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Rewarding users giving opinion on information portal

Bachelor's thesis

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Kasutajate arvamuse väärtustamine infoportaalides

Bakalaureusetöö

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Author's declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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Abstract

The main purpose of diploma is creation of prototype for web information portal, which will give it's users a possibility to get benefits for expressing their ideas.

People of different ages use internet as the main source of information. It can be just internet pages surfing for having fun or searching some concrete information. There is a huge amount of places in the internet, where the content is coming from, they could be called information portals.

The majority of information portals have a possibility for user to express his opinion or comment on something. The main problem that could be found is that user's comments are not valued by information sources. So users are leaving their thoughts and are getting anything for that. Such actions can be equalled to wasting of time. Every action should have concrete purpose and result.

As a result of diploma is created web information portal, where people can not only leave their opinions, but also get benefits for that. For writing attractive comments people have a possibility to get their account upgrade for free. Also during project development author got good experience of using different technologies.

The thesis is in English and contains 36 pages of text, 6 chapters, 18 figures and 1 table.

Annotatsioon

Töö põhieesmärgiks on informatsiooni portaali prototüübi loomine. Portaali prototüüp annab kasutajatele võimaluse saada kasu oma arvamuse avaldamisest.

Erinevate inimeste jaoks on internet peamine infoallikas - selleks võib olla veebilehtede lehitsemine meelelahutuse eesmärgil, või ka konkreetse informatsiooni otsimine. Internetis on väga palju erineva taustaga infoallikaid. Neid nimetatakse infoportaalideks.

Enamikes infoportaalides on kasutajatel võimalus avaldada oma arvamust või jätta kommentaar. Infoportaalide problemaatilise kohana võib tuua välja aspekti, et kommentaare ei saa hinnata. Isegi kui jätavad kommentaari, ei ole võimalik neil sellest endale kasu saada. Seda saab võrrelda aja raiskamisega, sest igal tegevusel on konkreetne eesmärk ja tulemus.

Lõputöö tulemusena loodi infoportaal, kus kasutajad saavad oma arvamust väljendades kasu teenida - nii saab iga kasutaja kommenteerides artikleid kasutaja taseme tõstmise (“account upgrade”).

Lõputöö on kirjutatud inglise keeles ning sisaldab teksti 36 leheküljel, 6 peatükki, 18 joonist ja 1 tabel.

List of abbreviations and terms

API	<i>Application programming interface</i> Programmi liides
RSS	<i>Really Simple Syndication</i> Uudistevoo vormingu standard
Backend	<i>Data access layer of software</i> Tarkvara andmetele juurdepääsu kiht
Frontend	<i>Presentaton layer of software</i> Kliendipoolne osa, mis suhtleb serveriga
JSON	<i>Javascript Object Notation</i> Andmeedastuse tarvis loodud tekstiformaat
NPM	<i>Node Packer Manager</i> Suurim ühtne Javascripti pakettide salv
MVVM	<i>Model–view–viewmodel</i>
SSE	<i>Server-sent-event</i>
SCSS	<i>Sassy Cascading Style Sheets</i>

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1. Introduction

Internet is used in different spheres of our life. One of the most important aims of internet using is getting information on the topic person is interested in. For this purpose there is a huge amount of different information portals and sources.

1.1 Problem overview

Nowadays internet and technologies are playing big role in our life. It is not possible to imagine even one day without internet, because it affects every sphere of our activity. People of different ages use internet as the main source of information. It can be just internet pages surfing for having fun or searching some concrete information. There is a huge amount of places in the internet, where the content is coming from, they could be called information portals.

The majority of information portals have a possibility for user to express his opinion or comment on something. The main problem that could be found is that user's comments are not valued by information sources. So users are leaving their thoughts and getting are anything for that. Such actions can be equalled to wasting of time. Every action should have concrete purpose and result.

1.2 Statement of problem

The purpose of diploma is creation of web information portal, which will give it's users a possibility to get benefits for expressing their ideas.

On the portal user will be able to:

- Read information in 3 categories(News, IT, Cars)
- Go to next article by clicking the button
- Leave opinion under the article
- Like other user's comments

- Get graph information about amount of news for last 6 hours
- Create and log in to own account
- Get account upgrade after reaching 1000 likes on his comment
- Use portal on both mobile and computer

It is planned to create web information portal using Java Spring for backend and Vue.js for frontend part. Testing will be done on the computer on which is installed Windows 10 operation system and on the mobile with Android 7.

1.3 Methodology

Firstly for reaching the goal there will be done an analysis of main information portals in the internet. It is needed for choosing the list of web sources, which will be used for getting information articles. Those articles will be shown on the main portal page.

Secondly will be chosen tools, which will be used during developing and described the reason for choosing exactly them.

After there is development part, which shows how the information portal was done: what the requirements were, process description and the project structure.

Finally will be done testing with a help of 5 people on different devices.

For getting the needed result there will be used different technologies, such as: Java Spring, Vue.js, MySQL, Jenkins, Docker.

1.4 Overview

Current diploma consists of 6 parts:

- In the first part will be done the analysis of main web information portals on English language and will be selected the list, which will be used for getting information articles. Also in this part will be discussed the tools, which will be used in the scope of this diploma during development.

