# Project Plan

## *Mobileye*

*Mobeye*

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|---|---|---|
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### Version history

| Version | Date | Author(s) | Changes | State |
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### Distribution

| Version | Date | Receivers |
|---|---|---|
| 1.0 | 07/09/2020 | Kiavash Bahreini |
| 2.0 | 02/10/2020 | Mobeye, Kiavash Bahreini |

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# 1. Project assignment

## 1.1 Context

This project is created for the Dutch company Mobeye which specialize in innovative alarm and telemetry technology. The company was founded in 2008 with the idea to help people and organizations to make their life safer and easier by providing them with a meaningful way to secure, control and monitor their property and devices remotely.

Mobeye products have received multiple awards and are also used worldwide in various sectors, including police, the agricultural and medical industry, in building management and industry, by both professional users and consumers. Their in-house Research & Development team designs and develops customer-specific products on request as well.

## 1.2 Goal of the project

The goal of this project is to design and develop a mobile application that would contribute to the Mobeye existing notification system.

Currently, when an alarm message is received it is forward to different users via e-mail, SMS or a voice call.

Due to increasing demand, Mobeye has decided to create a mobile application that their customers can use as another way to receive any important alarm system messages. The mobile application would also offer a more convenient way for the customers to access some basic control functions.

By logging into their personal account, the users would be able to control and monitor their devices. They would receive a push notification in case there is an emergency and they would also have the possibility to view relevant data concerning the alarm that has been forwarded to their device. The users would also have the possibility to access some basic control
functions as for example to arm or disarm a device. Furthermore, there would be the option to go to the Mobeye's web portal from where their customers could acquire full control.
The mobile application that would be developed for the Dutch company Mobeye would not only elevate their performance and answer their customers' needs, but also would offer a new modern way for their client to overview and control their devices.

## 1.3 Scope and preconditions

| **Inside scope:** | **Outside scope:** |
|---|---|
| 1 Secure login system for only confirmed users | 1 Registration of users |
| 2 Display alarm messages as a push notifications | 2 Create the alarm messages |
| 3 Alarm sound when a notification is received | 3 Format the alarm messages |
| 4 Display relevant data | 4 Monitor the data |
| 5 Offer basic control functions (arm/disarm device) | 5 Create control functions |
| 6 Link mobile application to web application | 6 Create web application |
| 7 Support escalation | 7 Decide the escalation hierarchy |

**Preconditions:**
The Mobeye web application has been created using the C# programming language. The developer team of this project has decided to use Xamarin, which is a mobile cross-platform that uses C# as well. This way we would allow the developers of Mobeye to be able to have a better grasp and understanding of the mobile application that this project would have as an outcome.

## 1.4 Strategy

This project will use the Agile approach because its iterative nature would allow the development team to adapt to change quickly and deliver work fast. By breaking the project down into more manageable tasks that would be tackled in short iterations or sprints, it allows the team to be better equipped to quickly change direction and focus as requirements often change unexpectedly. The agile methodology promotes collaborative working, especially with the customer, so that way they are always satisfied and are provided with outcomes that result in benefits. The team would use Scrum as an agile framework because it is based on continuous learning and adjustment to fluctuating factors. It acknowledges that the team does not know everything at the start of a project and will evolve through experience.

## 1.5 Research questions

### ***How can a mobile app be realized to notify users about an alarm and open doors using a call key?***

More and more people around the world are using their smartphones for their everyday tasks. It is unimaginable today to get out of the house without taking your mobile phone with you. Phones give us the ability to always stay connected with the people we love and things we care about. That is why we are focusing on creating a functional mobile application for the Mobeye company.

#### *Functionalities*

First and most important, we want our application to be able to notify its user if their Mobeye alarm senses some strange things (smoke, water, temperature, humidity, doors opened) where they have installed them. It is also very important for a user to be able to quickly enter the application and monitor the changes which are his Mobeye sensors sensing. A crucial thing for a user is to have correct and real time data so he can respond accordingly.
Users should be able to open the door using a call key. When the user comes to the door, if he has the access, we should be able to press the designated button on the application which will allow him to open the door.

#### *Development*

The application is being developed in sprints of three weeks. We will be using Xamarin for our front end (design) of the application, and ASP.NET Core will be used to develop the back end (logic) of our application. We will describe why we choose those technologies for our development process in one of the next research questions.

