INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM

Team ID	PNT2022TMID11019
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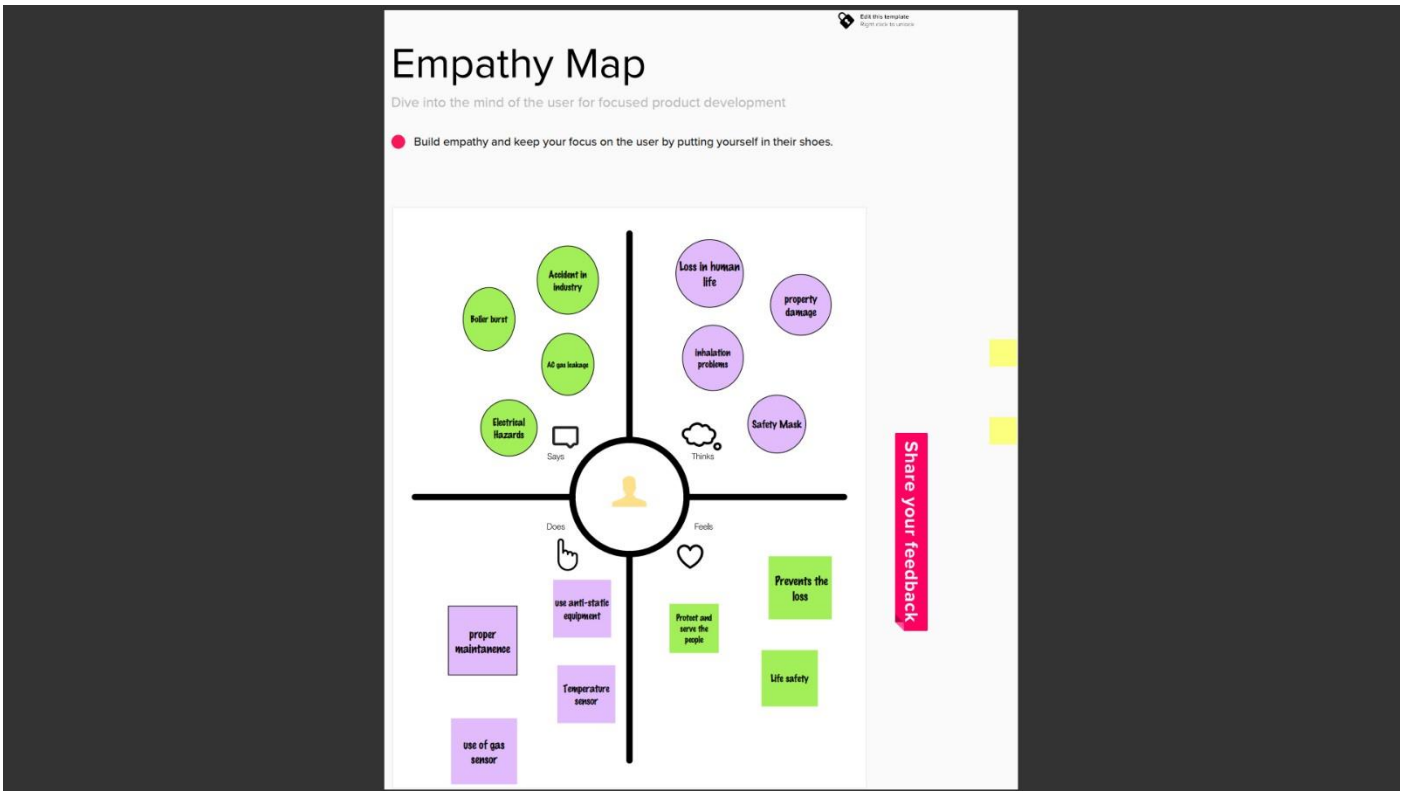
Team Member	LOKASRI S
Team Member	LAVANYA V
Team Member	KARTHIKA S