- In the second part there will be talk about development. Will be discussed the architecture and development process.
- Third part concerns testing. There will be described testing methods, testing results and problems that might be found.
- Part number four is about future development possibilities. There will be shown how the information portal, which was done in the scope of diploma, can be integrated in something bigger.
- Part number five is the last one. There will be discussed the results of diploma according every aim that was set in introduction and the conclusion will be drawn.

As a result of all those parts portal is created and all the functionality planned is implemented.

2. Analysis and tools

In next two chapters there is talk about analysis and tools.

In analysis chapter there is described, which web information portals were analyzed, the way it was done and description of categories for which they were chosen.

Tools section contains description of technologies that were used during project development, explanation why exactly those tools were chosen and example of tasks that by solved by them.

2.1 Analysis

In project there are three categories for which information sources should be chosen. They are: News, IT and Cars.

News category contains articles with the most important events that are happening all over the world.

IT category contains the information about new technologies that were developed, reviews and detailed description of those products.

Cars category is about car world: new car concepts, test drives and global car events.

During web portals analysis there were three main criteria by which the choice was done. Portal's statistics during last 3 month, support of RSS feed and author's personal opinion about articles quality on concrete web portal. RSS support is needed because this method is used for collecting articles in project.

Web portal	Global Rank	Visits(last 3 month)	Visit duration
neweurope.eu	559198	413.3K	1m 31sec
voxerop.eu	493955	385.1K	48 sec
techradar.com	1104	209.2M	1m 26sec
newscientist.com	20469	15.4M	1m 25sec
autonews.com	51968	4.5M	4m 9sec
thetruthaboutcars.com	59384	4M	1m 57sec

Table 1 Web portal's statistics [1]

For every article's category were chosen 2 web portals from the top list, which better meet the requirements. Above there is shown table, which contains statistics of all 6 portals.

Table contains 3 columns with portal's statistics:

- Global rank
- Visits (last 3 month)
- Visit duration

First one gives an information about the current portal's position comparing it to all web portals in the world. **Second one** shows the number of unique portal's visitors during last 3 month. **The third** shows the average number of time user spends on the portal. Those are the main 3 parameters by which the portal's popularity can be found. [1]

Below are shown diagrams on which it can be seen the number of visits on those web portals for past 3 months. Also is described the choice of 1 portal from the list for every category.

News category: neweurope.eu VS voxeurop.eu

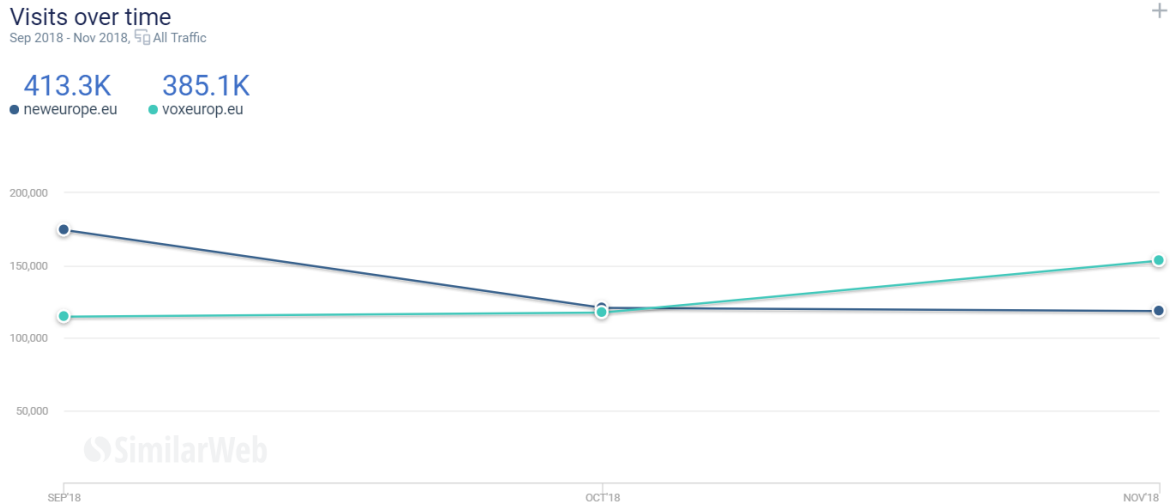


Figure 1 Comparison of information sources for News category [1]

In News category were compared 2 top information portals both with support of RSS feeds.

From the graph it can be seen that neweurope.eu traffic for past 3 months is 413.3K and voxeurop.eu – 385.1K [1]. Also from *Table 2 Web portal’s statistics* it can be seen that *visit’s duration* parameter is twice bigger than voxeurop.eu, so neweurope.eu is chosen as source of information for News category, because of having better results in 2/3 parameters.

