# PROJECT MANAGEMENT PLAN

**Greepam**

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| --- | --- | --- |
|  |  | **RELATED ARTIFACTS** |
| **Reference** |  | **Artifact Name** |
| WBS | [Work](https://pmc.epam.com/pmc/document/detail.do?id=4050741400002828801) Breakdown Structure |  |

# 1 INTRODUCTION

## 1.1 DOCUMENT PURPOSE

The purpose of this document is to describe project management and related plans of the Greepam project. This document will be kept up-to-date by the EPAM Project Manager throughout the project.

This document applies to the Greepam project.

## 1.2 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

A brief description of the specific definition, acronyms and abbreviation, which be used during the project activity.

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| --- | --- | --- |
| **Abbreviation** | **Acronyms** | **Definitions** |
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|  |  |  |

# 2 PROJECT OVERVIEW

## 2.1 PROBLEM DESCRIPTION

Krakow is now firmly established as one of Europe’s top tourist destinations, attracting millions of visitors every year. Multinational companies are flocking here, as are young people unable to find jobs elsewhere in Europe. How long before awareness of the city’s poor air quality begins to make the city unattractive, threatening its economic health as well as the health of the people who live here? According to measurements taken by the Małopolska air monitoring network, the problem is very bad indeed. The network consists of 11 monitoring stations in the region, three of which are in Krakow (Al. Krasińskiego, ul. Bujaka, ul. Bulwarowa).

Krakowski Alarm Smogowy republishes pollution figures on its Facebook page, and points out some worrying trends: “In December 2012, residents of Kurdwanów could breathe safe air on only three days of the month, while in the city centre there was only one day with safe air.” In November 2015, pm10 levels have reached 281,2 µg/m3, over 540% “normal” levels— though research has shown that any level is risky. Nowadays, figures are even worse. It is obvious, that situation will not be solved by itself.

Particulates are not the only problem. Levels of highly carcinogenic benzopyrene and nitrogen dioxide, which has been shown to inhibit lung function, are also high. Unsafe nitrogen dioxide levels are only recorded in three Polish cities: Warsaw, Wrocław and Krakow, where EPAM operates.

Two things work against Krakow’s air quality: pollution and geographical factors that prevent the dispersal of pollution. The two major sources of the most harmful pollutants are domestic solid fuel furnaces and motor vehicles, but local industry and air-borne pollutants from other parts of Poland and neighboring countries also contribute.

Geographically, Krakow sits in a valley, which tends to concentrate pollutants, and experiences a low number of windy days, which means pollutants are not readily dispersed.

In October 2015 President Duda signed a revised environmental law, with the support of Krakow Mayor Jacek Majchrowski, aiming to rid the city of coal furnaces by 2019. It ends a period of back-and-forth struggle between the Małopolska regional assembly and the Supreme Administrative Court, which had blocked an earlier resolution.

Yet the problems of funding and enforcement remain. Krakow has had a programme subsidising the replacement of solid fuel furnaces for many years, but it is proceeding at a glacial rate. Krakowski Alarm Smogowy note that, at the current rate of replacement, it could be decades before the last domestic furnaces are gone. One problem is that poorer Cracovians are unenthusiastic about getting rid of their coal-burning heaters, even with financial help, because it will simply result in higher fuel bills for their new heating system.

### 2.1.1 Project Goal

* To encourage EPAMers to become EcoPAMers:
* Strengthening EPAM image of socially responsible corporate that contributes to sustainable development of local society by promoting ecological means of transport. To achieve that, Greepam will deliver software to track employees commute activities to reward individuals who act in an ecologically responsible way.
* Optimizing office resources in terms of parking space usage by optimizing number of cars needed for employees to reach the office and monitoring employees commuting habits.
* Protecting and preserving natural environment

## 2.2 ASSUMPTIONS AND CONSTRAINTS

Architecture and design of Greepam requires excellent planning and organization. Project team is ready and prepared to conduct such endeavor. Due to the nature of the project many aspects of the project’s execution need to be taken into consideration. Project needs to be very precisely planned with time proper time buffers to each phase – as certain parts of Greepam assemble and

transportation depend on external providers. Project timely delivery depends on timely transportation, availability of resources at specific moment of time and its efficiency.

That creates constraints which need to actively manage within the project – with the goal to minimize its impact on the project.

Transportation can create delays. Project team needs to work on proper time management which will include delay buffers in its estimation. Due to budget limitations project team can afford to allocate only one SME to each phase. It can creates constraints if limited availability will appear.

Another constraint can be cultural boundaries – which create issues in communication and projects execution at place of its realization. Not knowing the market and cultural background – can create some unexpected issues that will have to be managed.

Since we are innovative company – there is no such initiative in realization now. We can easily compete with traditional sources of fuel now – with simple indicators: price and availability.

We expect that the transportation will be managed properly and will not cause any unexpected and unpredicted issues. After transportation we have properly organized network of sub-providers – who will provide the material for wall structure. We have prepared them in advanced and have diversified the sources not to depend on only one. Therefore we can count to have the project realized in timely manner and with involvement of local community representatives – as planned.

