

ELECTORAL SUPPORT TO MOLDOVA

TECHNICAL SPECIFICATIONS

FOR INTEGRATION OF VOTER TURNOUT AND ELECTION RESULTS WITH
CEC WEBSITE

LIST OF ABBREVIATIONS

Abbr.	Description
UNDP	United Nations Development Program
IOM	International Organization for Migration
CEC	Central Election Commission
DEC	District Election Commission
PS	Polling Station
MID	Ministry of Information and Development
MICT	Ministry of Information and Communications Technology (previously MID)
CTS	Centre of Special Telecommunications
SAISE	State Automated Information System – Elections
ROV	Register of Voters
ROP	Register of Population
GUI	Graphical User Interface
RTS	Result Tabulation System
VS	Microsoft Visual Studio
EVR	Electronic Voters Register
OCV	Out-of-Country Voting
Doc Nr	The passport or ID Card's number. For example, every passport issued to the same person, will have a different number. A Voter can potentially have a ID card with Doc Nr, Russian Passport with Doc Nr and Moldova Passport with Doc Nr, or even previous Documents with Doc Nr, all of them different numbers, but the same person.
IDNP	Identity Number for Natural Person. Unique number for each person. Every Moldovan citizen might not have an IDNP yet. Citizens are allowed to refuse such a number for religious reasons.

INTRODUCTION

The State Automated Information System – Elections (SAISE) is a comprehensive Election System which integrates all the IT tools and functions needed by an Election Management Body (EMB) to conduct Elections.

The first two sections give the background to the request for integration.

The CEC Website (www.cec.md) is the public portal for the events, decisions, results and voter information.

This document is the Technical Specifications describing how the CEC Website should interface with the SAISE database to display the Voter Turnout and preliminary Election Results on Internet.

The last section, *Website Election Results Output*, is directly related to the request for integration into the CEC Website.

SAISE RESULT MANAGEMENT

OVERVIEW

The SAISE Result Management module allows the User to enter the Election Results on Election Day at close of Poll. The Ballot Counts are displayed in exactly the same order as the Election Result Protocol document. The Competitors will be arranged in the same order as indicated by the *Ballot Order* fields in the *Registration of Political Parties* module.

The counts entered by the User will be verified and validated by the SAISE by applying certain predetermined and publically available formulas in an attempt to reduce typing errors. The results will then be stored in the Central Database to be used by other SAISE modules.