#### *Stakeholders of the project*

This project has multiple stakeholders. We as a team are one of the stakeholders. We will work on the mobile application and documentation of the project. Our scrum master is mr. Kiavash Bahreini. He is going to help us as a team to stay on the right path through the whole project. Jack and the Mobeye company are also one of the stakeholders. Jack is a contact person of Mobeye, and he will be giving us feedback on the progress of the project from part of the Mobeye.

## ***Why have we chosen Xamarin for our Mobeye project?***

Xamarin is an open source app platform from Microsoft for building modern & performant iOS and Android apps with C# and .NET. Xamarin extends the .NET developer platform with tools and libraries specifically for building apps for Android, iOS, tvOS, watchOS, macOS and Windows. With Xamarin, your entire app is written using C#, from back end code, such as business logic and data access, to native API access.

### *Choosing Xamarin for our project.*

Our task is to build an application that will both work on Android and iOS, viewing this task Xamarin is the perfect open source platform that covers our needs for making this project. With Xamarin we can target all platforms and share a single codebase for Android and iOS using the same programming language. Xamarin allows us to support multiple platforms with minimal duplication of work, what makes it great for our needs.

### *Xamarin over React Native.*

Both of these open source cross-platform frameworks are favoured by the development community to build high-performing apps while saving coding efforts and time. The performance of React Native is commendable - it keeps its promise of delivering near-to-native performance. However, when you dig deeper, there are a few points that you should consider, like it doesn’t support 64-bit mode on Android, has certain navigational performance issues, and large app size when compared to native applications. Talking about Xamarin, it deserves brownie points for running the fastest code on both Android and iOS platforms. It fully supports 64-bit mode and provides a brilliant UI to enable the use of native tools directly.

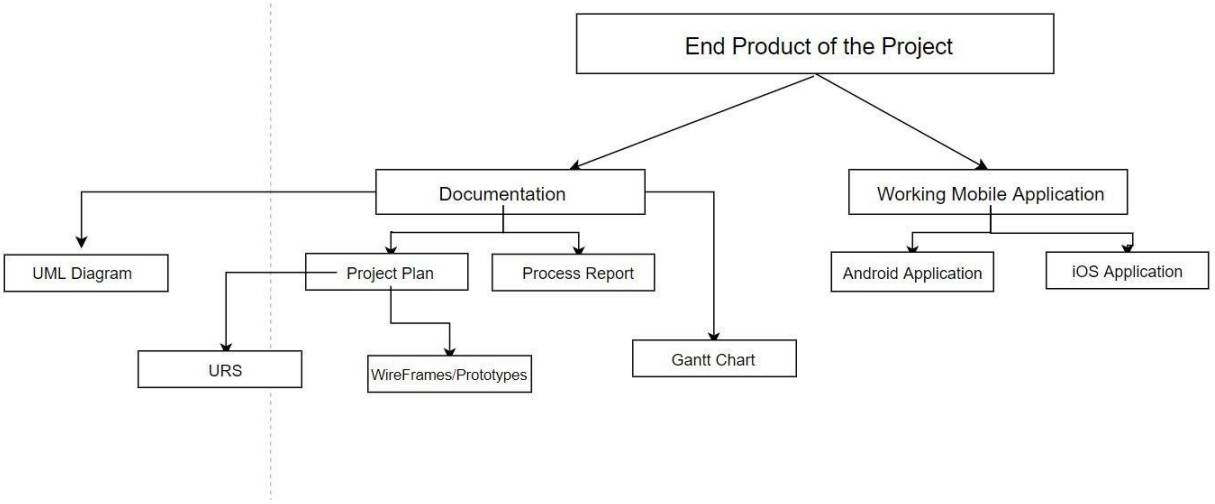
## ***Why are we going to use ASP .NET Core for the backend?***

The main reason our team decided to use ASP .NET is because of the big performance gain, compared to other popular web frameworks.


