan has migrated more than 20 Surveys on IST (Project on going).

Impact:

- IST's real-time processing capabilities significantly reduced the time required to collect, process and analyze data, resulting in faster and more accurate outputs.

User Experience:

- Feedback from users highlighted IST's ease of use, flexibility, and the benefits of having a unified system for all data processing tasks.

Regional Use:

- IST is currently being used by several statistical offices in the region, each of which has seen improvements in data quality and efficiency.

Impact of IST Implementation

Enhanced Data Accuracy:

- IST's validation processes significantly reduced errors, leading to more accurate and reliable data.
- The system's real-time processing capabilities ensure that data is consistently updated and accurate.

Time Savings and Efficiency :

- Automated processes reduced the time required for data collection, validation, and reporting.
- This efficiency gain allowed staff to focus on more strategic tasks, improving overall productivity.

Positive Feedback:

- Stakeholders have reported high satisfaction with IST's performance, highlighting its ease of use and the tangible benefits it delivers.
- The system's impact on the quality and timeliness of statistical outputs has been widely recognized.

Collaboration among IT teams leads to Knowledge and Skills sharing.

Why Choose IST?

Proven Solution:

- IST is a proven solution that has been successfully implemented in multiple countries, demonstrating its effectiveness in various statistical domains.

Customization:

- The system is highly customizable, allowing it to be tailored to the specific needs of different statistical offices.

Cost-Effective:

- IST offers a cost-effective solution by reducing the need for multiple software systems and minimizing manual intervention in data processing.

Support and Maintenance:

- SORS provides comprehensive support and continuous updates to ensure that IST remains aligned with the latest statistical practices and technologies.
- International implementations ensure support for various statistical approaches and methods.

Regional Standardization:

- Adopting IST can help drive regional standardization, facilitating better collaboration and data sharing across countries.

International Standardization:

- IST promotes the standardization of data processing methods, enabling statistical offices to comply with international standards such as GSBPM

How to Get Started with IST

Initial Steps:

- Begin by assessing current data processing workflows and identifying areas where IST can add value.
- Engage with SORS to discuss your specific needs and explore customization options.

Pilot Project:

- Consider launching a pilot project to test IST's capabilities.
- Use the pilot project to gather feedback and refine the system before full-scale implementation (e.g. biggest impact on implementation in Kyrgyzstan is speed of Survey application development).

Implementation Support:

- SORS will provide comprehensive support throughout the implementation process, including training, technical assistance, and ongoing maintenance.
- Additional support is available through existing IST Community.

Introducing IST to New National Statistical Organizations: Key Steps

On-site Visits & Training Best Practices:

Month 1: Study visit to SORS for IST introduction and needs assessment
Months 1-3: Training at NSO for IST customization
Months 3-6: Follow-up training at NSO

Survey Deployment Timeline:

1st Survey (CAPI/CAWI) in ~3 months

20-40 Surveys in ~6-9 months

Key Trainings:

- IST functionalities
- IST Application Design Framework
- IST SQL Server Administration
- IST Output Tables SQL

Infrastructure Needs:

- 2 virtual servers with 4 CPU cores and 64GB RAM each
- Network connectivity with branch offices
- MS SQL Server License
- Windows environment

Q&A Session

Open Discussion:

- We invite you to ask any questions you may have about IST, its capabilities, and how it can benefit your organization.
- Our team is here to provide detailed answers and address any concerns you may have.

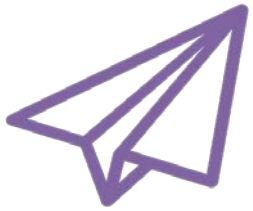
Topics for Discussion:

- Feel free to ask about specific technical features, implementation strategies, or potential customization options.
- We are also happy to discuss any aspects of IST's architecture, security, or compliance features in more detail.

Next Steps:

- If you have any questions that require further investigation, we will follow up with detailed responses after the session.
- We look forward to engaging in a productive discussion and addressing any topics of interest.

Contact Information



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