IT category: techradar.com VS newscientist.com

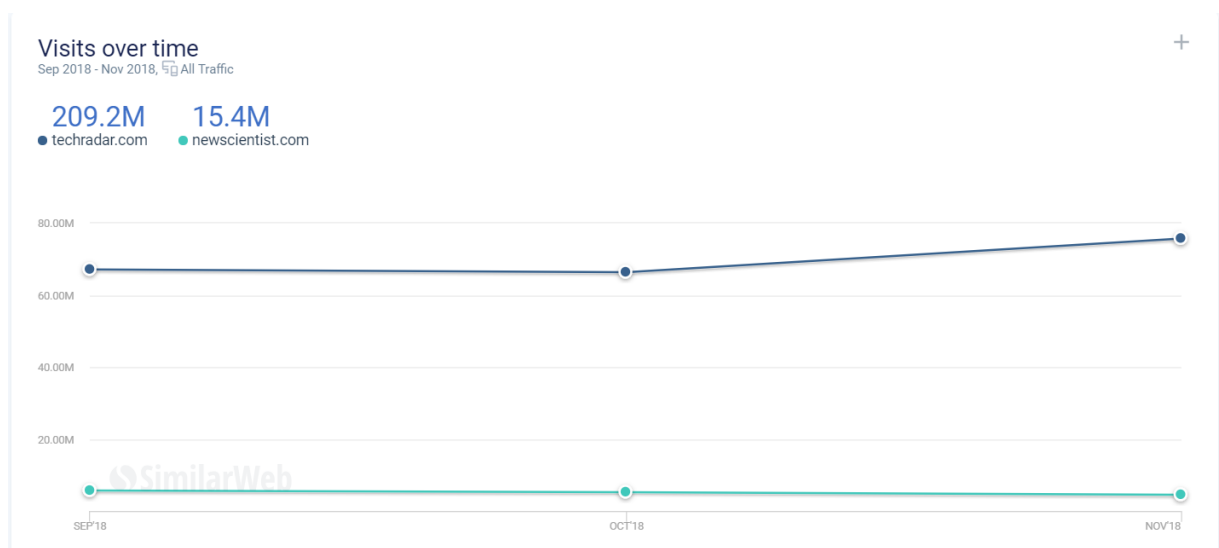


Figure 2 Comparison of information sources for IT category [1]

In IT category were compared 2 top information portals both with support of RSS feeds.

From the graph it can be seen that techradar.com traffic for past 6 months is 209.2M and newscientis.com – 15.4M [1]. Also from *Table 3 Web portal's statistics* it can be seen that *global rank* and *visit's duration* parameters are better than newsscientis.com has, so techradar.com is chosen as source of information for News category, because of having better results in 3/3 parameters.

Cars category: autonews.com VS thetruthaboutcars.com

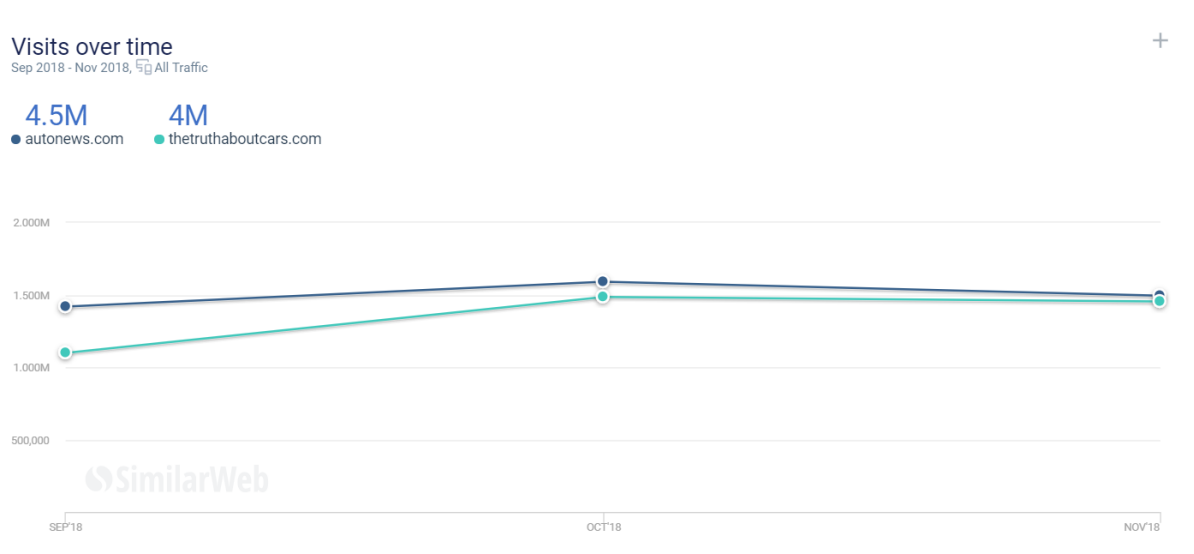


Figure 3 Comparison of information sources for Cars category [1]

In Cars category were compared 2 top information portals both with support of RSS feeds.

From the graph it can be seen that autonews.com traffic for past 3 months is 4.5M and thetruthaboutcars.com – 4M [1]. Also from *Table 4 Web portal's statistics* it can be seen that *global rank* and *visit's duration* parameters are better than thetruthaboutcars.com, so autonews.com is chosen as source of information for Cars category, because of having better results in 3/3 parameters.

All the portals from *Table 5 Web portal's statistics* have one main functionality for users. Users are able to get information from articles in different categories. If go deeper to functionality it can be seen that 2 of 6 portals even do not have a possibility for user to leave

their opinion under the article. The others that have comment functionality do not have any benefit for user, who is leaving comments. These facts prove the problem that existing web portals do not pay attention to people's opinions and do not reward users. This problem will be solved in scope of current diploma.

