

# D-Voting

E-Voting on Dela



## D-voting - Front-end development for an e-voting platform

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Semester project  
Final presentation

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1. Introduction to the platform
2. Current status of the front-end
3. Features and implementations
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5. Demo

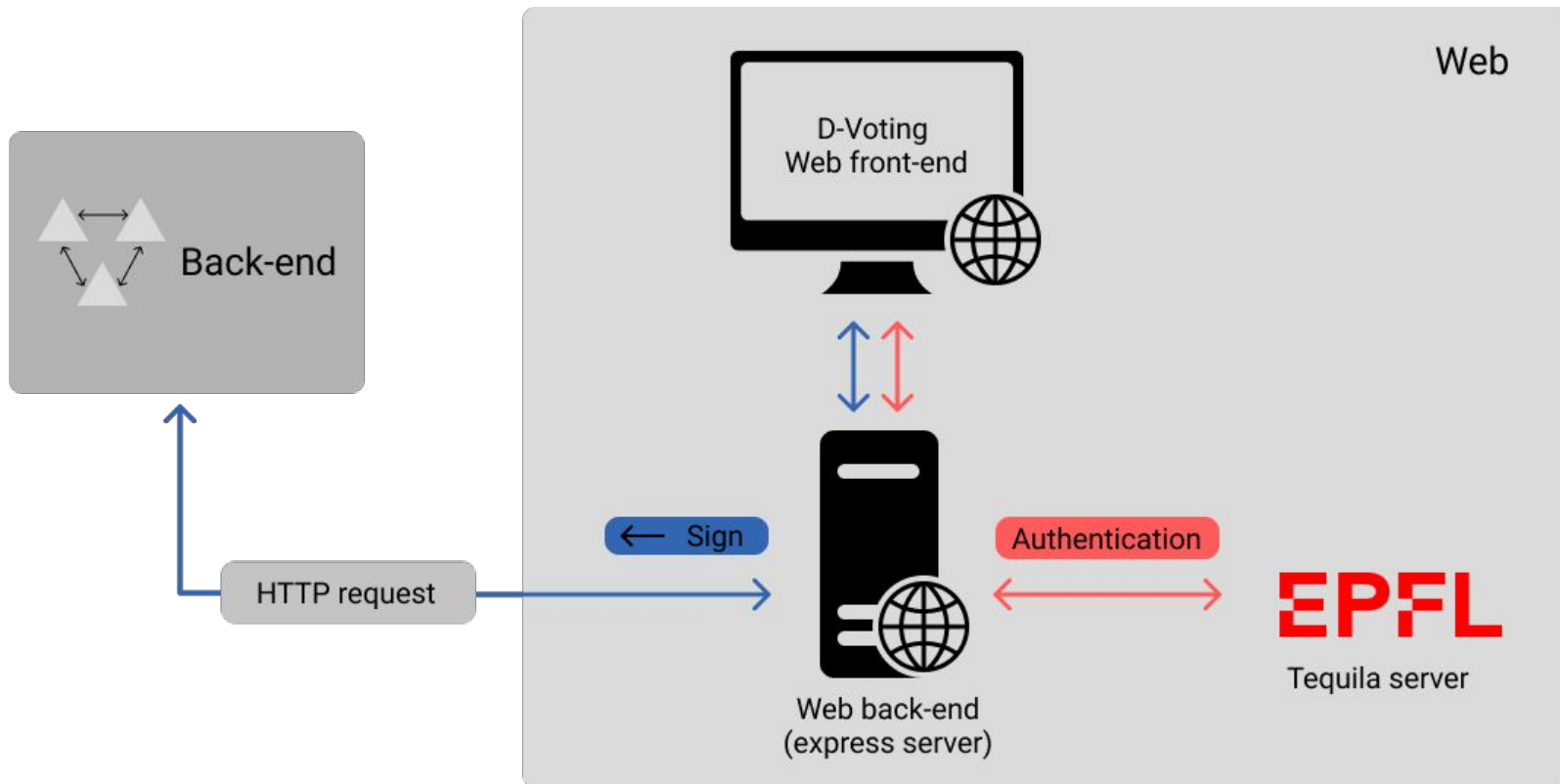
# Introduction to the platform

- The D-voting platform
- Front-end architecture
- Previous status of the project (as of February)