USE CASE

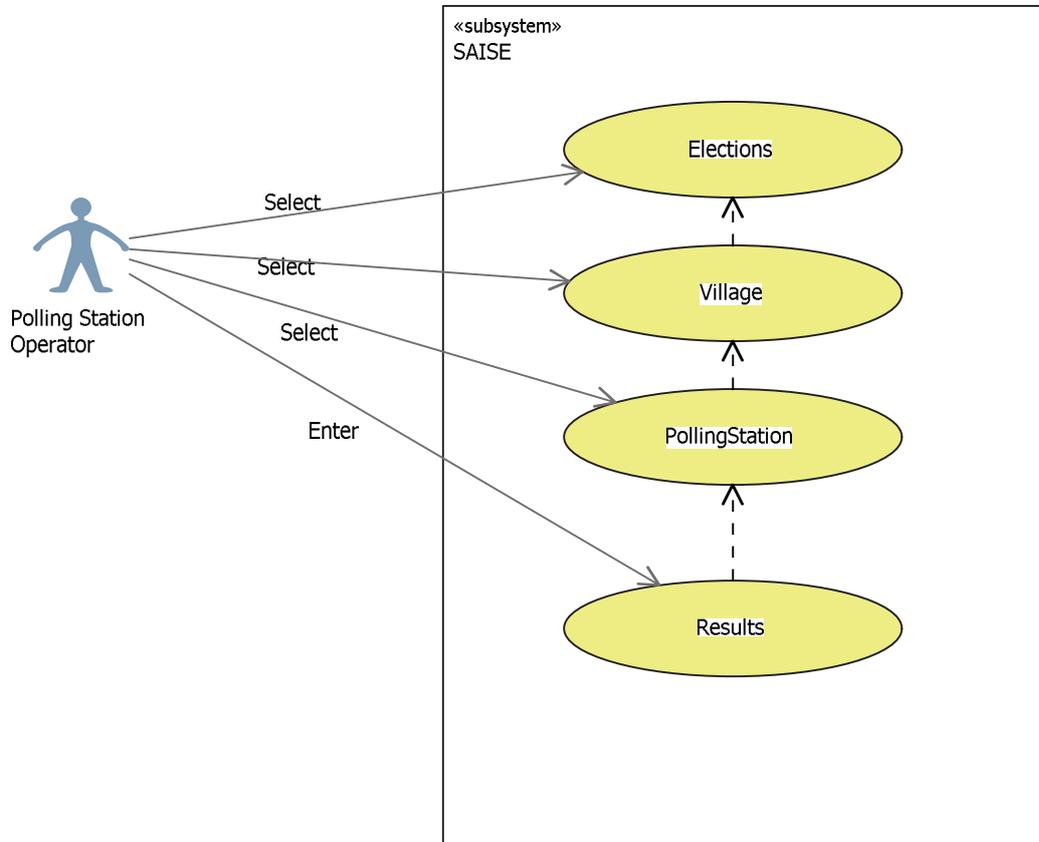


Figure 1: Use Case diagram for Operator to enter Election Results

ACTIVITY DIAGRAMS

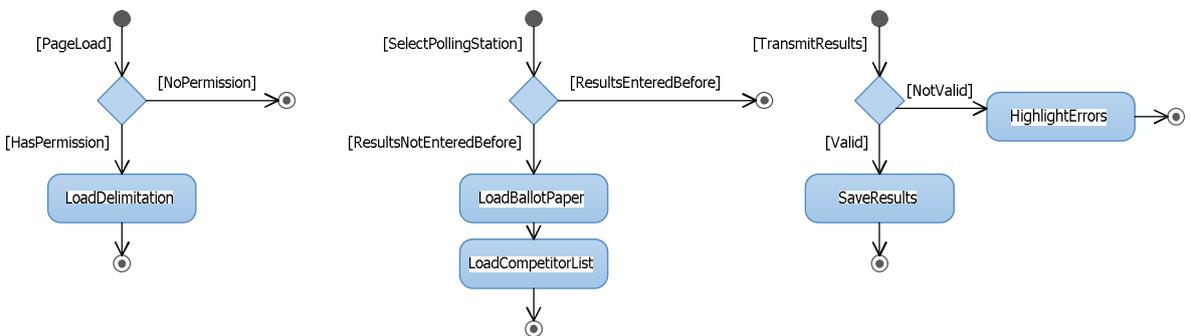


Figure 2: Activity Diagrams for Page Load, Polling Station Select and Transmit Results

DATABASE DIAGRAMS

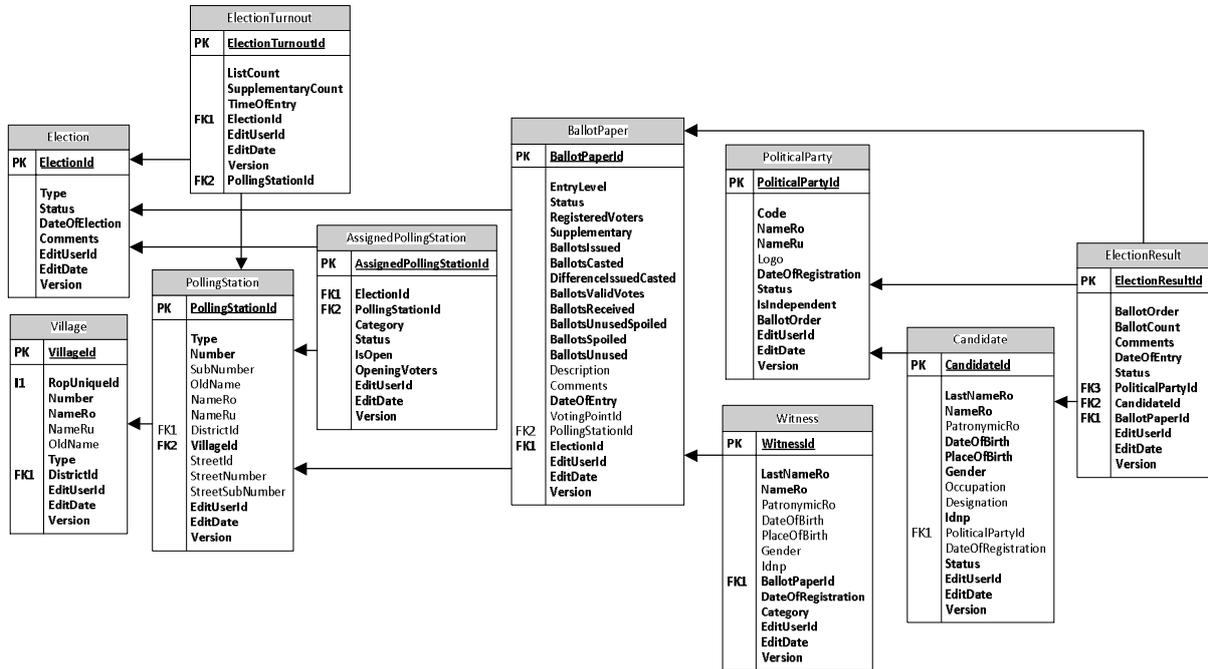


Figure 3: Database Diagram of tables and related tables used for Result Management

This structure already exists and the SAISE will be populating the tables with the appropriate data.

