**Smart IoT System with Agentic AI + Arduino + Firebase + Web/Mobile**

1. **Scope:**
   1. **Business:** Smart environment monitoring
   2. **Application**: Python apps, Firebase backend, Web/Mobile dashboards
   3. **Data:** Sensor readings, AI insights, user interactions
2. **Key Stakeholders:**
   1. **Developer**: Prabhu,Krishna,Arun,Prem
   2. **Users**: Farmers,homeowners,environment monitors
   3. **Future engineers:** Those extending System later
3. **Principles:**
   1. **Modularity**: Each sensor/component works independently
   2. **Simplicity**: Use low cost and simple tech
   3. **Reusablity**: Code and architecture should be adaptable
   4. **DataSecurity**: Secure Access to Firebase and GenAI API
   5. **OpenStandards**: HTTP,REST,JSON
4. **Tools:**
   1. **Modelling**: Digrams.net
   2. **VersionControl**: Github
   3. **Code**: Python, Arduino IDE,JS,firebase SDK
   4. **AIAgent:** OpenAI
5. **Constraints and Assumptions**

| **Type** | **Examples** |
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| **Budget** | Limited, so use free Firebase tier & ESP8266 |
| **Power** | ESP8266 has limited processing power (no GenAI onboard) |
| **Connectivity** | Assumes stable Wi-Fi |
| **Data Volume** | Light — only sending small sensor data |
| **Security** | Firebase rules must be configured |