Automatic AI ventilation

Team 1

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PROCESS

01 Overview

02 Goals & Methods

03 Team & Strategy

04 Effect

Overview

Part 1.

Overview

Importance of ventilation

Harmful substances such as fine dust and radon will accumulate as the concentration of carbon dioxide in the house increases

Decreasing house dust mites, mold and bacteria reproduce can prevent various respiratory diseases

Therefore recently, interest in indoor air quality has been increasing

Overview

Effects of ventilation in the COVID -19 era

Part1

The COVID-19 virus remains in the air for a long time if the infected person stays in an enclosed environment

Part2

In order to prevent the spread of COVID-19, we should open the window at least three times a day and for at least 10 minutes each time for natural ventilation

Part3

the risk of transmission could be reduced by one-third just by allowing ventilation for 10 minutes

Overview

Hard to choose when to ventilation

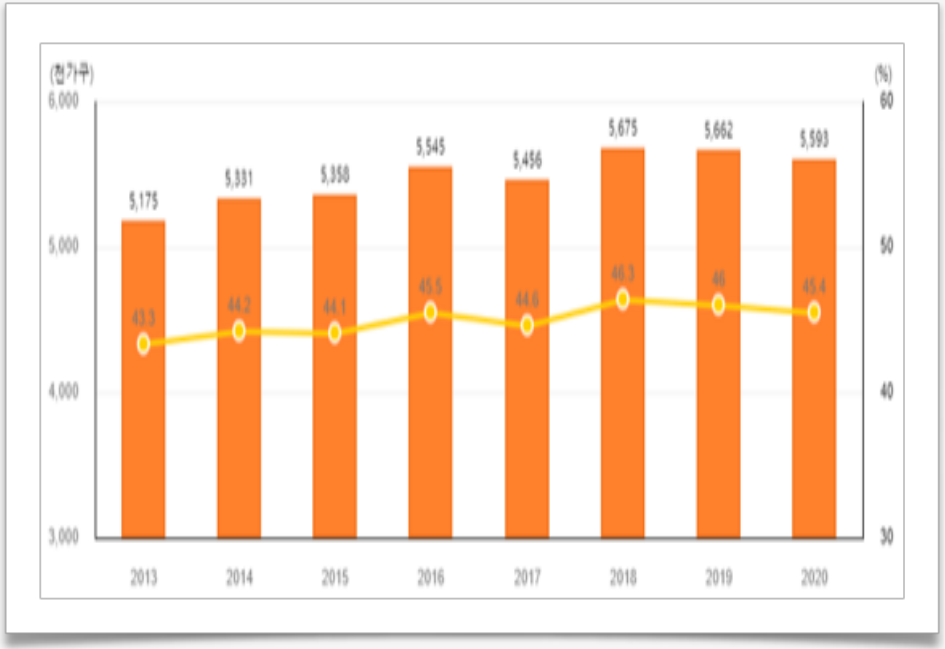
The sky became cloudy, and the air became cloudy due to the increasing concentration of fine dust

The amount of yellow dust is increasing, and due to climate change, the time spent on the Korean Peninsula is increasing

