

**Project Management Plan**

**“ Indoor Climate Control System ”**

**GROUP 3**

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Document history

| Version | Author | Date | Description | Status |
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# Terms & abbreviation

|  |  |
| --- | --- |
| SDD | System Design Document |
| UI | User Interface |
| MVP | Minimum Valuable Product |
|  |  |

# Project description

## Context

*<<Describe the company and context briefly.>>*

(1 st TRY) [ C.V. ] Airios speciality is in climate control systems, they try to provide the best comfort for their use by using well known solid technology together with continuous improvement based on new well documented technology and user feedback.

(2 nd TRY) [ C.V ] Airios speciality is towards creating a product like no other on the market along with the safety and reliability of it. Climate control systems are the core of the company, which began as a joint venture with Honeywell, although today they are an independent organisation. Since the begining fo Airios in 1982 they also have diverged into other branches revolving around the control of the environmnet such as the conectivity, apperances and inner components of the products.

(3 rd TRY) [ F.R. ] Airios is a systems manufacturer of custom-made electronics for residential climate control that was founded in 1982. This company is trading under the name of Honeywell Customized Comfort Products and has been a joint venture company of Honeywell Inc since 2002.

The focus of this company is the customer for which we take part in this project in order to build an indoor climate control system.

This project is created because nowadays, many households around the sub-tropical countries want to have an indoor climate system that could adapt their home climate automatically due to rapid and multiple climate changes that always happen around their home environment in a year.

[Suggestion for a final version: by Z.B]

Airios is a systems manufacturer, which produces custom-made electronics for residential climate control, that was founded in 1982. It began as a joint venture with Honeywell, although it is an independent organization today. Airios specializes in climate control systems but despite them being the strong suit of the company, Airios has also set their foot into other branches revolving around the control of the environment such as the connectivity, appearances and inner components of the products. The company strives to create its products like no other on the market by researching customers' needs as well as applying their feedback along the way. The final product is configured with the necessary safety measures as well as the reliability of the entire system.

## Project goal

*<<Describe the goal of the project. Take into account:*

*The why, what is the reason for doing this project ?*

*What would the new preferred situation look like ?*

*What are the advantages of this project?*

*How does this project add value to the company/context?*

*Which possibilities are offered by the ICT product that the project will realize ?*

*>>*

(1 st TRY) [ C.V. ] In making of this product we aim to provide a new type of comfort to the end-user. This has risen due to previous feedback of our users from recent and past projects regarding climate control. Such project like ours will be an improvement to our past achievements in this field concerning the comfort of our users and the stability of their environment.

(3 rd TRY) [ B.Z. ] The goal of this project is to come up with a smart indoor climate control system, which will provide the user with a pleasant and safe environment. The reasons behind this are the much needed air quality as well as a climate control that every home needs. This solution should be more ideal than the regular environment as it would be automated to the user’s preferences. The provided solution will be wireless and all the devices will communicate with each other, so the user won’t have to bother with doing that manually.

[Final suggestion by ZB]

The goal of this project is to produce a smart indoor climate control system, which will provide the user with requested contentment. The problems the company is being presented with are climate changes which cause the weather to be more unpredictable than ever along with the bad air quality. In this project Airios will attempt to create a system that will automatically regulate the indoor temperature by comparing it to the preferred user setting and adjusting accordingly. Additionally, the company will work on a ventilation system which will turn on fans and bring fresh air when the detected CO2 levels are too high in comparison to those of a desirable living environment.