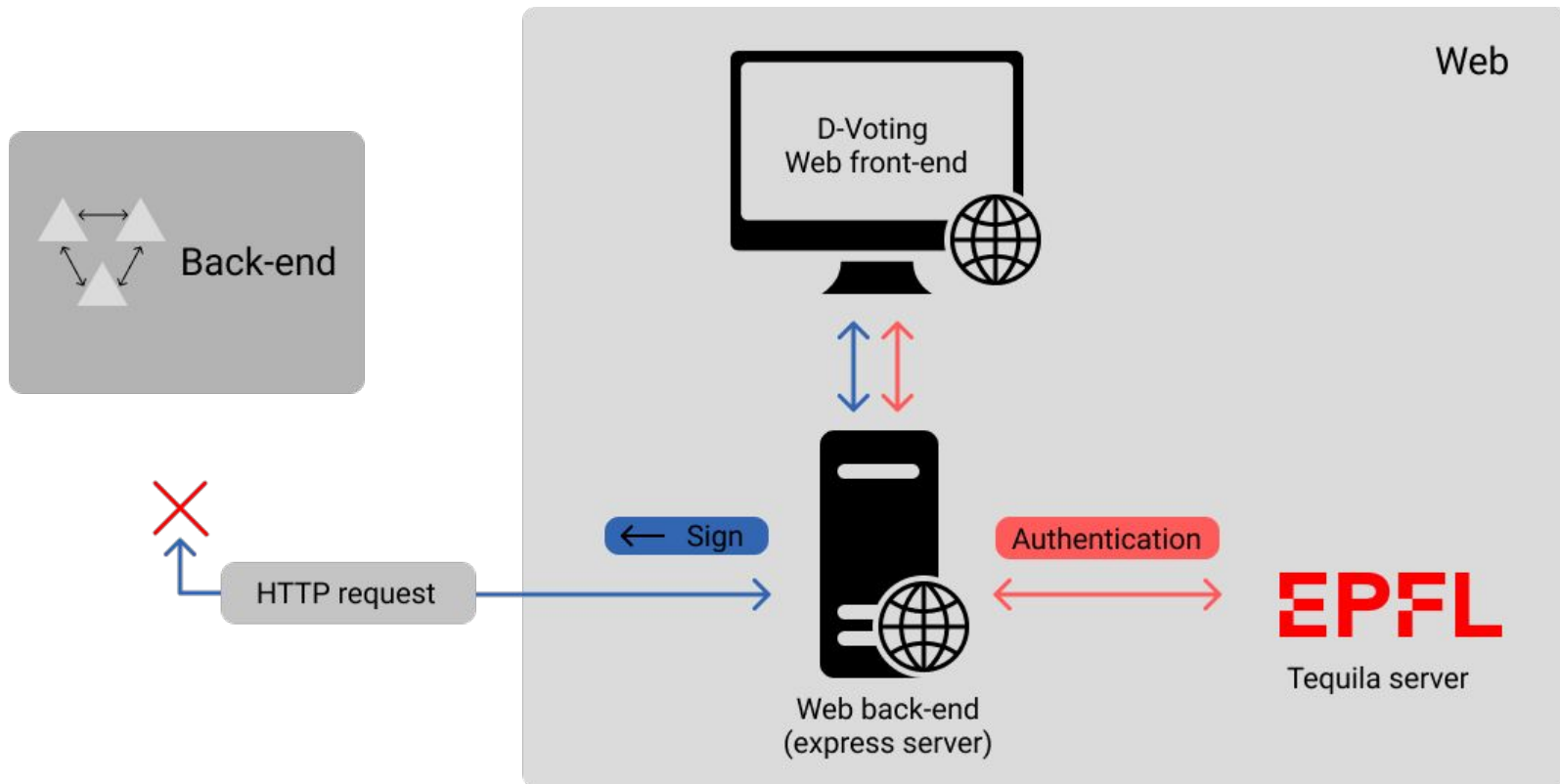
# The D-voting platform

- Voting platform based on the E-voting system on DELA blockchain
- Two backends, one that implements all the blockchain logic, the other to authenticate and sign all the communication between the front-end and the proxies
- A front-end to interact with the whole system (voting, monitor an election, managing user roles & nodes etc.)