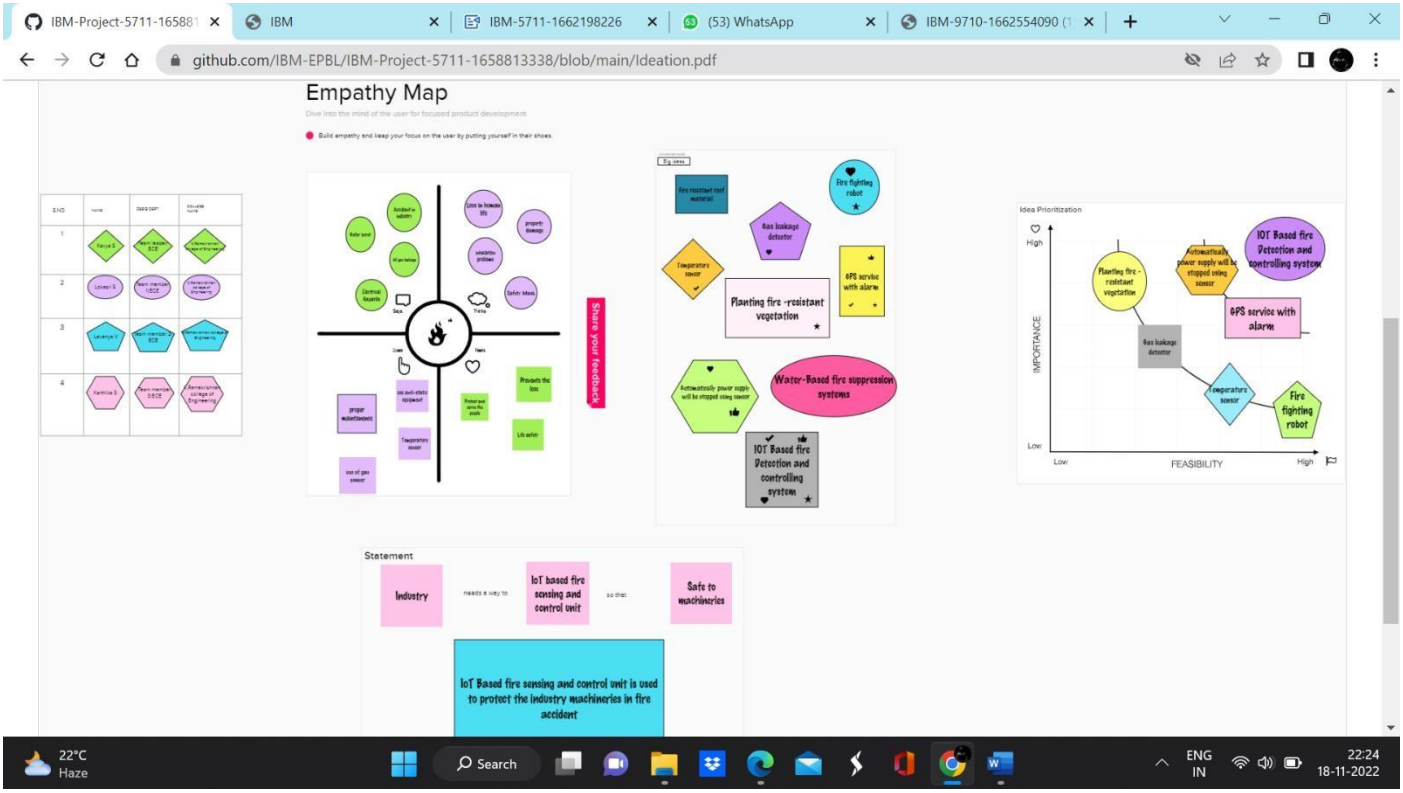
PROJECT OBJECTIVES:

An intelligent fire alarm system is specifically designed to provide advantages such as identification of the fire location, locate any fault in the alarm system wiring, and ensure easier maintenance. Moreover, these modern intelligent fire alarm systems are more sensitive as compared to the classic models and are competent to detect false alarms.

IDEATION:



EMPATHY MAP:



LITERATURE SURVEY:

Kerry R. Anderson,Published on" The Intelligent Fire Management Information

System (1993)" An overview of the present fire situation is provided by the Intelligent Fire Management Information System (IFMIS), a fire management technology that incorporates fire weather, forest inventory, and suppression resources. IFMIS determines the fire meteorological conditions, forecasts probable fire behaviour, and evaluates the coverage effectiveness of suppression resources using the Canadian Forest Fire Danger Rating (CFFDRS) System. IFMIS is now a tool used for early attack planning and presuppression planning. Modeling fire spread, containment, or campaign (project) fires is not included in IFMIS. The construction and operation of the software known as the Intelligent Fire Management Information System (IFMIS) are described in the manual that follows. As a decision-support tool for forest fire managers engaged in early attack dispatching and preparedness planning, this software.

