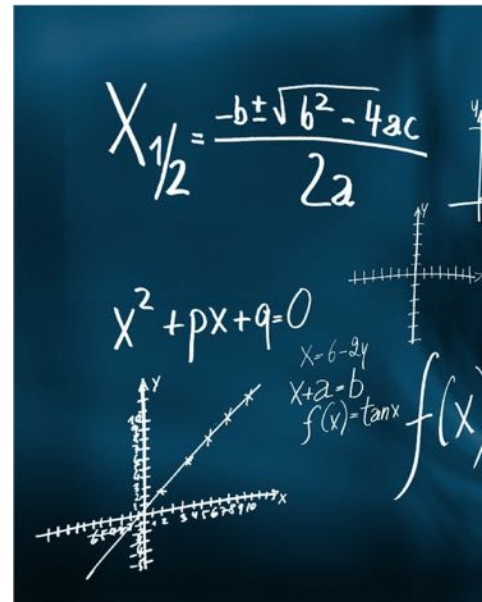


Smart Requirements Engineering for Small and Medium sized Companies

OpenReq Opencall

selection:arts

- SelectionArts was founded in 2013
 - Autonomous Systems for Enhanced & Efficient Learning Processes
 - Psychology-enhanced AI for Collective Intelligence & Group Decisions
 - Recommender Systems & Machine Learning Solutions for Marketing, Sales & Production
- Selected References



villach



- **Bad / No Requirements Engineering...**

- results in defects that are very expensive to fix in the production phase
- decreases project success rates
- less integration of ...
 - stakeholders and
 - customers

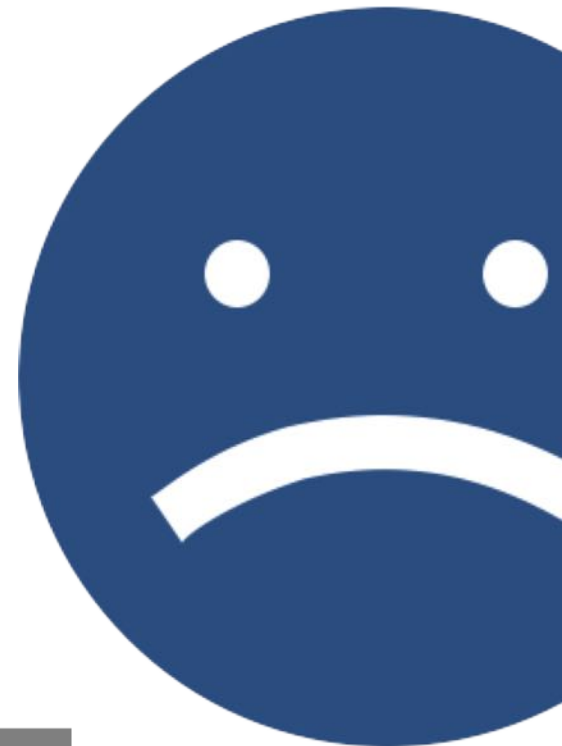
Efficient RE is not only interesting for large companies but also for SMEs



overworked



no time



- Censio, a Task and RE tool for SMEs
 - Easy to use Userinterface
 - no manual necessary
 - Easy stakeholder involvement
 - Easy customer involvement
 - Smart recommendation features by integrating OpenReq components
 - Guided TODOs



relevant data



customer /
stakeholder
involvement



smart
recommendations





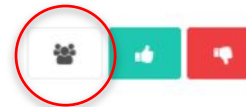
Sportswatch

Alternatives

Speed Measurement

As evaluation after a workout, the average speed must be shown. The following statistics should be displayed: average speed and maximum speed. For measuring the average and maximum speed, a storage unit for storing the data is necessary.

👍 0 🗨️ 0 🧑‍🤝‍🧑 0 💬 0



💬 COMMENTS

🔗 DEPENDENCY-DETECTION

🔍 SIMILARITY-DETECTION

🔗 CROSS-REFERENCE-DETECTION

🔍 REQUIREMENT-QUALITY

reload

Actual requirement

Speed Measurement

Description:

As evaluation after a workout, the average speed must be shown. The following statistics should be displayed: average speed and maximum speed. For measuring the average and maximum speed, a storage unit for storing the data is necessary.



- This service is used to identify dependencies between requirements based on the description, to get an overview about the potential requirement relationships.
- The recommended requirement pairs are those whose similarity is not too high but also not too low.
- Unsupervised content-based detection approach is used
- The service is fully integrated, deployed during the requirement creation as well as in the detail view mode.



- This service is used to identify similarities between requirements based on the description, to avoid duplicate creation of requirements.
- The similarity score between requirements, based on TF-IDF, is precalculated.
- High similarity score means requirements are potential similar.
- The service is fully integrated, deployed during the requirement creation as well as in the detail view mode.



