ROMANIA

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Romania Capacity Building for Statistics (P167217)

OUTPUT No. 11

Report on advisory services provided to Recipient on the Recommendation, advice and best practices for the development and customization of an IT Integrated Solution for the Architecture and Computation of the Costs of Products and Activities NIS – SICCA

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Table of Contents

Table of Figures

List of Acronyms

CONRENA	Consolidation of the National Statistical System Project
DTS	Statistics Territorial Directorates
GAMSO	Generic Activity Model for Statistical Organizations
GDPR	General Data Protection Regulation
GSBPM	General Statistics Business Process Model
IT	Information Technology
INS	National Institute of Statistics
LAN	Local Area Network
LGA	List of generic Activities
ONAs	Other National Authorities producing statistics
PSNA	National Statistical Annual Program
RAS	Reimbursable Advisory Services
SICCA	IT Integrated Solution for the Architecture and Computation of the Costs of Products and Activities
WAN	Wide Area Network

Introduction

This report provides "**recommendations, advice and best practices for the development and customization of an IT Integrated Solution for the Architecture and Computation of the Costs of Products and Activities NIS – SICCA"** as part of Output 11 under the Reimbursable Advisory Services (RAS) Agreement on Romania Capacity Building for Statistics (Project No. P167217). The project is implemented by the National Institute of Statistics (INS) with support from the World Bank.

The technical assistance provided support to the INS on cost management by calculating the direct and indirect costs for all statistical products at the level of generic activities, component/subcomponents and projects, standardized according to GSBPM / GAMSO, optimizing the statistical production costs, and improving the orientation of the INS budget towards evidence / records.

The SICCA product has been developed following the recommendations of Output 4.1.a "**Functional review and report on the reorganization of the NIS and DTS (notes and recommendations for institutional improvement)"**, one of the earlier deliverables of the project.

A first assessment, conducted using the technique of the SWOT analysis, indicated as a **Threat** the „Budgetary constraints (budget cuts) of the INS" and as a **Weakness** the „Low efficiency organizational structure; INS organization is not soundly functional", while at the same time it identified as a **Strength** the „Implementation of a cost control tool (cost collection software - SICCA)", as one of the means by which to compensate the lack of readily available information on resources which to base the organization of the INS and mitigate the budgetary constrains (the budget cuts)..

One of the seven areas of intervention identified in the document was **Capacity Building**, with a specific focus on the „Development of the administrative capacity of the INS". In the list of actions proposed to improve the administrative capacity of the institution, a cost accounting system for statistical production and the related administrative activities for the evaluation of the cost-effectiveness ratio (SICCA) were identified as priorities.

The work also conducted an assessment based on the UNECE „Modernization Maturity Model". The assessment was carried out for four dimensions: Business, Methods, Data and Application. In the Business dimension one can find the recommendation to use the „list of activities" connected with the GSBPM and GAMSO model in different procedures, starting from SICCA, which will be the first tool released to use and test the global list of activites defined by INS.

In conjunction with the SICCA activities, the report recommends that INS explicitly establishes that the use of GSBPM and GAMSO should be an indispensable component of the institute's strategy for moderinzation of activity. In the final proposal of the Modernisation Maturity Model, the SICCA is identified as one of the Key Steps/Requirements needed to promote the INS from the Current Maturity level 3 to the Target Maturity level 4 in the Business dimension.

Finally, the SICCA is the tool suggested by the report for institutional improvement, connected to GSBPM-GAMSO by collecting the costs for each activity using GAMSO and GSBPM as standards. The document also recommends to introduce in future the releases of the system also information about the statistical methods used, quality indicators, software used and input/output data in order to increase the impact of the tool on the INS organization of the statistical processes.

Based on the preliminary specifications and expected functionalities, recommendations were provided, as well as training and guidance for the development and customization of an IT Integrated Solution for the Architecture and Computation of the Costs of Products and Activities of the INS – SICCA. Also, in completing the Output, the analysis of the technical specifications of the SICCA were done using the statistical standards of the GAMSO and the GSBPM, in line with global best practice standards.

The objective of the SICCA can be achieved, if it will become a tool daily used by the INS and if the recommendations, provided through this report or through additional analysis conducted during the actual use of the tool, could be followed through and implemented accordingly by the management and staff of the INS.

1. Overview of the SICCA development

The SICCA-related activities and the use of the GSBPM and GAMSO framework are part of the official strategy of the INS for its institutional development and modernization.

The first important release is the SICCA, namely the IT Integrated Solution for the Architecture and Computation of the Costs of Products and Activities of the INS, that is implemented to collect the costs for each activity using GAMSO and GSBPM as standards for the statistical production and organization.

The purpose of the SICCA is to support the cost management of the INS and it relies on three objectives: (i) the calculation of the direct and indirect costs for all statistical products at the level of generic activities, component/subcomponent and projects, standardized according to GSBPM / GAMSO; (ii) the optimization of the statistical production costs and the determination of the costs; and (iii) the improvement of the INS budget based on evidence / records.

In preparing the specifications for the SICCA, several assumptions (described further) were considered to help the INS management to identify the necessary improvements for the organization and for the statistical processes.