Elbehiery Hussam,Published "Developed Intelligent Fire Alarm System"on October 2012, The main goal of a fire alarm system is to

give people advance notice of a fire so they can escape and take swift action to minimise the effects of the fire as soon as possible. Alarms can be set off manually or with the aid of detectors (Remotely). Sirens are used to alert or evacuate the residents. The key is to use the bus system intelligent distributed computer system fire alarm system. Although installation in the system is much easier than in the past, it still cannot meet modern needs, with the installation costs of equipment costing between 33% and 70. With the Intelligent Building of the rapid development of technology applications, commercial fire alarm market demand growth, The recommended method for a fire alarm system.

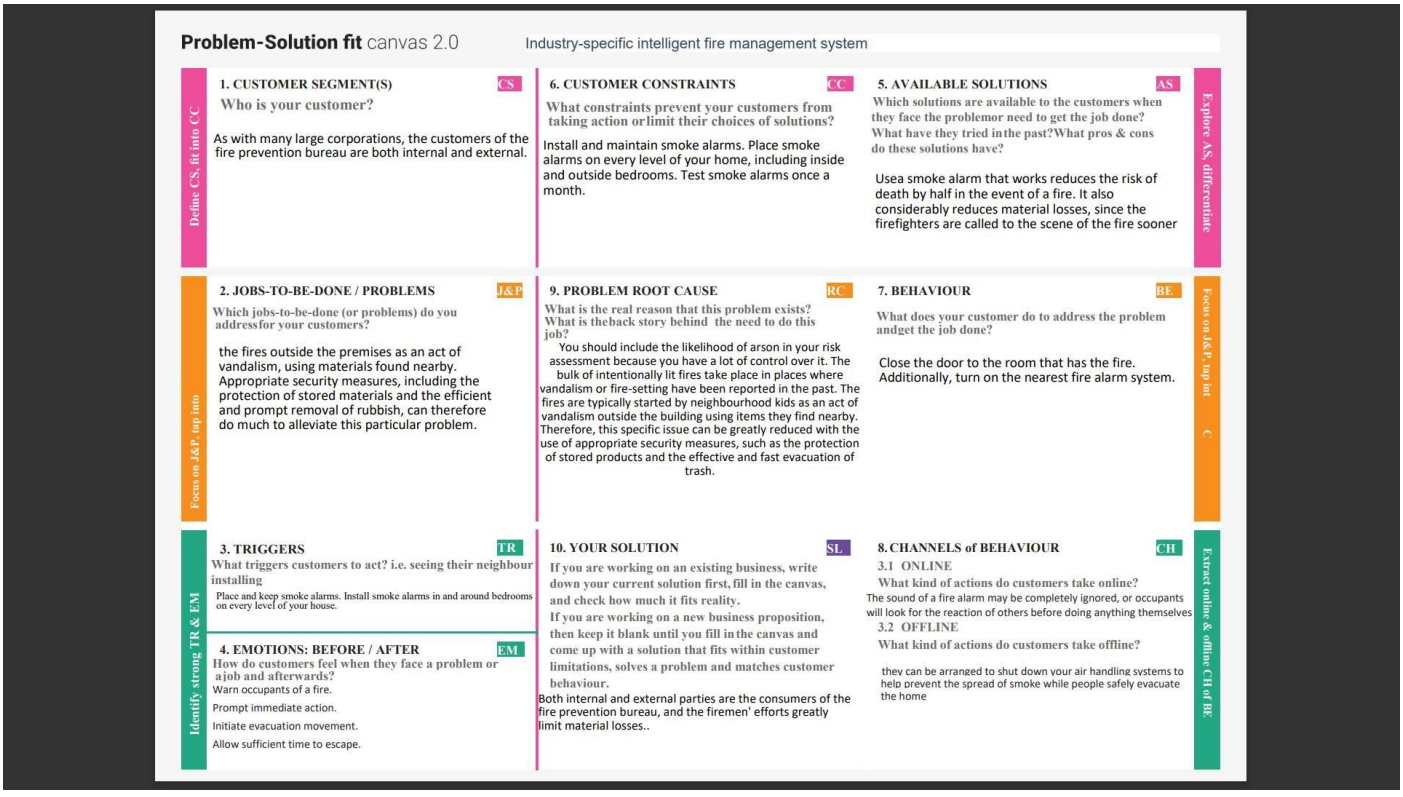
Sheng zeng,Published"Intelligent Fire Alarm System Based on MCU", Safety comes first, then prevention. Constant advancements in energy technology and the modernization of technological devices have made life more convenient for humans. These hightech items have also created a fire threat, though. Every year, many fires are started in China for a variety of causes, so people should not only be conscious of their own safety but also adopt certain preventative and warning measures. Sending alarm signals and finding the fire quickly are essential for timely reminders to be sent to those nearby to take safety precautions. STC89C52, a single chip microcomputer from the 51 series, serves as the paper's processing hub. The detection method integrates a number of detecting techniques, such as temperature, smoke concentration, and flame, helping to prevent omission and single false alarms.