Overview

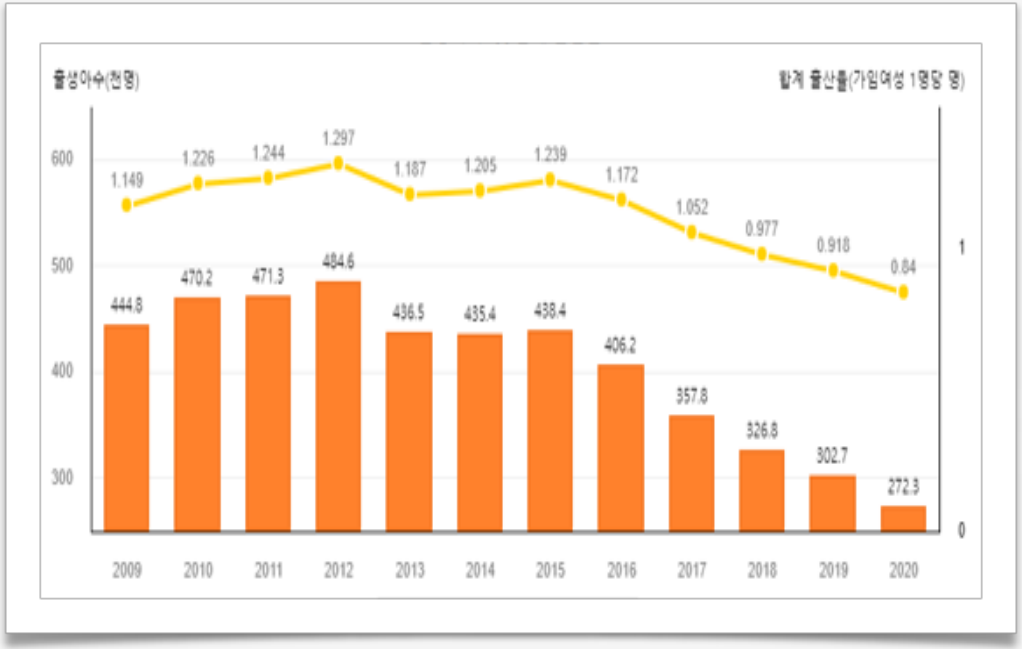
Increased proportion of dual-income couples and declining fertility rates

맞벌이가구 비율



fewer people are staying at home

출생아 수 및 합계 출산율



lack absolute ventilation time

Overview

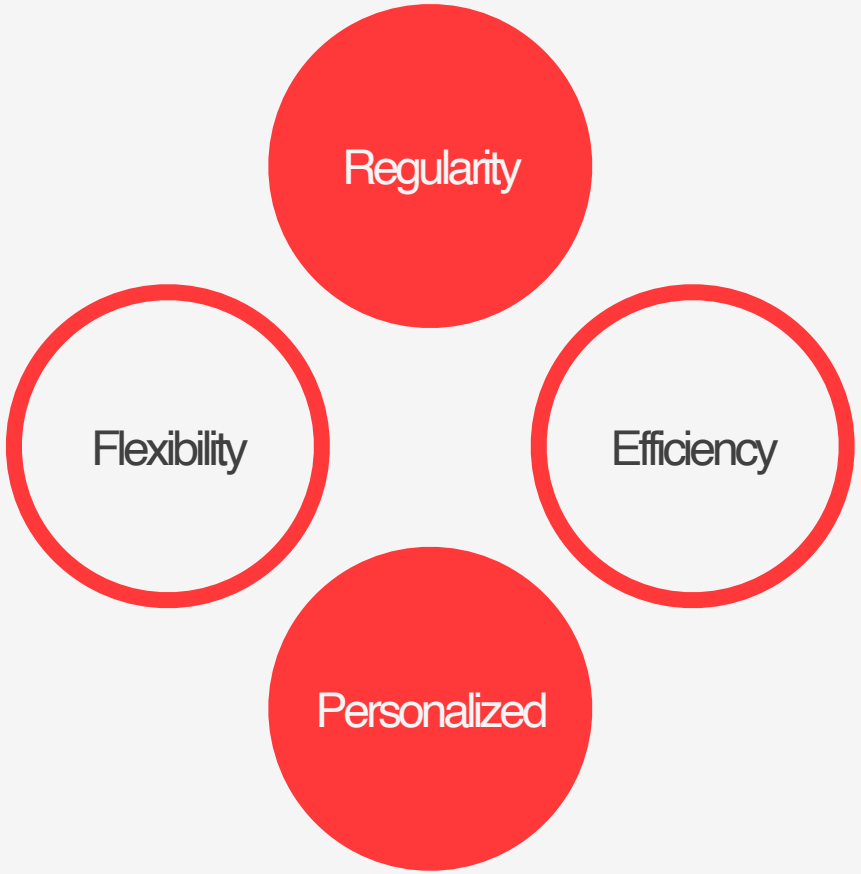
Therefore, there is a need for an AI automatic ventilation system that can automatically ventilate each house!