2.2 Tools

In the next chapters are described all the tools that were used for development in the scope of current diploma.

2.2.1 Java Spring

For developing backend part it was decided to use Java Spring. The Spring Framework provides a comprehensive programming and configuration model for modern Java-based enterprise applications - on any kind of deployment platform [2].

Spring helps developer to solve such problems:

- Spring provides easy and **secure** way to handle Forms, Logins
- Spring takes care of all the **dependencies** you might want or need to build your kind of app [3].
- Spring solve Autowired problem
- Java method direct contact to database

The choice was made between Spring and PHP. Despite of those advantages of Spring that are described above, the main reason of choosing Spring was the size of project. In future it's planned to develop something bigger, so more services will be developed, for those aims Spring is better [4]. Also it was author's wish to use current framework for developing.

2.2.2 Vue.js

Frontend part for current project was developed with Vue.js framework. Vue.js is a progressive framework for building user interfaces. It is very easy to adopt this framework for

every project due to its design. It is also perfectly capable for creating Single-Page Applications [5].

Vue.js advantages are:

- Size of this framework is 18–21KB [6]
- Speed and dynamism
- Simplicity, its enough basic knowledge of JavaScript and HTML
- MVVM architecture
- Components reuse
- Easy access to Material Design components through Vuetify.js

As disadvantage may be said that Vue is quite new framework, not all the cases might have been documented, but it is developing fastly. and author has a wish to try new technologies for development.

The choice was made between Vue.js, Angular and React. React and Angular are more complex to start developing on them [7]. Also author has a wish to try new technologies for development, so Vue.js has a priority.

2.2.3 MySQL

For data repository in current project was chosen MySQL, the choice was done between MySQL and PostgreSQL. The first one was chosen because it supports more programming languages and due to popularity, it is on the second place between databases [8]. MySQL advantages are: it is developer friendly, it works rapidly, secured and reliable database. Also Spring and MySQL database combination is richly documented.

2.2.4 Docker

Docker is a tool designed to make it easier to create, deploy, and run applications by using containers [9]. Containers allow a developer to package up an application with all of the parts it needs, such as libraries and other dependencies, and ship it all out as one package [10].

For developers, it means that they can focus on writing code without worrying about the system that it will ultimately be running on. Docker guarantees that shared container will work same way on every operating system.

One more advantage of Docker is that the whole program configuration is put to common Dockerfile.

2.2.5 Jenkins

Jenkins is a self-contained, open source automation server, which can be used to automate all sorts of tasks related to building, testing, and delivering or deploying software. [11] This software give a possibility to automate packing and deployment. It's saves a lot of time and reduces a human factor error.

Also it is easy to install, it's possible to use Docker for installation.

3. Development

In current chapter is shown analysis of web information portal development, where are described portal's requirements and using manual. Also is described the process how the needed requirements were met that is methodology. In the end is shown comparison of goals and result, whether the result meets requirements.

3.1 Requirements

In current chapter are described functional and non-functional requirements of the information web portal that is planned to be created. Functional requirements describe the functionality that user should be able to do in the created portal. Non-functional – describe are relevant for portal architecture and include usability, performance and comfortability [12].

3.1.1 Functional requirements

On the portal user will be able to:

- Read information in 3 categories(News, IT, Cars)
- Go to next article by clicking the button
- Leave opinion under the article
- Like other user's comments
- Get graph information about amount of news for last 6 hours
- Create and log in to own account
- Get account upgrade after reaching 1000 likes on his comment
- Use portal on both mobile and computer

Those are requirements that describe the functionality that user should be able to do in the created portal.

3.1.2 Non-functional requirements

Non-functional requirements:

- User interface should be intuitive and easy to use
- User interface is on English
- User interface should work on both desktop and mobile

Those requirements are relevant for such portal points as: architecture, usability, performance and comfortability.

3.2 Process

In next chapters is described the whole process of information portal development.

3.2.1 RSS feed reading

RSS is a type of web feed which easily allows a user to keep track of updates from a website. Furthermore, **RSS feeds are based on an XML file which summarizes the content of a site** [13]. It is possible to subscribe to one or more feeds and display the updates by regularly checking if the XML has changed.

```

try {
    synchronized (this.feedMonitor) {
        Reader reader = this.feedUrl != null
            ? new XmlReader(this.feedUrl)
            : new XmlReader(this.feedResource.getInputStream());
        NewsCategory feed = this.syndFeedInput.build(reader);
        if (logger.isDebugEnabled()) {
            logger.debug("Retrieved feed for [" + this + "]");
        }
        if (feed == null) {
            if (logger.isDebugEnabled()) {
                logger.debug("No feeds updated for [" + this + "], returning null");
            }
        }
        return feed;
    }
}
catch (Exception e) {
    throw new MessagingException("Failed to retrieve feed for '" + this + "'", e);
}

```

Figure 4 Article fetching

In our case there are 3 feeds sources to which subscription will be done: autonews.com, neweurope.eu, techradar.com.

Fetch is done with a help of Java Spring.