The system is designed from the outset to store essential information such as input/output data the costs. The solution was designed in conjunction with the Annual Plan (PA) and the National Statistical Annual Program (PSNA), which include the OONAs producing or contributing to statistics.

Another important aspect was the detail-level required for the system and buy-in process. The application is based on the List of Generic Activities (LGA) described according to the GSBPM/GAMSO standards and represent an important input for the information management system of the institution. The LGA contains a maximum 500 elementary activities.

The introduction of a type of time recording system that requires employees to record their activities with excessive detail could result in operational overload without giving back the desired benefits. For that reason, it has been proposed to introduce the system in a smooth way, asking for example the employees to indicate the time dedicated at sub-process level. The detailed list of activities (more then 500) prepared was used in the initial phase as an indicative list (exhaustive) for “support” in the process.

The SICCA is addressed to the INS management, as well as to all departments and employees of the INS. The SICCA was designed and caried out as a web application for calculating the costs of statistical projects. The tool uses a hierarchy of:

- Project (managed by a Project Manager);
- Component/ subcomponent
- Activity (involves the employees).

Usually, in the INS a Project is a Statistical Survey, but it can also be a statistical research, a publication, a grant, an external project, a request for data, an ad-hoc project, or a support project, etc.

The application will manage for the INS projects the:

- Direct costs at the level of projects/component/subcomponents/activities:
    - Personnel costs: based on the number of hours declared by the employee at the level of project/LGA;
    - Material costs: based on the cost of paper for printing questionnaires and publications, cost of printing, mail costs, etc.;
    - Payment for interviewers for statistical surveys where interviewers are used for the collection phase.
- Indirect costs (GAMSO activities, utilities, phone service, cleaning etc.), distributed proportionally to man/hours between statistical projects. The application will manage the parameters to be used to distribute indirect costs for different periods.

For projects of ONAs the application will manage the annually lump cost which will include personal costs, printing costs, costs for data collection, other direct costs and indirect cost accordingly.

The development process of the SICCA was a continuous and collaborative effort between the Bank and the INS teams, who evaluated the existing situation regarding the cost management of the statistical activities; defined the expected results of using the SICCA; prepared the statistical processes description and technical specifications; and implemented the development process *per se* (see Annex 1 – Business and technical requirements).

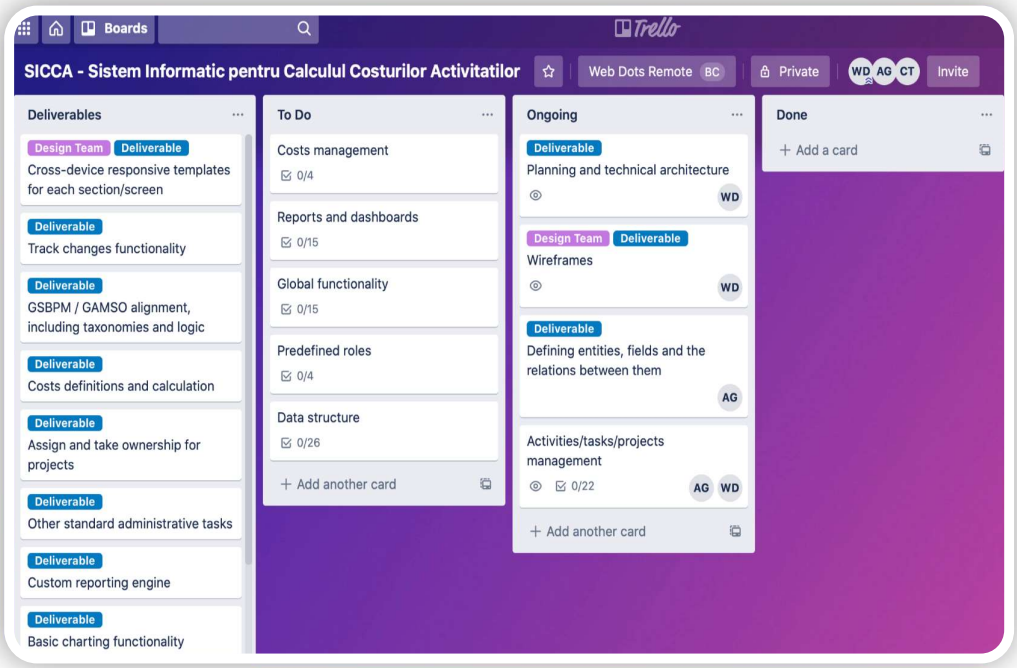
The SICCA is designed and developed to cope with several technical requirements. The application is accessible simultaneously to all 2,000 INS employees (500 employees at the central headquarter and 1,500 employees in the territorial statistical departments, located throughout the entire country). It is a web application accessed only with an internet browser, without requiring additional software like plug-ins or similar, with an interface accessible through the most widely used internet browsers: Microsoft Edge, Internet Explorer, Firefox, Chrome. It is installed in the INS LAN and users connect via the INS WAN.

All the various software components of the application were designed and implemented using open-source technologies. The technology stack consists of:

- Operating system – any major OS is supported, including Linux, OSX and Windows;
- Programming languages – PHP (backend), Javascript/HTML/CSS (frontend);
- Database server – MySQL/MariaDB/PostgreSQL;
- Web Server – Apache/NGINX;

The specifics of the application and the implications at level of the INS guided the teams towards using a Lean[1] and Agile[2] software development approach, with all tasks managed in Trello (a Kanban-type[3] board) with both the INS and Bank teams contributing and following the development process (see Figure 1).