GOAL

Part 2.

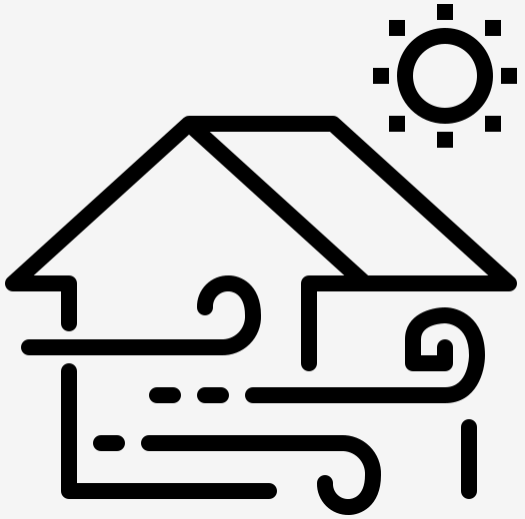
GOAL

Four goals of our ventilation system



GOAL

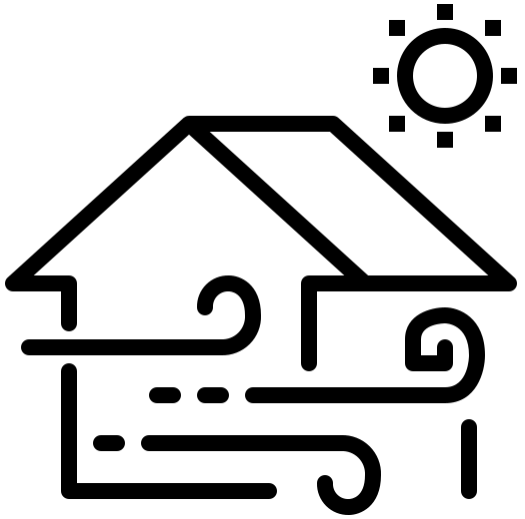
Regularity



- The application will automatically ventilate the house based on the regular & consistent time.
- It is good to ventilate for 30 mins, 3 times a day.