Guang Xu,Published "Real-time wildfire detection and tracking in Australia using geostationary satellite: Himawari-8" on 2017, Emergency responders and the general public can both benefit from real-time knowledge regarding the spatial extents of wildfires in order to lessen their effects. However, timely and reliable information regarding the regions impacted by active wildfires is frequently hard to get by on a large spatial and temporal scale. This study examines

the viability of using Australia's newly deployed geostationary Himawari-8 satellite to produce such realtime data. Extremely high-temporal-resolution (10 minutes) multispectral images provided by the Himawari-8 satellite is ideal for real-time wildfire monitoring on a broad spatial and temporal scale. A case study of the recent 2015 wildfire in Esperance, Western Australia, is used to assess the possibilities of real-time wildfire monitoring using Himawari-8. The findings show that the detection is resistant to smoke and light clouds.

PROJECT DESIGN PHASE 1 :

PROBLEM SOLUTION FIT:



Problem-Solution fit canvas 2.0

Industry-specific intelligent fire management system

1. CUSTOMER SEGMENT(S) CS

Who is your customer?

As with many large corporations, the customers of the fire prevention bureau are both internal and external.

6. CUSTOMER CONSTRAINTS CC

What constraints prevent your customers from taking action orlimit their choices of solutions?

Install and maintain smoke alarms. Place smoke alarms on every level of your home, including inside and outside bedrooms. Test smoke alarms once a month.

5. AVAILABLE SOLUTIONS AS

Which solutions are available to the customers when they face the problemor need to get the job done? What have they tried inthe past?What pros & cons do these solutions have?

Usea smoke alarm that works reduces the risk of death by half in the event of a fire. It also considerably reduces material losses, since the firefighters are called to the scene of the fire sooner

Define CS, fit into CC

Explore AS, differentiate

2. JOBS-TO-BE-DONE / PROBLEMS J&P

Which jobs-to-be-done (or problems) do you addressfor your customers?

the fires outside the premises as an act of vandalism, using materials found nearby. Appropriate security measures, including the protection of stored materials and the efficient and prompt removal of rubbish, can therefore do much to alleviate this particular problem.

9. PROBLEM ROOT CAUSE RC

What is the real reason that this problem exists? What is theback story behind the need to do this job?

You should include the likelihood of arson in your risk assessment because you have a lot of control over it. The bulk of intentionally lit fires take place in places where vandalism or fire-setting have been reported in the past. The fires are typically started by neighbourhood kids as an act of vandalism outside the building using items they find nearby. Therefore, this specific issue can be greatly reduced with the use of appropriate security measures, such as the protection of stored products and the effective and fast evacuation of trash.

7. BEHAVIOUR BE

What does your customer do to address the problem andget the job done?

Close the door to the room that has the fire. Additionally, turn on the nearest fire alarm system.