Figure 1 - Distribution of tasks for the SICCA development



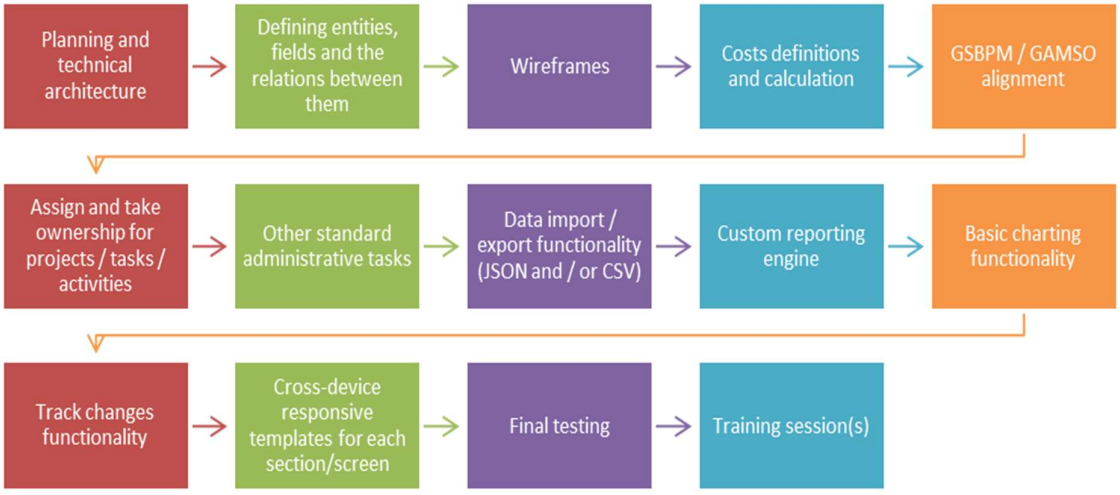
The workplan posted in Trello allowed the INS staff to follow and contribute to it and see the progress of development. Trello showed what needed to be done, what was being worked on and what was ready (tasks moved between sections as the development process progressed) together with the project resources (specifications, team discussions, etc.) and allowed grouping the tasks into deliverables to be able to follow the progress both at the component/subcomponent level and at the deliverable level (see Figure 2).

1 Lean development is derived from a production method used by Toyota. It offers a solid conceptual framework, values and principles, as well as good practices, derived from experience. It's one of the methods used in agile software development.

2 Agile development comprises various approaches to software development that advocates adaptive planning, evolutionary development, early delivery, and continual improvement.

3 A Kanban board is an Agile project management tool designed to help visualize work, limit work-in-progress, and maximize efficiency (or flow). Kanban boards use cards, columns, and continuous improvement to help technology and service teams commit to the right amount of work, and get it done! Trello is the service used to manage boards and cards related with SICCA **https://trello.com/invite/b/gva0xUM6/e6e2ceae4cd563f1979dda0ba8e6de4c/sicca-sistem-informatic-pentru-calculul-costurilor-activitatilor**

Figure 2 - SICCA development steps and intermediary deliverables



The development process was conducted through regular (weekly or monthly) full-team meetings since June 2020, complemented by "stand-up" technical meetings whenever needed (Annex 8 – Working meetings).

The functionalities developed have been available for checking and testing by the team once these were deployed. The testing process of the SICCA was conducted through two main sessions by the INS staff with support from the Bank team. First, the testing of the functionalities took place during May-June 2021 and, second, the testing of the reports and functionalities resolved after the first testing session took place during November 2021. The observations or bugs identified during the first session were solved through a joint effort of the INS and Bank teams. As a result of the two testing exercises, the SICCA was documented (see Annex 1 - Preliminary (initial) Business and Technical Requirements, Annex 2 – Web administrator Manual, Annex 3 - User manual, Annex 4 – Administrator backend manual and Annex 5 - Database and nomenclatures).

Once the SICCA was tested and have been accepted the functioning principles, it run for the training of the INS staff in a combined session of presentation and hands-on/coaching activities directly into the application. The training was conducted from the perspective of the user as employee in performing a statistical survey/activity and from the perspective of the user as manager of survey/activity. The actions of the user and the manager constituted the core of training (see Annex 7 - Training materials).

2. Main characteristics of the application

The SICCA was developed starting from the LGA described according to GSBPM/GAMSO standards to support the management of the operations regarding statistics production. The main characteristics of the application are presented further.

Functionalities

The functionalities are structured at the level of project management, activity and component/subcomponent management, at dashboard level and for the automation of specific recurrent actions of the application. The following functionalities are available.