# Front-end architecture



# [February] Compatibility issue





This page lists all the elections that have ever been created.  
Click on the election name to display additional details.

| Title                                    | Status              | Action   |
|--|---------------------|--|
| <a href="#">IC class representatives</a> | ● Open              | <button>Close</button> <button>Cancel</button> |
| <a href="#">SV class representatives</a> | ● Results available | <button>See results</button>                   |
| <a href="#">MA class representatives</a> | ● Ballots shuffled  | <button>Decrypt</button>                       |
| <a href="#">EL class representatives</a> | ● Closed            | <button>Shuffle</button>                       |
| <a href="#">AR class representatives</a> | ● Canceled          | ---  |

Elections per page 5 ▾ 1-5 of 5 < >

# [February] Front-end

Create a new election by filling out the information below or by uploading a json file

**Option 1**

Election title\*:

Add a candidate \*:

Mara   
Mike   
Dave

**Option 2**

Choose a json file from your computer:  
 No file selected.

| sciper | role     | Action                                |
|--------|----------|---------------------------------------|
| 231123 | operator | <input type="button" value="DELETE"/> |
| 111112 | operator | <input type="button" value="DELETE"/> |
| 123567 | admin    | <input type="button" value="DELETE"/> |
| 295747 | admin    | <input type="button" value="DELETE"/> |

Rows per page: 100 ▾ 1-4 of 4 < >



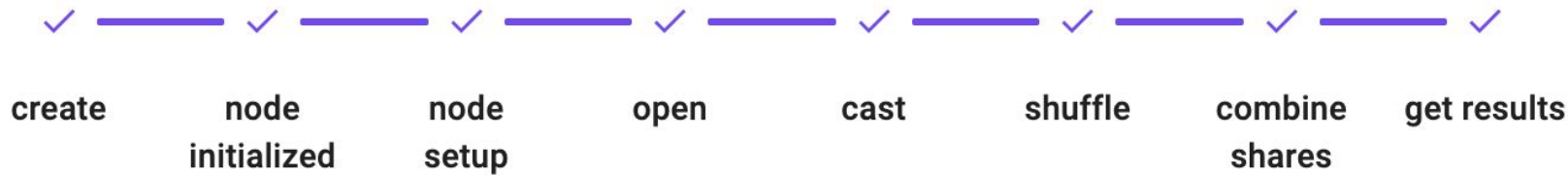
# Current status of the front-end

- Update of the transactions
- Update of the API calls

# Updating the transactions

Status of API transactions:

- ✓ Create election form (*new v2 !*)
- ✓ Initialize and Setup the nodes
- ✓ Cast a ballot
- ✓ Compute & Get results



Election flow

# Update of the API Calls

## DK2: DKG setup

|        |  |
|--------|--|
| URL    | <code>/evoting/services/dkg/actors/{ElectionID}</code> |
| Method | <code>PUT</code>                                       |
| Input  | <code>application/json</code>                          |

```
{  
  "Action": "setup",  
  "Proxy": ""  
}
```

Return:

