

**Exercise 3: Target specification (Pflichtenheft)**

Delivery: 02.11.2015

Stefan Fritsch, Tabea Schmidt

**Must-haves:****Voting**

- Every elective citizen has to be able to submit his 'Erststimme' and his 'Zweitstimme' online
- It has to be possible to submit an invalid vote
- Multiple or illegal votes have to be prevented by an authentication where every citizen has to submit his identifier and date of birth beforehand
- The election has to be completely anonymous, i.e. it should not be possible to relate a single vote to a certain citizen
- Every vote has to be considered and must not be lost under any circumstances
- The usage of the online voting should not differ from the voting in the poll site, i.e. both votes can be cast in any possible order
- The voting of approximately 60 million elective citizens has to be possible during the election and there should be no capacity problems
- The application must have integrated recovery components

**Analysis of current and previous elections**

- The application has to be able to compute the results and predictions of the current election with the current method accurately
- It has to be possible to display the results of former elections, which means the result of the elections of 2009 and 2013
- There should be various possibilities to visualize the elections available:
  - The number of seats per party in the 'Bundestag'
  - The distribution of 'Erststimmen' and 'Zweitstimmen' per 'Wahlkreis'
  - Additional information, e.g. the members of the 'Bundestag'

**Should-haves:**

- The application should be secured against SQL injections, but it does not have to withstand a broad DDoS attack
- It should be possible to compare the statistics of the current and a previous election

**Can-haves:**

- The computation of the individual members of the parliament is reasonable, but not necessary
- Additionally, this analyses are useful:
  - The winner parties of each 'Wahlkreis'
  - The tightest winners or losers of each party in the election
  - Results of a party in comparison to a previous election (in percent and in number of seats)

**Differentiation criteria:**

- An actual election does not have to be executed, a simulation is sufficient
- Additional information or applications for the voting do not have to be offered, which also would not be available in the polling station
- A voting of more than 60 million citizens or a voting for other elections than the election of the Bundestag do not have to be considered

**Technical Implementation:**


- Relational database (PostgreSQL): Storage of the data of different elections and of all delivered votes
- Back end (Node.js, Express): An application server for the management of the stored data and the delivered votes as well as for ensuring data consistency. Operations can be executed by a REST-API.
- Front end (Jade, Stylus): Representation of the web page, especially the visualization of the analysis, which was explained earlier, and the interactive delivery of a vote. The required data is requested by the provided API.

Glossary	
<b>Erststimme</b>	In the election of the 'Bundestag' each citizen has two votes. With the 'Erststimme' the elector can choose a candidate from his 'Wahlkreis'. The candidate, who achieves the most votes in his 'Wahlkreis', gets a seat in the 'Bundestag' directly.
<b>Zweitstimme</b>	In the election of the Bundestag each citizen has two votes. With the 'Zweitstimme' the elector can choose a party and their 'Landesliste'. The percentage of the 'Zweitstimmen' of a party determines the number of seats this party gets in the 'Bundestag'.
<b>Überhangsmandat</b>	These are mandates, which a party gets, when the number of seats, which were achieved by the number of 'Zweitstimmen' for this party is lower than the number of direct candidates. The number of 'Überhangsmandate' for a party is given by the difference between the number of direct candidates and the number of seats, which were won with the 'Zweitstimmen'.
<b>Ausgleichsmandat</b>	If another party gets 'Überhangsmandate', all other parties in the Bundestag get 'Ausgleichsmandate' in order to have a representation of the 'Zweitstimmen' in the composition of the 'Bundestag'.
<b>Wahlkreis</b>	Germany consists of 16 federal lands. Each federal land is again subdivided into 'Wahlkreise'. Each citizen belongs to exactly one 'Wahlkreis' and also votes in this 'Wahlkreis'. In each 'Wahlkreis' one candidate can be elected into the 'Bundestag' directly.
<b>Landesliste</b>	A party has a 'Landesliste' for each federal land, in which it wants to participate in the election. On this 'Landesliste' the different candidates of the party for this federal land are orderly represented. This order determines which candidates get seats in the 'Bundestag' considering the percentage of 'Zweitstimmen' in the federal land for this party.

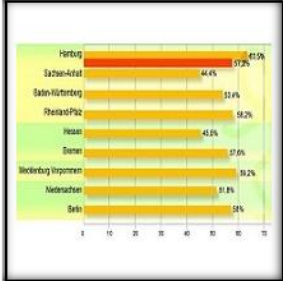
**Mockup:**

## Bundestagswahlergebnisse

**Verteilung der Parteien im Bundestag**



**Wahlbeteiligung**



**Zum Wählen bitte ausweisen**

Personalausweis-Nummer:

Geburtsdatum

OK

Zusätzliche Statistiken zur aktuellen und vorherigen Bundestagswahlen finden Sie hier: [Statistiken](#)

## Wahlzettel

für Personalausweisnummer: xxxxxxxxx

● Erststimme	
<input type="radio"/>	Kandidat 1
<input type="radio"/>	Kandidat 2
<input type="radio"/>	Kandidat 3
<input type="radio"/>	Kandidat 4
<input type="radio"/>	Kandidat 5
<input type="radio"/>	ungültige Stimmabgabe

● Zweitstimme	
<input type="radio"/>	Partei 1
<input type="radio"/>	Partei 2
<input type="radio"/>	Partei 3
<input type="radio"/>	Partei 4
<input type="radio"/>	Partei 5
<input type="radio"/>	ungültige Stimmabgabe

Zurück

Stimme abgeben

## Wahlzettel

für Personalausweisnummer: xxxxxxxxxx

<input checked="" type="radio"/> Erststimme
<input type="radio"/> Kandidat 1
<input type="radio"/> Kandidat 2
<input type="radio"/> Kandidat 3
<input type="radio"/> Kandidat 4
<input type="radio"/> Kandidat 5
<input type="radio"/> ungültige Stimmabgabe

<input type="radio"/> Partei 4
<input type="radio"/> Partei 5
<input type="radio"/> ungültige Stimmabgabe

**Stimme abgegeben**  

Ihre Erst- und Zweit-Stimme wurde erfolgreich abgegeben.

Bitte klicken Sie auf "OK", um zum Hauptbildschirm zurückzukehren.

OK

Zurück

Stimme abgeben

## Statistiken

-- Bitte wählen Sie eine Statistik aus -- ▾

-- Bitte wählen Sie ein Bundesland aus -- ▾

-- Bitte wählen Sie einen Wahlkreis aus -- ▾

Jahr 2013

Jahr 2009

Zurück zur Hauptseite: [Ergebnisse](#)