Project management

- Project management and project award (multi-project)
- Management of statistical production projects and GAMSO (support)
- Grouping projects according to certain criteria
- Component/subcomponent
- Copying projects
- Entering the hours allocated to each activity / component/subcomponent / project, with the option to delete, correct and confirm
- Introduction of the same activity for several days (repeated activity) within the same component/subcomponent / project

Activity / component/subcomponent / project level

- Assignment of component/subcomponents and activities (according to the LGA classification)
- Establish periodicity and deadlines
- Designation of experts by project / component/subcomponent / activity (from the list of employees)
- Possibility to group activities and component/subcomponents,
- Upon completion of the project: release of resources, final checklist, notifications, documents, certifications, final reports

Dashboard functionalities

- Different and customizable dashboards for different roles:
  - At the level of top management of the NIS (president, vice-president), especially visual and graphic elements
  - At the level of directors (coordination positions except the top management of INS) will be allowed to monitor "their" projects, a project can be monitored by several directors
- Rules, alerts and messages regarding completed timesheet
  - At the level of execution functions
  - At the webmaster level
  - At the system administrator level

Application functionalities

- Manually monthly import of employees' nomenclature containing of employee identification data, monthly salary costs and workload
- manual entry in the system, periodically, at work level (where applicable) of the data from the INS accounting system by categories of expenses: postal

costs, printing of questionnaires, costs generated by the use of interview operators, others.

- manual introduction in the system, periodically, at project level (where applicable) of costs at the level of other domestic producers of official statistics (ONA)

Cost calculation

The calculation observes the direct and indirect cost at the level of generic projects, component/subcomponents and activities as presented below.

- Direct costs
  - Personnel costs: based on the number of hours declared by the employee at the production project / activity level
  - Material costs: based on the cost of paper for printing questionnaires and publications, the cost of printing / printing them, postage costs, etc.
  - Payment for interview operators.
- Indirect costs (GAMSO activities, utilities, communications, cleaning, etc.); these costs are distributed proportionally to man/hours between statistical projects; the application manages the allocation keys, which will be used to distribute indirect costs for different periods.

During the development phase, the calculation and allocation of direct and indirect costs were tested.

Reporting

The reporting developed under the SICCA is focused on the consumption of effort during statistical surveys and the cost incurred, resulting in detailed reports, and on other various reports with the purpose of managing information at INS as the presented below.

Detailed reports:

- Hours worked / product / service, project / component/subcomponent / activity management levels, depending on the roles in the system
- Centralized reports for different time intervals
- Financial report with the calculation of the costs of statistical projects broken down by expenses (direct, indirect);
  - Calculation of employees' costs on products / services
  - Calculation of total costs by projects / component/subcomponents / activities

Nomenclatures:

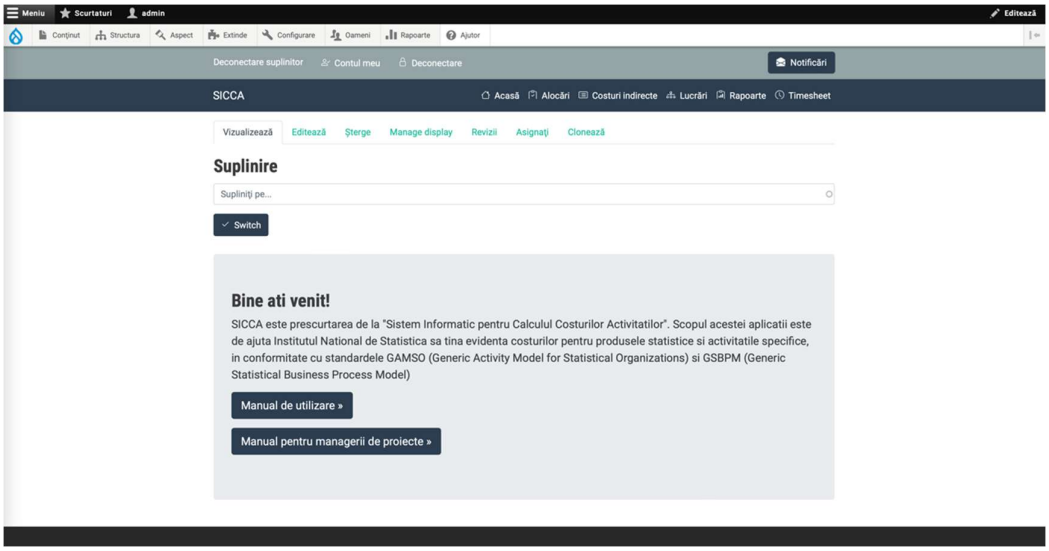
- Supports the structure of functionalities of SICCA
- Are prepared by INS and manual uploaded periodically to efficiently prepare the reports
- Require specific development and terminology:
  - File format: UTF-8
  - The columns must be delimited by " **;** "

- Values that contain multiple words in a column are enclosed in quotation marks
- The values must be entered correctly, without extra spaces and necessarily without the ENTER key.
- All values for calendar date included in the files must be in the format zz.ll.AAAA (eg: 10.12.2021 OR 09.03.2022)
- Multiple values must be separated as indicated by the following string [,] (e.g., 1, 2, 3, 127, 589 OR 1.0.1, 1.0.0.2, 2.0.1.2)
- Files can contain diacritics (ă, ț, ș, â, î) only if the UTF-8 file format is applied
- Proper nouns must be written without diacritics or signs (accents on letters) characteristic of the Hungarian language
- The file must not contain the "/" sign, where necessary it will be replaced by the "|"
- The use of ";" is not allowed inside the texts.