One of the final phases of the project is dedicated to the training of local person – who will be responsible for maintaining the Greepam. Since the job market is definitely limited at place of destination –we are assuming that this person will be easy to find and will respond to the training well.

# 3 PROJECT ORGANIZATION

## 3.1 TEAM COMPOSITION (ROLES AND RESPONSIBILITIES)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **MILESTONE** | **STEP** | **DESCRIPTION** | **Initiator 1** | **Initiator 2** | **Initiator 3** | **Project Manager** | **Architect** | **UX Designer** | **Development Team Lead** | **Backend Developer** | **Web Developer** | **Mobile Developer** | **Quality Assurance 1** | **Quality Assurance 2** | **Public Relations** |
| **Project Start** | 1 | Prepare outcome description | **A/R** | **I/C** | **I/C** |  |  |  |  |  |  |  |  |  |  |
| 2 | Prepare demo screens | **I/C** | **A/R** | **I/C** |  |  |  |  |  |  |  |  |  |  |
| 3 | Prepare plan, resources and budget estimation | **I/C** | **I/C** | **A/R** |  |  |  |  |  |  |  |  |  |  |
| 4 | Prepare presentation for the Management | **A/R** | **R** | **R** |  |  |  |  |  |  |  |  |  |  |
| 5 | Approval from EPAM Management | **R** | **A/R** | **R** |  |  |  |  |  |  |  |  |  |  |
| **Initiation** | 6 | Ensure Project Manager | **A/R** | **I/C** | **I/C** | **I** |  |  |  |  |  |  |  |  |  |
| 7 | Ensure developers and testers | **I/C** | **I/C** | **I/C** | **A/R** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** |  |
| 8 | Ensure hardware, software, testing tols | **I/C** | **I/C** | **I/C** | **A/R** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** |  |
| 9 | Ensure PR availability | **I** | **A/R** | **I** |  |  |  |  |  |  |  |  |  | **I/C** |
| 10 | Ensure office space | **I** | **I** | **A/R** | **I/C** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** |  |
| **Design** | 11 | Gather information about public transport | **A/R** | **I** | **I** | **I** | **I** | **I** |  |  |  |  |  |  |  |
| 12 | Gather information about parking places | **I** | **A/R** | **I** | **I** | **I** | **I** |  |  |  |  |  |  |  |
| 13 | Research software physics | **I** | **I** | **I** | **I** | **A/R** |  | **R** | **I** | **I** | **I** |  |  |  |
| 14 | Research external API for software solution | **I** | **I** | **I** | **I** | **A/R** |  | **R** | **I** | **I** | **I** |  |  |  |
| 15 | Prepare with PR benefits policy | **I** | **I** | **A/R** | **I** | **I** | **I** |  |  |  |  |  |  | **R** |
| 16 | Design software architecture | **I/C** | **I/C** | **I/C** | **I** | **A/R** |  | **I/C** | **I** | **I** | **I** | **I** | **I** |  |
| 17 | Design UX and GUI mobile and web look | **I/C** | **I/C** | **I/C** | **I** | **A/R** |  | **I/C** | **I** | **I** | **I** | **I** | **I** |  |
| 18 | Plan software milestones and tests | **I/C** | **I/C** | **I/C** | **A/R** | **R** |  | **R** | **I** | **I** | **I** | **I** | **I** |  |
| **Software Implementation** | 19 | Project Management | **I** | **I** | **I** | **A/R** |  |  |  |  |  |  |  |  |  |
| 20 | Iterative backend implementation | **I** | **I** | **I** | **A** | **C** |  | **R** | **R** | **I** | **I** | **I** | **I** |  |
| 21 | Iterative GUI implementation | **I** | **I** | **I** | **A** | **C** | **C** | **I** | **I** | **R** | **R** | **I** | **I** |  |
| 22 | Initial user tests of all use cases | **I** | **I** | **I** | **I** |  |  | **I** | **I** | **I** | **I** | **A/R** | **R** |  |
| **Full and stable** | 23 | Ensure software stability on various platforms | **I** | **I** | **I** | **A** |  |  | **R** | **C** | **C** | **C** | **C** |  |  |
| 24 | Fixing bugs found in tests | **I** | **I** | **I** | **A** | **C** |  | **R** | **R** | **R** | **R** | **R** | **I** | **I** |
| 25 | End user prototype tests | **I** | **I** | **I** | **A** |  |  | **R** |  |  | **R** | **R** | **I** | **I** |
| 26 | Deploy stable software version | **I** | **I** | **I** | **A** | **C** |  | **R** |  | **R** | **I** | **I** |  |  |
| **Release and campaign** | 27 | Organize promotion campaign in EPAM | **C** | **C** | **A/R** |  |  |  |  |  |  |  |  |  | **R** |
| 28 | Organize opening party in EPAM | **A/R** | **C** | **C** |  |  |  |  |  |  |  |  |  | **R** |
| 29 | Organize public campaign in media (social media, local newspapers) | **C** | **A/R** | **C** |  |  |  |  |  |  |  |  |  | **R** |
| 30 | Project Management | **I** | **I** | **I** | **A/R** |  |  | **I/C** | **I/C** | **I/C** | **I/C** | **I/C** | **I/C** |  |
| 31 | Software support | **I** | **I** | **I** | **A** |  |  | **R** | **R** | **R** | **R** | **R** | **R** |  |
| **Research and observations** | 32 | Award users | **C** | **A/R** | **R** |  |  |  |  |  |  |  |  |  | **R** |
| 33 | Optimize usage of parking spaces | **A/R** | **I/C** | **I/C** |  |  |  |  |  |  |  |  |  | **I/C** |
| 34 | Research employees commuting habits | **I/** | **I/C** | **A/R** |  |  |  |  |  |  |  |  |  | **I/C** |
| 35 | Find out usage of tracking employees | **R** | **R** | **A/R** |  |  |  |  |  |  |  |  |  | **I/C** |
| 36 | Organize employees feedback (surveys) | **A/R** | **I/C** | **I/C** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **R** |
| 37 | Prepare presentation about results | **R** | **A/R** | **R** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I** | **I/C** |
| 38 | Present results and futher ideas to the Management | **A/R** | **R** | **R** |  |  |  |  |  |  |  |  |  | **I** |

