# D2.2 Families_Share Platform version 1

## WP2 – Platform Development

28.02.2019

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CAPS Topic: ICT-11-2017, Type of action: IA, Grant agreement No 780783

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*Document Information*

| Grant Agreement Number | 780783 | Acronym | FAMILIES_SHARE | |
|---|---|---|---|---|
| Full Title | Families_Share mobile-based services definition | | | |
| Topic | H2020 CAPS Topic: ICT---11---2017 | | | |
| Funding scheme | IA Innovation Action | | | |
| Start Date | 1/1/2018 | Duration | 34 months | |
| Project URL | www.families-share.eu | | | |
| EU Project Officer | Loretta Anania | | | |
| Project Coordinator | Agostino Cortesi, UNIVE | | | |
| Deliverable | D2.2: Families_Share Platform version 1 | | | |
| Work Package | WP2 Platform Development | | | |
| Date of Delivery | Contractual | M14 | Actual | 28/02/2019 |
| Nature | P - Propotype | **Dissemination Level** | P - Public | |
| Lead Beneficiary | VILABS | | | |
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| Contributor(s): | All partners | | | |
| Keywords | Platform, development, release, user manual, testing | | | |

*Document History*

| Version | Issue Date | Stage | Changes | Contributor |
|---|---|---|---|---|
| 1.0 | 18 February 2019 | Draft | Release of the first draft. | VILABS |
| 1.1 | 21 February 2019 | Draft | Ready for internal review. | VILABS |
| 1.2 | 26 February 2019 | Draft | Incorporation of feedback, ready for quality check by the PO and submission. | VILABS |
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# Executive Summary

This report aims at supplementing the software prototype of the Families_Share Platform. This release complies with the specifications for version 1 found in D2.1 – Services design and deployment environment, which were crafted in order to conform with the requirements captured in D1.2 – Families_Share mobile-based services definition. The document focuses on the user perspective and the flow within the Android / web app. Details on the backend design as well as the deployment architecture were included in D2.1.

The reader is invited to experience the functionalities of the platform by downloading the core Android app from [1]. The app is also available on Google Play Store in [2], though an invitation is currently needed as it is in closed testing.

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# 1 Introduction

## 1.1 Intended audience

This document targets Families_Share consortium members in order to reflect the progress of the implementation of the first release of the Families_Share platform. It also contributes to the overall dissemination of the activities and the results of the project.

## 1.2 Document structure

The document is organized as follows.

**Section 2** presents a walkthrough of the basic platform functionalities and acts as a user manual.

**Section 3** includes the results of the technical testing of the platform.

Finally, **Section 4** concludes the report.

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# 2 Families_Share Platform Walkthrough

This chapter presents the final version of Families_Share platform and demonstrates the steps involved in three end-to-end scenarios, which cover the platform's main functionalities.

1. Register user and provide information
2. Create and join groups
3. Create and join activities

## 2.1 Register and provide information

A new user can access the platform by downloading the corresponding community app from the Google Play Store and installing it on her device.

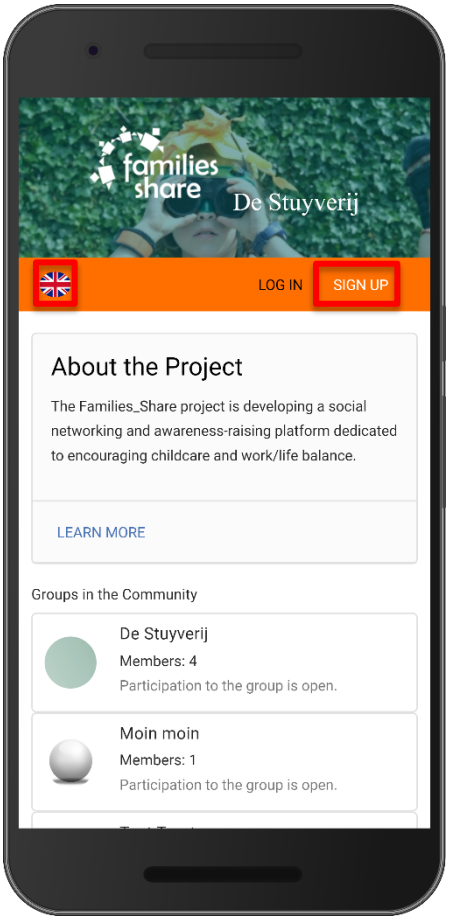


*Figure 1 - Landing screen*

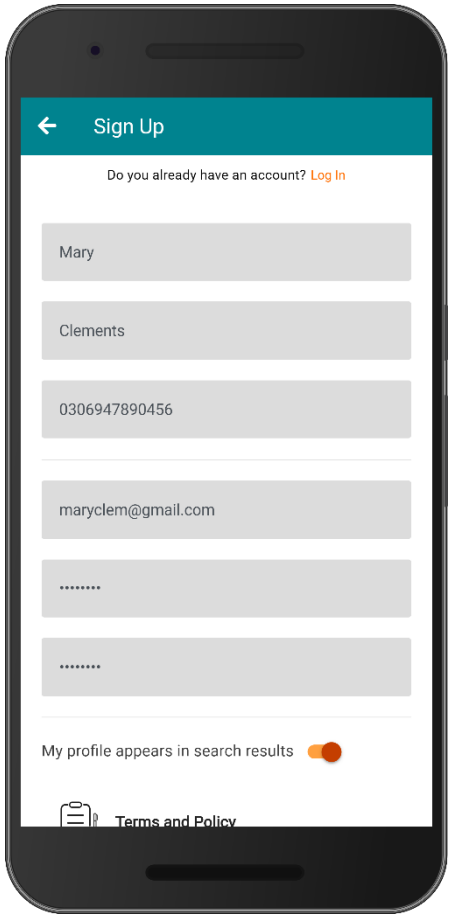


*Figure 2 - Sign up screen (a)*

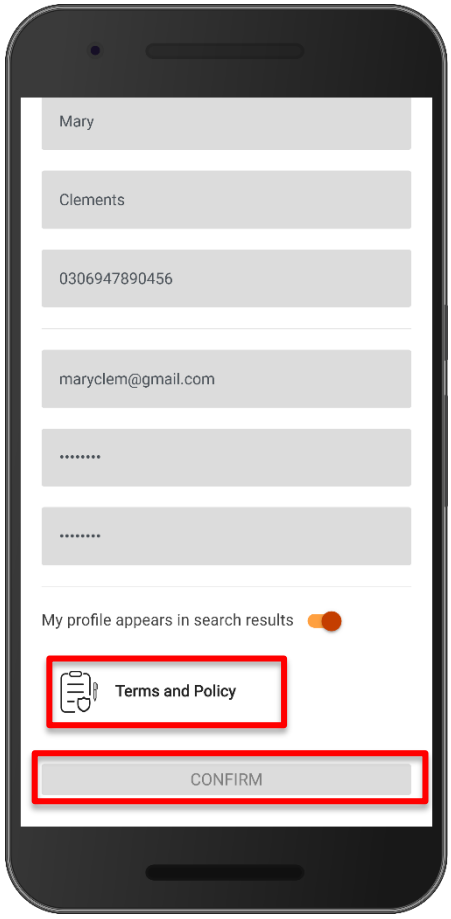


*Figure 3 - Sign up screen (b)*

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### 2.1.1. Register

Figure 1 illustrates the landing screen of the Families Share app, where the user can either log in to an existing account or create a new one. Before proceeding, in case the user wants to change the language of the app she can do so by clicking the flag icon at the left side of the navigation bar. Upon clicking Sign Up, the user is redirected to the sign-up screen, where she can create a new account (Figure 2, Figure 3). The user is then prompted to provide the following pieces of information:

1. Name
2. Surname
3. Phone number (optionally)
4. Email address
5. Password

The successful completion of the sign-up process involves a series of validation checks related to the proper input of the requested parameters (e.g. the password must contain at least eight characters). Upon filling the requested information, the user must then read and accept the terms of use and the privacy policy of the platform and finally confirm the provided information. Figure 4 demonstrates the home screen of the app, where the user is redirected after completing her registration.

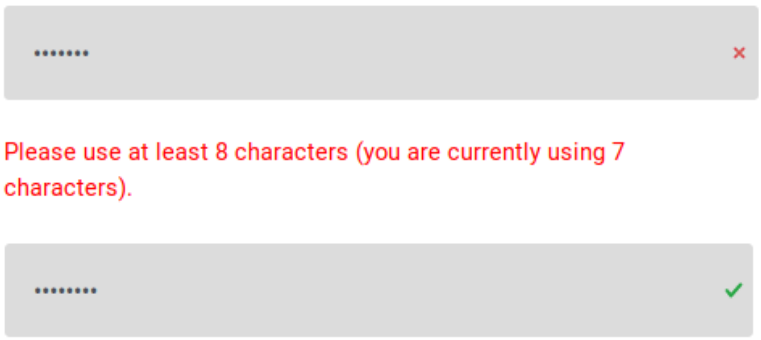


***Figure 4 – Parameters validation***

The home screen provides the user with useful information, listing the groups she is a part of and includes a personalized version of the Families_Share calendar that displays the user's signed up activities. Clicking on the "hamburger" (Figure 5) icon brings up the platform's main menu (Figure 6**Error! Reference source not found.**), which provides easy access to the platform's core functionalities (e.g. creating a group, searching for a group, visiting the user's profile etc).

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### 2.1.2. Edit profile

Upon clicking the “My profile” button the user is redirected to her profile screen, where she can edit her personal information and add her children to the platform (Figure 7). The user’s profile is divided in two smaller sections: a) The info tab, which describes the user’s personal information b) The children tab, that displays the user’s registered children.