## Project scope

*<<What activities, and which endproducts (to what extent or quality) belong to the project, and which don’t >>*

(1 st TRY) [ F.R. ]

| **No:** | **Inside scope:** | **Outside scope:** |
| --- | --- | --- |
|  | Ventilation Box (Simulated App) | Mobile App |
|  | Room Control UI | Scheduler |
|  | Wireless Communication | GPS Sensor |
|  | Database | Damage/Harm Detector |
|  | Analytic App | - |
|  | SDD [?] | - |
|  | Room Climate Sensors (Temperature, Humidity, CO2, TVOC) | - |
|  | [Extra Assignments] | - |

(2 nd TRY) [ C.V. ]

| **Inside scope:** | **Outside scope:** |
| --- | --- |
| 1. Indoor Climate Control |  |
| 1. Ventilation System |  |

*<< Indicate any preconditions. E.g., think of technology choices that have already been made by the company. Note that you are also expected to retain a critical, but constructive, mindset for choices already made >>*

## Research questions

*<<*

*Describe the research questions that are most relevant to your project. For each research question, describe the approach and/or methodology. Use the Dot Framework to specify strategies and methods - see* [*http://www.ictresearchmethods.nl*](http://www.ictresearchmethods.nl) *for details.*

*Note that research is not only part of the intial phases (like analysis) of the project, but runs throughout the whole project. E.g., in the realization phases, you will probably do research in the Workshop and Lab context.*

*Also realize that during the project your research questions may change, and that new ones will come up. That normal for any project ☺, and is not a problem as long as you involve the right stakeholders, and keep your deliverables updated and in sync.*

*>>*

(1 st TRY) [ B.Z. ]

*Why is the air quality crucial to monitor?*

*How to ensure the air quality of the environment?*

*How does automated temperature control benefit the user?  
How to ensure a pleasant temperature for every individual user?*

*How frequently should the communication protocol receive data?*

*MAIN RESEARCH QUESTION - “How t”*

(2 nd TRY) [ C.V. ]

How can modern advancements in technology such as new types of sensors and creative thinking can contribute to improving the control of the indoor climate ? (CAN SPLIT)

Sub questions :

(3 rd TRY) [F.R.]

* How to make the smart home indoor climate control system reliable?

Subs:

* What features can make the automatic system work properly?
* What is required to make the system adapt to its environment climate?
* How to make the system communication reliable?

## End products & deliverables

*<< A Product Breakdown Structure (PBS) lists the end products that you realize, including a description of each product. In software engineering, the end products are more than just the project plan and the application itself. E.g., requirements documents, architecture documents, research reports and test reports are all end products. These are all important products that are required for effective handover. They are also necessary for further maintenance and follow up-projects. The PBS can change during the course of the project..>>*

(1 st TRY) [ B.Z. ]

* Research about CO2 impact on our lives

# Project Organisation

## Stakeholders, team roles and responsibilities

*<<Indicate all stakeholders and team members for your project. For each stakeholder indicate the role for your project. Note that the role that a person has for your project is different from the function the person has. E.g., someone with the function “department manager of department X” can have the role of product owner for your project.*

(1 st TRY) [F.R.]

| **Name** | **Abbreviation** | **Role and functions** | **Availability** |
| --- | --- | --- | --- |
| *Contact name (and specify further detail as needed, e.g., email or tel nr).* | *Abbreviations 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).* |
| *Brice Guayrin* | *B. Guaryin* | *Product Owner of Airios Department* | *-Monday from 13 pm, Tuesday, Wednesday, Thursday, Friday*  *-Fontys R.10 or b.guayrin@fontys.nl* |
| *Victor Covalciuc* | *V. Covalciuc* | *Project Team Leader ( Scrum Master )* | *-Monday & Wednesday, 09.00 - 21.00*  *-Tuesday or Thursday, 09.00 - 21.00*  *-Friday 09:00 - 16:00*  *-Saturday 10:00 - 12:30*  *-Fontys R.10 or v.covalciuc@student.fontys.nl* |
| *Žana Bašić* | *Z. Basic* | *Project Team*  *Co-Leader*  *( Co - Scrum Master )* | *-Monday & Wednesday, 13.00 - 16.00*  *-Tuesday or Thursday, 16.00 - 17.00*  *-Friday & weekends 16.00 - 20.00*  *-Fontys R.10 or z.basic@student.fontys.nl* |
| *Farros Ramzy* | *F. Ramzy* | *Project Team Member* | *-Monday & Wednesday, 13.00 - 16.00*  *-Tuesday or Thursday, 16.00 - 17.00*  *-Fontys R.10 or f.ramzy@student.fontys.nl* |
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| *Andy Verkooijen* | *A. Verkooijen* | *Project Team Member* | *-Monday & Wednesday, 13.00 - 16.00*  *-Tuesday or Thursday, 16.00 - 17.00*  *-Fontys R.10 or a.verkooijen@student.fontys.nl* |