3.2.2 Request API-s

For communication between Frontend and Backend parts are used API requests. Next are shown main API-s and described what for they are used. Main purpose of the API-s in current project is communication with database through Backend and return information to Frontend.

Main API-s that were used:

- Connection to SSE for getting article name for certain category
- Get certain article full info
- Login and registration requests
- Like request for liking comments
- Requests for getting all the comments for certain topic

SSE connection is done with a help of this GET request:

`http://dev.server.01.yourpoint.io:8080/api/v1/channel/category_name/events`

After connecting to SSE we start getting new event every 7 second. Below there can be seen the process of getting new event, which contains article id.

```
C:\Users\tomas>curl http://dev.server.01.yourpoint.io:8080/api/v1/channel/top_rated_test/events
id:a28b76fe-9450-48cf-84d3-7a59600a727f
event:iamFine
data:{"__type":"iamFine","stream":null,"topicId":null}

id:a7503de6-3aa6-4ec5-92c4-2a0ca6c2c469
event:newItem
data:{"__type":"newItem","stream":null,"topicId":"359734"}

id:dbaacf1-11aa-487c-bfd1-0aae969b5508
event:newItem
data:{"__type":"newItem","stream":null,"topicId":"352283"}

id:e87708c0-b005-460e-b00d-c9407e5960eb
event:newItem
data:{"__type":"newItem","stream":null,"topicId":"359734"}
```

Figure 5 SSE connection example

After getting article id from event, there is done new GET request for getting all the information for certain article id.

Get topic information request:

`http://dev.server.01.yourpoint.io:8080/api/v1/topic/360514`

We are sending GET request, which contains topic id for which we want to get all the information for this topic.

```
{
  "id": 360514,
  "title": "Gaming in 2018: a retrospective",
  "link": "http://www.techradar.com/news/gaming-in-2018-a-retrospective",
  "category": "TECH",
  "value": "Questionable working hours, retro revivals and an incredible",
  "publishedDate": "2018-12-30T12:00:09"
}
```

Figure 6 Getting article information with certain id

Registration POST request:

http://dev.server.01.yourpoint.io:8080/api/v1/user/registration

Registration POST parameters example:

```
{  
  name: "qweqweqweqweqw",  
  email: "dfdsfsfsd@gmao.com",  
  password: "****"  
}
```

Figure 7 Registration POST request parameters example

Registration POST request response example:

```
{  
  "id": 361623,  
  "name": "qweqweqweqweqw",  
  "email": "dfdsfsfsd@gmao.com",  
  "password": "****"  
}
```

Figure 8 Registration POST request response example

Login POST request:

http://dev.server.01.yourpoint.io:8080/api/v1/login

Login request parameters:

```
{  
  password: "qwerty"  
  username: "qwerty"  
}
```

Figure 9 Login POST request parameters example

Login response:


```
{
  "authResult":true,
  "token":"eyJhbGciOiJIUzUxMiJ9.eyJzdWIiOiJxd2VydHkiLCJyb2xlIjpbXSswiZW5hYmxlIjpb0cnV1LCJ1
  "userId":361832,
  "reason":"OK. Token has granted"
}
```

Figure 10 Login response example

Like GET request:

<http://dev.server.01.yourpoint.io:8080/api/v1/comment/362041/like>

We are sending GET request, which contains comment id, which we want to like.

For response to this get request we are getting *true* or *false*, so *true* means that our like was successfully put and *false* – vice versa.

All comments GET request:

<http://dev.server.01.yourpoint.io:8080/api/v1/topic/361550/comments?start=0&limit=15>

We are sending GET request, which contains topic id for which we want to get all the comments.

Response example:

```

[
  {
    "id": 362084,
    "user": {
      "id": 361832,
      "name": "qwerty",
      "email": "qwerty@qwerty.com",
      "pictureUrl": null,
      "subscriptionType": null,
      "userPoints": null,
      "registrationDate": "2018-12-30T15:07:32"
    },
    "topic": {
      "id": 361550,
      "title": "Now there's a report of an iPhone XS Max catching fire",
      "link": "http://www.techradar.com/news/now-theres-a-report-of-an-iphone-xs-max-catching-fire",
      "category": "TECH",
      "value": "An iPhone XS Max has apparently caught fire without warning, though Apple has yet to officially respond.",
      "publishedDate": "2018-12-30T14:30:02"
    },
    "text": "Like it",
    "attachments": [],
    "likesCount": 0,
    "submitTime": "2018-12-30T15:35:29",
    "hasLike": false
  },
  {
    "id": 362081,
    "user": {
      "id": 361832,
      "name": "qwerty",
      "email": "qwerty@qwerty.com",
      "pictureUrl": null,
      "subscriptionType": null,
      "userPoints": null,
      "registrationDate": "2018-12-30T15:07:32"
    },
    "topic": {
      "id": 361550,
      "title": "Now there's a report of an iPhone XS Max catching fire",
      "link": "http://www.techradar.com/news/now-theres-a-report-of-an-iphone-xs-max-catching-fire",
      "category": "TECH",
      "value": "An iPhone XS Max has apparently caught fire without warning, though Apple has yet to officially respond.",
      "publishedDate": "2018-12-30T14:30:02"
    },
    "text": "bfbfbd bfbf",
    "attachments": [],
    "likesCount": 0,
    "submitTime": "2018-12-30T15:35:25",
    "hasLike": false
  }
]

```

Figure 11 All comments response example

All the API-s above are used for getting information from database, which is further used for showing it in user interface. Backend project contains Docker file with a help of which it is possible to start the project on different systems fastly. This file contains the majority of configuration and it's not needed to make it manually. [10]

3.2.3 Frontend part

In this chapter is described frontend part development.