`200 OK` `text/plain`

## DK3: DKG get info

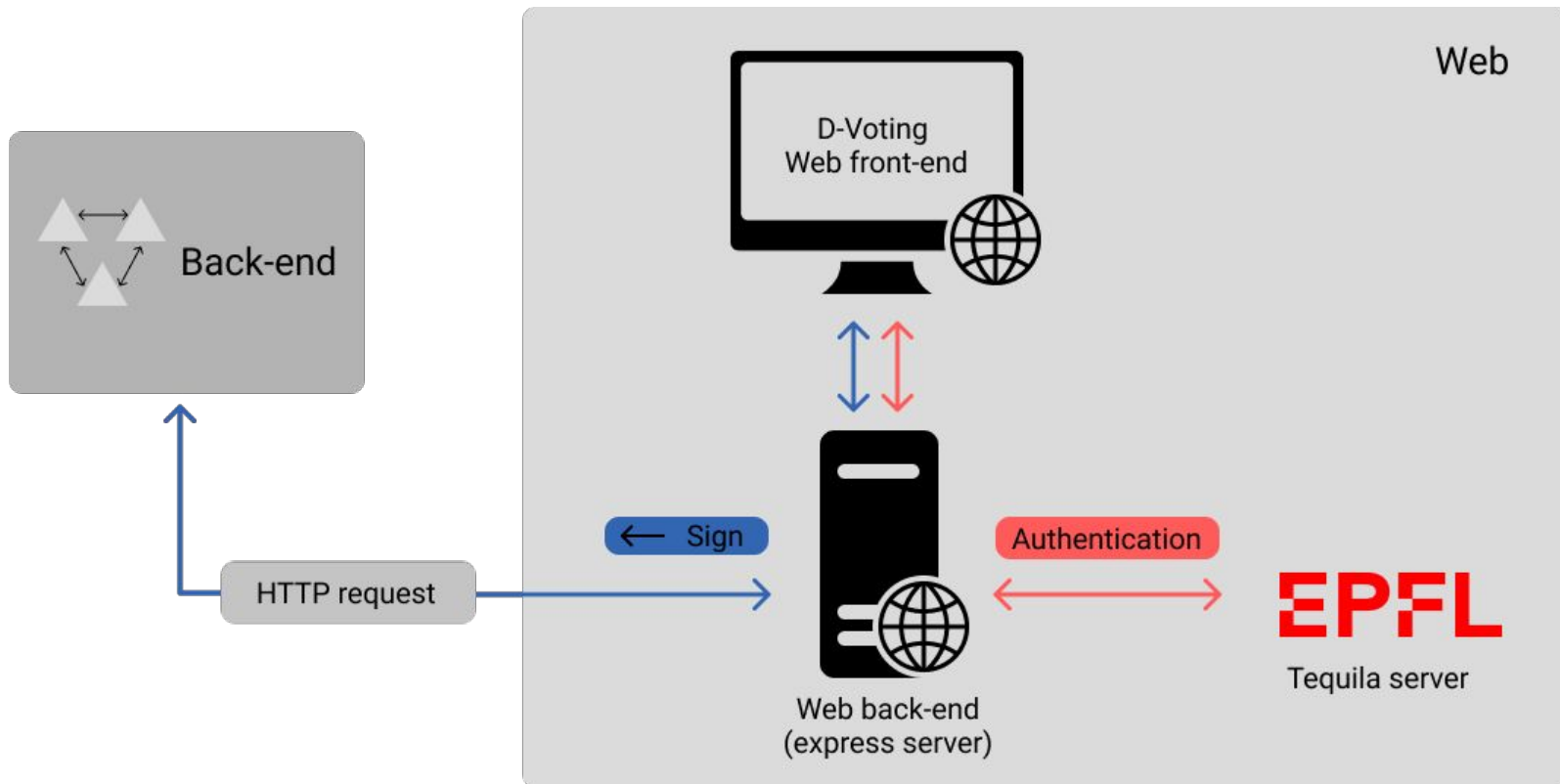
|        |  |
|--------|--|
| URL    | <code>/evoting/services/dkg/actors/{ElectionID}</code> |
| Method | <code>GET</code>                                       |
| Input  |  |

Return:

`200 OK` `application/json`

```
{  
  "Status": "<int>",  
  "Error": {  
    "Title": "",  
    "Code": "<uint>",  
    "Message": "",  
    "Args": {}  
  }  
}
```

# Compatibility issues are resolved



# Features and implementations

- Create election
- Manage election
- Cast ballot
- Election results
- Manage user roles and nodes
- UX testing

# Create election

- Complete Election form with:
  - Subjects/ Sub-subjects
  - Ranks/Selects/Texts
  - I/O Form validation
- Preview the election
- Upload and export election in JSON with validation

The screenshot shows a modal window titled "Select" with a star icon. It is divided into two columns: "Main properties" and "Additional properties".

**Main properties:**

- Title:** A text input field containing "How did you find the teaching?".
- Choices:** A list of three text input fields: "bad", "normal", and "good". Each field has a minus sign (-) to its right. The "good" field also has a plus sign (+) to its right.

**Additional properties:**

- Max number of choices:** A dropdown menu set to "1".
- Min number of choices:** A dropdown menu set to "1".