Additionally, our client's Web portal is already using C# so it will be easier to integrate our solution to their existing codebase and ASP .NET Core is optimized for use with Xamarin Forms. ASP .NET Core is a modern framework, but it is based on the tried and true ASP .NET framework. Also the Core version is open source and uses a light-weight, modular HTTP pipeline.
For the research we used Library and Workshop research strategies

## 1.6 End products

The diagram below outlines the end products that the project would deliver. The first main outcome of this project would be the working mobile application that would be both available for Android and iOS devices. The other deliverable would be the documentation. The project plan, together with the URS and wireframes/prototypes would serve as a guideline for the developers and also would be an agreement between the project owner and the team of what the requirements are and what is their priority, what the scope of the project is, what design should be implemented, etc. Gantt Chart would be used to track the project deadlines and serve as a schedule for the developers. A document would be created that would consists technical details – to illustrate the decisions made by the team and the reason behind them, but also it might ease the Mobeye's developers to understand the working process of the application. The final process report would describe the overall achievements of the project and would consist of personal reflection of each of the teammates. If needed a guide would be created to better accommodate the transition of the end users to the mobile application



# 2. Project organisation

## 2.1 Stakeholders and team members

| Name | Abbreviation | Role and functions | Availability |
|---|---|---|---|
| *Contact name (and specify further detail as needed, e.g., email or tel nr).* | *Abbreviation can help, e.g., when using the name in tools like Jira or MS project.* | *See above.* | *When is the person available for your project (define this in the way most relevant for your project, e.g., which days are available, the amount of time, or in which phase of the project).* |
| Jack Vandevijver; jack.vandevijver@mobeye.nl | Vandevijver ,Jack | Project Owner | *Each sprint – online Monday meeting at 14:00; otherwise reachable by eamil* |
| Kiavash Bahreini; kiavash.bahreini@fontys.nl | Bahreini, Kiavash K. | Project mentor; Semester coach | *Reachable by email; Monday and Tuesday lectures* |
| Lyutfi Ismail; l.ismail@student.fontys.nl | Ismail, Lyutfi L.S. | Team member; Contact person with the project owner | *Monday, Tuesday,Wednesday; if necessary could be contacted by email or online meeting* |
| Leon Matijević; l.matijevic@student.fontys.nl | Matijević, Leon L. | Team member | *Monday, Tuesday,Wednesday; if necessary could be contacted by email or online meeting* |
| Kristin Peneva; k.peneva@student.fontys.nl | Peneva, Kristin K.D. | Team member | *Monday, Tuesday,Wednesday; if necessary could be contacted by email or online meeting* |
| Bozhidar Stoykov; b.stoykov@student.fontys.nl | Stoykov, Bozhidar B.V. | Team member | *Monday, Tuesday,Wednesday; if necessary could be contacted by email or online meeting* |
| Pavel Astašov; p.astasov@student.fontys.nl | Astašov, Pavel P. | Team member | *Monday, Tuesday,Wednesday; if necessary could be contacted by email or online meeting* |
| Iustin Teşcan; i.tescan@student.fontys.nl | Teşcan, Iustin I.M. | Team member | *Monday, Tuesday,Wednesday; if necessary could be contacted by email or online meeting* |

## 2.2 Communication

Due to the unfortunate circumstances with the Covid-19, most project meetings would take place online via Microsoft Teams, however if possible the team might have in-person meetings to better deliberate and resolve any arisen issues. A more informal way of communication between the team members would be WhatsApp as it is most convenient for everyone. Two big meetings would take place during the week – one on Monday to discuss the goals and tasks for

the week and one on Friday that would be used to plan the upcoming week and assign the specific tasks. Following the Scrum principles, the team would have daily standups to discuss what has been done since the last meeting, to go over the plan for that day and if necessary overcome any obstacles.
Email and online meetings via Microsoft Teams would be means of communication with the project coach. Their goal would be to provide feedback for each of the teammates and also to answer any questions that would occur during the development process.
During each sprint, online meetings using Microsoft teams would be used for a way to communicate and receive feedback from the project owner. They are also reachable via email if something needs to be further discussed or agreed upon. Currently, online meetings with the project owner are scheduled each spring on Monday at 14:00, however this might change in the future.

# 3. Activities and time plan

## 3.1 Phases of the project

The project would consist of several phases that would highlight the work that would be done throughout them.