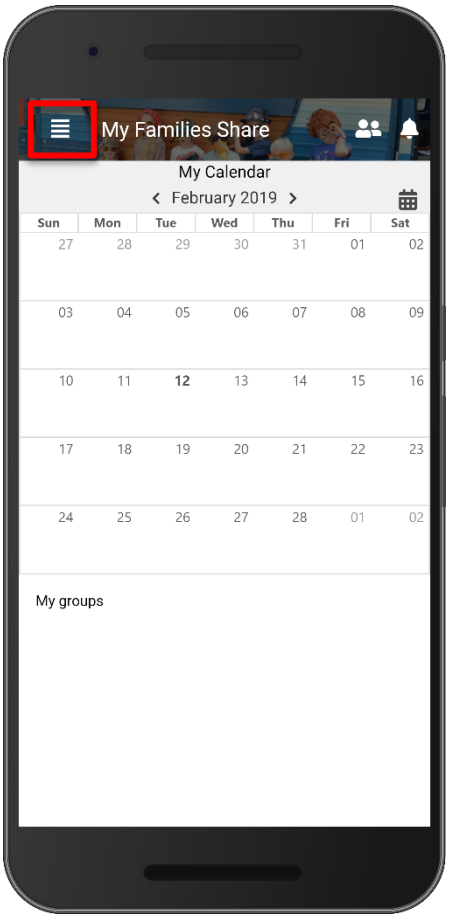


*Figure 5 - Home screen*

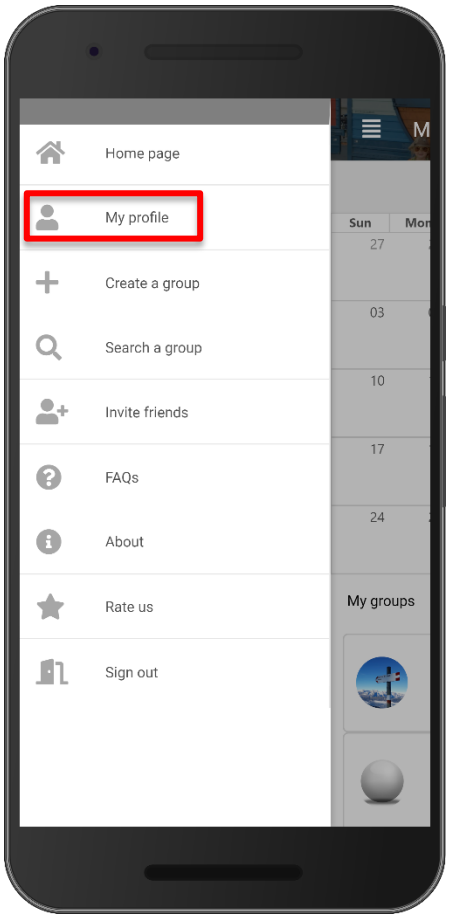


*Figure 6 - Main menu*

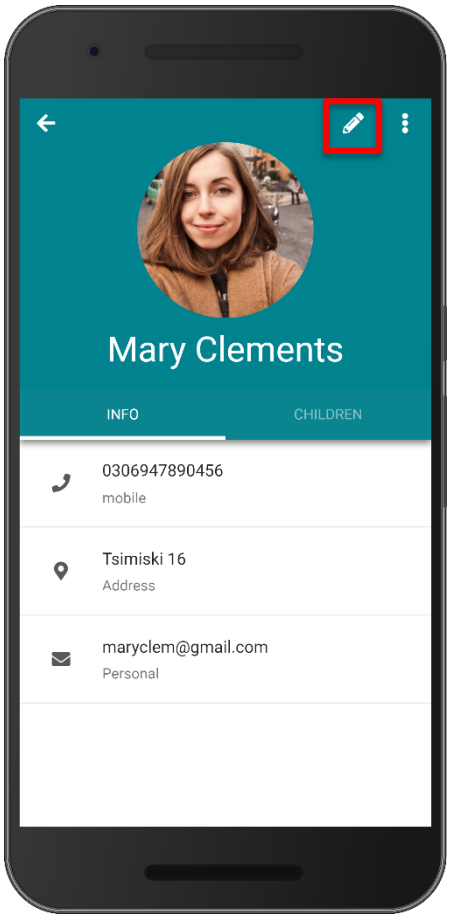


*Figure 7 - Profile screen*

In the editing screen of her profile (Figure 8) the user can add additional information (e.g. location) or edit her existing. Furthermore, the user’s profile photo can be changed either by uploading a new one from the device’s collection of photos or by capturing a new photo with the device’s camera. At last the platform provides the user with the option of setting her profile visibility. By default, a user’s profile is visible, which means that the user appears in other users’ search results and can be invited in groups.

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All changes made to the user's profile can either be discarded or saved by clicking the "times" or "check" icon correspondingly.

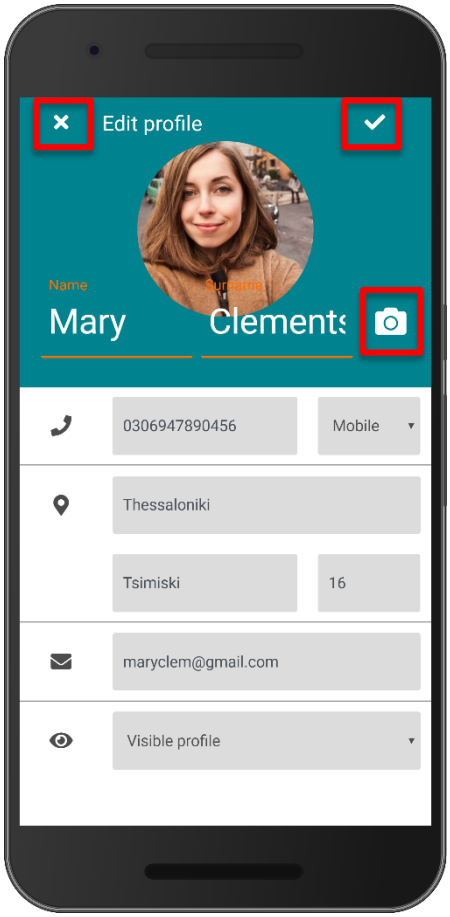


*Figure 8 - Edit profile screen*

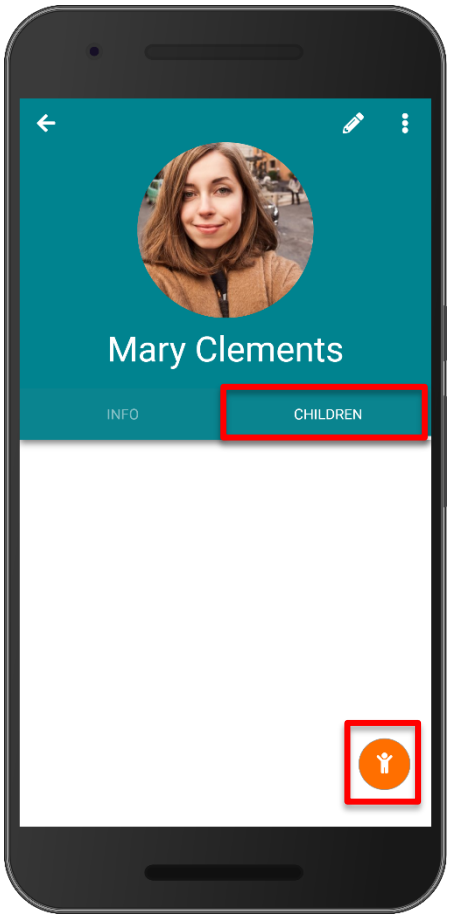


*Figure 9 - Children tab*

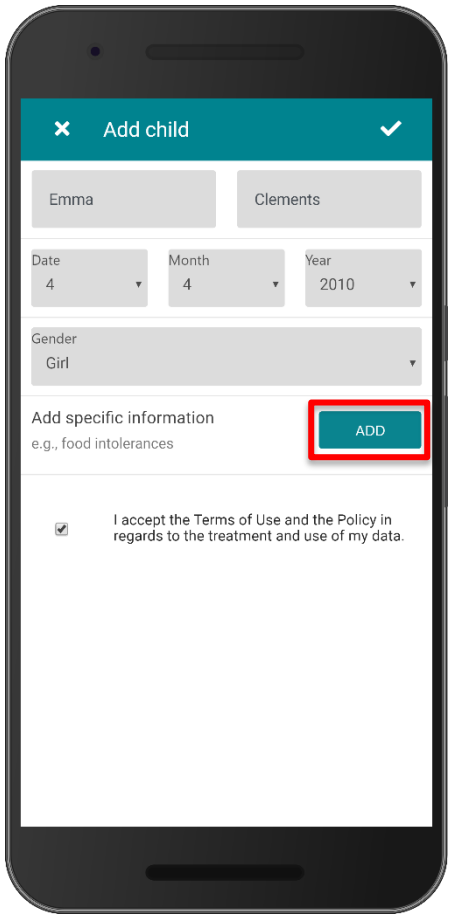


*Figure 10 - Create child screen*

### 2.1.3. Add a child

Upon navigation to the children's tab (Figure 9), the user can register her children to the platform, an action which is necessary in order for them to participate in group childcare activities. By clicking the child icon, the user navigates to the child creation screen (Figure 10), where she can fill some basic information regarding her child. Furthermore, the user may add additional information (Figure 11) related to any special needs that exist (e.g. allergies) or other important information that the caregiver needs to know (e.g. a specific toy that calms a child). It is worth mentioning, that sensitive information about the child gets only disclosed to group members that are directly involved in the childcare activity. Upon filling all the information needed and saving the changes the user gets redirected back to the children tab, where the newly added child appears (Figure 12). In case the user ommited some crucial information about the child, she can always navigate to the child profile screen (Figure 13), by clicking

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on the child. There, she can perform actions such as editing existing or adding new information and inviting another user to register as parent or guardian of the child inside the platform.