Focus on J&P, tap into

Focus on J&P, tap int C

3. TRIGGERS TR

What triggers customers to act? i.e. seeing their neighbour installing

Place and keep smoke alarms. Install smoke alarms in and around bedrooms on every level of your house.

4. EMOTIONS: BEFORE / AFTER EM

How do customers feel when they face a problem or ajob and afterwards?

Warn occupants of a fire.

Prompt immediate action.

Initiate evacuation movement.

Allow sufficient time to escape.

10. YOUR SOLUTION SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.

If you are working on a new business proposition, then keep it blank until you fill inthe canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

Both internal and external parties are the consumers of the fire prevention bureau, and the firemen' efforts greatly limit material losses..

8.CHANNELS of BEHAVIOUR CH

3.1 ONLINE

What kind of actions do customers take online?

The sound of a fire alarm may be completely ignored, or occupants will look for the reaction of others before doing anything themselves

3.2 OFFLINE

What kind of actions do customers take offline?

they can be arranged to shut down your air handling systems to help prevent the spread of smoke while people safely evacuate the home

Identify strong TR & EM

Extract online & offline CH of BE

PROPOSED SOLUTION:

Project Design Phase-I
Proposed Solution Template

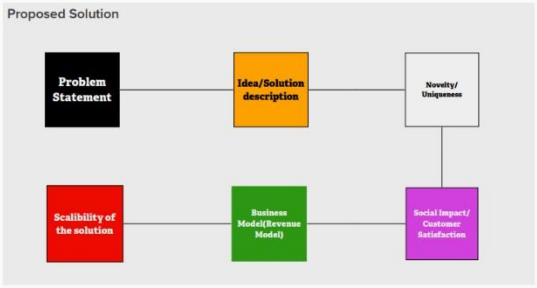
Date	30 September 2022
Team ID	PNT2022TMID11019
Project Name	Project - Industry Specific Intelligent Fire Management System
Maximum Marks	2 Marks

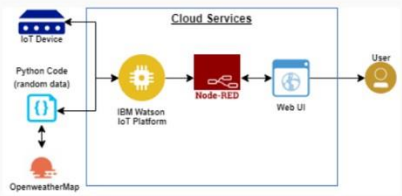
Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To enhance the industry's safety management system. enhancing the safety management system to prevent industrial fire occurrences.
2.	Idea / Solution description	Combining an Arduino Uno board with a fire detection and fire extinguisher system, to establish IOT-based fire safety management in the industrial sector. Additionally, a GPS tracking system is used with some sensors (such as a humidity, flame, and smoke sensor).
3.	Novelty / Uniqueness	An integrated system that monitors temperature, gas levels, and fires and autonomously deploys fire extinguishers with accurate position data and call and SMS notifications for responses.
4.	Social Impact / Customer Satisfaction	Early prevention reduces the cost of industrial fire accidents. Locations close by for greater accuracy and dependability. Integration design for compatibility
5.	Business Model (Revenue Model)	Many sectors can use this product. Given the numerous sectors that are currently involved in saving people and machinery from fire accidents, this might be seen as a useful and productive item.
6.	Scalability of the Solution	It is attempting to implement this method because we need to provide an Arduino-modified device that receives signals from sensors. Simple to maintain and operate. Low maintenance time was necessary. Cost represents a fair value.