## 3.2 METHODS OF WORK

Greepam team work will be based on two methodologies: waterfall for sequential work according to project plan and milestones and agile for software creation during work on Software Implementation.   
Work on project will be divided into the following seven stages:

|  |  |  |
| --- | --- | --- |
| **Name** | **Start date** | **End date** |
| Project Start | 02.11.2017 | 24.11.2017 |
| Initiation | 27.11.2017 | 08.12.2017 |
| Design | 11.12.2017 | 16.01.2018 |
| Software Implementation | 17.01.2018 | 31.05.2018 |
| Full and stable | 01.06.2018 | 31.07.2018 |
| Release and campaign | 01.08.2018 | 31.08.2018 |
| Research and observations | 03.09.2018 | 28.09.2018 |

During Project Start phase project Initiators will prepare project outcome description as well as project plan and budget estimation together with some demo screen for the product. All of those will be presented to the EPAM Management. Phase ends with the Management’s approval.

Project Initiation phase is about ensuring resources for the project: people, hardware, software and office space. Project Initiations will find other members of a team: Project Manager, Architect, UX Designer, Development Team Lead, Backend Developer, Web Developer, Mobile Developer and two Quality Assurance specialists. As close cooperation with EPAM Public Relations team is needed during the Project, contact person from PR team will be designated to cooperate with the Greepam Team.

Design phase will consist of software requirement gathering, that will include gathering information about public transport and parking spaces. Based on that information Development Team will research physics used in the software application and potential 3rd party libraries be used. After that the Architect will prepare application architecture that would serve best for the Project. UX Designer will define ergonomic design for the users of mobile and web part of the application. Project Manager together with Initiators and Architect will divide development work into milestones, user stories and tasks.

In Software Implementation phase the application will be created by the Development team and tested by QA team. Work in this phase will be divided into smaller iterations planned in the previous stage.

Full and Stable phase will be about ensuring correctness of the software of various platforms (various phones, browsers), bug fixing and further tests by QA and Initiators testing prototype. Phase will end with deploying stable software release.

Next there will be Release and campaign phase during which the application will be advertised to the EPAM employees. Email and posters campaign will end in application presentation party for the Greepam team and the employees. Together with EPAM PR specialist Initiators will try to advertise the application in social media and local newspapers as an element of EPAM CSR policy. During this phase PM as well as Development and QA teams will be still occupied with support tasks.

In Research and observations phase active users of the Application will be awarded. EPAM employees will be invited to fill in a survey about the application and its outcome. Employees habits an commuting patterns will be analyzed and in terms of additional value to the company. Presentation about the results will be presented to the Management.

# 4 SCOPE MANAGEMENT

## 4.1 REQUIREMENTS MANAGEMENT

In Greepam project requirements management will be responsibility of the Project Manager. Initial requirements were collected during project initiation and are listed in the project plan. The scope was defined through a comprehensive analysis of company PR needs and policies during requirements collection process and is described in work breakdown structure as well as in deliverables specification. Some details of technical solutions will be specified upon completion of Initial design milestone, however overall technical design and requirements are clear. Feasibility the requirements was confirmed by the Architect.

Proposed scope changes may be initiated by stakeholders or any team member. All changes for scope have to be introduced in accordance with scope change management procedures defined in change management section.

Project manager supported by the architect and Development Team leader, will periodically verify progress of the project, at least once every sprint, in terms of scope, priorities and accordance to requirements. To ensure project is consistent with the scope, every interim and final deliverable as well as achievement of the milestone has to be accepted by Project sponsor during project status meeting. On the meeting Project Manager will present the deliverable and prove it’s coherency with requirements and schedule.