At the bottom of the modal are two buttons: "Cancel" and "Save" (with a checkmark icon). Below the modal, the text "Fill at least 1 answer." is visible.

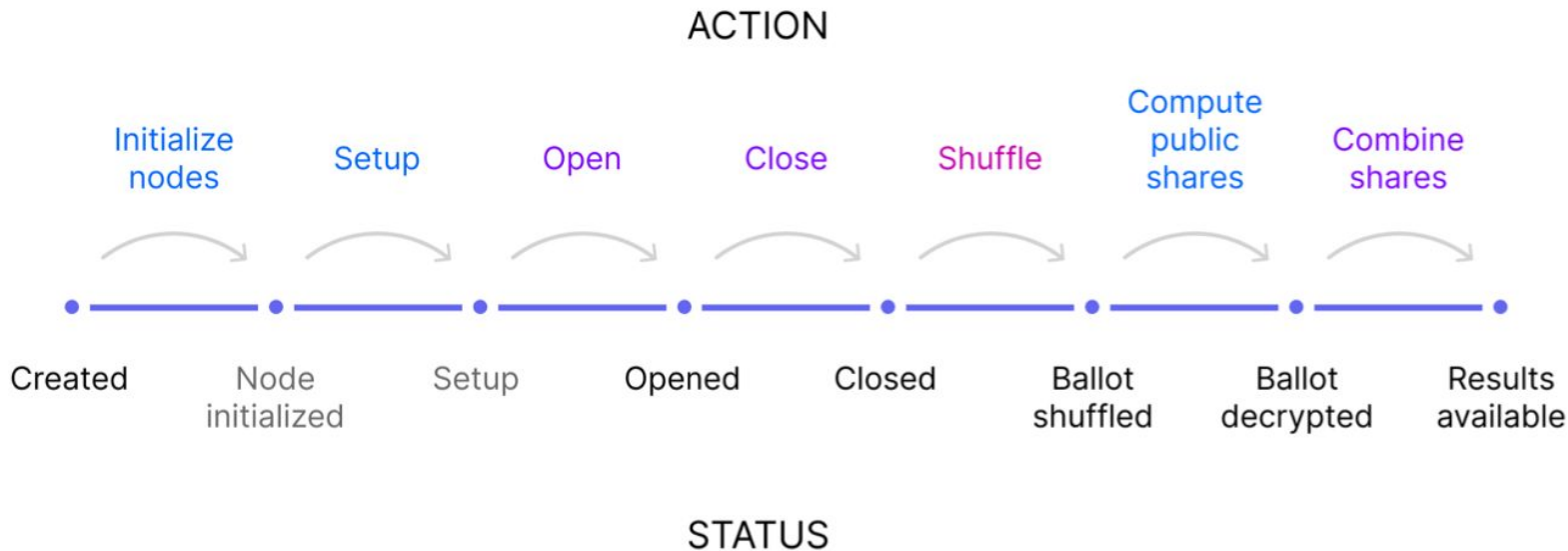
***Modal to create a select question***

# Manage election

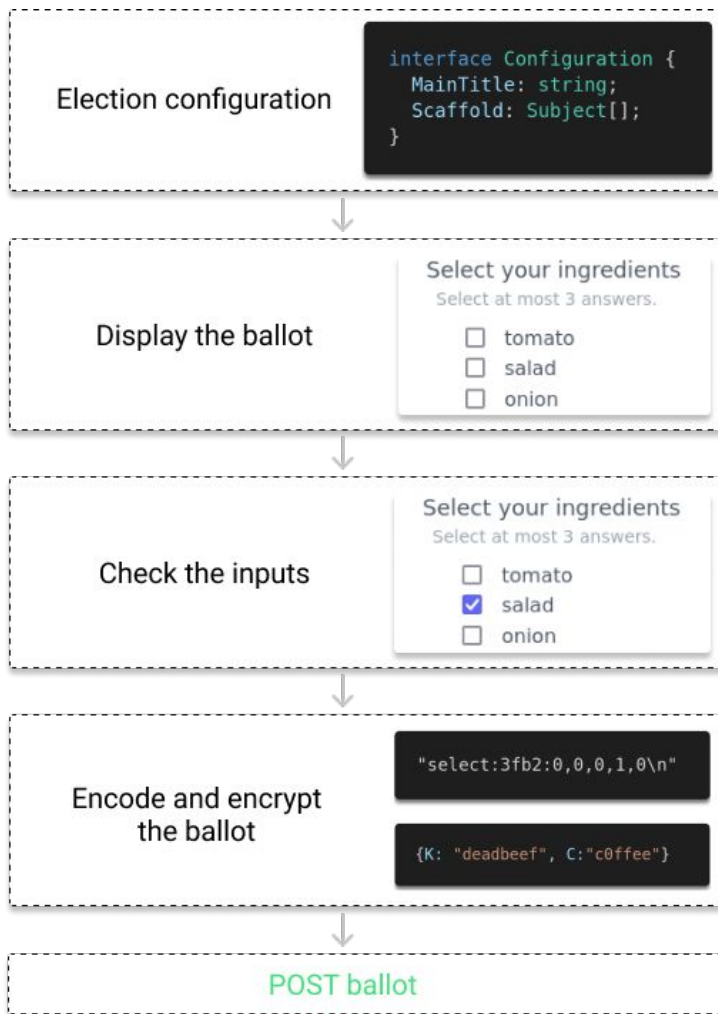
- Auditing an election (including node initialization and setup):

## Actors

- Smart contract
- DKG service
- Neff shuffle service



# Cast vote





- See the results of an election

## Results

Total number of votes : 2

### Life on the campus

#### Rate the course

How did you find the provided material, from 1 (bad) to 5 (excellent) ?



How did you find the teaching ?



Who were the two best TAs ?



# Manage user roles and nodes

- Manage user roles

Please give the sciper of the user

Sciper

admin

Cancel Add user

- Manage the nodes

Please enter the addresses of the node and the proxy

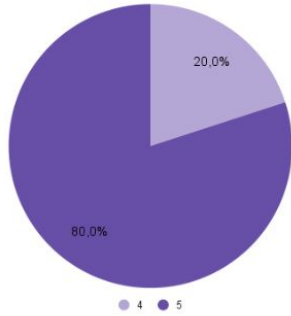
Node: 123.123...

Proxy: https://...

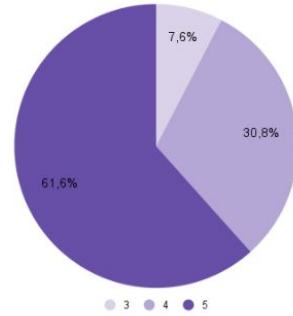
Cancel + Add

# UX testing

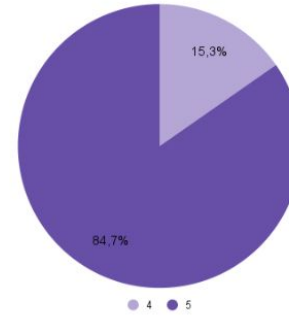
- 13 persons completed the testing survey:
  - ~30-40 minutes/persons
- The website was not online yet:
  - Had to be physically present
  - Used the front-end with the mocked API
- [Process] Asked them to accomplish the following actions:
  - Login
  - Manage user roles
  - Create an election and open it
  - Vote on another election
  - Make the results of the election available
  - Fill the Google form



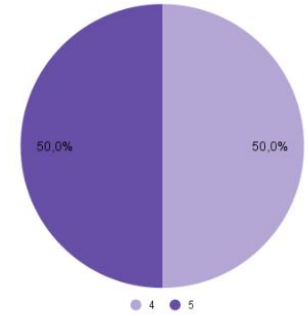
(a) Admin page.



(b) Election create page.



(c) Vote page.





(d) Election page.

Figure 4.6: Results of the question "On a scale from 1 to 5 (1=not at all, 5=very much), was the interface easy to use?", for each of the pages. All users gave at least a 3 to all pages, and most of them rated them a 5.

# Improvements and future work

# Improvements and Future work

- Ticket to verify if ballot was taken into account
- Support for   : translation of the UI and the ballots
- Open election only to a subset of the users (e.g by section)
- Facilitate further the election creation
  - Modal on Subject creation
  - Tooltips for the page
- Optimise the web-backend transactions

# Demo

<https://dvoting-dev.dedis.ch/>