GOAL

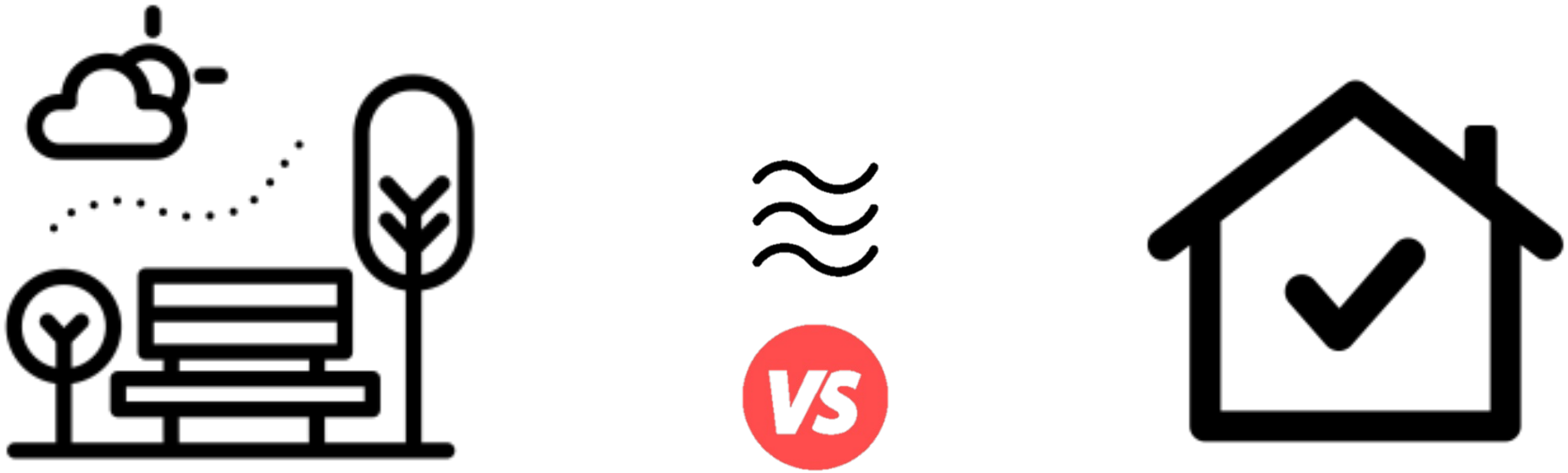
Flexibility



- Based on the weather outside, the application should ventilate flexibly.
- If the weather or air condition is bad, the AI should be able to decide whether to ventilate.

GOAL

Efficiency



- By comparing the air condition of outdoor and indoor, the application should ventilate efficiently.
- It can judge if it would be benefit or not for the user to ventilate at certain moment.

GOAL

Personalized

- This application It reads the pattern of the user’s daily routine and provides users personalized system to ventilate their house.
- hour(before they come home)
- place(where they usually spend time)

METHOD

METHOD

Key features of the method

Function	Tools	Detail
User application	React native	- User can use application to set user setting - Manual operation of the device is possible
Collect weather information	Use http api	- Collect weather information - Containing fine dust, humidity … etc.
Connect user application & device	Zerynth	- Use zerynth to connect user application and ventilation device
Prediction	Use AI algorithm	- Determine whether to ventilate or not - To determine, it use user setting, weather & indoor information

METHOD

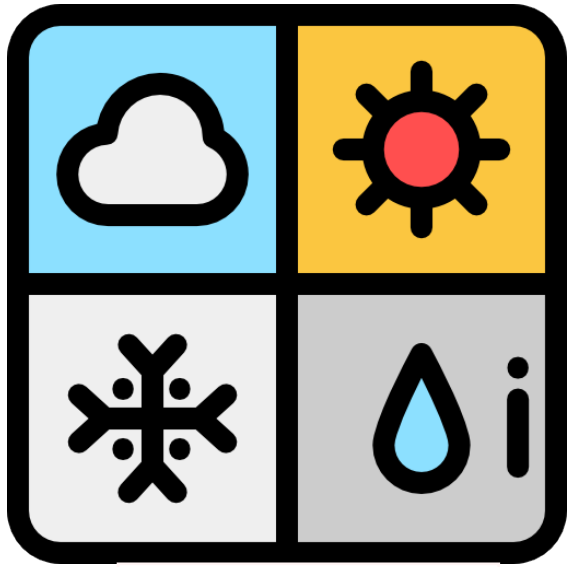
User application

React Native

- The user Application will be developed using React Native
- The Application is used by the user to manually operate the device or to input user-customized information

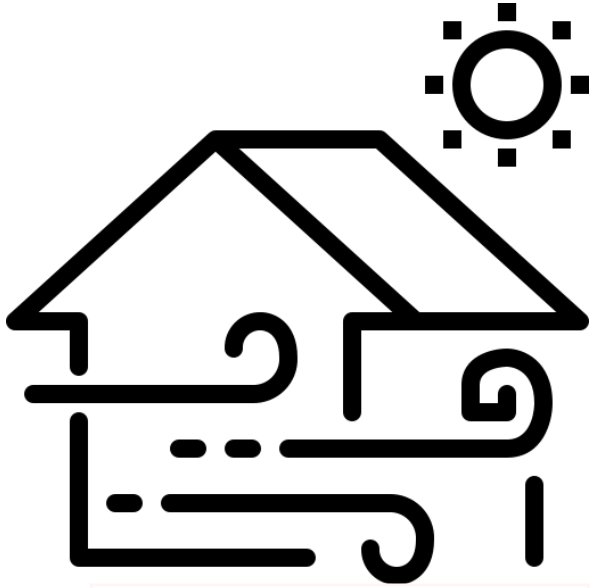
METHOD

Collect weather information



Weather API

Weather data



Ventilation system

fine dust,
humidity.. etc..