## 4.2 DELIVERABLES SPECIFICATION

This paragraph provides definition of expected deliverables, by stating what is required, what is optional and what is not part of the deliverables. Deliverables can be categorized as software and process, both leading to achieve primary goal of the Greepam project, which is development of Corporate Social Responsibility.

### 4.2.1 SOFTWARE REQUIREMENTS

Software deliverables include mobile applications (code name: Kompass), server side applications (code name: Tree house) and web interface applications (code name: Tree monitor)

Kompass should track commute from home location to destination being EPAMs office and back. User should have a possibility of specifying home location by address or coordinates. Destination is EPAMs office where user spends work time and user can select it from predefined list.

User should have a possibility of choosing in Kompass a mean of transport and Kompass should have ability to verify credibility of user choice and recognize the way user commutes, distinguishing five categories i.e. walking, riding a bike, public transport, car sharing, individual car commute.

Car sharing is defined as commuting by privately held car in group of two or more EPAMs employees that covers majority (at least 50%) of distance from home location to EPAMs office of each user that constitutes a car sharing group.

Kompass should track the path of commute and distance covered including name of the user, coordinates, velocity and stops

User can check in Kompass availability of the parking lot at present time and predicted at the time of arrival.

User should be warned by Kompass if there is little or no availability of parking lot at destination, specific for mean of transport chosen by the user.

User can check in Kompass benefits points gather in Greepam program. Benefit points should be graphically represented as tree leafs.

User can check in Kompass how much pollution would be emitted if instead of ecological commute, individual car commute was used.

Kompass should be able to execute on Android 5.0 or above and iOS 6.0 or above on medium price devices (up to $650)

Kompass should transfer all data in real time by mobile networks or WiFi to Tree house executing on remote EPAMs servers.

Tree house software should collect data from up to 1500 users at a time and store up to 60 days of history for users.

Tree house should calculate benefit points based on the algorithm developed in process part of the project.

Tree house should calculate and Tree monitor web interface should present summary of statistics of individual users and group of users, means they commute, their benefit points collected, path from users home to EPAM office on the map.

Tree house should calculate and Tree monitor should present opportunity to lower capacity of parking lots in case utilization is low.

Tree monitor web interface should present statistics of using parking lot capacity over past 30 days.

Tree monitor web interface should be compatible with Google Chrome ver. 42 or above, Microsoft Internet Explorer ver. 11 or above and Safari web browser.

All software should be documented in terms of architectural decisions made, usability, user manuals and contain test evidences for all use cases corresponding to requirements.

All third party libraries should have decision path documented (why and what were the alternatives) and usage of commercial third party software should be justified while its price be limited to $1000 in total.

### 4.2.2 SOFTWARE CONSTRAINTS

All software (Kompass, Tree house, Tree monitor) should support at least 1500 users (i.e. number of EPAM employees in Krakow in 2017) with specification as above, but not necessarily more than that. It is considered as nice to have, though not in scope of the project to make the software expandable for greater number of users. If there is a need to handle greater number of users, additional project need to be run.

All software functionality is limited to the borders of the Kraków city (Poland) and up to 15 kilometres away from city borders. It is out of scope for the project to adjust it to work for any other location.

Kompass software can use various data gathered and shared by the Smartphone it executes on, such as e.g. user location but for user privacy, it should not track anything that is irrelevant to the core functionality of the project.

Non-statistical data (that concerns individual users), private data and personal data gathered by the software should not be shared with any third party unless clearly stated and approved by the user.

### 4.2.3 CAMPAIGN AND PROCESS DELIVERABLES REQUIREMENTS

Campaign should be held in public media including local newspaper or magazine and local or national TV channel and at least 5 billboards in proximity of EPAMs office.

Campaign should consists of two parts: informing about initiative start and informing about progress and results 2-3 weeks after it has started.

Second part of campaign should include statistics about how much pollution was not emitted (particles and carbon dioxide) on average thanks to the initiative.

As part of promotional campaign, opening party to all EPAM employees should be given.

Process should design an algorithm for assigning benefit points (leafs) for the users that make use of ecological means of transport from home to EPAMs office.

Benefit points should be proportional to the distance covered (the longer distance covered, the more points assigned) and mean of commute.

Process should prioritize riding a bike and walking over public transport and car sharing should be least valuable in terms of benefit points for a unit of distance.

## 5 RESOURCE MANAGEMENT

5.1 RESOURCE LIST  
Resource list with details is presented in separate spreadsheet.

Resource lists includes:

Labor: Initiator 1, Initiator 2, Initiator 3, Project Manager, Architect, UX Designer, Development Team Lead, Backend Developer, Web Developer, Mobile Developer, Quality Assurance 1 and 2 specialists, PR specialist

Hardware: Computers, mobile phones, tablets

Software: 3rd party software

5.2 STAFFING PLAN  
Team size and structure are presented in Project Organization chapter.

## 5.3 TRAININGS

All the team members will be assigned from EPAM employees with regards of their skills: architecture, UX design, project management, front-end and back-end development so no additional trainings are planned.