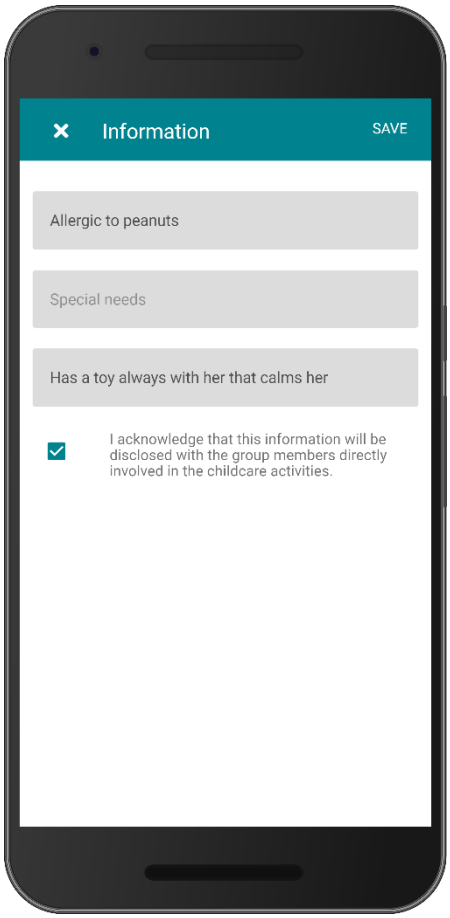


*Figure 11 - Additional info screen*

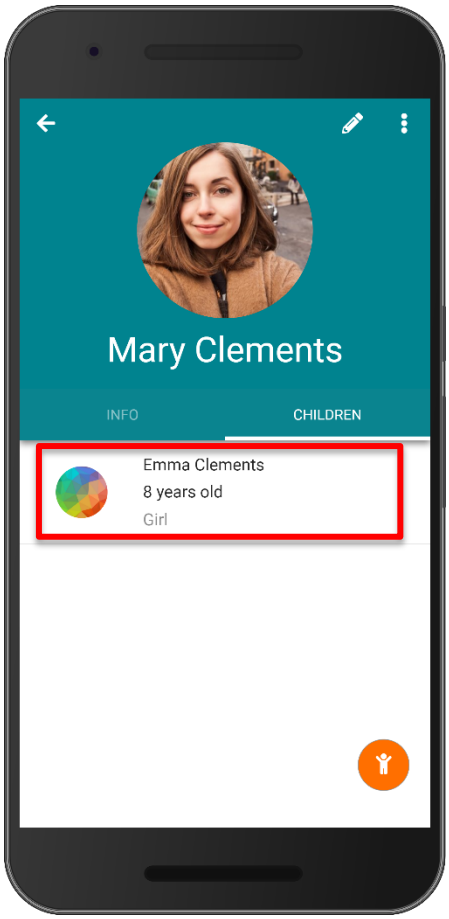


*Figure 12 - Children tab with new child*

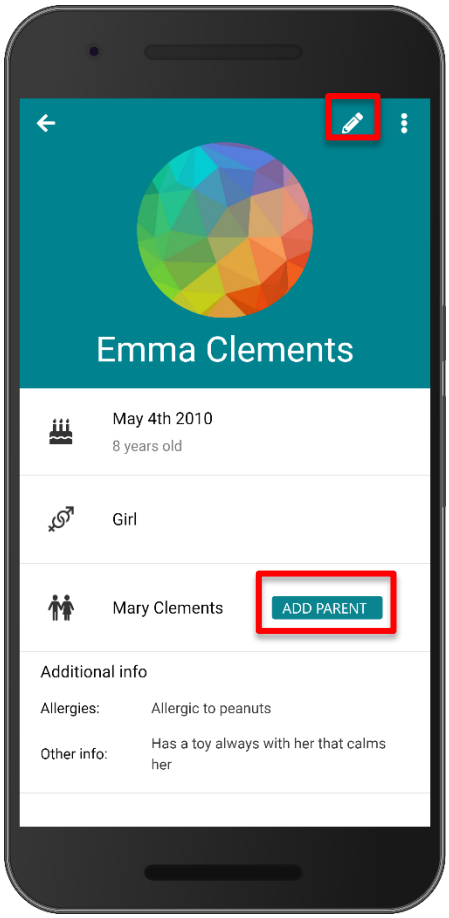


*Figure 13 - Child profile screen*

## 2.2 Create and join groups

Following, the registration of her children to the platform, the user is now ready to create her own group or join an existing one and start participating in activities. These two actions become available to the user by bringing up the main menu of the platform and clicking on the corresponding button (**Error! Reference source not found.**).

### 2.2.1. Create a new group

Upon clicking the "Create group" button the user is redirected to the group creation screen. Figure 15, Figure 16, Figure 17 and Figure 18 illustrate the steps the user must follow in order to create a group. In step 1 the user is prompted to provide a name and (optionally) a description for the group. The name of the group must be unique and not exist already. Following, in step 2 the user can choose whether she wants the group to be visible in search results or not. By default, a new group is visible.

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In step 3, the user has to provide a location for the group. Finally, by clicking on the plus icon in step 4 the user may invite other users to be a part of her new group.

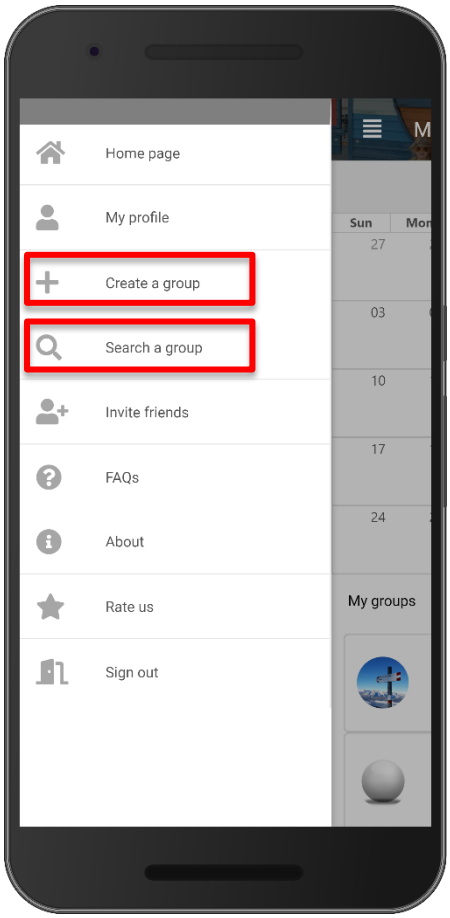


*Figure 14 - Main menu*

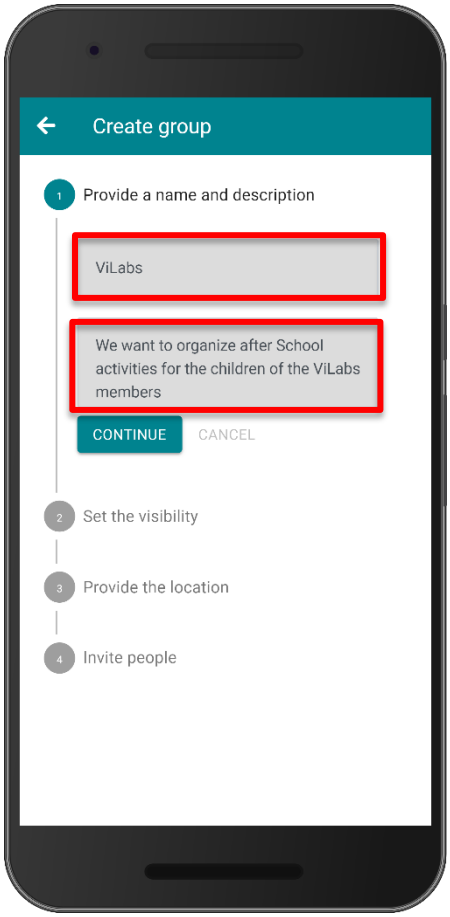


*Figure 15 – Creating a group step 1*

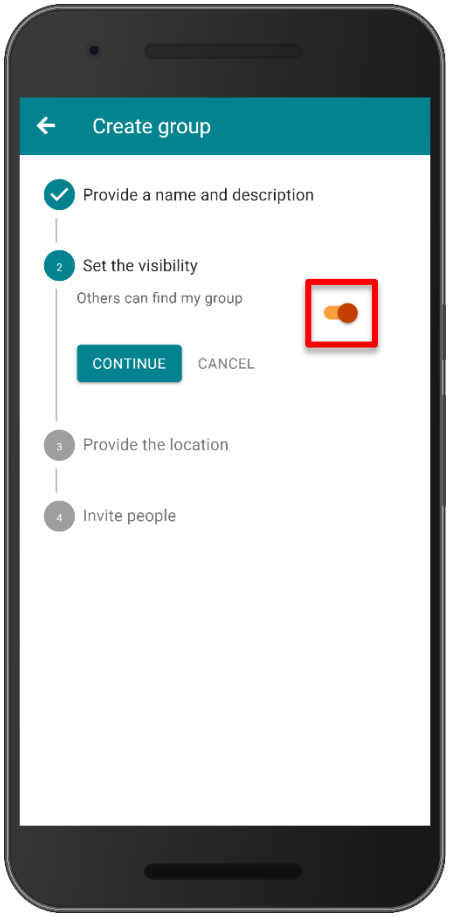


*Figure 16 – Creating a group step 2*

After completing these four steps and clicking the finish button the new group is created and added to the user's home screen (Figure 19). The user that creates a group is automatically added as an admin of the group, enabling her to edit the group settings, invite new member etc.