USER INTERFACE

The following user interface does exist in SAISE to enter the data into the SAISE Election Result tables.

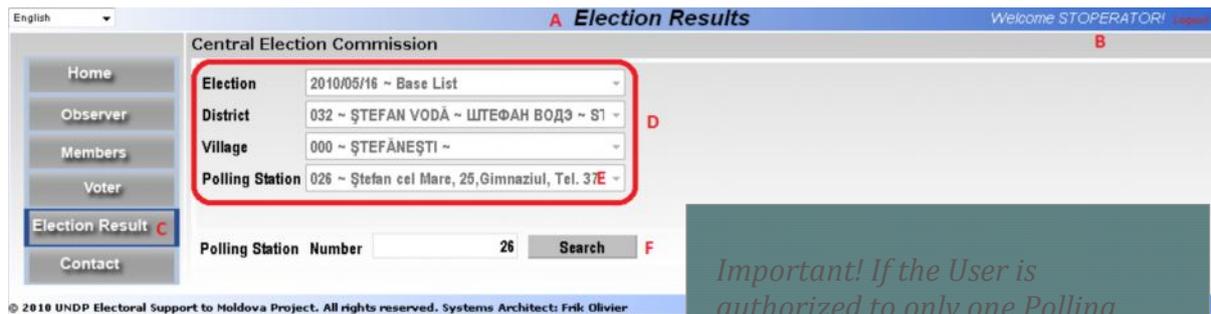


Figure 4: Election Result Input Page

- A. **Page Title** – Indicates that the User is currently busy with the *Election* management functions.
- B. **Login User** - Shows the current login user.
- C. **Election Results button** – Menu Button to access the page.
- D. **Delimitation** – The User should select the Polling Station for the results to be entered.

Important! If the User is authorized to only one Polling Station, the SAISE will select that Polling Station Automatically, the selection will then be disabled.

- E. **Polling Station** – The User has two ways to select the Polling Station. One way is to navigate through the drop down selections to the desired Polling Station. The other way is through the Search Polling Station Number function described next.
- F. **Search Polling Station Number** – Certain Districts such as Chisinau have many Polling Stations. The Search function will allow them to enter the Polling Station Number as it is on the Result Protocol and search for it.

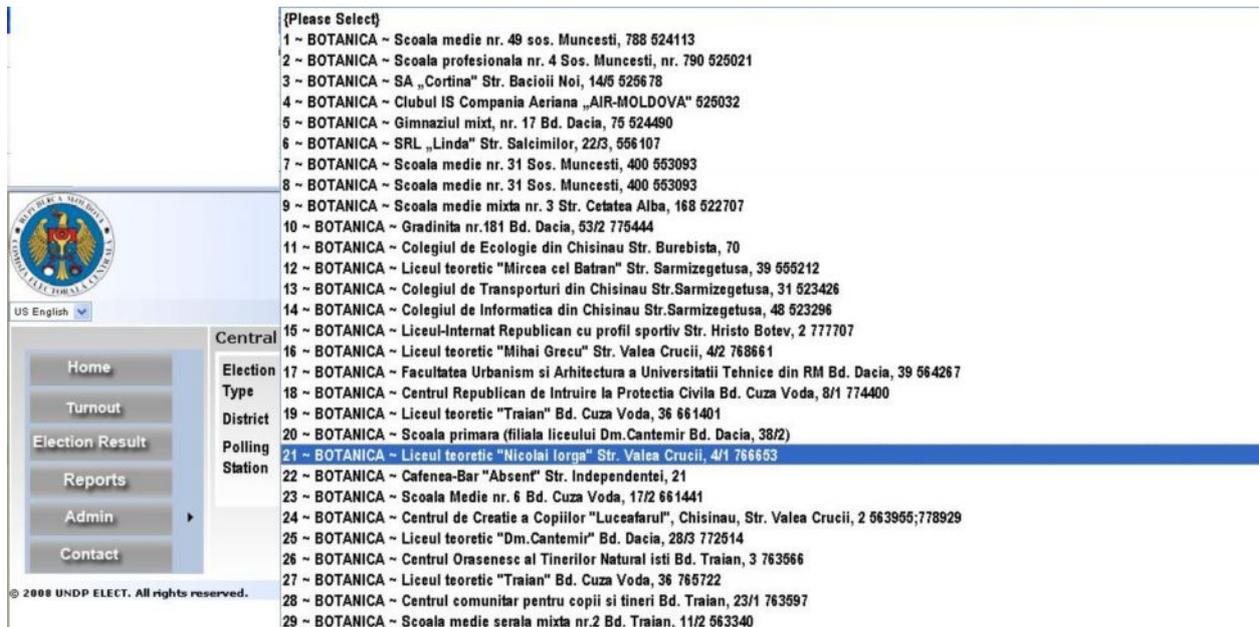


Figure 5: The long way round to search for Polling Station by selecting from the Polling Station Drop Down List

The operator has two (2) ways of selecting the polling station they want to select to enter the results for. They can select from the list of polling stations (E) or enter the number of the polling station in the search box (F). By clicking the mouse cursor in the Polling Station box a list of polling stations for that district will appear as shown below. Or by selecting the polling station by inputting the number of the polling station and click *Search* the polling station will appear and the results input screen will display.

