Vision and Scope Document

for

Fingerprint Voting System

Prepared by:

Aganović Ajla 210302135

Mujezinović Amina 210302140

Subašić Nejira 210302167

Jeličić Ivan 210302160

Žiga Edin 190302192

Version 1.0

November 6th, 2022

Table of Contents

1.Business Requirements

"The business requirements describe the primary benefits that the new system will provide to its sponsors, buyers, and users." The following section aims to establish the business requirements for the ***Fingerprint Voting System***.

1.1 Background

The idea of the ***Fingerprint Voting System*** as an idea was suggested and developed after the team received firsthand experience with the election system within *Bosnia & Herzegovina*. For clarification, the voting system in *Bosnia & Herzegovina* leaves much to be desired, as even in 2022 it is limited to pen and paper voting, and manual vote counting that often lasts for hours. The ***Fingerprint Voting System*** by design and implementation aims to simplify the whole process, for the voters and authorities alike.

1.2 Business opportunity

Bosnia & Herzegovina by nature has an extremely complex political system, something which is reflected in the voting system. The voting process for a *B&H* citizen consists as follows:

- Researching beforehand which voting location the citizen is assigned to.
- After arriving on that location for election day, someone must manually confirm the citizen's identity via ID Card, Driver's license, or passport.
- The voter signs their name in a specialized notebook for that one voting location, after which they are handed 4 individual voting tickets each having security features (should the voter not be in the notebook, they are not allowed to vote at that location).
- The voter goes to one of the voting booths, proceeds to vote for each of the four layers of authority (with each layer of authority having specific voting rules).
- After voting, they fold the voting tickets and submit them inside a sealed box.

It is apparent that the entire process can be streamlined using technology, reducing the need for paper printing, per ticket security features, individual identification, voter frustration and worry about their voting location, and so on.

After the 12-hour voting period immediately comes the ticket counting process, consisting of a team of 5 people counting hundreds of tickets at a time for each level of authority in *Bosnia & Herzegovina*. This process is extremely slow, as every ticket needs to be opened, checked if the vote is valid, sorted into its own category and afterwards counted to confirm the total number of tickets. It usually lasts well into the night, with some locations counting until dawn. An entire process that has incredible room for improvement.

By implementing the ***Fingerprint Voting System***, any voter will be able to vote at any voting location. Each location will have multiple Android Based Devices with the system install on them, through which voters will be able to prove their identity using their fingerprint. After which, the relevant voting tickets are generated based on the user's data (as tickets are different for different locations in *B&H*). In order to confirm the voter's identity, the system will be able to access government databases to cross-reference the data provided. All vote counting will be done server side, completely automatically, eliminating human errors and the need for manual labor.

1.3 Business objectives

As the project is mostly based on changing government policies and improving general well-being for the population of *Bosnia & Herzegovina*, it must be noted that the largest financial objectives consist of cost saving reductions, rather than profit(see *Table 1.3.1*).

Financial	Nonfinancial
- Completely eliminate design and printing costs - Reduce material costs by 20% in first year, and 80% in following years compared to previous years - Reduce yearly election labor costs by 60% - Achieve a 400% return on investment after selling the patent to CEK (Central Election Committee) within the first year of development - Long term contract for maintaining the system, consisting of monthly payouts for a minimum of five years - Eliminate need for additional hardware investments besides initial investment in first 5 years.	- Develop a voter friendly platform - Provide updates and security improvements for the platform - Comply with specific country regulations - Patent *Fingerprint Voting System* - Eliminate need for voter specific designated locations - Eliminate need for counting and authenticating votes - Eliminate possibility of incorrect voting - Eliminate possibility of human error - Provide accessibility features for impaired voters (Assisted voting mode) - User guide on how to use - User guide on how to vote

Table 1.3.1 Financial & Nonfinancial Business Objectives

1.4 Vision statement

For the *CEK (Central Election Committee)* which has been struggling to meet the demands of citizens regarding the elections in *Bosnia & Herzegovina*, the **Fingerprint Voting System** is a solution to every concern regarding election efficiency and safety. The system will consist of having Android Based Devices with fingerprint reading capabilities at multiple locations during elections, allowing users to vote regardless of the location they visit. It will remove the need for printing physical tickets, human labor, identification as well as manual vote counting. The system is estimated to reduce labor costs by roughly 60%, and material costs by almost 80% in the coming years. Unlike the current pen and paper voting process which allows for voter mistakes, our system will completely eliminate the possibility of incorrect voting, vote tampering, incorrect counting, human error, and many other factors that reduce election result credibility.

1.5 Business risks

Table 1.5.1 presents the business risks associated with the development of the ***Fingerprint Voting System***.