Documentation of SICCA

Details of the functionalities of the application initially described and modifiec (substantially in some cases) during development process, and references are available in **Annex 1 - Preliminary (initial) Business and Technical Requirements;** all functionalities as they were developed and available in the actual application are presented in **Annex 2 - Web administrator manual** and in **Annex 3 - User Manual**. The installation and configuration of the SICCA are detailed for for IT administrators in **Annex 4 – Administrator (backend) Manual** and in **Annex 5 – Database and Nomenclatures** and, respectively, are completed by **Annex 6 – Source code of application.**

Figure 3 - SICCA main page



The scripts for installing the SICCA will be provided as annex to this report and are available at the INS.

The nomenclators on employees, on departments, on ONAs, on LGA, on type of works, on works and group of works, type of input and output data and on periodicity are the core of the SICCA content. They are prepared and updated by the INS.

3. Further recommendations

The SICCA is functional and available for all INS and DTS employees and is populated with updated information on statistical surveys as available at the INS.

The purpose of the SICCA is ambitious but achievable if coherent and consistent actions will follow once the application is go-live and produce the reports designed. Several recommendations are presented here as a recap on implementing the management of costs at the level of the INS through this application.

The application should be used by all employees involved in statistical production. A buy-in process is necessary to generate interest for using the SICCA not as a control and monitoring tool, but as a friendly support for the planning and management of statistical activities for all employees. The transparency and accuracy of information from the SICCA are important values of the INS and public administration and all employees should take advantage of them.

A continuous training process and access to instructions and tutorials will help the process of acquiring information and abilities to use the application. Also, a constant involvement in promoting and using SICCA by management of the INS is a supportive action.

A constant focus on updating information on projects/component/subcomponents/ activities, on salaries of personnel and on nomenclatures will ensure accurate reports that will avoid misunderstandings, mistrusts or claims regarding the content of them.

The reports generated by the SICCA could be used for analysis of activities/ components/subcomponents efficiency and observing the needs for competencies of allocated employees and for including those into training programs to improve their personal skills for statistics production or other activities. Also, observing the allocation of staff by projects and by the active skills that are required for implementation, the career paths could be adjusted, and specific trainings could be envisaged for professional development. These will support the optimization of statistical production in the end and progress to a GSBPM higher level.

The SICCA should be a supporting tool for planning and budgeting that will generate information about statistical costs and evidence for annual and multiannual budgets on projects and on statistical programs. For that, a constant and continuous cooperation between the INS budget specialists and the statistical production ones is desirable. Together, the specialists will have the possibility to examine and analyze the budgetary resources necessary for statistical works and to conclude on the most suitable resources they can use to successfully complete the statistical works. Further the SICCA will provide input into optimizing the processes and the resources allocation in accordance with the expected results setting the stage for a results-informed budget process.

The SICCA will be also useful to analyze and compare the costs of different phases and surveys. This analysis will help the management to understand which are the bottlenecks and which the "best practices". Once we understand which phases and which surveys are the most efficient in terms of costs, it will be possible to replicate the methodological and technological solutions in the less efficient surveys. In this way, the SICCA package will help the INS in the standardization process of the various tools used in the various surveys and in the various statistical domains.

From a technical point of view, both the application and the infrastructure on which SICCA is installed needs to be kept up to date with the latest security patches. In practice, this means that the application administrator and the system administrator need to be aware of all security-related releases. For Drupal this can be achieved by either subscribing to the https://www.drupal.org/security page using RSS, or to follow the official Twitter account on https://twitter.com/drupalsecurity. For infrastructure-related security, please refer to the best practices recommended by the security team relevant to the host operating system that is chosen by the INS. Applying security updates for Drupal is described in the Administrator Manual.

4. Annexes

Annex 1 - Preliminary (initial) Business and Technical Requirements
Annex 2 - Web administrator Manual
Annex 3 - User Manual
Annex 4 - Administrator (backend) Manual
Annex 5 - Database and Nomenclatures
Annex 6 - Source code of application
Annex 7 - Training Materials
Annex 6 - Working Meetings

An archive **"SICCA Documentation"** is provided with this report and completes the information from annexes **2, 3, 4, 5, 6 and 7.**
https://drive.google.com/drive/folders/1oeKaICjpB6S4O2Wm6YStrZ9QXKK31YMx).

Annex 1 – Preliminary (initial) Business and Technical Requirements

Note: The initial functional and technical requirements have changed during the application development process as a result of the beneficiary's requests. The requirements are presented for information. The structure and functionalities of the application in its final form are presented in the manuals provided to the beneficiary.

LOGIC

1 Purpose of system:

SICCA will be an IT web application for calculating costs of statistical projects carried out within National Statistical Institute (INS).
The National Statistics Institute has around 2000 employees organized as follows:
- 500 employees at the central headquarter
- 1500 employees in the territorial statistical departments, located throughout the entire country.

The application must be accessible simultaneously to all 2000 INS employees.
The applications will be based on the List of Generic Activities (LGA) described according to GSBPM/GAMSO standards and will represent an important input for the information management system of the institution.
LGA contains a maximum 500 elementary activities.
The hierarchy used is:

- Project (managed by Project Manager)
- Component/subcomponent (managed by Component/subcomponent Manager)
- Activity (involve employees)

Usually in INS a Project is a Statistical Survey, but it can also be a statistical research, a publication, a grant, an external project, requests of data, ad-hoc projects etc.