## Communication

*<< Indicate the meetings and other channels of communication that you have established, or that you use for your project. Think of communication with all stakeholders including company supervisor, teachers, etc.*

*In which manner does each communication take place? Think of the goals, the location (or whether it should be online), the timing and frequency, and the attendee list.>>*

(1 st TRY) [S.L. - 02.21.22]

Communication within the team and with the client is divided into several different meetings over different mediums as follows:

**Daily stand-up:**

Team meetings are held in person at the University during weekdays to discuss individual hurdles and task progress of each team member. Remote online meetings are organized via discord and Microsoft Teams during weekends.

**Bi-Weekly:**

Sprint demo meeting with the client is scheduled every 2 weeks, through emails, depending on the availability of the client. A proof of concept of the previous sprint is demonstrated followed by backlogs for the next demo to be agreed on with the client.

**Occasional:**

- Pre-demo meetings to prepare for the demo and prioritize backlogs to discuss with the client for the next sprint.

- Post demo meeting to discuss outcomes of the meeting and assign backlogs among team members.

- Remote meetings via Microsoft Teams and Discord server when needed.

# Activities and time plan

## The phase of project

*<< Describe the main phases of your project. Even in a scrum project you should specify at least the components at the beginning and end phases like problem analysis in the beginning, as well as handover, evaluation, refelction, and wrap up at the end.*

*For internship projects, reserve sufficient time for developing/maintaining the portfolio/thesis.*

*>>.*

(1 st TRY) [ C.V. ]





This phase consists of preliminary talks mostly brains storming for any kind of idea regarding the project and planning of the project. Moreover, we set up tools and communication bases to facilitate working together in the upcoming planning and execution of the project.



In this phase, we begin to solidify and write our previous discussions from the initiation phase. Firstly,

## Milestones

*<< For a waterfall project you can indicate the phases and milestones below (can be adapted as required).*

*For an agile project describe how the artefacts are planned. E.g., length of sprint (with justification), organization of stand up, demo, retrospective.*

*>>*

(1st Try ) [ F.R. ]

| No. | **Phase** | **Milestone** |
| --- | --- | --- |
| 1. | Sprint 0 | Project Planning |
| 2. | Sprint 1 | MVP of all sensors & SDD |
| 3. | Sprint 2 | GUI design & wireless communication |
| 4. | Sprint 3 | One room system & cloud/database |
| 5. | Sprint 4 | Merged system |
| 6. | Sprint 5 | Final product |

# Risk management

*<< Investigate and define all risks affecting the project. For each risk indicate what has been done, or will be done during the project, to prevent the risk from being actualized, and define the mitigation actions, such as what you plan to do if the risk actually eventuates.*

*In a more elaborate version, you can also label the risks with their chance of occurence and impact. The advice is to focus on risks that have both a real chance of eventuating and some considerable impact. Direct risks, like what to do if your company supervisor is not available anymore, should always be described, as they have happened in the past quiet regularly.*

*>>*

Some of the potential risks involved in the project, and their mitigation strategies are as follows:

(1 st TRY) [ S.L - 02-21-2022 ]

| Risk | Probability | Impact | Countermeasures |
| --- | --- | --- | --- |
| Absent team members due to unforeseeable circumstances. E.g. sickness | HIGH | HIGH | - Distribute the remaining work package among team members.  - Git repository, daily stand-up meetings and Kanban board to keep track of assigned tasks and progress. |
| Technological defects E.g. data loss, laptop breakdowns, and defective products. | MEDIUM | MEDIUM | - All code is backed-up in a GIT repository.  - Thoroughly test end products before demo or delivery. |
| Scope Creep E.g. Additional requests of features from the clients existing outside the project scope. | HIGH | HIGH | - Well defined project scope outlining inscope and out of scope tasks.  - Determine the feasibility of the requests and implement changes if possible within the given time frame. |
| Failure to deliver a complete working end-product | HIGH | HIGH | - Prioritize important backlogs, highlight bottlenecks, and thorough product tests. |

(2 nd TRY) [ C.V. ]

| Risk | Probability | Impact | Countermeasures |
| --- | --- | --- | --- |
| Sick team members | HIGH | HIGH |  |
| Delivering a downgarded verision of the product | medium | medium |  |
| Product not working | low | high |  |
| Technology breaking-down | low | high |  |
| Team members getting sick . | low | medium |  |
| Theft | low | high |  |

# Configuration management

*<< Describe the project approach with respect to version management. This might include things like tooling, branching strategy, promotion-, release- and baseline strategy.*

*Also, when relevant, think of a mechanism to deal with change requests and problem reports*

While working on this project, the team members will use some strategies to control the update version of the products in an agile way. These strategies are the tasks management strategy, system merging strategy, and testing strategy.

## 6.1 Task Management Strategy

In this part, the team will split the features into some smaller tasks to work on. And each task should be splitted equally on their quantities, difficulties, and milestones. The team will use a scrum board to manage this task management per each sprint, and will use a repository to organize each update version of their tasks.

* Scrum Board

The scrum board will have some categories like “New”, “Active”, and “Closed” by its standard. And each of these categories has its own functionalities.

In the “New” category, all of the available tasks will be displayed. These are the free tasks that can be picked up by a team member to work on. In “Active”, the board will display every task that is currently being done. There is a developer working on each of their tasks labeled in this category. And if a task has been finished, that task can be just placed in the "Closed” category so everybody knows that the task is done.

However, the scrum board can be extended to have more than these three categories. For example, the team members could add a “Review” category between the “Active” and the “Closed” category, which means someone is still checking and figuring out if something has been missing in a task that was done before it is officially closed.

* Repository

The repository is a proper place to split, update, and merge a task to work for the industrial project. It is because of the safe use of it and the easy way to check or go back to the previous version of the task that has been published in it by multiple versions of its branch. To control each version update for every task, the team will use git for their repository.

There are two types of branches that the team will use. One of them is the dev branch (<task\_name>\_dev) where each member do their own tasks for their product features, and the other one is the master branch (<project\_name>\_master) where the team member should not touch until every smaller tasks on the active category finished and merged with each other.

## 6.2 System Merging Strategy

During working for this project per task, the team should merge every finished update until these updates become a complete product by the end of this project. There are two ways to do this merging strategy, which are:

* Merge to Dev

Any developer can merge their dev branches with each other only if these branches are included in the same user story or feature area. The developer must make sure that both of the dev branches which will be merged later are already reviewed before, and if they want to merge features or completed acceptance criterias of the user story, the dev branch in each task must be completed first.

* Merge to Master

This part of merging is only allowed when every feature is ready and merged into a one complete product, and that product is already tested before this merging is applied. It is because this merging will include every branch under the master branch into one completed repository.

## 6.3 Testing Strategies

Testing strategy is a way to ensure the quality of the product before releasing it. Testing strategy will include:

* Unit-testing

This testing basic approach is followed by the programmer to test the unit of the program. It helps the developers to know whether the individual unit of their code is working or not.

* Integration-testing

This type of testing focuses on the construction and the design of the product. The integrated units should be checked if they are working without any errors or bugs before doing this testing strategy.

* System-testing

This testing strategy checks the main functionality, security, and portability of the product before it goes to the hand of the customer. The product should be fully compiled and integration-tested before it is going into this testing part.

USE THIS !!!!!!

# Reference