- This service is used to identify cross references between requirements based on the description, to check another way of dependency between requirements.
- Cross-references are dependencies, explicitly stated in the requirement description i.e. the id
- The service is fully integrated, deployed during the requirement creation as well as in the detail view mode.



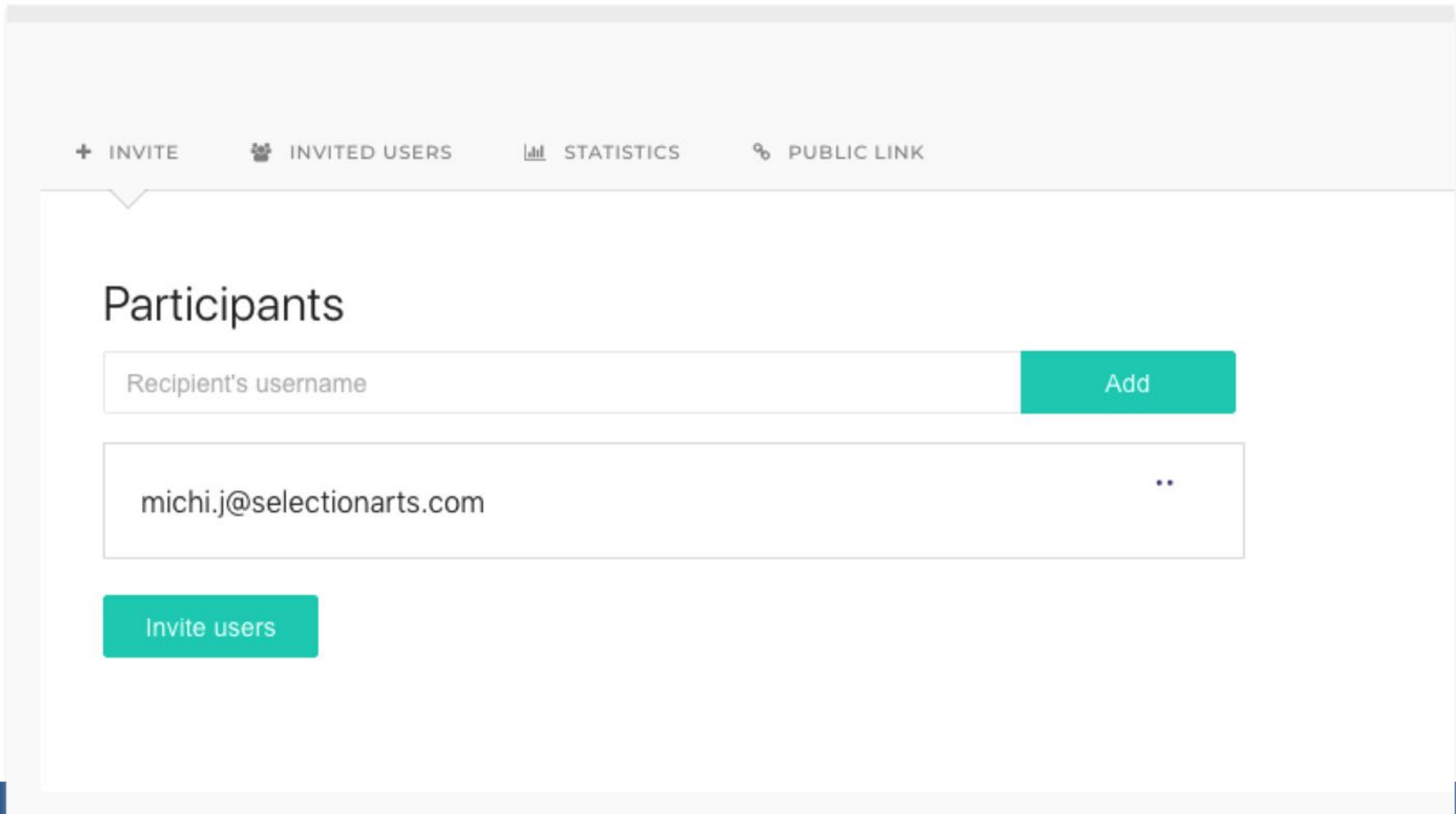
- This service is used to do a quality check on the description of requirements. Users can get quality feedback on the text they've written. The service shows different types of quality issues.
- These quality issues include syntactic and semantic issues in the wording and phrasing of the requirements description.
- Simple Natural language processing (NLP) techniques are used.
- The service is fully integrated, deployed during the requirement creation as well as in the detail view mode.