5.4 PROCUREMENT PLAN  
Greepam Project Manager will provide oversight and management for all procurement activities under this project. The Project Manager is authorized to approve all procurement actions up to 100 000 PLN. Any procurement actions exceeding this amount must be approved by the Project Sponsor. While this project requires minimal or no procurement, in the event procurement is required, the Project Manager will work with the project team to identify all items or services to be procured for the successful completion of the project. The Project Manager will then ensure these procurements are reviewed and presented to the contracts and purchasing groups. The contracts and purchasing groups will review the procurement actions, determine whether it is advantageous to make or buy the items or resource required services internally, and begin the vendor selection, purchasing and the contracting process.  
In the event a procurement becomes necessary, the Project Manager will be responsible for management any selected vendor or external resource. The Project Manager will also measure performance as it relates to the vendor providing necessary goods and/or services and communicate this to the purchasing and contracts groups.

# 6 SCHEDULE MANAGEMENT

Project schedule was created in ProjectLibre application and includes milestones and deliverables presented in Work Breakdown Structure (attached in separate pdf file). Activity definition will identify milestones which must be performed to complete each deliverable. Activity sequencing will be used to determine the order of work packages and assign relationships between project activities. Activity duration estimating will be used to calculate the number of work periods required to complete work packages. Resource estimating will be used to assign resources to work packages in order to complete schedule development.

## 6.1 ROLES AND RESPONSIBILITIES

Initiator 1, Initiator 2, Initiator 3 are responsible for project outcome definition, gathering requirements, contacting EPAM Management and PR. They ensure resources an cooperate with Project Manager in milestones definition.

Project Manager is responsible for work coordination of Architect, UX Designer and Development and QA team. She participates in project milestones definition and activities division into iterations.

Architect, UX Designer, Development Team Lead, Backend Developer, Web Developer, Mobile Developer, Quality Assurance 1 and 2 specialists are responsible for software design, implementation and tests.

PR specialist cooperates with Initiators on defining award policy, organizing internal and external promotional campaign and results analysis.

EPAM Management consults and approves project scope and plan.

6.2 SCHEDULE CONTROL  
The project schedule will be reviewed and updated as necessary on a bi-weekly basis with actual start, actual finish, and completion percentages which will be provided by task owners. The project manager is responsible for holding bi-weekly schedule updates/reviews; determining impacts of schedule variances; submitting schedule change requests; and reporting schedule status in accordance with the project’s communications plan. The project team is responsible for participating in bi-weekly schedule updates/reviews; communicating any changes to actual start/finish dates to the project manager; and participating in schedule variance resolution activities as needed.

The project sponsor will maintain awareness of the project schedule status and review/approve any  
schedule change requests submitted by the project manager.

## 6.3 WBS

Attached in pdf.

## 6.4 MAJOR MILESTONES AND MAIN WORK PACKAGES

Details presents in section 3.2 Methods of Work

# 7 QUALITY MANAGEMENT

## 7.1 PURPOSE OF THE QUALITY MANAGEMENT PLAN

The purpose of the Greepam Quality Management Plan is to establish the goals, processes, and responsibilities required to implement effective quality management functions for the project. This QMP defines how the Project Team will implement, support, and communicate project quality practices for use with the Greepam Project.

The Quality Management Plan will accomplish the following objectives for the Greepam project:

* Outlines the purpose & scope of quality activities
* Defines how quality will be planned and managed
* Defines quality assurance (QA) activities
* Defines quality control (QC) activities
* Defines roles and responsibilities for quality management activities

## 7.2 QUALITY MANAGEMENT APPROACH

The quality management approach for the Greepam project will ensure quality is planned for both the project and processes.

Project scope includes not just a building a single mobile application, but ultimately complete framework/ecosystem, which will be integrated with external systems. Quality management goal is to assure successful project finish and to gather as much knowledge as possible about project and process quality which might be used in further product development for series deployment, eventually production. Gained knowledge and expertise might be shared with external systems owners in order to help them in matter of improving quality of their products/systems.

## 7.3 ESTABLISHING QUALITY STANDARDS AND REQUIREMENTS

Project both processes and product quality standards and requirements will be mainly determined by the project team and Quality Engineer. Quality Engineer will review newly identified standards and incorporate them into project documentation if approved. The project team will also document any newly identified quality standards into the Greepam project plan and

## 7.4 PROBLEM REMEDIATION

The Greepam Quality Engineer or Product Engineer will schedule separate meetings with corresponding project stakeholders as needed to determine corrective actions and process improvements. The results of the activities are then acted on, where possible, to improve the success of future project phases by incorporating experiences and lessons learned into subsequent phase or subsequent project planning activities.