The system will manage for NIS projects:

a. Direct costs at the level of projects/component/subcomponents/activities:
   - Personnel costs: based on number of hours declared by the employee at the level of project/LGA
   - Material costs: based on the cost of paper for printing questionnaires and publications, cost of printing, mail costs, etc.
   - Payment for interviewers for statistical surveys where interviewers are used for the collection phase

b. Indirect costs (GAMSO activities, utilities, phone service, cleaning etc.), distributed proportionally to man/hours between statistical projects: the system will manage the parameters to be used to distribute indirect costs for different periods

For ONS's projects the system will manage the monthly cost for: total personal costs, total print costs, total costs for interviews, total other costs.

2 General requirements

- Codifying important elements with unique ID: project, project groups, component/subcomponent, activity, human resources, technological resources
- All the organizational units and the resource assignation must be managed to grant the changes in time, using validity periods from-to
- Nothing is deleted – definitive cancellation of components is forbidden in order to allow tracking changes
- Display of changes in time (needed) and option of returning to earlier versions
- Manage some activities after the end of the project (refund requests, post-implementation reports, audits, sometimes carried out weeks up to years after project)
- Archiving fully finalized projects in an archive system: management of current and archived systems (available in read/only). The system must be able to "archive" projects once they are finished and closed: archived projects will be removed from standard operation and will be available in read/only to users for consultation.
- Receiving alerts by email (needed) SMS (optional) (including who and when and what)
- Formulating Gantt charts[4] for defined projects, displaying dates (start/end/milestones), activities and resources involved

3 Tool requirements

- Features to attach files (deliverables) in different steps
- Be aware of General Data Protection Regulation (GDPR): SICCA contains information that do involve GDPR and this will influence access/visualization rights to the system
- Defining fields as Mandatory/Optional & defining unique fields
- Visualization filters, with the possibility of saving (Saved filtered views)
- Customizable views of data
- Interface in Romanian and English language (possibly multi-language)
- Integration of documents from other software (activities, resources, costs etc.): there is the need to upload documents of different formats connected to activities, resources or costs

4 Roles defined within system structure, at the level of:

- Employee – regularly types in (at least once per week) hours worked (including overtime) at the level of project/statistical activity. Employee is responsible for accuracy of information entered
- Employees with special roles (control, assistant directors, HR manager, system manager etc.): have special rights determined by role

4 https://en.wikipedia.org/wiki/Gantt_chart

- General director/director/Deputy director/Project coordinator: manages and approves accuracy of information entered into the system by subordinates/team members
- Assistant director: person assigned by the director general/director or the project coordinator, has the right to enter data in the general director's/director's/project coordinator's name or in case of anyone's absence due to illness or a longer period of absence

DATA

- The system must allow management (insert, update, delete) of classifications related to:
  - Statistical projects (according to PSNA or new projects from the past year)
  - INS project membership: input/output/support for project
  - List of LGA for each activity
  - General directorates, directorates, departments, INS and regional compartments code and description from HR (with period of validity from-to)
  - List of ONAs (other national authorities)

- The system must manage (insert, update, delete) for each statistical **project** the following attributes (there will be about 200 active projects):
  - Type of projects (statistical survey, statistical research, grant, projects, administrative sources, statistical registers, data bases, publications)
  - Owner of the project (NIS or one ONA)
  - Reference period (year, month, trimester) (in the primary key Project-code+Reference-period (usually year)), projects usually span for many years
  - Creation date
  - PM Directorate/department responsible (see directorate classification)
  - Organization funding the project: EU percentage, national percentage, OECD percentage, mixed percentage
  - Periodicity (cf. according to classification)
  - Component/subcomponent for statistical survey which are managed by questionnaire: UNICA, SCs (start and end of year)
  - Type of project (see classification of type of projects)
  - Project status: start date, end activities date, end finalization project (close and archive)
  - Global man/hours planned for the project
  - Product/Service
  - Input (surveys, administrative sources, registers), Output (data base, publication, dissemination), Support (GAMSO activities)

- The system will manage (insert, update, delete) for each **employee** the following information (the data will be uploaded from HR system with a function that will be run weekly, receiving all modifications):
  - ID (Marca)

- INS position
- Salary, Labor individual cost, Standard cost
- Date employed
- Date of exit from system
- Shifted schedule and period of shift, normal schedule/part-time schedule, hours worked
- Role in INS organization chart (office, compartment, service, directorate, general directorate etc.)
- The calendar period for which the above information is valid, because a person is an employee of INS, but can move from one department to another, from one direction to another, can change his position, etc.