- The edemocracy service is used to collect the opinions from people outside the project e.g. users of a software who could be asked whether they would appreciate to have a certain feature in a software or not.
- The edemocracy service can be initiated for any created task. There are two ways to invite people:
 - sending invitations via E-Mail to potential participants
 - anonymous participations via a generated URL with a nickname

The project members are able to view the statistics of the votes

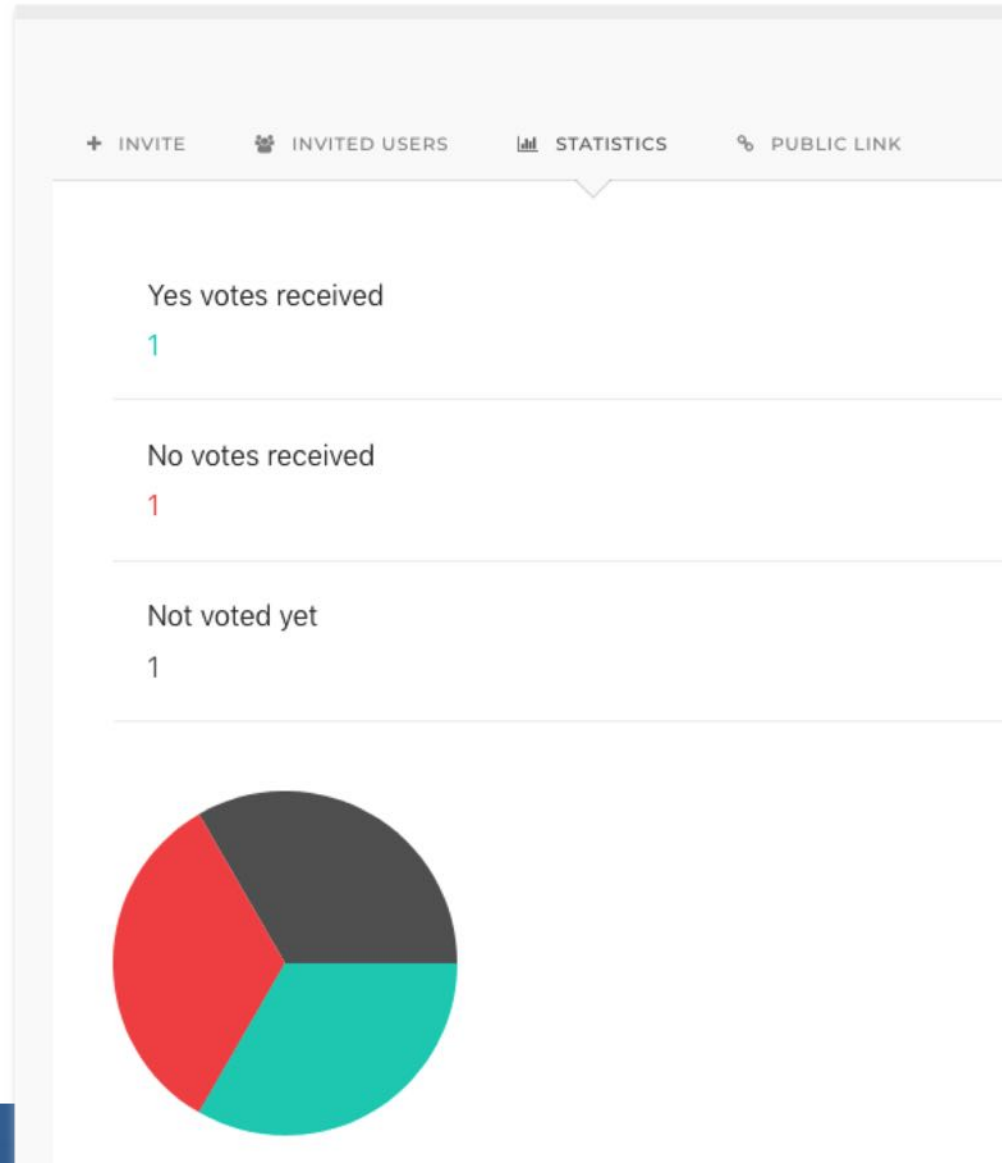
Invitation of potential participants via E-Mail

A screenshot of the Edemocracy web application's 'Participants' management interface. The interface has a light gray header with four navigation tabs: '+ INVITE', 'INVITED USERS' (with a group icon), 'STATISTICS' (with a bar chart icon), and 'PUBLIC LINK' (with a link icon). The 'INVITE' tab is selected. Below the header, the main content area is titled 'Participants'. It contains a form with a text input field labeled 'Recipient's username' and a teal 'Add' button. Below this, a list of invited users is shown, with one entry: 'michi.j@selectionarts.com' followed by a three-dot menu icon. At the bottom left of the form area is a teal button labeled 'Invite users'.