## 7.5 QUALITY ASSURANCE

### 7.5.1 Project Quality

Some of the QA tools and techniques identified during planning stage of the Greepam project can be find below:

* **Requirement analysis** which is performed with project team in early project stages and before each phase or even before each action if required to gain confidence that the requirements are capable of guiding a process that results in successful final result. Techniques used for requirement review and validation include regular analysis of specific requirements and obtaining feedback about them from relevant stakeholders
* **Designs reviews** which are performed by selected stakeholders before committing request to external vendor or continuing with any further work. It applies to any stages of the project where any kind of design is expected output. Techniques involve design proposal walkthroughs, checklists and inspections to obtain feedback from relevant stakeholders.
* **Milestones reviews** which are performed after each milestone. Smoke and regressions tests execution are included.
* **Test design, implementation and execution** which are iteratively performing before, during and after sprints. Details of testing approaches, strategies, techniques and test process are described in Test plan.
* **Defect management** whichis performedcontinuously be Quality Engineers according to Defect management part of Test plan

### 7.5.2 Delivery Process Quality

The quality of delivery process is supported by following practices

###### **Retrospective meetings** for the teams handled periodically (1 week initially) or at the end of each phase/milestone. During these meetings corrective process actions are determined addressed and managed. Past correction actions get reviewed. If necessary issues are escalated to the project management stakeholders

* **Daily Standups / Daily reports** involving all parties engaged in reviewed activity. PM is to be required on all such meetings and PM responsibility is to define who should attend.
* **Process related inspection meetings** handled on demand by PM. During these meetings needs for corrective actions are addressed and managed, past correction actions get reviewed. If necessary, issues are further escalated to right level/people. The follow-up actions for process inspection meetings are captured and stored in JIRA.
* **Project progress control** is tracked in tools such MS Project and JIRA. It is to be reviewed and discussed during regular meetings (daily standups or retrospectives). Any issues with progress should be escalated to the project management stakeholders.
* **Project budget control** should be monitored constantly by the PM. With a help of tools as MS Project and forecast techniques it should be constantly re-estimated to be sure it is within the limits.

## 7.6 QUALITY CONTROL

The quality control of the Greepam project focuses primarily on the final product delivery with acceptable performance and within assumed constraints. The quality performance standards for both process and projects are mostly to be determined during various stages of the project.

The Project Manager will schedule regularly occurring project, management, and document reviews. In these reviews, an agenda item will include a review of products, any discrepancies and/or audit findings from the quality manager, and a discussion on product improvement initiatives.

## 7.7 QUALITY MANAGEMENT RECORDS AND REPORTS

Every single project team member and each project stakeholder are responsible for quality of the project in their own area of responsibility. The Greepam project team will maintain records that document assessments performed on the project. Maintaining these records will provide objective evidence and traceability of assessments performed throughout the entire projects and product life cycle. Example records include the process and product assessments reports, completed checklists, quality metrics, and weekly/monthly status reports. The project team will use a shared document repository to contain the reporting data and the reports produced as part of the quality activities and reviews. The records will be maintained through the whole life cycle of the project and are meant to be used as inputs for further development activities of Greepam project.

# 8 PROJECT BUDGET

Detailed budget presentation is provided in attached excel Resources\_Budget.xlsx. Cost and Schedule performance Index (CPI and SPI respectively) will be reported on a monthly basis by the Project Manager to the Project Sponsor. Variances of 10% or +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to yellow or cautionary. These will be reported and if it’s determined that there is no or inimal impact on the project’s cost or schedule baseline then there may be no action required. Cost variances of 20%, or +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to red or critical. These will be reported and require corrective action from the Project Manager in order to bring the cost and/or schedule performance indexes back in line with the allowable variance. Any corrective actions will require a project change request and be must approved by the CCB before it can be implemented.  
Earned value calculations will be compiled by the Project Manager and reported at the monthly project status meeting. If there are indications that these values will approach or reach the critical stage before a subsequent meeting, the Project Manager will communicate this to the EPAM Management immediately.

Costs for the Greepam project include:

Labor costs: 962 120 PLN

Software costs: 20 000 PLN

Hardware costs: 38 900 PLN

Logistics costs: 127 000 PLN

Contingency Reserve: 57 400 PLN

Management Reserve: 114 800 PLN

Project Baseline (including Contingency Reserve): 1 205 420 PLN

Total Project Cost (Project Baseline + Management Reserve): 1320 220 PLN

# 9 CHANGE MANAGEMENT PLAN

The Change Management Plan was created for the Greepam project in order to set expectations on how the approach to changes will be managed, what defines a change, and the overall change management process. All stakeholders will be expected to submit or request changes to the Greepam project in accordance with this Change Management Plan and all requests and submissions will follow the process detailed herein.

The Change Management approach for the Greepam project will ensure that all proposed changes are defined, reviewed, and agreed upon so they can be properly implemented and communicated to all stakeholders. This approach will also ensure that only changes within the scope of this project are approved and implemented.

The Change Management approach consists of three areas:

Ensure changes are within scope and beneficial to the project

* Determine how the change will be implemented
* Manage the change as it is implemented

The Change Management process has been designed to make sure this approach is followed for all changes. By using this approach methodology, the Greepam project Team will prevent unnecessary change from occurring and focus its resources only on beneficial changes within the project scope.