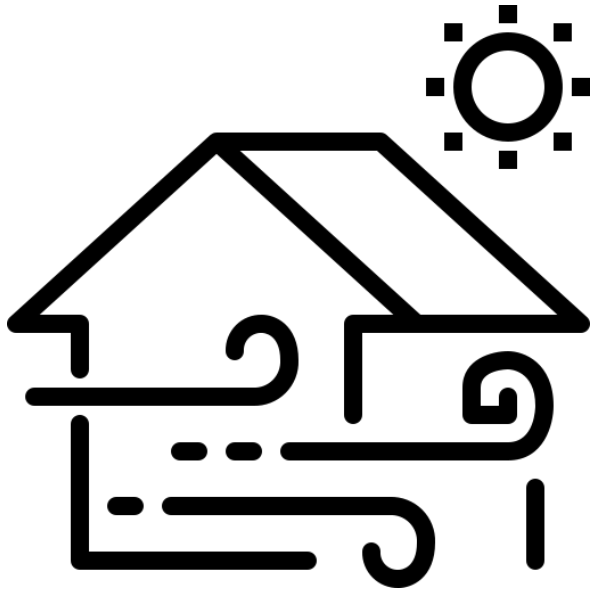
METHOD

Connect user application & device

User Application

Zerynth

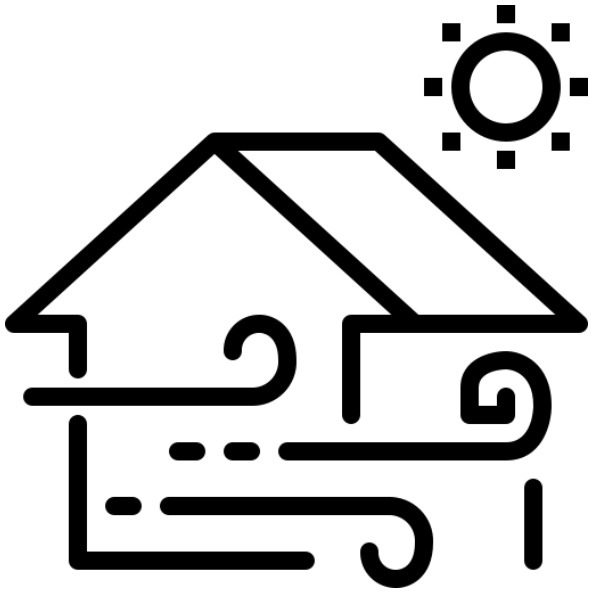
CONNECT



Ventilation system

METHOD

Prediction using AI



Ventilation system

python

- Programming will be conducted in python
- Determines whether to ventilate using ai algorithm with user settings information and weather data

TEAM & STRATEGY

Part 3.

TEAM

Team formation

	Main Role	Name	Description
Team 1	Developer	Park Jongeun	Overall structure design, application database design
		Park Taehee	Using tools (react native, etc.) required for IoT application, server design
	Designer	Lee Jaehyun	Service planning and design, user analysis, market research
		Kim Seoyun	Service planning and design, UX/UI design