List of the invited users

+ INVITE		👤 INVITED USERS		📊 STATISTICS	🔗 PUBLIC LINK
michi.j@selectionarts.com					

Edemocracy statistics after one user voted




The public URL with which potential participants vote anonymously

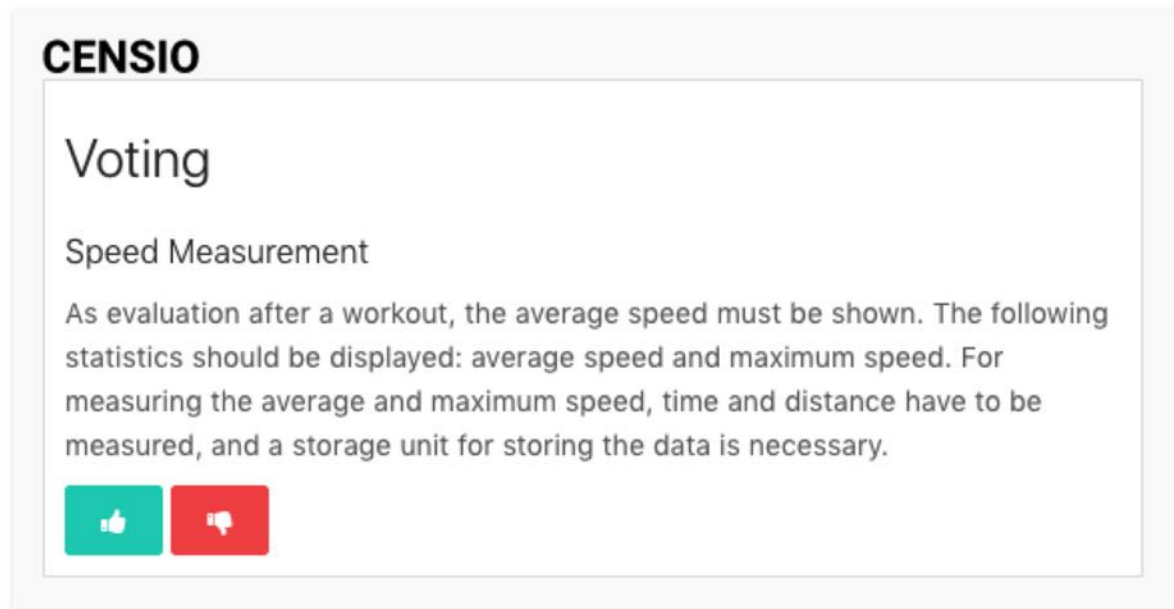
[+ INVITE](#) [INVITED USERS](#) [STATISTICS](#) [PUBLIC LINK](#)

Public Url:

<http://localhost:8080/eDemocracy/public/b43a3946-511b-4e0b-a771-2f2ed03310db>



The voting screen - participants can either vote with thumbs up or down



The voting screen for anonymously added users, they have to enter a nickname and vote with thumbs up or down.



CENSIO

Voting

NICKNAME
Nickname

Speed Measurement

As evaluation after a workout, the average speed must be shown. The following statistics should be displayed: average speed and maximum speed. For measuring the average and maximum speed, time and distance have to be measured, and a storage unit for storing the data is necessary.





- The requirements classifier service was planned to integrate in the Opencall project but we didn't use it because:

Most SMEs we talked to have projects in different domains, so we would need new classifiers for every project. Since the classifiers have to be trained with hundreds of requirements, which are not available for training, so we didn't use it.



- Small Study
 - Companies with software background
 - (P1) Software for Municipalities
 - (P2) Application Software
 - (P3) Xamarin consulting and development
 - (P4) Valueengineering background
 - (P5) Building Industries background



- Current software in use for managing requirements
 - **MS Sharepoint and Project**
 - **Jira**
 - **Excel sheets**
- Current feeling regarding the software used for managing tasks and requirements from 1 (not happy) to 10 (very happy)
 - **companies rated between 4 and 7**



What is your impression, how helpful is each of the components in the context of Censio, one a scale from 1 (not helpful at all) to 10 (extremely helpful)?

	P1 Software for Municipalities	P2 Application Software	P3 Xamarin Consulting and Dev	P4 Valuemanageme nt Consulting	P5 Consulting in Building industries
Dependency detection feature	9	8	9	10	7
Similarity detection feature	9	9	10	9	6
Cross reference detection feature	9	9	8	8	7
Requirements quality feature	7	6	7	7	7
Edemocracy feature	10	9	9	10	6

- Impressions of Censio
 - all companies would give Censio a try
 - and also had ideas for the extension
 - Integration with other services like Microsoft e.g. Excel import
 - Adding Scrum features e.g. Backlog
 - Assignment of tasks to users





- Censio platform “Smart and easy task and requirements engineering”
- The OpenReq component integration
 - similarity detection, dependency detection, requirements quality and edemocracy
- A small study covering different participants from different industries with the following outcomes:
 - awareness regarding the imperfections of requirements engineering
 - openness to improve their requirements engineering process





Thanks