There are several types of changes which may be requested and considered for the Greepam project. Depending on the extent and type of proposed changes, changes project documentation and the communication of these changes will be required to include any approved changes into the project plan and ensure all stakeholders are notified.

The project manager must ensure that any approved changes are communicated to the project stakeholders. Additionally, as changes are approved, the project manager must ensure that the changes are captured in the project documentation where necessary. These document updates must then be communicated to the project team and stakeholders as well.

## 9.1 SCOPE CHANGE FLOW

Scope Changes are the changes which are necessary and impact the project’s scope which may be the result of unforeseen requirements which were not initially planned for. These changes may also impact budget and schedule. These changes may require revision to WBS and other project documentation as necessary.

Proposed scope changes may be initiated by the Project Manager, Stakeholders or any member of the project team. All change requests will be submitted to the Project Manager who will then evaluate the requested scope change. Upon acceptance of the scope change request the Project Manager will submit the scope change request to the Scope Change Control Board and Project Sponsor for acceptance. Upon approval of scope changes by the Scope Change Control Board and Project Sponsor the Project Manager will update all project documents and communicate the scope change to all stakeholders. Based on feedback and input from the Project Manager and Stakeholders, the Project Sponsor is responsible for the acceptance of the final project deliverables and project scope. The Project Manager, Sponsor and team will all play key roles in managing the scope of this project. As such, the project sponsor, manager, and team members must be aware of their responsibilities in order to ensure that work performed on the project is within the established scope throughout the entire duration of the project.

If a change to the project scope is needed the process for recommending changes to the scope of the project must be carried out. Any project team member or sponsor can request changes to the project scope. All change requests must be submitted to the Project Manager in the form of a project change request document. The Project Manager will then review the suggested change to the scope of the project. The Project Manager will then either deny the change request if it does not apply to the intent of the project or convene a change control meeting between the project team and Sponsor to review the change request further and perform an impact assessment of the change. If the change request receives initial approval by the Project Manager and Sponsor, the Project Manager will then formally submit the change request to the Scope Change Control Board. If the Scope Change Control Board approves the scope change the Project Sponsor will then formally accept the change by signing the project change control document. Upon acceptance of the scope change by the Scope Change Control Board and Project Sponsor the Project Manager will update all project documents and communicate the scope change to all project team members stakeholders.

## 9.2 SCHEDULE CHANGE FLOW

Scheduling Changes are the changes which will impact the approved project schedule. These changes may require fast tracking, crashing, or re-baselining the schedule depending on the significance of the impact.

If any member of the project team determines that a change to the schedule is necessary, the project manager and team will meet to review and evaluate the change. The project manager and project team must determine which tasks will be impacted, variance as a result of the potential change, and any alternatives or variance resolution activities they may employ to see how they would affect the scope, schedule, and resources. If, after this evaluation is complete, the project manager determines that any change will exceed the established boundary conditions, then a schedule change request must be submitted.

Submittal of a schedule change request to the project sponsor for approval is required if either of the two following conditions is true:

The proposed change is estimated to reduce the duration of an individual work package by 5% or more, or increase the duration of an individual work package by 5% or more.

The change is estimated to reduce the duration of the overall baseline schedule by 5% or more, or increase the duration of the overall baseline schedule by 5% or more.

Any change requests that do not meet these thresholds may be submitted to the project manager for approval.

Once the change request has been reviewed and approved the project manager is responsible for adjusting the schedule and communicating all changes and impacts to the project team, project sponsor, and stakeholders. The project manager must also ensure that all change requests are archived in the project records repository.

## 9.3 BUDGET CHANGE FLOW

Budget Changes are the changes which will impact the approved project budget. These changes may require requesting additional funding, releasing funding which would no longer be required, or adding to project or management reserves. May require changes to the cost baseline.

If project manager or any team member determines that a change to the budget is necessary, he will meet project manager and project sponsor to review and evaluate the change. They must determine any alternatives or variance resolution activities they may employ to see how they would affect the scope, schedule, and resources. If, after this evaluation is complete, the project manager determines that any change will exceed the established boundary conditions, then a budget change request must be submitted.

Submittal of a budget change request to the project sponsor for approval is required if either of the two following conditions is true:

The proposed change is estimated to reduce the cost of an individual work package by 5% or more, or increase the cost of an individual work package by 5% or more.

The change is estimated to reduce the overall project budget by 5% or more, or increase the overall project budget by 5% or more.

Any change requests that do not meet these thresholds may be submitted to the project manager for approval.

Once the change request has been reviewed and approved the project manager is responsible for adjusting the budget plan and communicating all changes and impacts to the project team, project sponsor, and stakeholders. The project manager must also ensure that all change requests are archived in the project records repository.

## 9.4 RESOURCE CHANGE FLOW

Resource Changes are the changes which are necessary and impact the project’s resources: staff and equipment which may be the result of unforeseen needs or situations which were not initially realized. These changes may impact either budget or schedule, or both. These changes may require revision to project budget, WBS and other project documentation as necessary.