FUNCTIONS

1. Projects Management and Assigning to Projects (Multi-Project)
   - Managing multiple projects
   - Grouping projects to have grouped reports
   - Projects can belong to groups
   - Moving component/subcomponents between projects
   - "Promote" a component/subcomponent as a project (opt)
   - Copying projects
2. Functions at the level of activity/component/subcomponent/project
   - Assigning component/subcomponents and activities (according to LGA classification)
   - Periodicity of component/subcomponents and activity
   - Deadline of component/subcomponents and activity (open and close component/subcomponents by the PM)
   - Assigning expert per project/component/subcomponent/activity (from employee list)
   - Material costs: such as paper for printing questionnaires and publications, the cost of printing, mail costs, etc.
   - For each cost: free description, category (print/interview/other), amount
   - Payment for interviewers for statistical projects where interviewers are needed for the collection phase
   - Indirect costs (utilities, phone service, cleaning etc.) distributed proportionally to statistical projects
   - Function to proportionally distribute Indirect costs (utilities, phone service, cleaning etc.) to projects, in accordance with number of man/hours per project
   - Project conclusion: finalizing the project, releasing resources, final checklist, notices, documents, certifications, final reports
   - Viewing available and allocated resources by project / project manager
   - Re-assigning resources from one project to another, in accordance with organization priorities (with approval of Project Manager/General Director/Vice-President)

3. Functions for every employee (and for PM delegate):
    - Inputting hours assigned in each activity/component/subcomponent/project, with the option of deleting, correcting and confirming (usually on current and previous month)
    - Inputting same activity for multiple days (repeated activity) within same component/subcomponent/project
4. Dashboard
    - Different and customizable dashboards for different roles:
        - At level of INS Top Management (President, VP), including especially visual and graphic elements (Dashboard widgets & metrics/formula metrics)
        - At level of Directors, they will be authorized to monitor "their" projects, one project can be monitored by many Directors
        - At level of project manager, including real-time status updates about component/subcomponents/activities and budgets (Real Time status)
    - Dashboard library/template (opt)
    - Rules and alerts and messages on Milestones
    - Possibility to export Dashboard output to image files
5. Component/subcomponents
    - Marking component/subcomponents as belonging to one or more funding organizations or to PSNA, including updates on visualization and reporting
    - Assign component/subcomponent/activity to GSBPM phases
    - Assigning personnel in charge of component/subcomponents/activities
    - Assign component/subcomponents/activities into groups
    - Report per component/subcomponent/activity
    - Activity matrix view
    - Time-sheet view
    - Report on attributed/unattributed activities
6. Users (human resources)
    - The application must include a function to align (daily/weekly) employee's data with HR system, getting ID data, directorate assignment, mail, tel, degrees and certifications in a free text, Salary costs (hourly), Standard costs. Data for the alignment will be made available in csv files to be uploaded to SICCA system. The alignment will be executed by SICCA users with a menu command whenever they deem it necessary, usually weekly
7. Costs of other resources from Accounting system
    - SICCA will receive by Accounting system every month four figures: Money spent for Personnel, for Printing, for Interviews, other costs. The INS Accounting Department will prepare a customized print for this, with the download of data in csv format. Usually, data will be available after 20-30 days from the end of the month. The upload of Accounting data will be executed by SICCA users with a menu command whenever they deem it necessary, usually monthly

8. Costs of ONAs (Other National Authorities) responsible of some official statistical projects
    - SICCA will receive every month four figures for a project produced by ONAs: Money spent for Personnel, for Printing, for Interviews, other costs. The INS will prepare a standard file to be fulfilled by ONAs. The upload of ONA's data will be executed by SICCA users with a menu command whenever they deem it necessary, usually monthly
9. Reporting tools (per project, project groups, component/subcomponent, activity, PM organizational unit of INS, PSNA, GSBPM phase[5]) with the option of exporting reports in various formats, with the purpose of subsequent processing and data comparison:
    - Detailed reports of hours worked/product/service, project/component/ subcomponents/activity levels of management, depending on the roles in the system
    - Reports of hours worked per organizational unit
    - Centralized reports for various intervals of time
    - Financial report with calculation of costs of statistical projects broken down per expenses (direct, indirect)
    - Calculation of costs of employees per products/services
    - Calculation of total costs per projects/component/subcomponents/activities
    - Various other reports necessary for information management: Pipeline report, Compare periods in reports, Risk management reports
    - Costs at the level of a directorate for a certain project/component/ subcomponent/activity
    - Costs of each project based on its type (input, output, support)
    - Comparison between costs of some activities/component/subcomponents/ projects
    - Other combination of dimensions: time intervals, employees, directorates / compartments, activities, component/subcomponents, projects
    - Budgetary planning and monitoring the budget throughout the project duration, with the option of monitoring time delays and financial differences compared to estimations, accept funds for some projects
    - Simulating scenarios in order to identify and mediate risks. As resources allocation and deadlines can change, the system should support the definition of "what-if" scenarios to verify the effects of these changes (e.g., by changing resource allocation or final or intermediate deadlines)
10. Administrator (backend) functions
    - Management of all functionalities described
    - Dashboard that includes the space occupied by the system, the website and separately from files (space/site/repository metrics)
    - Configuration of physical location of files

5 https://statswiki.unece.org/display/GSBPM

- Automatic back-up to a secure location, through configuration of back-up schedule (daily, weekly, monthly or on-request)
- API facilities for data interchange: vendors can propose and detail such facilities to exchange/export data from the system
- Sending of warning messages to users through INS email system
- Assigning roles and access (Granular permission management) with roles within projects (Project Manager, Component/subcomponent Manager, employee, delegate)

TECHNICAL REQUIREMENTS

- Technical requirements:
  - INS users (local or from County Statistics Offices connected via INS LAN) would have LAN based access to the SICCA application
  - Must be web application installed in INS LAN
  - Must be specified the hardware and software requirements needed

SICCA will run on Apache or NGINX as web server with a MariaDB / MySQL / Postgres Data Base Management System. Operating system for both machines will be Ubuntu Linux LTS (minimum version 18.04).