ELECTION RESULT ENTRY SECTION

After selecting the polling station the operator wants to enter the results for the screen for the input of the protocol from that polling station displays.

Ballot Paper

a) Number of voters included in voters' lists

b) Number of voters included in supplementary lists

c) Number of voters who received ballot papers

d) Number of voters who participated in voting

e) Difference between the number of ballots received by voters and number of voters who participated in voting

f) Number of ballot papers declared invalid

g) Number of validly expressed votes for each electoral competitor

Ballot Order	Candidate	Political Party	Party Code	Ballot Count
1	Qatrawi Ersilia	Partidul Comuniștilor din Republica Moldova	PCRM	<input type="text" value="270"/>
2	Lichi Ion	Partidul Popular Creștin Democrat	PPCD	<input type="text" value="190"/>

h) Total number of validly expressed votes

i) Number of ballot papers received by the district electoral council

j) Number of unused and cancelled ballot papers

B

Figure 6: The Election Result Protocol section filled in

The operator must only enter the results when they have the original protocol with the signature of the chairman and the seal of the respective station. The system does not allow the operator to re-enter the results for the same polling station once they have been submitted.

The columns of this form correspond to the boxes of the protocol on the Election Results page (A). The operator transfers the information from the protocol into the SAISE (A). The operator has to fill in all the columns from column even if their value is equal to zero.

To confirm the operator presses *Submit Results* (B). After that, the election results are passed to the SAISE for validation. After results have been submitted this polling station will not be available in the list of polling stations for other input.

WEBSITE ELECTION RESULTS OUTPUT

OVERVIEW

The SAISE Election Results Management module stores the data in a relational database with a complex structure in order to allow for history of election results, allowing for Parliamentary Elections and Local Elections and is flexible to Polling Station changes. The tables are optimized to easily relate the relevant data through a series of related tables.

However, these relational tables are not optimized for Internet usage where a massive amount of requests for Election Results on Election Day. Therefore the data should be de-normalized into a flat structure and aggregated data should be processed and stored in a data warehouse fashion. This data should be indexed for speed optimization.

