Project Development Phase

Exception Handling

TEAM ID	NM2023TMID04400
PROJECT NAME	BIOMETRIC SECURITY SYSTEM FOR VOTING PLATFORM

Exception Handling :

Accuracy

- A system is said to be accurate if it can assure:

  (1) No legitimate vote can be ignored in the final tally;

  (2) No illegitimate vote can be counted as valid;

  (3) Votes can not be tampered with (changed) after submission.

Democracy

- Democracy is understood to be the proper (equal) weighting of votes:

  (1) All legitimate voters can vote.

  (2) Legitimate votes are counted only once (all votes have equal weight).

Privacy

- The ability of a system to assure:

  (1) No party can associate a vote with the originating voter (voting is anonymous);

  (2) Voters may not prove how they have voted.

- Special attention should be drawn on this second privacy property. When it is required, the inability of a voter to prove the contents of their vote is intended to avoid the selling/extortion of votes.

- The problem with this requirement is that it is incompatible with free-text fields in ballots (any unconstrained answering can be used to mark votes and later prove their authorship), and it also often limits verifiability: if users know how they voted but cannot prove it, even if they verify their vote was miscounted they can not prove that either.
- Systems designed in a way that does not allow for vote proof (as traditional elections have so far been) are also called receipt-free.

Verifiability

- Verifiability may be either
  (1) Universal, so that voters, administrative entities and third-parties can verify each vote was properly authorized and counted for; or
  (2) Partial, enabling only some of the involved parties (a constituted observer or an administrator) to verify results, or possibly permitting only the verification of part of the results (as when a voter is only able to verify the correctness of his own vote).

Flexibility

- The flexibility of a system is understood as the freedom it allows for in the structure/contents of ballots.
- Flexible systems are those that do not impose any restrictions on the formats of neither questions nor answers.

Operational Requirements and Robustness

Availability

- In a practical implementation, availability refers to:

(1) How a system maintains functionality and stability from the beginning to the end of an election;

(2) The ability of a system to receive votes from all voters equally and at any time when the election is open.

Collusion Resistance

- A system is as resistant to collusion as it is hard to gather enough parties to effectively compromise the core requirements, mostly considering Privacy and Availability.

- Measurements of collusion resistance are often given in terms of how many entities are necessary to collusion.

Scalability

- Scalability measures how well a system applies to larger scales.
- Scaling is said to be efficient if computational/communication costs are linear to the number of voters.