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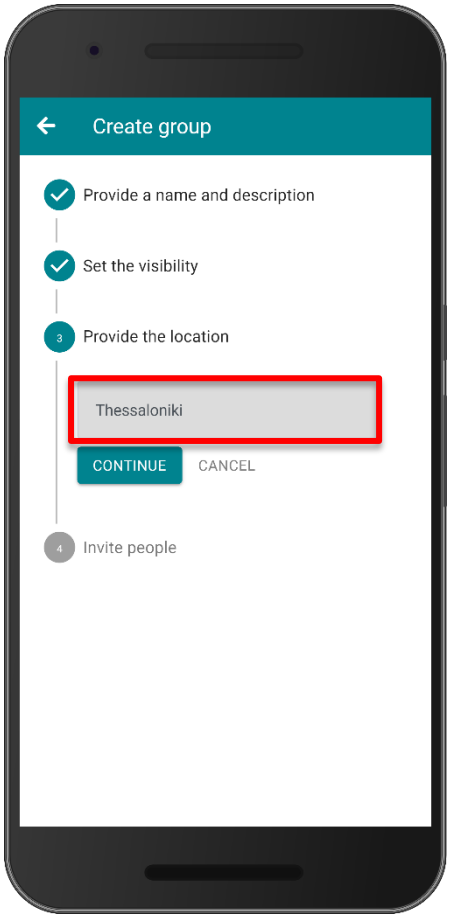


*Figure 17 – Creating a group step 3*

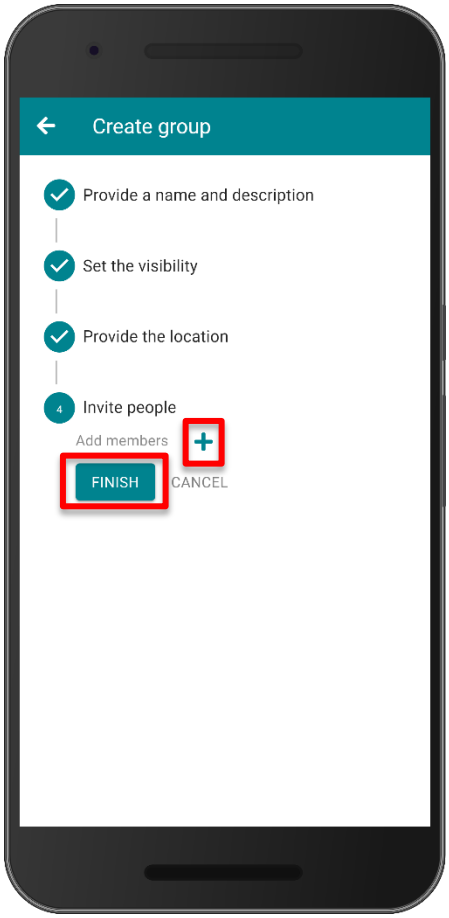


*Figure 18 – Creating a group step 4*

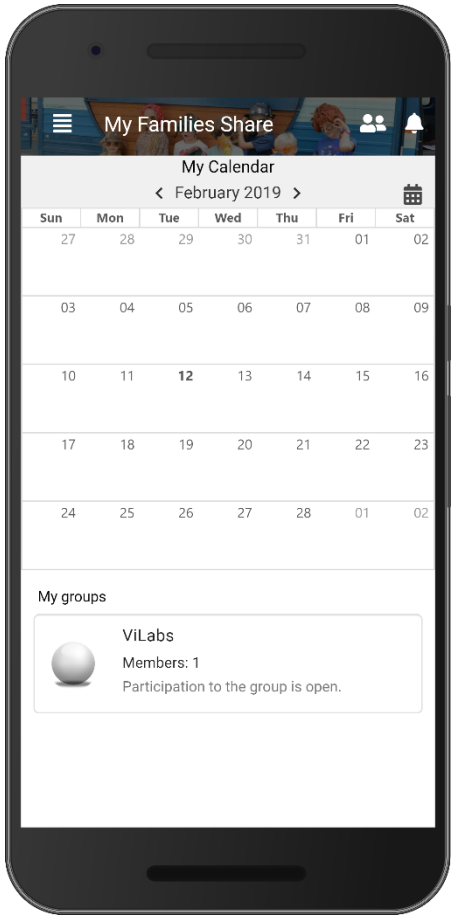


*Figure 19 - Home screen with a new group*

### 2.2.1. Join an existing group

For the user to join an existing group, she has to navigate to the search screen (Figure 20) by clicking the "Search a group" button in the main menu. Upon navigation to this screen, the user can input a query and search for a specific group. The platform will try to match the user's query with group names and provide a list of suggestions (Figure 21). Clicking on a group, will redirect the user to this group's about screen (Figure 22). A group has four different sections where the user can navigate to: a) about b) members c) activities d) news. However, navigation is disabled to users that aren't member of the group. A non-member can only see a brief description of the group and click the join button. After clicking the join button, a user has to wait for any of the group admins to approve or reject this request. Upon approval, the user will have access to more group information and will be able to navigate to all the different sections (Figure 23).

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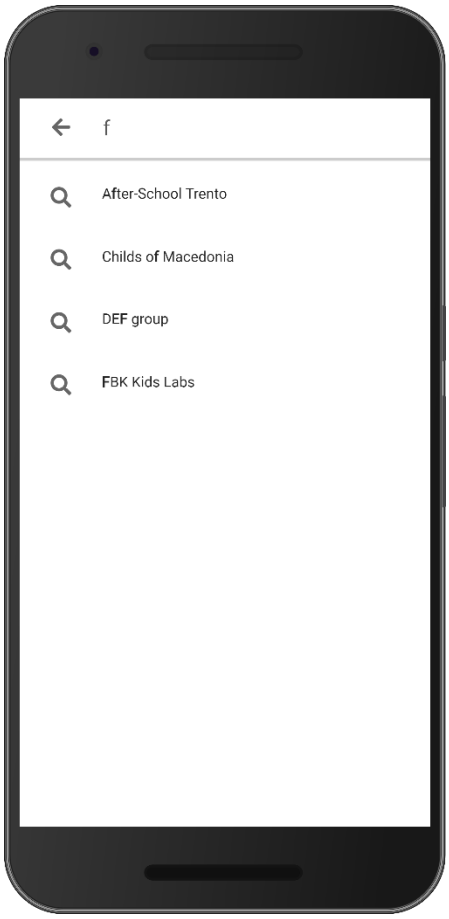


*Figure 20 – Searching for groups suggestions*

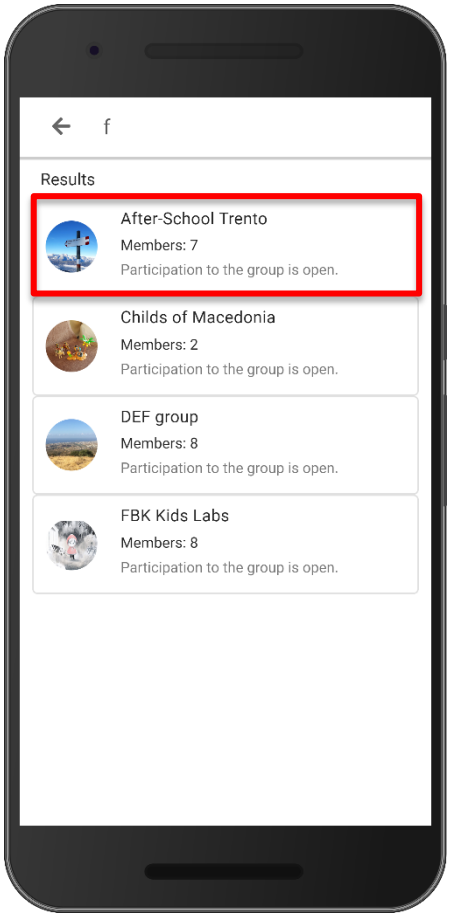


*Figure 21 – Searching for groups results*

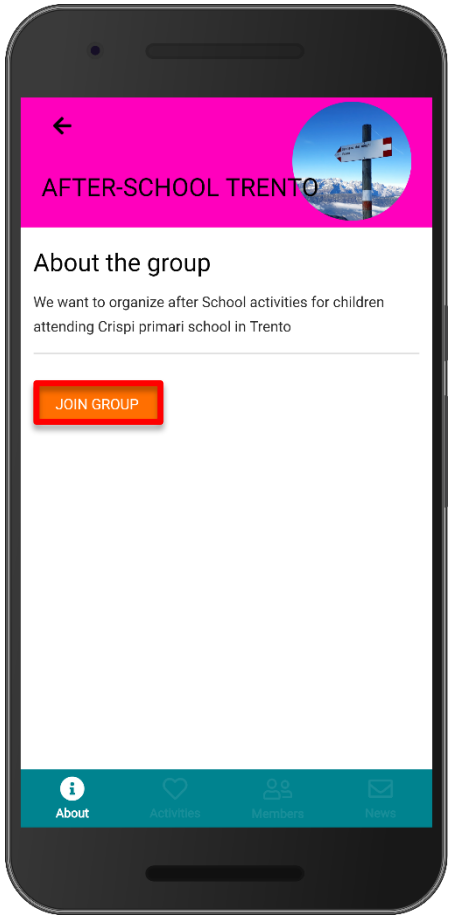


*Figure 22 – Group about screen when user is not member*

Figure 24 illustrates the members section of the group, where a user can be informed about the other members of the group and contact them via email or phone.

Figure 25 illustrates the news section of the group which is divided in two sub sections: a) notifications b) messages.

In the messages subsection the user may post a new message to the group or reply to an existing one. A message can be plain text or have also photos attached to it. In order to attach photos to a message a user must click on the camera icon of the new message bar and choose some photos from the device's collection. When the user has finished editing her message, she can post it to the group messages by clicking the paper plane icon. In the notifications subsection a user can be informed about important group announcements such as new group rules or a newly added activity.

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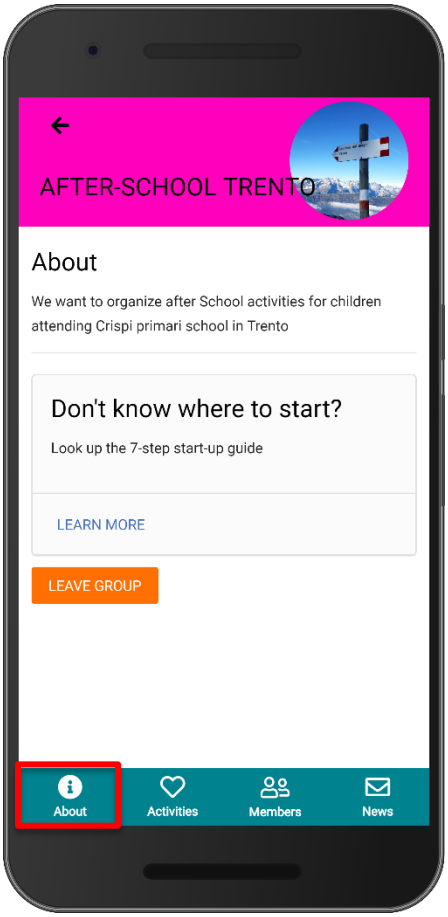