USE CASE

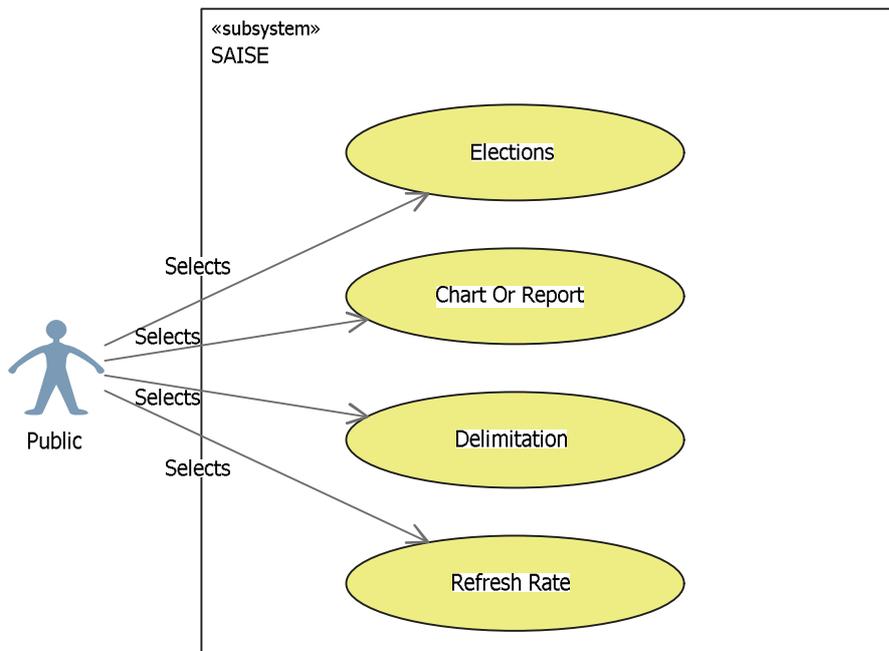


Figure 7: Use Case diagram for Public to view Election Results

ACTIVITY DIAGRAMS

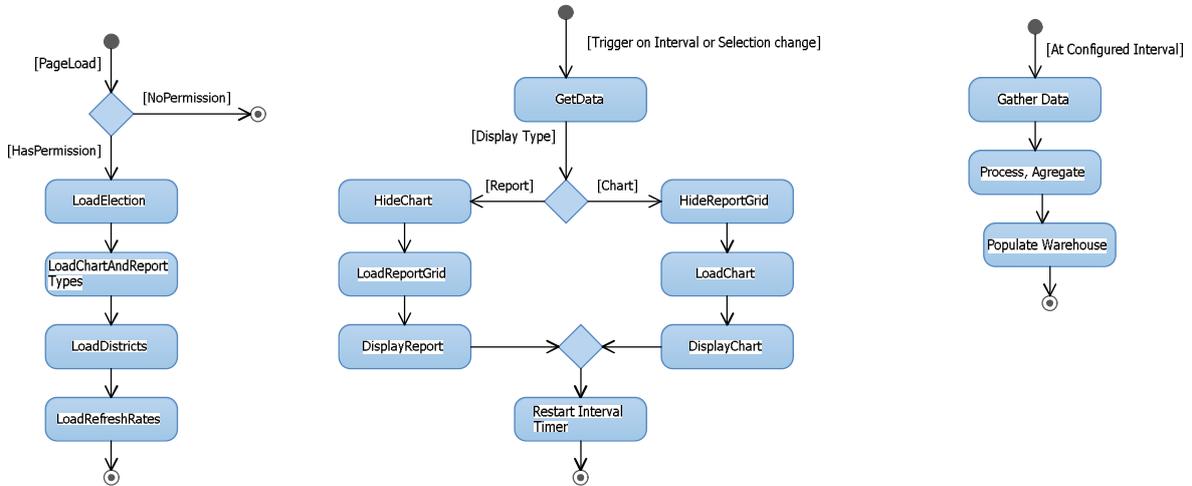


Figure 8: Activity Diagrams for Page Load, Report Triggers and Updating Warehouse

DATABASE DIAGRAMS

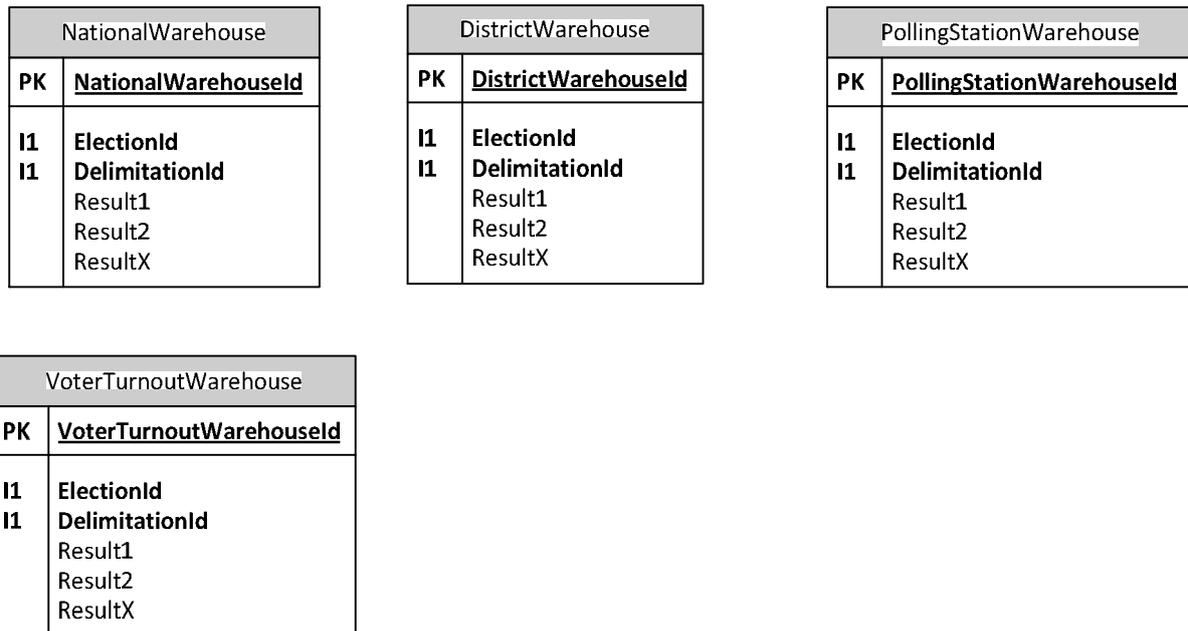


Figure 9: Database Diagram of tables and related tables used for Result Management Warehouse

The above tables do not exist and could be adapted or changed to fit the preliminary Election Results integration into the CEC Website. This can be populated via insert triggers on the SAISE *ElectionResults* table. These tables should contain all the aggregated and processed information. The indexes should be designed for fast access and for many read requests from the Internet.