Machine requirements (minimum), based on inputs from developers of similar projects as well as World Bank specialists' input:

- Web Server – Apache / NGINX
  - Ubuntu LTS (min 18.04)
  - CPU 8 cores, 64 bit
  - RAM 32 GB
  - Disk 500 GB
- MariaDB / MySQL / PostgreSql
  - Ubuntu LTS (min 18.04)
  - CPU 8 cores, 64 bit
  - RAM 32 GB
  - Disk 1 TB
- Developed preferably in PHP environment
- Must use a central relational data base (Oracle or MySQL-MariaDB or PostgreSQL) system
- The choice of open-source tools for development tools and for all the various software components is strongly recommended and will be considered an advantage
- The data base must be fully documented with tables, attributes, indexes, relationships, constraints, triggers and stored procedures commented
- Client interface must be accessed only with internet browser, without requiring additional software like plug-ins or similar: the goal is also to avoid any additional cost or license for INS to use the product
- Client interface must be accessible with the most widely used internet browsers: Microsoft Edge, Internet Explorer, Firefox, Chrome
- Application must support 2000 simultaneous users. For BI/Analytics area we have to distinguish between two types of users: all users must be able to examine

the output of BI operations (reports and charts and dashboards), while only 10 simultaneous users must be authorized to produce new outputs in the BI/Analytics area

- Application must identify users at least through Active Directory user and password; a forgotten password must be recoverable by specifying username or user email address
- All information sent between clients and server must be encrypted (https)
- The system must be available 24 hours/day, 365 days per year, except time interval planned for maintenance
- Source code of application must be available, together with appropriate documentation, in order to facilitate current maintenance operations, but also the addition of new functionalities in the future; the source code will be released under open-source license
- The system will supply online help, but user guides must also be available offline (pdf or other formats)
- Software generated reports will be available in multiple formats: as web pages in a browser and there should option to save them at least as pdf and excel files
- The system must include a report generator using which it's possible to generate new reports not planned initially
- (optional) The system will display a RESTful interface via HTTP to supply data in JSON format necessary for interfacing with other systems
- Assistance provided during the installation and initial configuration until successful INS acceptance test
- Training for SICCA administrators and for SICCA trainers
- Development time: 1 year
- Mixed INS-WB reference work group for requisites and clarifications on the product functionalities

Annex 2 – Web administrator Manual

The Manual is provided in electronic format, archived with this report (only in Romanian).

Annex 3 – User Manual

The manual is available inside the SICCA application on the first page (Romanian version only) and is provided in electronic format, archived delivered with this report.

Annex 4 – Administrator (backend) Manual

The SICCA Application administration manual (Romanian version only) is provided in electronic format, archived with this report.

Annex 5 – Database and nomenclatures

The SICCA application database (sql) and its content and user diagrams, as well as its nomenclatures, are provided in electronic format, archived with this report.

Annex 6 – Source code of application

The source code of the application is provided in electronic format, archived together with this report.

Annex 7 – Training materials

The training support is provided in electronic format, archived together with this report.

Training guidance/topics:

1. Start from homepage
2. Log in as admin
3. Create PROJECT
4. Create a component/subcomponent from the project form - with Entity Browser
5. Create an activity from the inline form (Project->Component/subcomponent->Activity)
6. Show the front page of the project with details and related component/subcomponent -> activity
7. Click on the component/subcomponent and activity links and show their pages.
8. Create a new component/subcomponent and select as parent the previous project.
9. Show the project page and point that the structure of the component/subcomponents is changed
10. Go to the people page and create a new user account with the employee role.
11. Go to the activity and add the newly created user as an assignee.
12. Go to incognito and log in as the newly created user.
13. Go to timesheet.
14. Log some time in different weeks
15. Come back as admin and approve the timesheet (from the extended timesheet)
16. Add a direct cost for the Project
17. Add a direct cost for the Activity
18. Add indirect cost(s)
19. Go to the costs report in the project, component/subcomponent and activities
20. Update the cost for the logged hours
21. Explain how to - Alter LAG taxonomy
22. Note what taxonomies are related and show detail pages

Practice – prepare a project/survey

Annex 8 – Working meetings

Dates of working group meetings (from last to first):

1. November 16, 2021
2. August 17, 2021
3. July 1, 2021
4. May 25, 2021
5. April 22, 2021
6. April 8, 2021
7. March 18, 2021
8. February 18, 2021
9. December 29, 2020
10. December 16, 2020
11. December 9, 2020
12. November 17, 2020
13. November 3, 2020
14. October 21, 2020
15. September 23, 2020
16. September 9, 2020
17. August 26, 2020
18. August 4, 2020
19. July 17, 2020
20. June 30, 2020
21. June 16, 2020

Part of the meeting minutes can be found at https://trello.com/b/gva0xUM6/sicca-sistem-informatic-pentru-calculul-costurilor-activitatilor .