*Figure 23 - Group info screen when user is member*

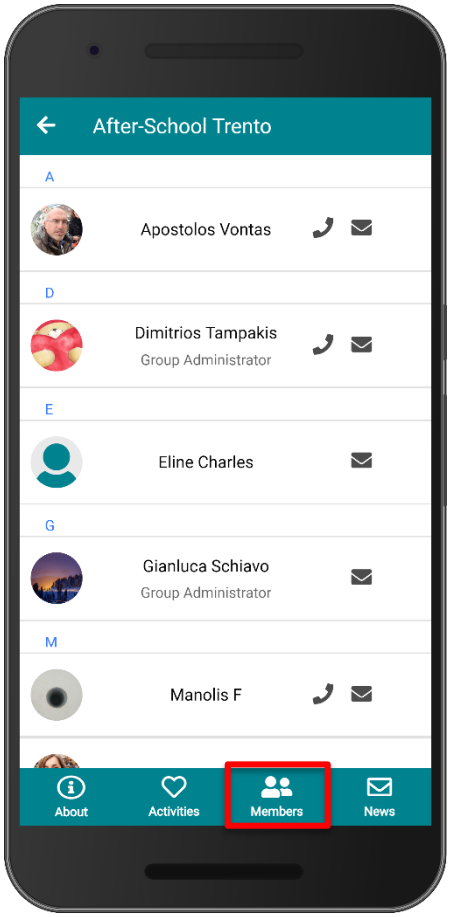


*Figure 24 - Group members screen*

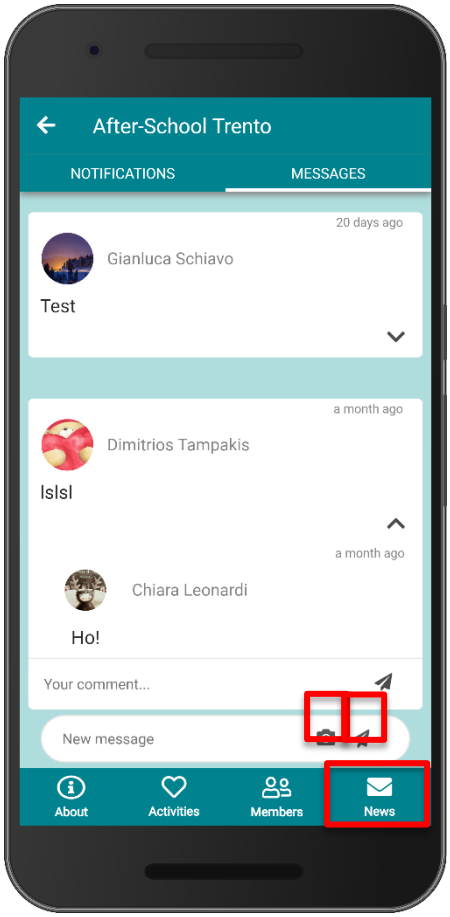


*Figure 25 - Group news screen*

## 2.3 Create and join activities

Figure 26 illustrates the activities section of a group. This section displays a list of all the group's activities as well as a group version of the Families_Share calendar. This calendar displays group events that are in a fixed state, meaning that the event's details, such as time, location and number of participants have been decided and won't change in the future. The user can either navigate to a specific activity by clicking on it or create a new one by clicking the plus icon.

### 2.3.1. Create a new activity

Upon clicking the plus icon, the user is redirected to the activity creation screen. Figure 26, Figure 27, Figure 29 illustrate the steps the user must follow in order to create an activity.

In step one (Figure 26) she must provide a name for the activity and (optionally) a description. The color of the activity is selected randomly by default but can be changed at any time in the Activity Edit screen.

In step two (Figure 27), the user selects the dates that the activity will take place on. She can select a single date or multiple dates. An activity can be recurrent. By clicking, on the repetition switch the user

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enables repetition and may select between two options: a) weekly repetition b) monthly repetition. It is worth mentioning that the repetition switch is disabled when multiple dates are selected and can only be clicked when the user has selected a single date.

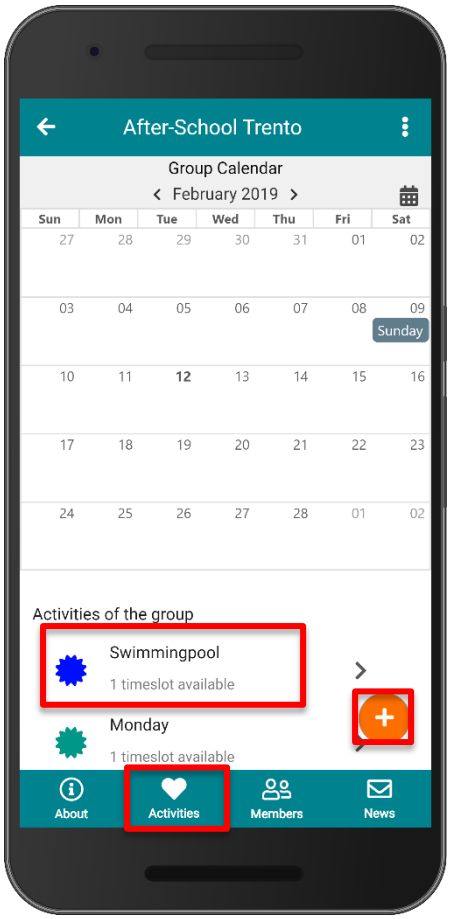


*Figure 28 - Group activities screen*

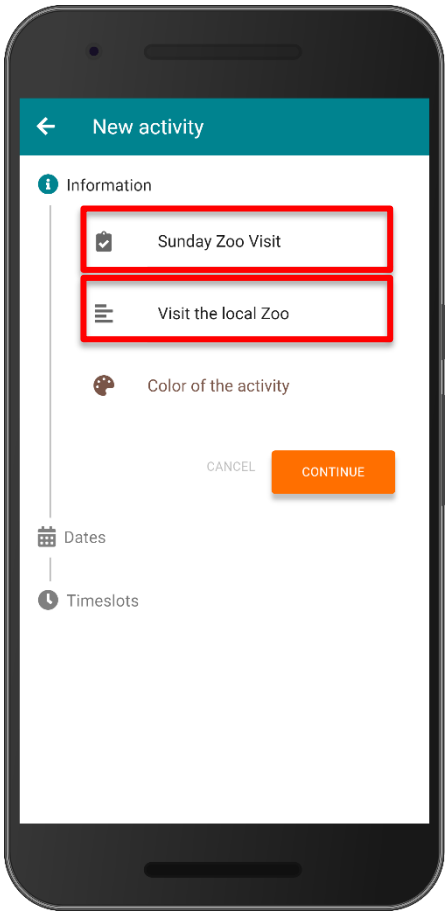


*Figure 26 – Creating an activity step 1*

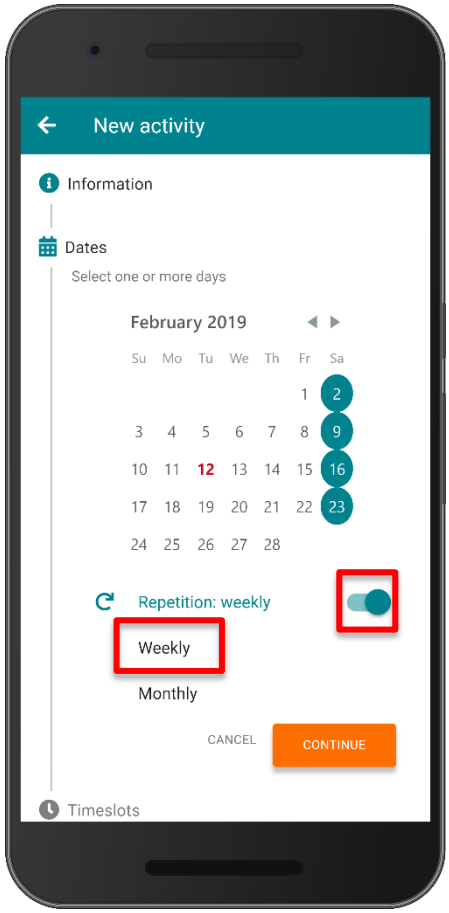


*Figure 27 – Creating an activity step 2*

In step 3 (Figure 29), the user must add the desired timeslots (events) for each day she selected. By default, all days share the same timeslots, but the user may add different timeslots for each day by clicking the corresponding button as shown in Figure 29. Clicking the "ADD TIMESLOT" button brings up the new timeslot window, where the user can provide all the necessary details regarding the timeslot (event) (Figure 30). Specifically, the user is prompted to provide:

a) A start time
b) An end time
c) A name
d) A location
e) The required number of parents (minimum number of participating parents)
f) The required number of children (minimum number of participating children)
g) A description (optionally)

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h) A cost per person (optionally)

By default, the name of a timeslot is the same as of the activity's, but the user can always change that. After filling, all the requested parameters the user may save the timeslot or discard it by clicking on the check or times icon correspondingly. Figure 31 illustrates the newly added timeslot. The user can delete the new timeslot by clicking on the times icon or expand it to see its details by clicking on it.

Finally, upon adding all the desired timeslots the user has to click the "SAVE" button in order to complete the creation of the activity.