USER INTERFACE

MAIN FILTER CRITERIA'S

The screenshot shows a web interface for election results. At the top, it displays the district name: "CHIȘINĂU ~ КИШИНЭУ ~ CHISINAU". Below this, there are several filter criteria:

- Report Type (B):** A dropdown menu currently set to "Election Results".
- Refresh (H):** A button to refresh the data.
- Refresh Rate (I):** A dropdown menu set to "15".
- Election (C):** A dropdown menu set to "2010/05/16 ~ Local ~ Singera".
- District (D):** A dropdown menu set to "001 ~ CHIȘINĂU ~ КИШИНЭУ ~ CHISINAU".
- Village (E):** A dropdown menu set to "{Please Select}".
- Polling Station (F):** An empty dropdown menu.

 Below the filters, there is a table titled "Ballot Paper" (G) with the following data:

Ballot Paper	
a) Number of voters included in voters' lists	621759
b) Number of voters included in supplementary lists	33580
c) Number of voters who received ballot papers	402743
d) Number of voters who participated in voting	402723
e) Difference between the number of ballots received by voters and number of voters who participated in voting	20

Figure 10: Election Result Chart

- A. Chart/Report Title** – Feedback to User of the refreshed time, current type of report/chart and what delimitation level the data represents.
- B. Report Type** – Allow the User to select the different report types.
 - a. Voter Turnout** – The voter turnout in table format.
 - b. Voter Turnout Chart** – The voter turnout in chart format.
 - c. Party Results** – The preliminary results for each political party / candidate in table format.
 - d. Party Results Chart** – The preliminary results for each political party / candidate in chart format.
 - e. Election Statistics** – The aggregated figures from the protocol information such as Number of voters included in voters' lists, Number of voters included in supplementary lists, etc. in table format.
 - f. Protocol Document Information** – The aggregated information exactly as represented on the Protocol documents.
- C. Election** – List of elections for which data exists.

- D. **Delimitation District** – List of Districts for which data exists for selected Election (C). If not selected, then report data is aggregated to national level.
- E. **Delimitation Village** – List of Villages for selected District (D) for which data exists. If not selected, then report data is aggregated to selected District (D) level.
- F. **Delimitation Polling Station** – List of Polling Stations for selected Village (D) for which data exists. If not selected, then report data is aggregated to selected Village (E) level. Depending on type of data, in some cases this selection would not be displayed.
- G. **Display Area** – Display area for table report or chart.
- H. **Refresh button** – To override the interval timer refresh and immediately refreshing.
- I. **Refresh Rate** – Predefined list of automatic refresh of the currently selected report. This is useful for big screen displays.

SCREENSHOTS OF DISPLAYED DATA

VOTER TURNOUT

	Total	Count from Base List	Count from Supplementary List	Percentage
09:45	0	266826	13062	0
12:45	0	754021	37098	0
15:45	0	1009935	50073	0
18:45	0	1242483	76422	0
21:45	0	1490936	89085	0