Firstly Node.js should be downloaded and NPM library installed. It is needed for starting Vue.js on the server. NPM installation is done with a help of *npm install* command. Also during development were used Vuex and Vue router, this was done with commands *npm install vuex --save* and *npm install vue-router* [5].

Vue-router is used for assigning urls for components. Vuex is used for easy use of browser cache with a help of Vue store.

```
export default new Router({
  routes: [
    {
      path: '/',
      name: 'index',
      component: Index
    },
    {
      path: '/home',
      name: 'home',
      component: Home
    },
    {
      path: '/about',
      name: 'about',
      component: About
    },
    {
      path: '/contacts',
      name: 'contacts',
      component: Contacts
    }
  ],
})
```

Figure 12 Vue router

```
export default new Vuex.Store({
  state: {
    token: '',
    loggedIn: false,
    user: {
      id: '',
      username: '',
      email: '',
      pictureUrl: "https://virtual-strategy.com/wp-content/plugins/all-in-one-seo-pack/images/default-user-image.png",
      subscriptionType: '',
      yp: '',
      isConfirmed: false,
      registrationDate: ''
    },
    news: {
      id: "",
      title: "",
      link: "",
      category: "",
      value: "",
      date: ""
    }
  },
  mutations: {
    //Token setting
    setToken(state, data) {
      state.token = data;
    },
  },
})
```

Figure 13 Vue store

For working with requests is used axios library. It also could be installed with a help of npm with a command `npm install --save axios vue-axios` [5]. Below can be seen example of POST request in Vue with a help of axios.

```
sendData: function () {
  this.$http.post('/login', this.postData).then(
    (res) => {
      if (res.data.authResult) {
        this.login(res);
        this.getProfileData();
        this.$toasted.show("You are logged in!", {
          theme: "primary",
          duration: 1000
        });
      } else {
        this.$toasted.show("Username or password is wrong", {
          theme: "primary",
          duration: 1500
        });
      }
    })
  .catch((err) => {
    console.log(err);
    this.$toasted.show("Sorry, something went wrong :", {
      theme: "primary",
      duration: 1000
    });
  })
});
}
```

Figure 14 Vue axios POST request

For different views were used different components. Components were styled with a help of SCSS, it was chosen, because of sub structure possibility. HTML, SCSS and Vue.js code for one component are located in this component file with .vue extension. View of user interface can be found in *Attachment 1* section.