- Problem analysis and research - The first phase would be the problem analysis and research. During this phase the team would decide on the most appropriate technology, methods and strategies to be used throughout the project.
- Documentation – Apart from creating a project plan, the team would also create URS document, wireframes/prototypes of the mobile application, a more technical document that would have UML diagrams and explanation of the reasons behind choosing certain technologies for the implementation.
- Design – during this phase the team would be working on creating a user-friendly and simple GUI that would meet the criteria and preferences of the project owner, but would also be modern and easy to use.
- Implementation – The implementation would consist of several parts that combined at the end would create the final product. The implementation phase would be the longest one as it would require more work and research.
- Testing – Testing would be done after each component is created, so that there is sufficient test coverage. Furthermore, feedback would constantly be seeked from the project owner, so that changes could be made if necessary.
- Further improvements – Before delivering the final product, a phase for final changes would take place. During this phase, after the team has received feedback from both the project owner and the semester coach, final changes would occur.
- Delivering of final product – Apart from presenting the final product to the project owner, the team would also create a process report and if needed user guide for Mobeye's clients.

## 3.2 Time plan and milestones

The duration of the project would be divided into 7 sprints, each one lasting 3 weeks. The first sprint is Sprint 0, while the last one would be sprint 5.

| Phasing | Effort | Start date | Finish date |
|---|---|---|---|
| 1 Sprint 0 | Research and problem analysis | 31/08/2020 | |
| 2 Sprint 1 | | 14/09/2020 | 28/09/2020 |
| 3 Sprint 2 | | 05/10/2020 | 19/20/2020 |
| 4 Sprint 3 | | 02/11/2020 | |
| 5 Sprint 4 | | 23/11/2020 | |
| 6 Sprint 5 | | 14/12/2020 | |
| 7 Sprint 6 | | 18/01/2021 | |

# 4. Testing strategy and configuration management

## 4.1 Testing strategy

Since the project is revolved around received information from the client's server, the testing scope would include making sure that the required information is received and is correctly displayed to the user. It is also necessary to make sure that the input from the users is taken and forwarded to the Mobeye's server without any delay or issues.
The developer team would be responsible for the unit testing (at least 50% test coverage would be necessary to make sure that all the main components of the application are correctly working). The team would also use acceptance testing after the product is developed so that if there are any flaws, they could be fixed and a user-friendly mobile application could be introduced to the client.
There is still uncertainty whether an automated testing tool would be used, however if agreed upon between the client and the team, automated testing could be integrated in the project.

## 4.2 Test environment and required resources

The test environment is still into consideration as it has not been agreed upon between the client and the team, however the team would suggest using some of the core principles of the CI/CD environment as it would mean that any change and functionality that has been created is connected to the main application and tested, but also releasing the application on time so that if there are any problems they could be easily troubleshooted.

## 4.3 Configuration management

The project team would only be responsible for the configuration management of the mobile application, while the Mobeye's developer's team would continue to manage their servers, networks and systems.
For version control, the team would use GitLab as each feature is pushed into its own branch and if a merge is accepted only after that the feature is added to the main application.

# 5. Finances and risk

## 5.1 Project budget

The development of this project does not require any financing for the moment. If however, the project owner decides that the development team would also be responsible for the integration of the mobile application in both Google Play and Apple Store, then the current sitaution might change.

## 5.2 Risk and mitigation

| Risk | Prevention activities | Mitigation activities |
|---|---|---|
| 1 Project Owner unavailable when taking an important decision | Schedule meeting at least 5-6 days in advance;<br>All important decisions are discussed during the online meetings | Contact a second person in the company, that would be able to answer the team's questions and make a decision instead of the project owner |
| 2 Security approaches the team has developed are not compatible with Mobeye's current ones | The security approaches are agreed upon beforehand | Contact the project owner to discuss the possibilities and if necessary refactor the team's approaches to meet the company's standards. |
| 3 Team Member not doing the assigned work | Careful and detailed planning that would leave sufficient time for completion of all tasks; realistic deadlines; Proper communication among the team | Resolve the situation among the team, however if it continues seek advice from semester coach |
| 4 Team Member decides to leave the study | N/A | Distribute the tasks once again, discuss the situation with the semester coach; |
| 5 Insufficient time | Careful planning that would evenly and realistically divide the time between the different sprints. | Decide on functionalities and features that the mobile application must have and focus on them |