Figure 11: Example of Voter Turnout in table format

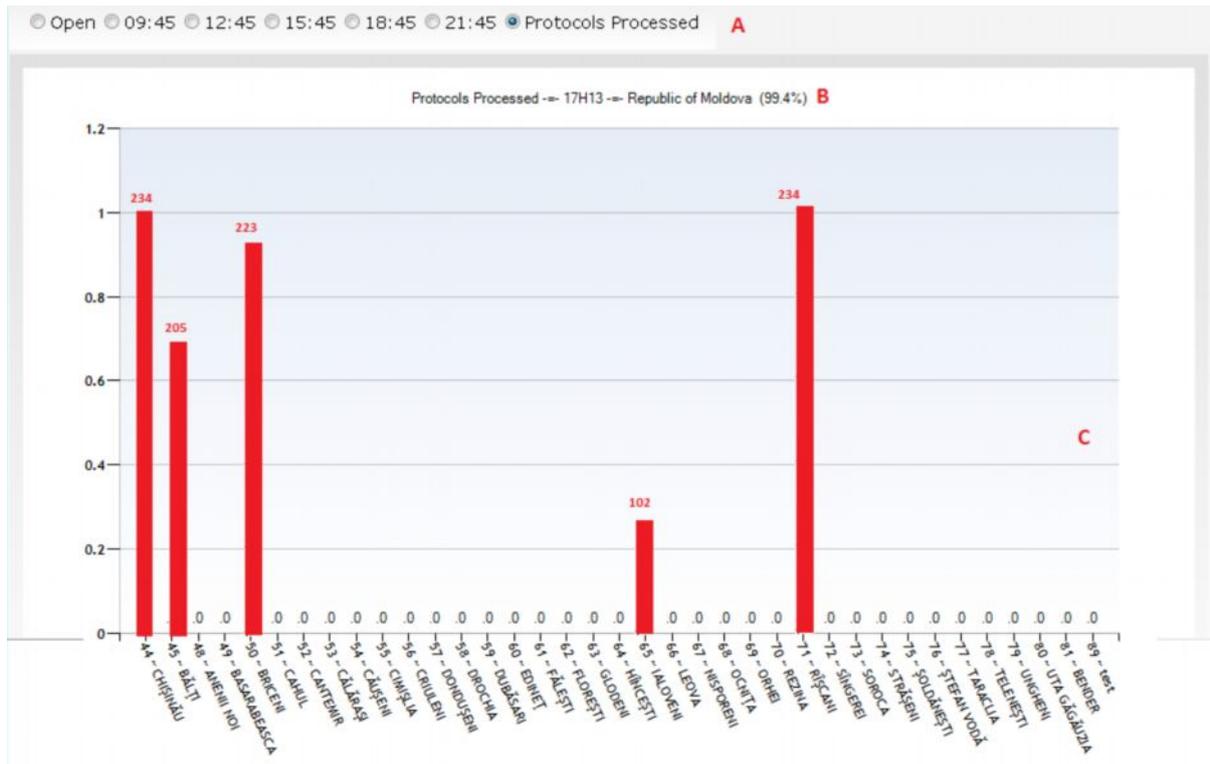


Figure 12: Voter Turnout in chart format

- A. **Time Selection** – The User will select for which time slot they want to view the chart. Three special cases exists:
 - a. **Open** – This will show the opening Voter Count of the Polling Station. The Polling Officer enters at opening off poll the number of voters on their base list via the SAISE. The chart title (B) should show the percentage of opened Polling Stations out of possible Polling Stations for the current selected Delimitation Level. The numbers on top of the bars should be the number of opening voters.
 - b. **Time slot** – The User can select any time slot for which the chart should display the turnout figures of voters for that time slot. The chart title (B) should show the percentage of voters voted at Polling Stations out of the base list + supplementary list for the selected Delimitation Level. The numbers on top of the bars should be the voter turnout number.
 - c. **Protocols Processed** - This will show which Polling Stations results were entered into the database. The District Officer enters at close off poll the figures and counts from the Protocol document via the SAISE. The chart title (B) should show the percentage of received Protocol documents from Polling Stations out of possible Polling Stations for the current selected Delimitation Level. The numbers on top of the bars should be the number of Votes casted.
- B. **Chart Title** – Contains the selected Timeslot type, the last refreshed time, the selected Delimitation Level and a percentage as described in (A).
- C. **Chart** – Shows the bar chart with figures on top of bars as described in (A).

PARTY RESULTS

A -- 17H39 -- Republic of Moldova

B Name	C i	PSD	PLDM	PCRM	PL	AMN	PDM	PEMAVE	i33
44 ~ CHIȘINĂU	0	0							
45 ~ BĂLȚI									
48 ~ ANENII NOI									
49 ~ BASARABEASCA									
50 ~ BRICENI									
51 ~ CAHUL									
52 ~ CANTEMIR									
53 ~ CĂLĂRAȘI									
54 ~ CĂUȘENI									
55 ~ CIMIȘLIA									
56 ~ CRIULENI									

Figure 13: Preliminary Party Results in table format

- A. Report Title** - Contains the selected Report type, the last refreshed time, the selected Delimitation Level.
- B. Delimitation List** – Vertical list of lower hierarchy delimitation from selected Delimitation Level.
- C. Political Party List** – Horizontal list of Political Parties in the same order as appearing on Ballot Paper.
- D. Data area** – Table area to display the data.