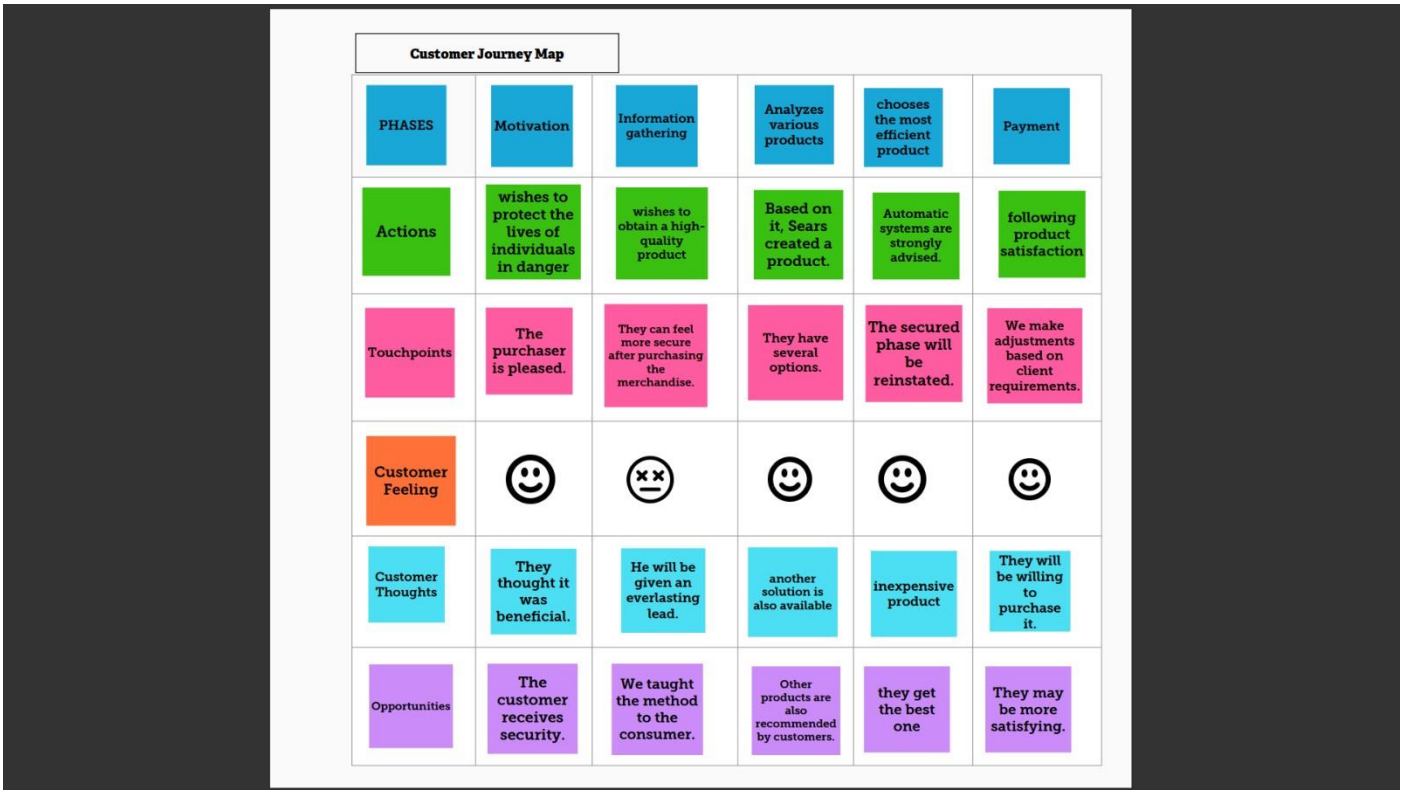
SOLUTION ARCHITECTURE:





PROJECT DESIGN PHASE 2 :

