Exercise 2 - Product Requirements Document

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October 22, 2015

Functional Requirements

- Analysis of current election
  - Composition of the Bundestag by party, taking into consideration: Direkt-, Überhangs- and Ausgleichsmandate
  - Direktmandate by party
  - Each vote has to be stored separately but can be aggregated on Wahlkreis-level for faster analysis.
- Comparison to former elections
  - Compare results of current elections to former elections, especially those from 2009 and 2013
  - Votes from former elections are not kept.
- Voting
  - Accept and store votes from people who are eligible to vote.
  - Only one first and second vote per person allowed

Nonfunctional Requirements

Performance Voting, evaluation and analysis has to happen in near real-time. *Acceptance criteria 3*

Scalability The system must handle the votes of 60 Million Wahlberechtigte on election day. *Acceptance criteria 2*

After the election has closed, the system has to present analytics in real-time to all interested citizens. *Acceptance criteria 2*

Information privacy The personal information of all voters and candidates has to be secure under all circumstances. *Acceptance criteria 6*

Robustness Loss of power, hardware or software crashes must not lead to a loss of votes. *Acceptance criteria 4*

Security The system has to be safe from intrusion. Only Wahlberechtigte are allowed to vote. They may vote exactly once per election. *Acceptance criteria 5*

Compliance The system has to be compliant with the Bundeswahlgeräteverordnung (BWahlGV).

User Interface

- Voting
  - The first vote and/or the second vote can be marked as invalid individually.
  - Order of first and second vote not specified
  - Neutral presentation of all options (i.e. no default values)
- Analysis
  - An easy to use web application allows the user to view statistics of the election as well as the items specified in the analysis-part of the functional requirements.

Acceptance Criteria

1. All functional requirements are fulfilled.
2. Scalability
   - An input of 150 million votes can be handled in 12 hours.
   - Over the next 6 hours after voting has ended: 200,000 requests per minute can be handled at peak.
3. Performance
   - The average vote has to be registered in less than 5 seconds, worst case: 15 seconds.
   - Calculation of the partial election results in less than 10 minutes.
   - A web-page, showing the current election status has to be served in less than 20 seconds.
4. Robustness
   - Consistent state even after power loss or resetting of the system.
5. Security
   - The system has to reasonably resist attempts of intrusion or disruption (e.g. DDoS, SQL-Injections, ...)
6. Privacy
   - Votes have to be completely anonymous.
   - Access to sensitive information (voters, adresses, names, ...) is to be restricted in such a way as to guarantee privacy.
   - Reports are only generated when data sizes are large enough to guarantee anonymity.