Major Risks	Minor Risks
• ***Fingerprint Voting System*** getting rejected by *CEK (Central Election Committee)* • Breaches of confidentiality • Inadequate financing from *CEK (Central Election Committee)* • Lack of collaboration from government bodies	• Electronic particles from space affecting bit values within the server • Power fluctuations • Data breaches • Dissatisfaction from general population with the system • Encryption algorithms costing performance

Table 1.5.1 Major & Minor Business Risks

2. Scope and Limitations

The following section aims to address the Scope and Limitations of the ***Fingerprint Voting System***.

2.1 Major features

The features listed represent the majority of what is to be expected from the ***Fingerprint Voting System***. To provide a clearer representation of the feature list, a Partial Feature tree is provided (see *Figure 2.1.1*).

1. User guide on how to use the ***Fingerprint Voting System***
    1.1. Select individual voting mode or assisted voting mode
2. Individual voting mode
    2.1. Fingerprint identification of user
    2.2. Confirmation of identity and retrieval residency information from government server
        2.2.1. Generation and delivery of relevant voting tickets to user
        2.2.2. Unidentified voter message
3. Assisted Voting Mode
    3.1. Authorized Personnel NFC Card Identification
    3.2. Fingerprint identification of user and assistant
    3.3. Confirmation of identities and retrieval residency information from government server
        3.3.1. Generation and delivery of relevant voting tickets to user
        3.3.2. Unidentified voter/assistant message
4. User guide on voting rules and restrictions
    4.1. Continue button

5. Display of Voting tickets
    5.1. Color coded sections, with different levels of authority
        5.1.1. Automatic restriction if selection limit is surpassed
        5.1.2. Refuse to vote option for every section
    5.2. Revisit voting rules option
    5.3. Next option
6. Confirmation of voting selection
    6.1. Selection overview
    6.2. Back button
    6.3. Confirmation button (10 second delay before being able to confirm voting choices)
        6.3.1. Voting choices get encrypted using RSA Encryption and are sent to local server with security information containing device number and location
    6.4. Thank you screen (20 second delay)
    6.5. Voting system reset

Fingerprint Voting System	Version: <1.0>
Vision and Scope Document	Date: 06.11.2022

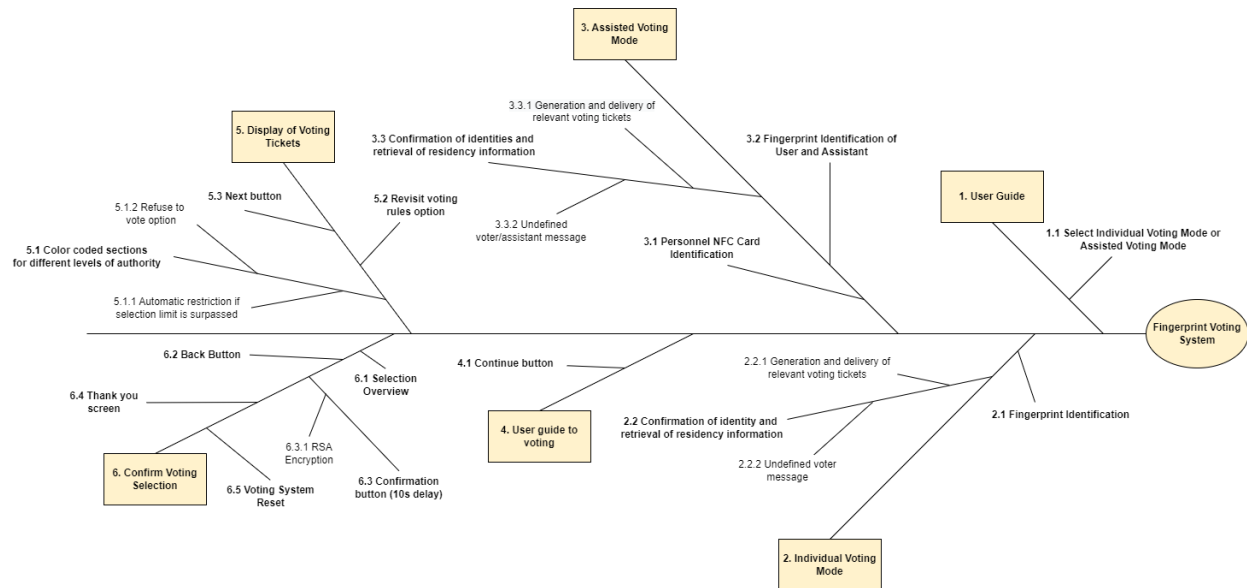| Date	Version	Description	Authors
06.11.2022	1.0	Initial Release	Aganović A., Mujezinvić A., Subašić N., Jeličić I., Žiga E.

Figure 2.1.1 Partial Figure Tree

3. Bibliography

- *Wiegers, K. E., & Beatty, J. (2013). Software requirements (Third Edition). Microsoft Press.*
- *Sommerville, I., & Sawyer, P. (2006). Requirements engineering: A good practice guide. John Wiley & Sons.*
- *Robertson, S., & Robertson, J. (2014). Mastering the requirements process. Addison-Wesley.*