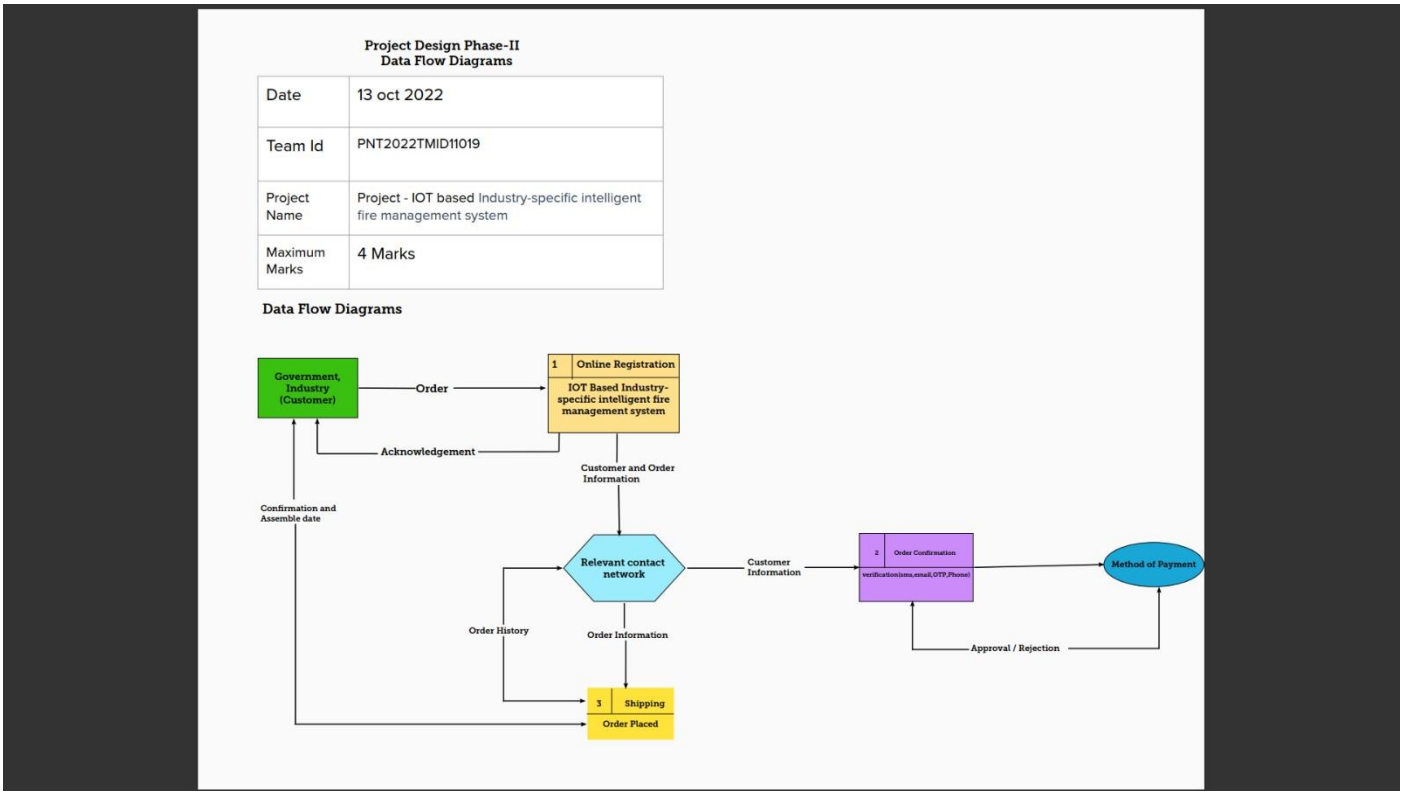
COUSTOMER JOURNEY MAP :



Customer Journey Map

PHASES	Motivation	Information gathering	Analyzes various products	chooses the most efficient product	Payment
Actions	wishes to protect the lives of individuals in danger	wishes to obtain a high-quality product	Based on it, Sears created a product.	Automatic systems are strongly advised.	following product satisfaction
Touchpoints	The purchaser is pleased.	They can feel more secure after purchasing the merchandise.	They have several options.	The secured phase will be reinstated.	We make adjustments based on client requirements.
Customer Feeling	☺	😵	☺	☺	☺
Customer Thoughts	They thought it was beneficial.	He will be given an everlasting lead.	another solution is also available	inexpensive product	They will be willing to purchase it.
Opportunities	The customer receives security.	We taught the method to the consumer.	Other products are also recommended by customers.	they get the best one	They may be more satisfying.

DATA FLOW DIAGRAM :



Project Design Phase-II
Data Flow Diagrams

Date	13 oct 2022
Team Id	PNT2022TMID11019
Project Name	Project - IOT based Industry-specific intelligent fire management system
Maximum Marks	4 Marks

Data Flow Diagrams

FUNCTIONAL REQUIRMENTS :

Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	11 October 2022
Team ID	PNT2022TMID11019
Project Name	Industry-Specific Intelligent Fire Management System
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Requirements	Static signboards will be replaced by smart linked sign boards that meet all standards.
FR-2	User Registration	Manual Sign-Up using a Website, Gmail or Phone
FR-3	User Confirmation	Telephone confirmation Conformation Authentication through email and OTP
FR-4	Payments options	Bank Transfer
FR-5	Product Delivery and installation	The location will influence the installation cost.
FR-6	Product Feedback	Through a website via Gmail