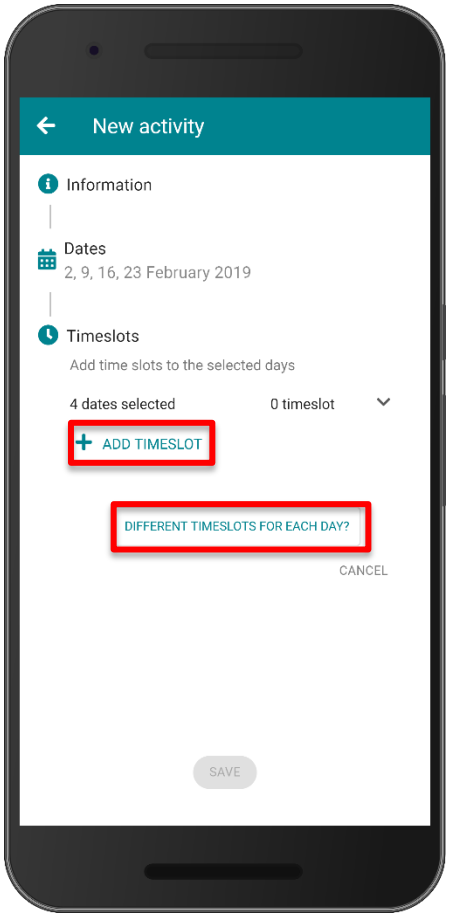


*Figure 29 - Creating an activity step 3*

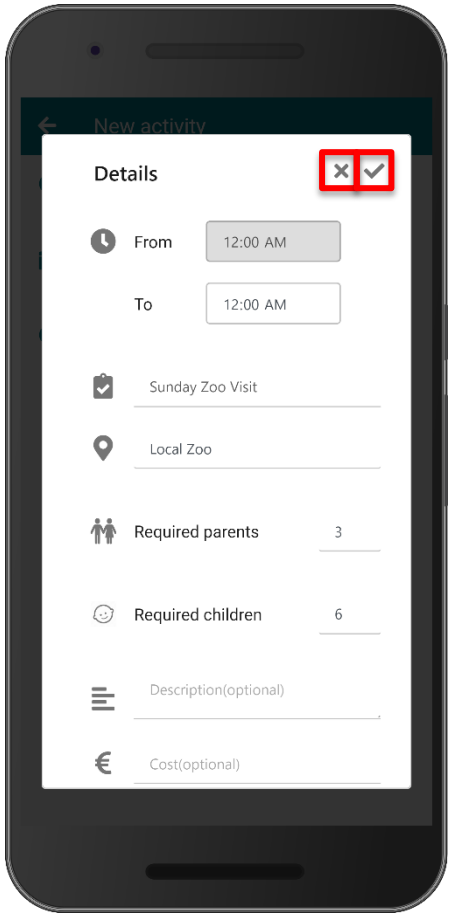


*Figure 30 - Adding a new timeslot*

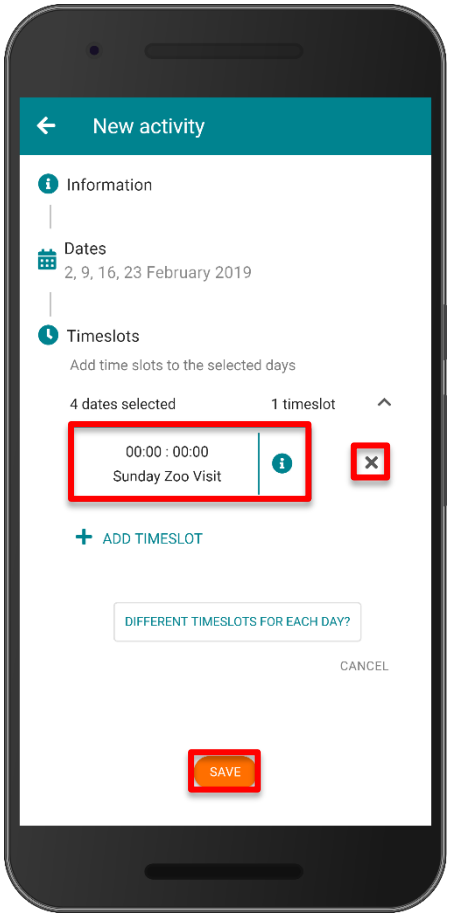


*Figure 31 - Creating an activity step 3, with new timeslot added*

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### 2.3.2. Join an activity

Figure 32 illustrates the Activity Screen, where the user can navigate to by clicking on any of the activities in the group activities section. Here, the user can see the main details of the activity such as the selected dates, the group organizing the activity etc. The name and color of the activity can be changed by clicking on the pencil icon, which redirects the user to the Activity Edit screen. For the user to see the timeslots of each date she has to click on the chevron up icon, which is at the bottom of the Activity screen. Upon clicking on this icon, the timeslots drawer is brought up that lists all the timeslots.

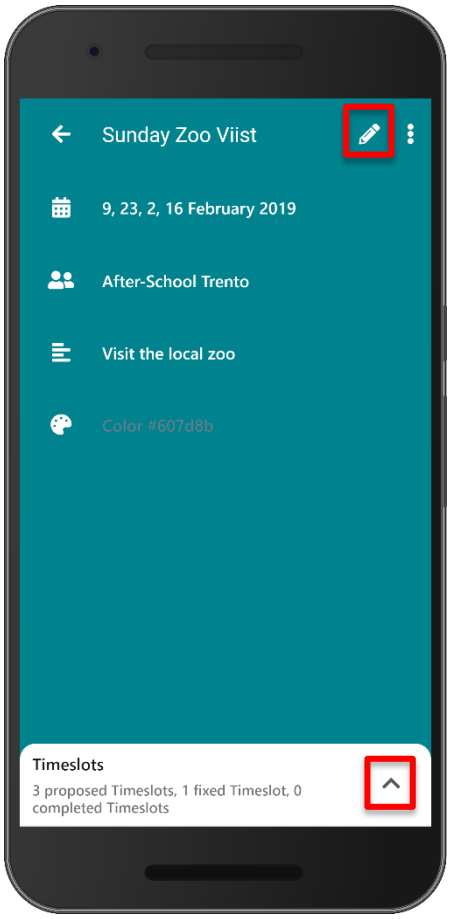


*Figure 32 - Activity screen*

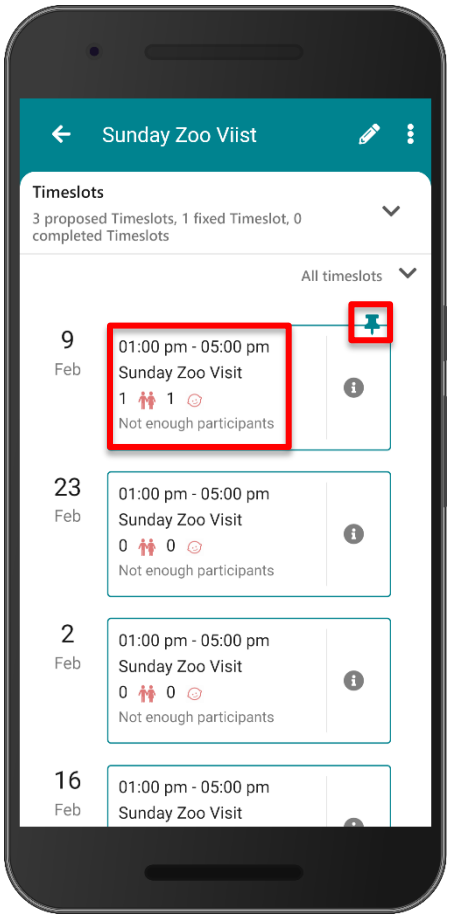


*Figure 33 – Activity screen with expanded timeslot drawer*

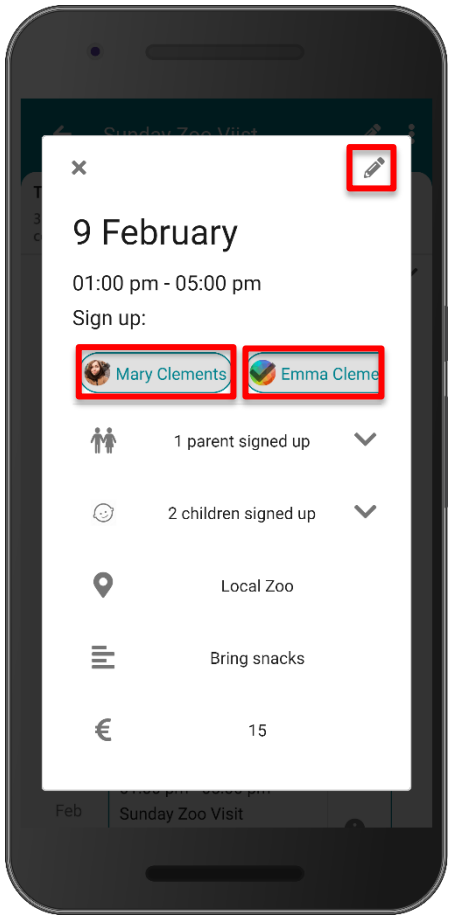


*Figure 34 - Expanded timeslot*

The preview of a timeslot provides the user useful information about the number of participants and the status of the timeslot. The numbers on the left of the couple and the child icon indicate the number of participating parents and children correspondingly. Furthermore, the color of each icon indicates whether the number of participants has reached the required one. Upon reaching, the required number the color of the icon will turn to green. The thumbtack at the top right corner of the first timeslot preview indicates that this specific timeslot is in a fixed state, while the rest of the timeslots are in a proposed state. As mentioned before, only fixed timeslots appear in the group or user calendar.

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Clicking on a timeslot preview brings up the expanded view of a timeslot (Figure 34). In this view, the user can sign up herself or her child by clicking on the corresponding name. In case, the user wants to edit the details of a timeslot she can click on the pencil icon, which redirects her to the edit view of the timeslot. However, in order for a user to edit a timeslot she must have admin privileges in the group, or she has to be the creator of the activity.

Figure 35 illustrates the home screen of the platform, which now shows the two groups the user has joined and the timeslot she has signed-up for participation.

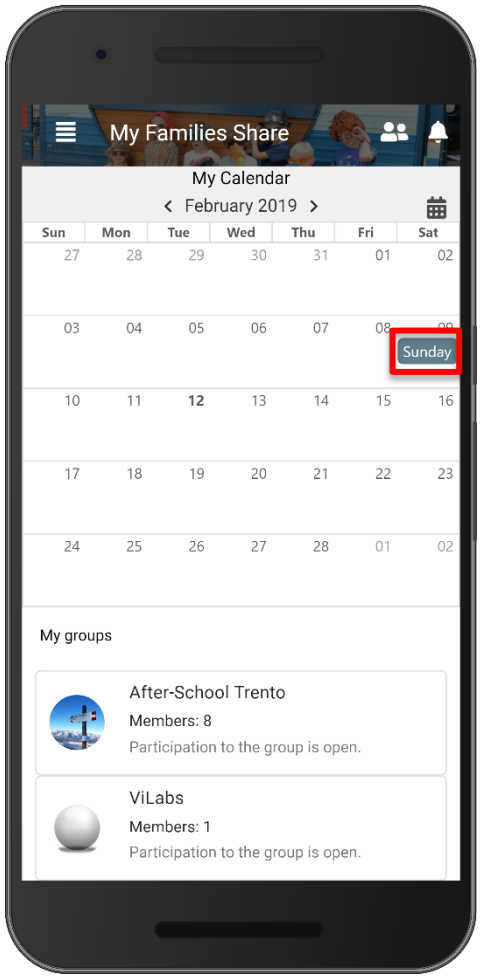


***Figure 35 – Home screen with a signed-up event***

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# 3 Platform Testing

In order to meet quality standards for the Families_Share platform and ensure its long-term success several tests were conducted. These tests not only verified the quality of the app but also provided useful insights regarding its further development and improvement. Two tools, aiming to test different aspects of the platform, were utilized:

a) Google's Lighthouse [3], which is an open source, automated tool aimed at improving the quality of web pages and measures useful metrics such as performance, accessibility, use of best practices etc.
b) Cyclopt's Software Quality Analyzer [4], that performs static code analysis and evaluates software quality characteristics on different axes.