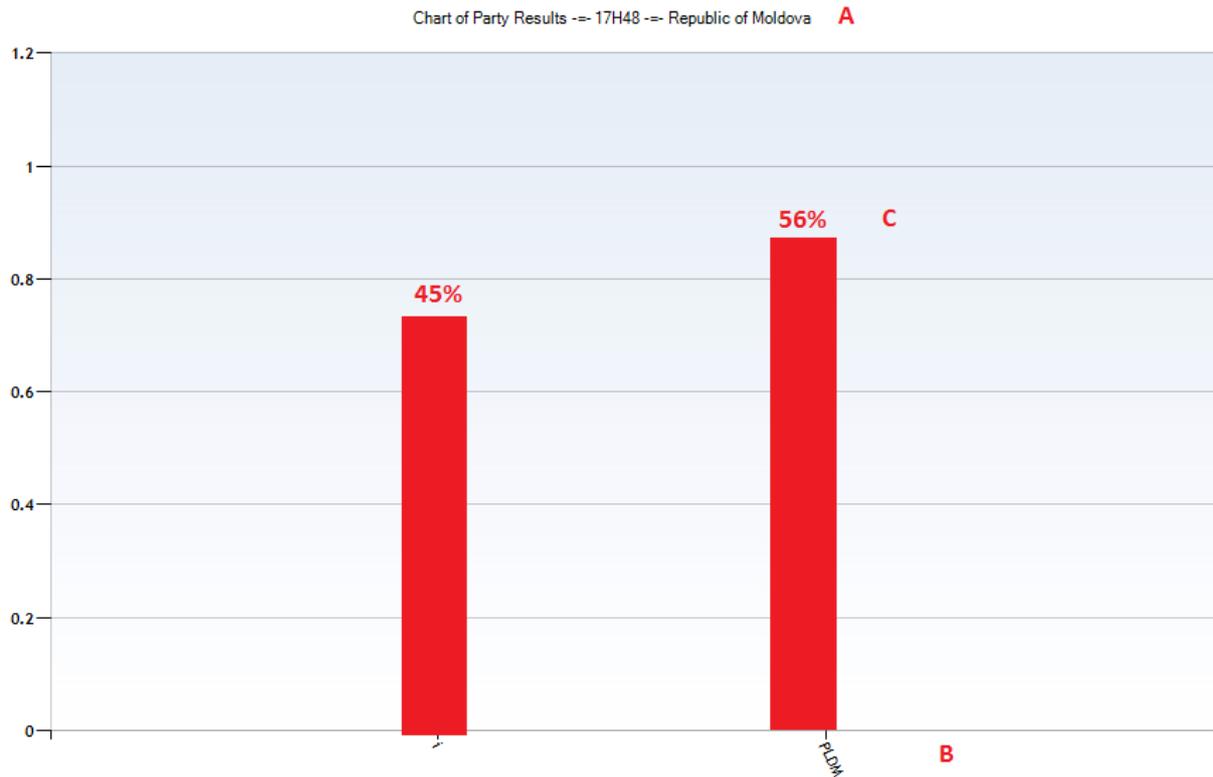


Figure 14: Preliminary Party Results in chart format

- A. Report Title** - Contains the selected Report type, the last refreshed time, the selected Delimitation Level.
- B. Political Party List** – Horizontal list of Political Parties in the same order as appearing on Ballot Paper.
- C. Votes** – Number of votes on top of the bar as a percentage (%).

ELECTION STATISTICS

-- 17H39 -- Republic of Moldova A									
B Name	C								
	Number of voters included in voters' lists	Number of voters included in supplementary lists	Number of voters who received ballot papers	Number of voters who participated in voting	Difference between the number of ballots received by voters and number of voters who participated in voting	Number of ballot papers declared invalid	Total number of validly expressed votes	Number of ballot papers received by the district electoral council	Number of unused and cancelled ballot papers
44 ~ CHIȘINĂU	621759	33580	402743	402723	20	1897	400826	680461	277718
45 ~ BĂLȚI	105162	2001	57249	57245	4	351	56894	106151	48902
48 ~ ANENII NOI	65167	4973	39653	39649	4	247	39402	73332	33679
49 ~ BASARABEASCA	16065	1033	12560	12560	D 0	79	12481	16028	3468
50 ~ BRICENI	56872	1217	35469	35468	1	261	35207	57386	21917
51 ~ CAHUL	90444	1729	53595	53594	1	291	53303	89708	36113
52 ~ CĂNĂTEMIR	41995	1485	25761	25761	0	165	25596	42091	16330
53 ~ CĂI ȚĂRAȘTI	58990	1976	34020	34020	0	226	33794	59497	25477
54 ~ CĂUȘENI	65520	3588	39288	39285	3	244	39041	67872	28584
55 ~ CIMIȘLIA	42703	1962	25686	25686	0	145	25541	42678	16992

Figure 15: Election Statistics in table format

- A. **Report Title** - Contains the selected Report type, the last refreshed time, the selected Delimitation Level.
- B. **Delimitation List** – Vertical list of lower hierarchy delimitation from selected Delimitation Level.
- C. **Information List** – Horizontal list of statistical information in the same order as appearing on Protocol document.
- D. **Data area** – Table area to display the data.

PROTOCOL DOCUMENT INFORMATION

Ballot Paper			
a) Number of voters included in voters' lists			2605660
b) Number of voters included in supplementary lists			105227
c) Number of voters who received ballot papers			1593221
d) Number of voters who participated in voting			1593143
e) Difference between the number of ballots received by voters and number of voters who participated in voting			78
f) Number of ballot papers declared invalid			10263
g) Number of validly expressed votes for each electoral competitor			
Candidate	Political Party	Party Code	Ballot Count
i Duca Ion		i	0 (.0%)
	Partidul Liberal Democrat din Moldova	PLDM	0 (.0%)
h) Total number of validly expressed votes			1582880
i) Number of ballot papers received by the district electoral council			2690830
j) Number of unused and cancelled ballot papers			1097609

Figure 16: Protocol Document Information