

**Project Design Phase-II**  
**Technology Stack (Architecture & Stack)**

Team ID	PNT2022TMID28739
Project Name	Emerging methods for early detection of forest fire
Maximum Marks	4 Marks

**Technical Architecture:**



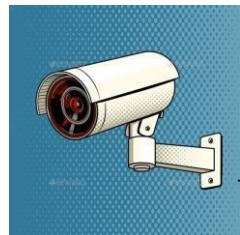
**Collects data from the sensors**



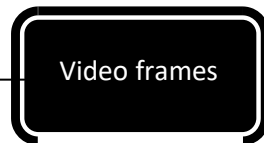
**Forest fire detection model**



**Train the model on IBM watson**



**Cameras used in the forest  
and drones**



**Indicates the fire through alarm**



**Sends an message  
Through API**

**Table- 1 : Components & Technologies:**

<b>S. No</b>	<b>Component</b>	<b>Description</b>	<b>Technology</b>
1.	Sensors	The user deploys the sensors in the forest to collect real time data	Temperature sensors, Heat detectors, Smoke sensors are used.
2.	Surveillance video camera	Cameras are fixed at an fixed distance in the forest	Infra red cameras are used.
3.	Drones	Drones can be used to monitor abandoned areas	Thermal cameras are fixed in drones which can controlled by humans.
4.	Video conversion	Videos can be converted into several frames	Video frame converter.
5.	Data collection	Sensor data can be collected by using the microcontroller	Altera, Atmel etc.
6.	Dataset	The dataset can be used for training and testing the model.	Dataset is stored in the cloud.
7.	Cloud database	The model is trained in the cloud more precise with detections more images can be added later on.	IBM Cloudant ,Python Flask.

8.	Infrastructure (Server / Cloud), API	Application Deployment on Local System / Cloud Local ,Cloud Server Configuration to send messages	Java/python ,React.Js ,JavaScript ,HTML ,CSS ,IBM Cloud ,OPEN CV ,Anaconda Navigator ,Local.
9.	External API-2	Purpose of External API used in the application	Aadhar API, etc.
10.	Fire alarm system	The purpose of alarm is to inform the fire.	Alarm can be deployed in forest offices.

**Table-2: Application Characteristics:**

S. No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Python Flask framework is used	Technology of Open source framework
2.	Security Implementations	Mandatory Access Control (MAC) and Preventative Security Control is used	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Scalable Architecture	High scalability with 3-tier architecture	Technology used

4.	Availability	Justify the availability of application (e.g. use of load balancers, distributed servers etc.)	Web server – HTML ,CSS ,JavaScript Application server – Python , Anaconda Database server –IBM DB2
5.	Performance	Enhance the performance by using IBM CDN	IBM Content Delivery Network