If project manager or any team member determines that a change in project resources is necessary, he will meet project manager and project sponsor to review and evaluate the change. They must determine any alternatives or variance resolution activities they may employ to see how they would affect the scope, schedule, and budget. If, after this evaluation is complete, the project manager determines that any change will exceed the established boundary conditions, then a resource change request must be submitted to the project manager for approval.

Once the change request has been reviewed and approved the project manager is responsible for adjusting the resources management plan and communicating all changes and impacts to the project team, project sponsor, and stakeholders. The project manager must also ensure that all change requests are archived in the project records repository.

# 10 RISKS MANAGEMENT

|  |  |  |
| --- | --- | --- |
| Risk | Description of the risk | Probability / Impact |
| Legal | Project assumes usage of a car, bike and public transportation at the initial design phase as well as in implementation, to understand physics of commute and gather metrics needed for recognition of how individuals commute. That results in specialists (developers, testers) travel across the city without business trip purpose. Currently EPAM has no procedures for expediting employees to experiment and gather measures in that way. In addition, driving a car with passengers with company car requires medical and psychological certificate. | Low / Low |
| Outdoor condition | Weather condition can delay outdoor activities related to initial design and recognition of physical nature of commute. | High / Low |
| Accidents | Due to unusual task of gathering physical data and outdoor activities, the risk of accident is far higher than in the case of indoor, office work. In addition, damage of equipment can delay project | Low / Medium |
| Technical issues | EPAM has little experience and few local experts in the discipline of physics and measurement, hence the task of understanding physics of commute is hard to estimate in terms of schedule and difficulty. | Low / High |
| External data access | Finding reliable, precise external API or database with public transportation maps and schedules might be difficult, which jeopardizes use case of public transportation. | Low / High |
| Property management | Property management company at which EPAMs rents office and park space (Buma group) might be unwilling to share information about entrance and presence of employees cars. | Low / Low |
| Staffing | Due to low criticality of the project to EPAMs business continuity it may happen employees could be moved to projects of higher importance affecting deadlines. Budget can also be decreased and moved to different, higher priority projects | Low / High |
| Success of campaign and software | Campaign may cause public interest and demand on the application and other organizations may find it useful. In addition, EPAM may find tracking of employees habits useful. If everything works as expected, savings can be made thanks to optimization of parking lot usages | Medium / High |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Risk identification** | **Quantitive risk** | | | | | | **Risk response** | |
| **Risk** | **Risk category** | **Probability 0-10** | **Impact 0-10** | **Risk score 0-100** | **Risk ranking** | **Risk response** | **Trigger** | **Risk owner** |
| **Legal** | | | | | | | | |
| No certified company car driver | Regulatory | 3 | 8 | 24 | 4 | Transfer | Preparation failure |  |
| Lack of procedures for outdoor labour work | Governance | 3 | 3 | 9 | 10 | Contingency | Preparation failure |  |
| **Climate and outdoor condition** | | | | | | | | |
| Physical measurements delay due to bad weather | Operational | 8 | 4 | 32 | 2 | Contingency | Force majeure |  |
| **Accidents** | | | | | | | | |
| Road accidents and damage of equipement | Operational | 2 | 8 | 16 | 7 | Transfer | Accident |  |
| Accidental body hurts during physical measurements | Operational | 1 | 8 | 8 | 12 | Accept | Accident |  |
| **Technical issues** | | | | | | | | |
| No expertise in physical measurements | Governance | 3 | 8 | 24 | 4 | Transfer | Lack of knowledge |  |
| Hardware failures | Operational | 1 | 5 | 5 | 14 | Contingency | Accident |  |
| Delays due to unpredictable activities | Operational | 3 | 3 | 9 | 10 | Contingency | Lack of knowledge |  |
| **External data access** | | | | | | | | |
| Fail to find precise city maps | Strategic | 1 | 3 | 3 | 15 | Accept | Wrong assumptions |  |
| Fail to find reliable public transportation schedules | Strategic | 3 | 3 | 9 | 10 | Accept | Wrong assumptions |  |
| **Property management agreement** | | | | | | | | |
| No agreement on sharing parking lot data | Strategic | 2 | 3 | 6 | 13 | Accept | Wrong assumptions |  |
| **Staffing** | | | | | | | | |
| Specialists move to higher priority project | People | 3 | 5 | 15 | 8 | Escalate | Organization |  |
| Specialists work inefficiently due to partial involvement | People | 2 | 5 | 10 | 9 | Mitigate | Organization |  |
| Budget decreased due to higher priority projects | Financial | 2 | 5 | 10 | 9 | Contingency | Organization |  |
| **Success of campaign and software** | | | | | | | | |
| High demand for releasing application publicly | Strategic | 4 | 4 | 16 | 7 | Exploit | Project success |  |
| Ideas for employees tracking utilization | Governance | 3 | 6 | 18 | 6 | Exploit | Project success |  |
| Savings made on parking lot rent | Financial | 5 | 5 | 25 | 3 | Exploit | Project success |  |
| High visibility of EPAM in media | Strategic | 5 | 7 | 35 | 1 | Exploit | Project success |  |