3.3 Structure

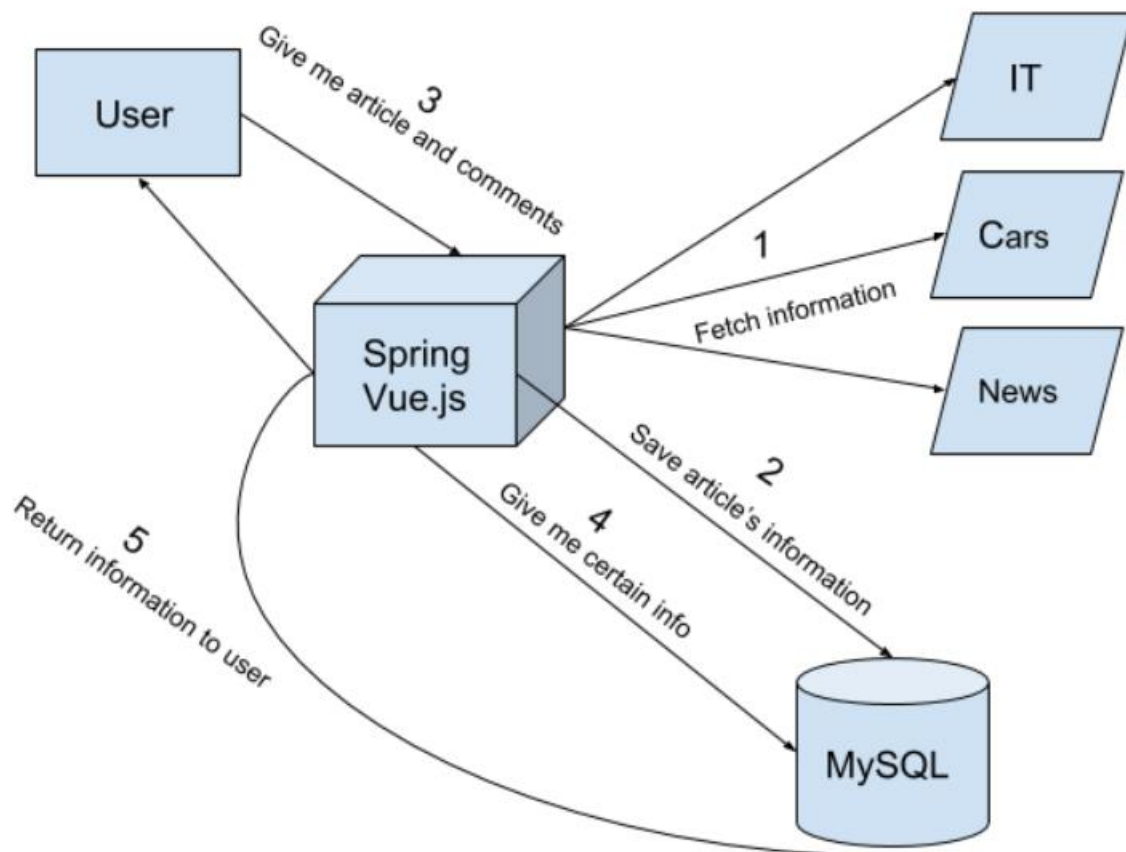


Figure 15 Project structure

Above is illustrated structure of the project. Firstly Spring is fetching information from sites for all the categories. Secondly it is saved to database. After that when user is coming to the portal, he is making request to Spring to fetch information from database. Finally information from database is going to Spring and it is redirected to user. Project can be find on <https://gitlab.com/Toking/diploma> , where is located .zip file with code.

4. Testing

In testing part author should make sure that all the information portal functionality is working correctly.

Firstly, all the functionality was tested personally by author, but this type of testing is not exact, because one person cannot reproduce behavior of group of people. So it was decided to attract more people to this action. It was decided to test all the functionality with a help of 5 users. Testing with 5 people lets you find almost as many usability problems as you'd find using many more test participants [14]. 2 users were using Safari version 12.0.2 browser in desktop and Safari 12.0 on mobile. 3 other users were using Chrome version 71.0.3578.98 in desktop and mobile.

During testing there was found 2 problems. First one concerned the page, when user clicks on the certain article and sees it's body. The problem was that on this page SSE connection was not stopped and because of that article and it's information were changing every 7 seconds, making it impossible to read. After this SSE connection part was checked and corrected, it solved the problem.

Second problem referred to user's profile page. The problem was that for 4 of 5 users the information was not shown. Author checked the profile API and frontend part, where it was processed. Problem was that in frontend part in GET request to profile API had one hardcoded value, after removing it the problem was solved.

These problems that appeared prove the importance of group testing, because testing , which is done only by one person is not exact and it always has big risk that something was dismissed.

All other functionality was working fine.

5. Possible future development

Information portal that was created in the scope of diploma is a strong prototype for social – content – platform. Author sees 1 good way of further project development.

It is creating social – content – platform. It means that portal will have both social and content parts. It could be done this way. Person comes on web portal and can see categories of articles. If he chooses one of the category there will be shown filters for précising information person wants to get, for example he can exclude certain words from the articles. So it's content part of portal – users are getting information.

Social part is that there will be possibility to create own channels for every user. On these channels creator also can filter information his channel will get, after that he can like or dislike the article he gets and write his own overview of day information in his category. Other people can search suitable information channel for them and get articles that are interesting for them.

This idea helps people to save there time, they will have one platform for all the information they want to get.

6. Summary

The main purpose of diploma was creation of web information portal, which will give it's users a possibility to get benefits for expressing their ideas. As the result of work in scope of diploma was created strong prototype of web information portal.

On created portal users can:

- Read articles from 3 categories(News, IT and Cars)
- Leave comments under the article
- Create own account
- Like other user's comments
- Get account upgrade

In the first part of the project there was done analysis of big information portals for each category and chosen those, which fit the requirements. After that were chosen technologies for development and prototype development started.

During project development author got good experience of using different technologies, especially Vue.js, which was absolutely new framework for author, but now he has good knowledge in Vue.js. Also MySQL and Spring knowledge were strengthen during diploma writing.

All the functionality that was planned is implemented and working. As a result of diploma is created web information portal, where people can not only leave their opinions, but also get benefits for that. For writing attractive comments people have a possibility to get their account upgrade for free. Also it has have big potential for further development.

Kokkuvõte

Pea diplomi eesmärk oli informatsiooni portaali loomine, mis annab kasutajatele võimalust saada kasu nende arvamusi avaldamise eest. Selle diplomi tulemuseks sain veeb informatsiooni portaali hea prototüüp.

Loodud portaalil kasutaja saab:

- Lugeda artikleid 3-s kategoorias (News, IT ja Cars)
- Kommenteerida artikleid
- Luua oma kasutajat
- “Like” teiste kasutajate kommentaarid
- Muuta oma kasutaja status

Projekti esimeses osas oli tehtud suure informatsioon portaale analüüs igale kategooriale ja valitud portaalid, mis vastavad nõuetele. Pärast oli valitud tehnoloogiad, mis kasutatakse arenduses ja prototüübi arendamine oli alustanud.

Projekti arendamise käigusel autoor sai hea kogemus erinevate tehnoloogiate kasutamisel, eriti Vue.js, mis oli autorile täiesti uus raamistik, vaid praegu autooril on juba palju teadmisi selles osas. Diplomi kirjutamise ajal tugevnesid teadmised ka MySQL ja Springi kohta.