It is important to point out that these results reflect the current state of the platform, which is still in development, undergoing continuous improvements on a daily basis.

## 3.1 Lighthouse Report

Results from the lighthouse report displayed satisfactory scores in all lighthouse metrics with the Progressive Web app metric having the lowest score of 50. We have to note that this score can be mostly attributed to the lack of an SSL certificate that enables the registering of service workers on a website, which are essential for a Progressive Web app. Performance-wise the score is very good, measuring low loading times, comparable to those of major known websites. Accessibility, Best Practices and SEO scores were the highest ones, indicating that very little optimization is needed on these axes.

The lighthouse report can be found in Annex A.

## 3.2 Cyclopt Report

This report evaluates the software code quality, based on a static analysis. Aggregating different aspects of the source code, four main characteristics are measured, i.e.:

- Functional suitability
- Security
- Maintainability
- Portability

The results of the audit are very satisfactory, especially considering the relatively early stage of development, positioning the overall quality of the project in the top 15% of the benchmark. The report also provides a number of recommendations, which will be considered in the following code cycles in order to further improve the scores.

The Cyclopt report can be found in Annex B.

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# 4 Conclusions

This document accompanies the initial release of the Families_Share platform. This release enables the execution of the first phase of the pilot test cases, which will take place in a six-month period, from Month 15 to Month 20. Results gathered in the first pilot testing will drive the next development phase of the platform, which will lead to the delivery of the final version in Month 23. The second version will be further evaluated during the second round of pilots, which will run from Month 24 to Month 32 and is planned to involve a total of 3500 real end-users within the seven CityLabs.

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# 5 References


[1] Families_Share Android app. [Retrieved February 2019]. [Online]. Available: https://bit.ly/2Spw937

[2] Families_Share Android app. [Retrieved February 2019]. [Online]. Available: https://play.google.com/store/apps/details?id=com.families_share

[3] Lighthouse | Tools for Web Developers [Retrieved February 2019]. [Online] Available: https://developers.google.com/web/tools/lighthouse/

[4] Cyclopt [Retrieved February 2019]. [Online] Available: http://cyclopt.com/



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# Appendix A

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http://83.212.107.194:4000/
Feb 18, 2019, 8:39 PM GMT+2
Emulated Nexus 5X, Simulated Fast 3G network

| Performance | Progressive Web App | Accessibility | Best Practices | SEO |
|---|---|---|---|---|
| 65 | 50 | 84 | 73 | 90 |

Score scale: 0-49 50-89 90-100

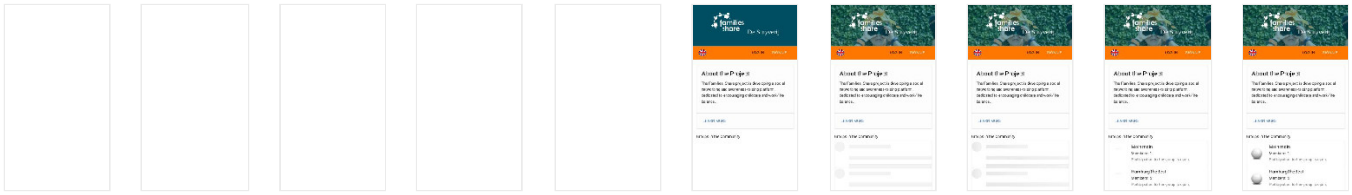
## Performance

65

### Metrics

| | | | |
|---|---|---|---|
| First Contentful Paint | 3.5 s | First Meaningful Paint | 3.5 s |
| Speed Index | 5.3 s | First CPU Idle | 5.3 s |
| Time to Interactive | 5.5 s | Estimated Input Latency | 20 ms |

Values are estimated and may vary.



### Opportunities

These optimizations can speed up your page load.

| | Opportunity | Estimated Savings |
|---|---|---|
| 1 | Eliminate render-blocking resources | 0.84 s |
| 2 | Defer unused CSS | 0.64 s |
| 3 | Efficiently encode images | 0.37 s |
| 4 | Serve images in next-gen formats | 0.35 s |

### Diagnostics

More information about the performance of your application.

| | | |
|---|---|---|
| 1 | Ensure text remains visible during webfont load | |
| 2 | Minimize Critical Requests Depth | 7 chains found |

**Passed audits** 16 audits

## Progressive Web App

These checks validate the aspects of a Progressive Web App, as specified by the baseline PWA Checklist.


| | | |
|---|---|---|
| 1 | Does not respond with a 200 when offline | |
| 2 | User will not be prompted to Install the Web App<br>Failures: Site does not register a service worker. | |
| 3 | Does not use HTTPS | 22 insecure requests found |
| 4 | Does not redirect HTTP traffic to HTTPS | |
| 5 | Does not register a service worker | |
| 6 | The `short_name` will be truncated on the homescreen<br>Failure: Manifest's `short_name` is too long (>12 characters) to be displayed on a homescreen without truncation. | |

**Additional items to manually check** 3 audits

**Passed audits** 6 audits

## Accessibility

These checks highlight opportunities to improve the accessibility of your web app. Only a subset of accessibility issues can be automatically detected so manual testing is also encouraged.


### Color Contrast Is Satisfactory

These are opportunities to improve the legibility of your content.

| | | |
|---|---|---|
| 1 | Background and foreground colors do not have a sufficient contrast ratio. | |

### Elements Are Well Structured

These are opportunities to make sure your HTML is appropriately structured.

| | | |
|---|---|---|
| 1 | `[id]` attributes on the page are not unique | |

**Additional items to manually check** 11 audits

**Passed audits** 10 audits

**Not applicable** 23 audits

## Best Practices


| | | |
|---|---|---|
| 1 | Does not use HTTPS | 22 insecure requests found |
| 2 | Does not use HTTP/2 for all of its resources | 22 requests not served via HTTP/2 |

| | | |
|---|---|---|
| 3 | Browser errors were logged to the console | |
| 4 | Displays images with incorrect aspect ratio | |

**Passed audits** 12 audits

## SEO


These checks ensure that your page is optimized for search engine results ranking. There are additional factors Lighthouse does not check that may affect your search ranking. Learn more.

### Crawling and Indexing

To appear in search results, crawlers need access to your app.

| | | |
|---|---|---|
| 1 | robots.txt is not valid | 1 error found |

**Additional items to manually check** 2 audits

**Passed audits** 9 audits

**Not applicable** 1 audits

Runtime settings

- **URL:** `http://83.212.107.194:4000/`
- **Fetch time:** `Feb 18, 2019, 8:39 PM GMT+2`
- **Device:** `Emulated Nexus 5X`
- **Network throttling:** `150 ms TCP RTT, 1,638.4 Kbps throughput (Simulated)`
- **CPU throttling:** `4x slowdown (Simulated)`
- **User agent (host):** `Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36 (KHTML, like Gecko) HeadlessChrome/72.0.3595.2 Safari/537.36`
- **User agent (network):** `Mozilla/5.0 (Linux; Android 6.0.1; Nexus 5 Build/MRA58N) AppleWebKit/537.36(KHTML, like Gecko) Chrome/71.0.3559.0 Mobile Safari/537.36`
- **CPU/Memory Power:** `852`

Generated by **Lighthouse** 3.2.1 | File an issue

# Appendix B

# FAMILIES SHARE PLATFORM

## SOFTWARE QUALITY EVALUATION
REPORT FOR THE
**"FAMILIES SHARE PLATFORM"**
BASED ON ISO 25010.

Quality Evaluation Report by

CYCLOPT

*Optimize your software lifecycle*

# TABLE OF CONTENTS



# ANALYSIS INFORMATION

- **Date of Analysis:** February 2019
- **Project Snapshot:** 15661a7d769cd60159340e07e6ad46b587be7d39 (#sha)
- **Analysis Type:** Static
- **Analyzed JS Files:** 154 (16,539 lines of code)
- **Number of Package.json files:** 2

# EVALUATION AXES

The analysis was performed using the following software quality characteristics as described in ISO 25010:2011:

**Functional Suitability**

This characteristic represents the degree to which a product or system provides functions that meet stated and implied needs when used under specified conditions. This characteristic involves whether the system under evaluation covers all the specified tasks and user objectives *(Functional completeness)*, provides the correct results with the needed degree of precision *(Functional correctness)* or facilitates the accomplishment of specified tasks and objectives *(Functional appropriateness)*.

**Security**

Security represents the degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization. This characteristic is composed of the following sub-characteristics: **a)** degree to which a product or system ensures that data are accessible only to those authorized to have access *(Confidentiality)*, **b)** degree to which a system, product or component prevents unauthorized access to, or modification of, computer programs or data *(Integrity)*, **c)** degree to which actions or events can be proven to have taken place, so that the events or actions cannot be repudiated later *(Non-repudiation)*, **d)** degree to which the actions of an entity can be traced uniquely to the entity *(Accountability)*, **e)** degree to which the identity of a subject or resource can be proved to be the one claimed *(Authenticity)*.