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

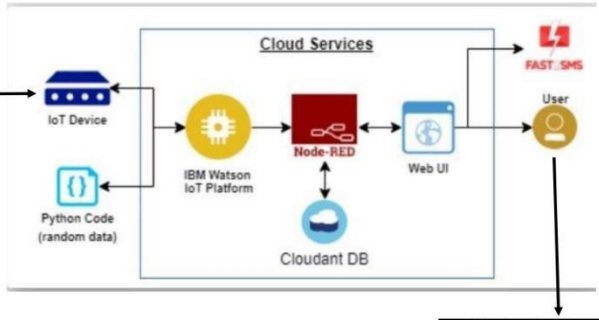
FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Product instructions should be straightforward, and the product should speak for itself.
NFR-2	**Security**	Condensed cloud data must be present on the network. Maintain constant focus on the board and avoid real-time avoidance.
NFR-3	**Reliability**	Hardware components are routinely examined..
NFR-4	**Performance**	The smart board's user experience must be improved, and the output must be accurate.
NFR-5	**Availability**	Based on the user's needs, all relevant functionality will be offered.
NFR-6	**Scalability**	The product is based on Fire alarm signals and should cover the entire Placed system.

TECHNOLOGY ARCHITECTURE:

Architecture and data fow of the IOT Based industry-specific intelligent fire management system images.

Solution Architecture Diagram:

Field:



User:

PROJECT PLANNING PHASE :

MILESTONE AND ACTIVITY LIST :

Project Planning Phase

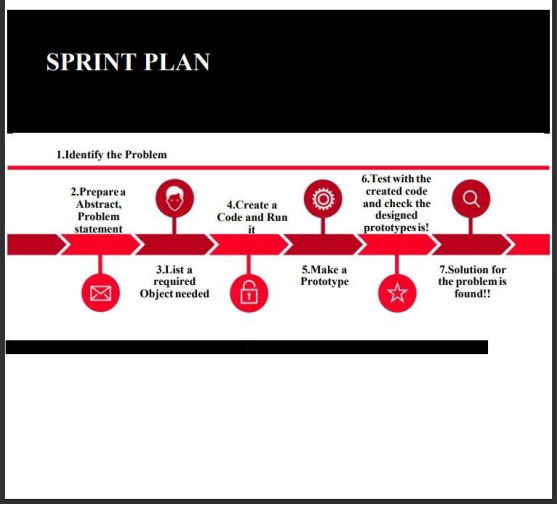
Milestone and Activity List

Date	21 October 2022
Team ID	PNT2022TMID11019
Project Name	Industry Specific Intelligent Fire Management System

TITLE	DESCRIPTION	DATE
Literature Survey& Information Gathering	A literature review is a comprehensive summary of previous researches on the topic. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research.	September 2022 3
Prepare Empathy Map	An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers. It helps us to understand the customer's pain, gain and difficulties from their point of view.	10 September 2022
Ideation- Brainstorming	Brainstorming is a group problem-solving method that helped us to gather and organize various ideas and thoughts from team members.	17 2022 September

SPRINT DELIVERY PLAN :

TOPIC	SPRINT PLAN
TEAM ID	PNT2022TMID11019
PROJECT NAME	**Industry-specific intelligent fire management system**
DATE	29-OCT-2022



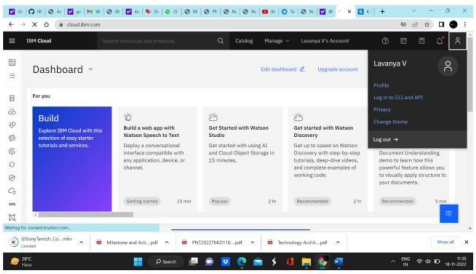
PREREQUSITES :

IBM CLOUD SERVICES :

Prerequisites

IBM CLOUD

Date	18 November 2022
Team ID	PNT2022TMID11019
Project Name	**Project -** Industry-specific intelligent fire management system
Maximum Marks	4 Marks



IBM SOFTWARE:

Prerequisites
PYTHON SOFTWARE

Date	18 November 2022
Team ID	PNT2022TMID11019
Project Name	Project - **Industry-specific Intelligent fire management system**
Maximum Marks	4 Marks