Kõik planeeritud funktsionaalsused portaalile said implementeeritud ja töötavad. Diplomi tulemusena oli loodud infoportaal, kus inimesed saavad mitte ainult oma arvamust jätta, vaid saavad ka selle eest kasu. Kasutajad kommenteerivad artikleid ja saavad “accounti upgrade” selle eest. Samuti on sellel on suur potentsiaal edasiseks arenduseks.

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Attachment 1

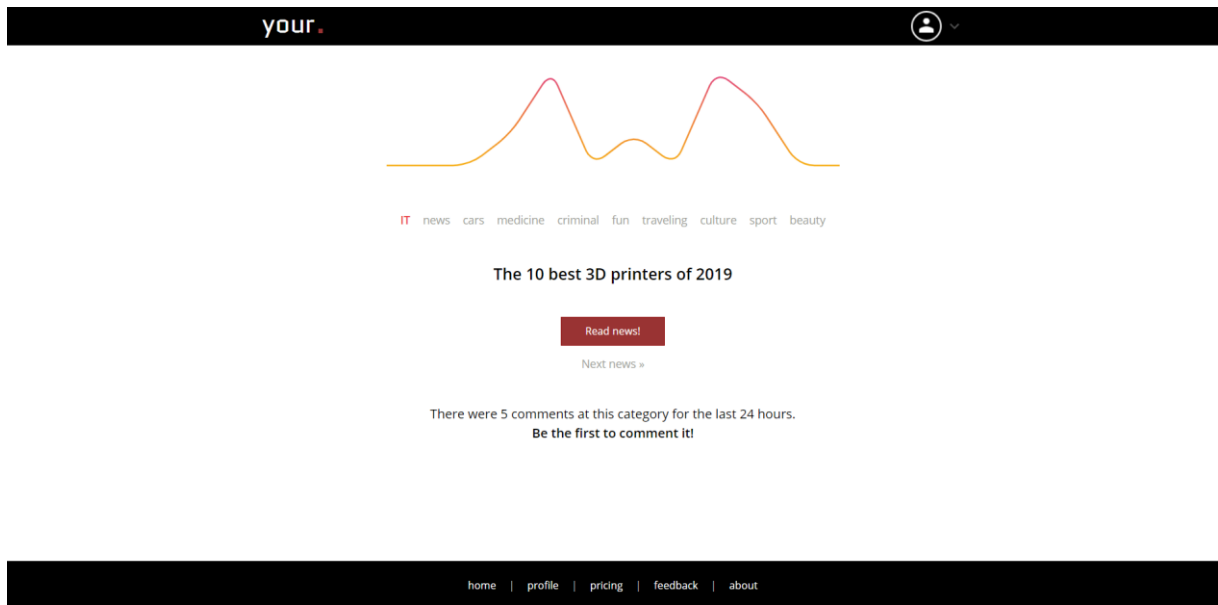


Figure 16 Main page view

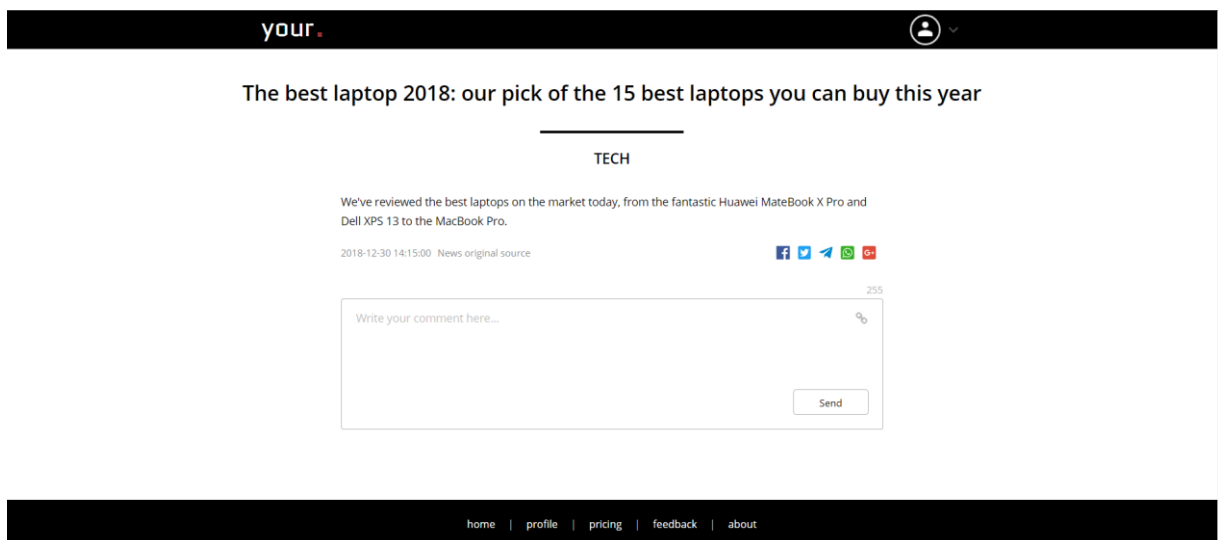


Figure 17 News page view

The best laptop 2018: our pick of the 15 best laptops you can buy this year

TECH

We've reviewed the best laptops on the market today, from the fantastic Huawei MateBook X Pro and Dell XPS 13 to the MacBook Pro.

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Figure 18 News page view with comments