**Maintainability**

This characteristic represents the degree of effectiveness and efficiency with which a product or system can be modified to improve it, correct it or adapt it to changes in environment, and in requirements. This characteristic is composed of the following sub-characteristics: **a)** degree to which a system or computer program is composed of discrete components such that a change to one component has minimal impact on other components *(Modularity)*, **b)** degree to which an asset can be used in more than one system, or in building other assets *(Reusability)*, **c)** degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified *(Analyzability)*, **d)** degree to which a product or system can be effectively and efficiently modified without introducing defects or degrading existing product quality *(Modifiability)*, and **e)** degree of effectiveness and efficiency with which test criteria can be established for a system, product or component and tests can be performed to determine whether those criteria have been met *(Testability)*.

**Portability**

Degree of effectiveness and efficiency with which a system, product or component can be transferred from one hardware, software or other operational or usage environment to another. This characteristic is composed of the following sub-characteristics: **a)** degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments *(Adaptability)*, **b)** degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment *(Installability)*, and **c)** degree to which a product can replace another specified software product for the same purpose in the same environment *(Replaceability)*.

Regarding each of the aforementioned characteristics the evaluator provided a score in the interval [1, 5], where 1 denotes that the software status is critical for the responsive quality characteristic, while 5 suggests that everything is fine and no action should is required. The score is always followed by a series of suggestions and actionable recommendations regarding the improvement of the respective characteristic.

# FINDINGS

## Functional Suitability

As for the functional suitability, the analysis requires the existence of the following information:

- Total Number of functional requirements
- Number of functional requirements that have been implemented
- Number of implemented functional requirements that have been tested
- Number of implemented and tested functional requirements that pass the test
- Code coverage of the tests *(statement/branch)*

The provided codebase (GitHub repository) does not contain the aforementioned information and thus the provided score cannot be considered objective. Given the first two metrics and taking into account the issues included in the provided repository, we have 58 functional requirements (one requirement per issue) out of which 9 are open.

As for the existence of tests, we were able to identify only one file (App.test.js) that contains tests using the following command:

*find . -type f -name '*test*'*

After the manual inspection of the source code, we found that the test checks whether the main component of the application renders without crashing. In addition, the package.json file of the back-end appears to contain no testing libraries.

| FUNCTIONAL SUITABILITY SCORE: | **4**/5 |
|---|---|

**Recommendations:**

- Use a systematic way to log requirements and link them with test cases
- Emphasize on testing (especially backend) and try to achieve the highest code coverage for both statements and branches (e.g. using jest). In that way, you can measure the functional suitability and discover problematic behaviours.

## Security

In this case, the security analysis involves analyzing the source code for the identification of several security vulnerabilities. These vulnerabilities may occur in the source code of the application itself or in its dependencies. According with the results regarding the dependencies we have the following:

- **Number of dependencies:** 1191 packages
- **Optional dependencies:** 1038 packages
- **Total number of dependencies:** 2229 packages

The analysis was performed using npmaudit tool. There were no vulnerabilities found, so there are no actions required from a dependencies point of view.

The security analysis also involves the analysis of the source code of the application itself against a large number of known issues and best coding practices related with security. During this process, we have the following findings:

● There are files containing unsafe regular expressions, which might allow an attacker to DOS the server with a long-running regular expression
● There are variables in filename arguments of fs calls, which might allow an attacker to access anything on the system

List of files that need to be checked in order to eliminate the aforementioned vulnerabilities:
• Families_Share-platform-master\src\helper-functions\export-activity-data.js
• Families_Share-platform-master\src\helper-functions\export-user-data.js
• Families_Share-platform-master\src\helper-functions\group-agenda.js
• Families_Share-platform-master\client\src\registerServiceWorker.js
• Families_Share-platform-master\client\src\serviceWorker.js
• Families_Share-platform-master\client\src\components\CardWithLink.js
• Families_Share-platform-master\client\src\components\Highlighter.js

| **SECURITY SCORE:** | **4**/5 |
|---|---|

## Maintainability

In an effort to evaluate the level of maintainability of the provided application, we perform static analysis using the Cyclopt JavaScript Static Analyzer (JSSA). This tool enables the computation a series of metrics along with the discovery of a large number of violations regarding the compliance of the source code with the state-of-the-practice coding paradigms. The analysis involves the usage of the following tools:

***- eslint:*** Discovers violations and evaluates the source code against the best coding practices *(includes the recommended rules)*
***- jsinspect:*** Discovers code duplicates
***- escomplex:*** Analyzes the complexity of the source code

**Findings:**

● **Total eslint errors:** 950

● **Total eslint warnings:** 301

● **Total number of code duplicates:** 229

Regarding the code duplicates, the following files should be checked:

Families_Share-platform-master\client\src\components\CreateTimeslotModal.js
Families_Share-platform-master\client\src\components\ExpandedTimeslotEdit.js

Families_Share-platform-master\client\src\components\PendingInvitesScreen.js
Families_Share-platform-master\client\src\components\PendingRequestsScreen.js

Families_Share-platform-master\client\src\components\AddParentModal.js
Families_Share-platform-master\client\src\components\InviteModal.js

Families_Share-platform-master\client\src\components\AgendaExpandedTimeslot.js
Families_Share-platform-master\client\src\components\ExpandedTimeslot.js

Families_Share-platform-master\client\src\components\PendingInvitesScreen.js
Families_Share-platform-master\client\src\components\PendingRequestsScreen.js

We strongly recommend the duplicate code to be identified and relocated in a general purpose library. As a result, whenever a change is should be performed, there will be a central point of reference.

As for the complexity of the source code the following table presents the findings:

| Metric | Description | Value | Benchmark dataset |
|---|---|---|---|
| **Change cost** | The average percentage of the source code that is affected by a single change. | 6.8 | Is in the **top 10%** of benchmark |
| **Line of code** | Average lines of code per function. | 62.08 | Is in the **bottom 20%** of the benchmark |
| **Cyclomatic complexity** | A measure of the different execution pathos in the source code | 1.01 | Is in the **top 10%** of benchmark |
| **Parameters** | Average Number of parameters per function | 0.53 | The **top 30%** of the benchmark lies in the interval [0.76, 1.23] |
| **Maintainability Index** | A metric in the interval from –Inf up to 171 that reflect the average maintainability degree of the project. | 106.8 | The **top 30%** of the benchmark lies in the interval [125.82, 148.17] |

As for the maintainability index values the following files should be checked as they are the primary candidates for becoming mom-maintainable:

| Source Code File | MI Value |
|---|---|
| Families_Share-platform-master\client\src\Constants\Texts.js | 6.535631 |
| Families_Share-platform-master\src\constants\notification-texts.js | 86.94918 |
| Families_Share-platform-master\src\models\profile.js | 88.0232 |
| Families_Share-platform-master\src\models\child.js | 89.70553 |
| Families_Share-platform-master\src\models\group.js | 90.28746 |
| Families_Share-platform-master\src\models\activity.js | 91.37769 |
| Families_Share-platform-master\src\helper-functions\export-user-data.js | 94.38124 |
| Families_Share-platform-master\src\models\announcement.js | 95.67876 |
| Families_Share-platform-master\src\helper-functions\group-agenda.js | 96.7126 |
| Families_Share-platform-master\src\models\notification.js | 97.75164 |

**MAINTAINABILITY SCORE:** **3,5**/5

## Portability

As for the portability part, we checked the effort required to transfer the system in a new environment. The analysis involves the following audits:

1. The application codebase is a single repo (in a centralized revision control system like Subversion), or any set of repos who share a root commit (in a decentralized revision control system like Git). (Audit Pass)

2. Explicitly declare and isolate dependencies. (Audit Pass)

3. Store configuration variables in the environment. Env vars are easy to change between deploys without changing any code; unlike config files, there is little chance of them being checked into the code repo accidentally; and unlike custom config files, or other config mechanisms such as Java System Properties, they are a language- and OS-agnostic standard. (Audit Pass)

4. Existence of backing services such as Heroku Prostgres, S3, Sentry etc. (Audit Pass)

5. Stateless app (Audit Pass)

6. Port binding in express (Audit Pass)

7. Existence of Logging mechanism (e.g. bunyan) (Audit Fail)

8. Run admin/management tasks as one-off processes (Audit Pass)

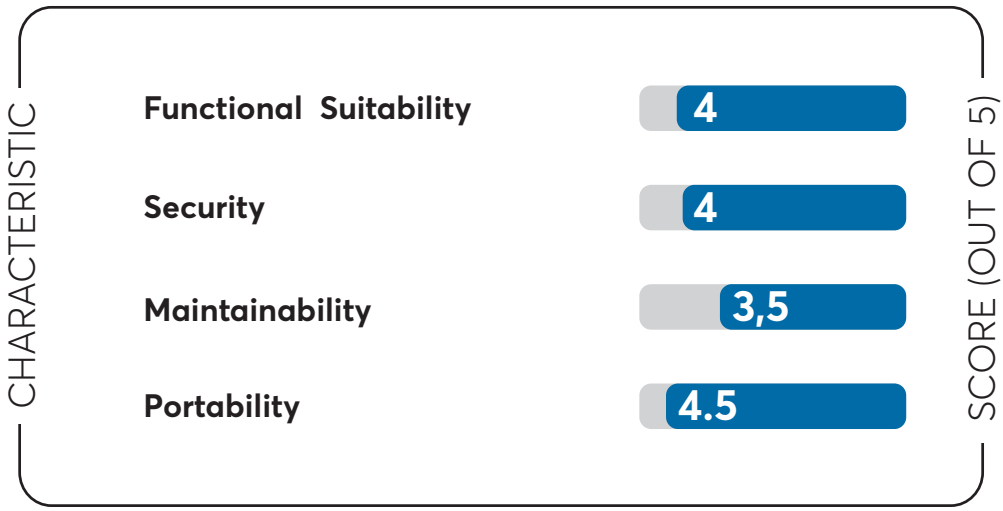
**Findings:**

- The level of portability is high.
- The only issue that requires attention *(is of critical severity)* is the absence of deployment instructions (located in README files or in any other documentation framework)

| **PORTABILITY SCORE:** | **4,5**/5 |
|---|---|

## CONCLUSIONS

The following table summarizes the static analysis results:




| **AVERAGE SCORE** | **4**/5 |
|---|---|

**Given the average score, the overall quality of the project lies in the top 15% of the benchmark.**

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# *explained*

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