Team & Strategy

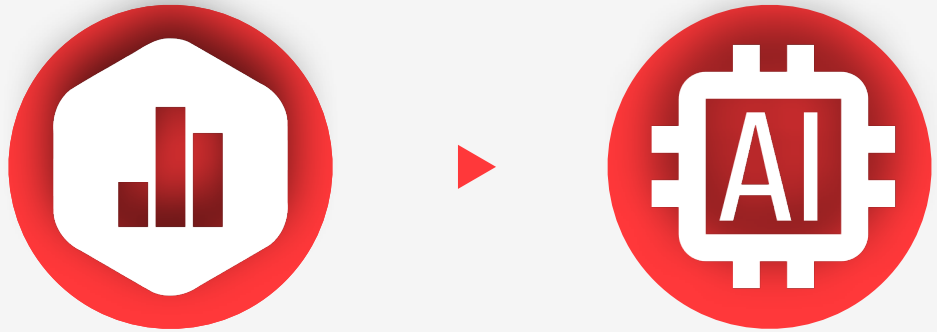
UX/UI

App Design

Server

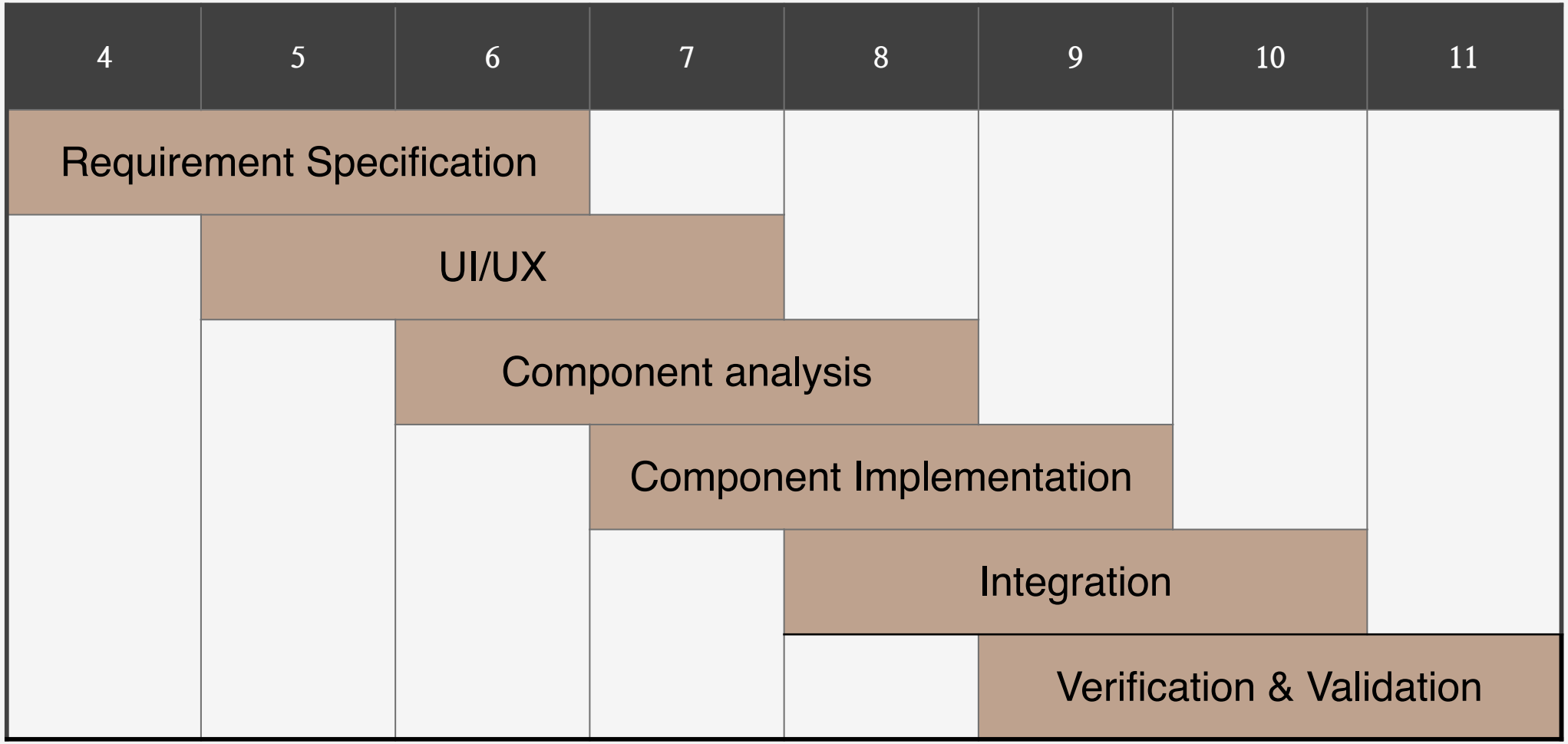
Data Analysis

AI



Team & Strategy

Schedule



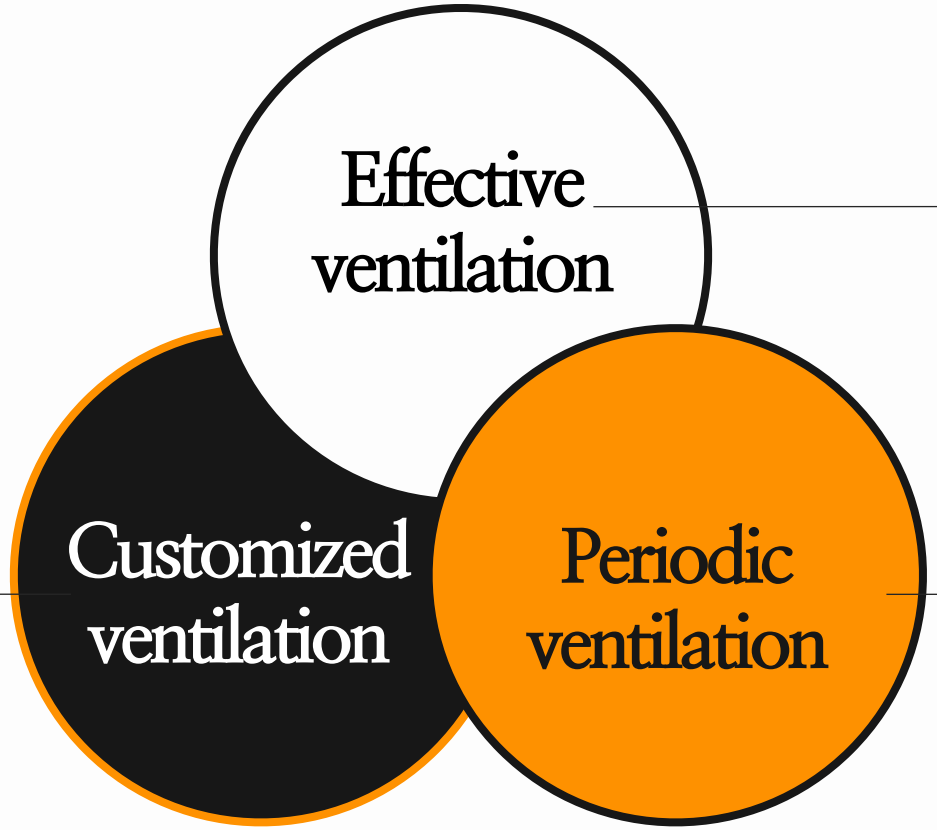
Team & Strategy

Evaluation Indicator	Quantitative	Importance
Accuracy of air quality measurement	95%	25%
Quickness of ventilation	1 min	5%
Accuracy of life pattern prediction	90%	15%
User convenience	95%	15%
Security	95%	25%

Effect

Part 4.

Effect



- Consideration of atmospheric conditions
- Consideration of weather conditions
- Adequate amount of ventilation

- Ventilation selectable
- Ventilation prediction system using big data
- Ventilation based on indoor air quality

- Have nothing to do with the presence of people
- Proceed at a fixed time
- Automatic progression


THANK YOU