FAF FCIM FACULTATEA CALCULATOARE, INFORMATICĂ ȘI MICROELECTRONICĂ

# Green Systems

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Green Systems

**We aim to solve your houseplant and agriculture watering problem** when you are away from home for days or want to automate an industrial environment. The system has combined a software with a powerful hardware together to help you provide the exact water amount that the plants need when it needs and in the adaptation where it is located, avoiding under or over-watering and customizing to the plant itself.

# The features:

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Completely **automated system** with **modularity** and **exapansionment**

**Advanced customization** *(individual plant and care settings)*

PH level
Salinity level
Deep moisture level
Air purity level
Light level
Humidity level
UV level

Advanced **data gathering** and **structuring**

**Remote** control, data **analysis** and **personalisation**

# Market Size and Growth

**Global Smart Irrigation Market:** This market is projected to grow significantly due to increasing awareness about water conservation and the rising demand for food due to the growing global population.

**Growth Drivers:** Technological advancements, increasing adoption of smart agricultural practices, government initiatives promoting water conservation, and the integration of IoT and artificial intelligence in irrigation systems.

**Projected Growth:** Analysts predict that the smart irrigation market could reach over **$2.5 billion by 2027**, growing at a compound annual growth rate **(CAGR) of around 15%**.

# Target costumer base:

- People who are very active/busy
- People who often travel
- Residents in climates where consistent watering is crucial but often challenging
- Small to Medium-Sized Agricultural Enterprises
- State and public facilities
- Businesses with offices
- Ground houses gardening
- Homeowners interested in smart home technology and gardening
- Eco-Friendly and Sustainability-Oriented Groups

# The **PBL** part

# Understanding the Challenges of Traditional Irrigation

Green Systems

**Inefficiency:** Traditional irrigation systems often use more water than necessary, leading to significant water waste.

**Lack of Precision:** Water is distributed uniformly regardless of the specific needs of different plants or zones, which can lead to overwatering some plants while under-watering others.

**Time Consumption:** Manual watering requires continuous effort and presence, making it impractical for busy individuals or large-scale operations.

**Environmental Impact:** Excessive water use strains local water resources and can lead to increased runoff and erosion.

# How GreenSystems Solves These Problems

**Adaptive Watering Technology:** Uses sensors to monitor soil moisture, weather conditions, and plant health to apply the precise amount of water needed.

**Customizable Scheduling:** Allows users to adjust watering schedules based on specific plant requirements and environmental factors, which can be managed remotely via a mobile app.

**Water Conservation:** Reduces overall water use by ensuring that water is only applied where and when it is needed, supporting sustainability.

**Ease of Use:** Automated systems reduce the labor and time required for plant care, making irrigation effortless and more effective.

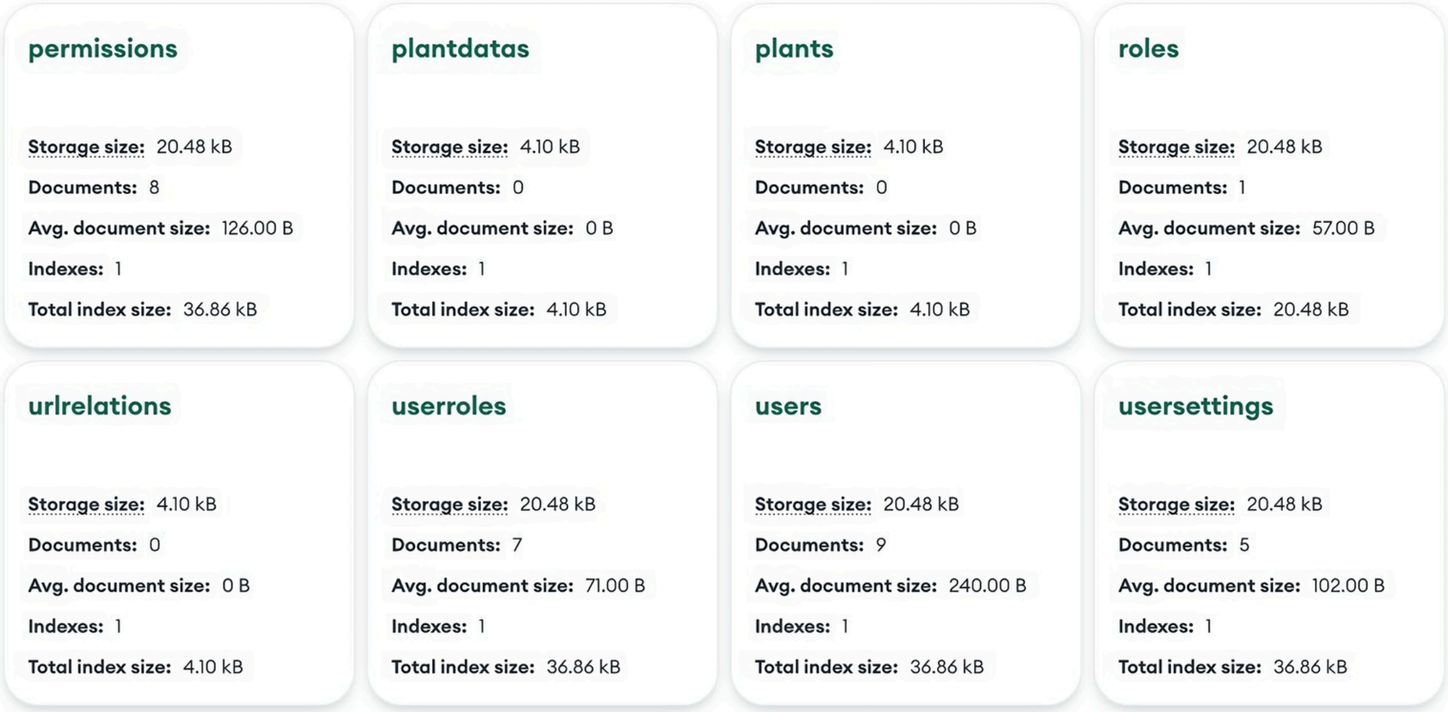
# Tech Stack:

**NestJS** and **React TypeScript** offer a robust, scalable solution for both backend and frontend development, ensuring our smart irrigation system is responsive and user-friendly.

**Arduino**, combined with **MongoDB** and **Docker**, provides a reliable and flexible platform for managing real-time data and deploying updates consistently.

Using **APIs** for seamless integration between components and **GitHub** for version control enhances collaboration and efficiency, making these technologies ideal for developing a sophisticated, eco-friendly irrigation solution.

# Our database



# Connected Components

- Arduino mega
- 2.8" TFT Touch Shield Resistive Touch Screen
- DFR0300 -analog sensor of salinity and PH
- Light and UV Sensor
- DHT22 humidity and temperature
- Capacitive Soil Moisture Sensor
- PM2.5, CO2, VOC, Ozone - Quality Monitor Sensor
- Multiple relay module
- Water pumps, Water level sensor,
- Sim800L Internet and SIM module
- DS3231 Real Time Clock

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{
    "system": "GreenSystemsHome",
    "hardwareID": "000000001",
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        "humidity": 200,
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        "water": true,
        "air": 180,
        "UV": 20
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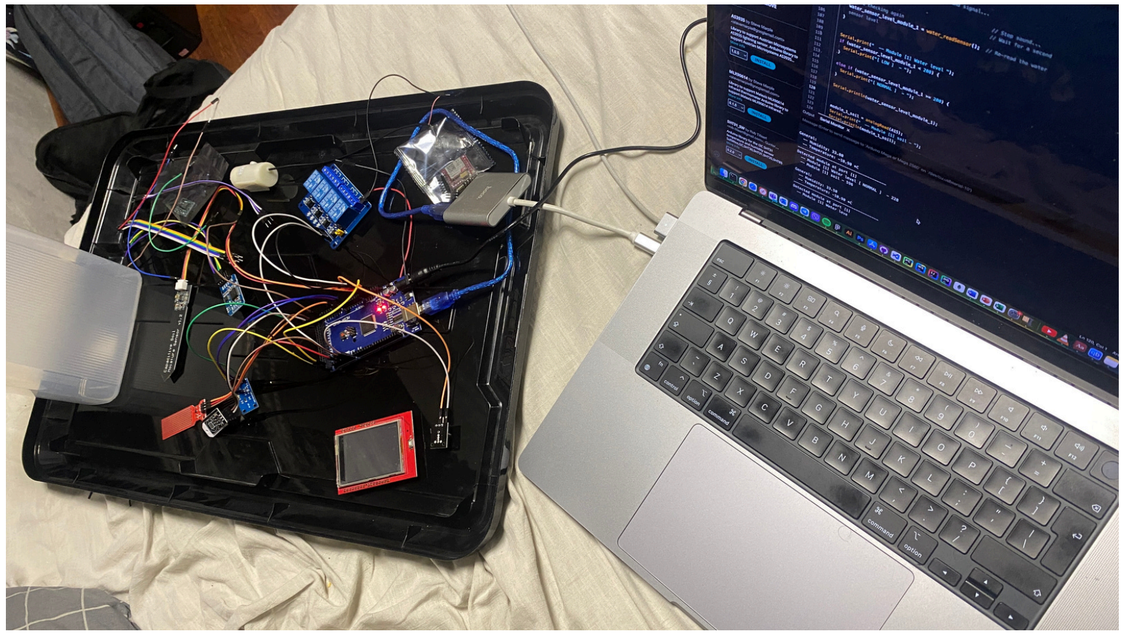
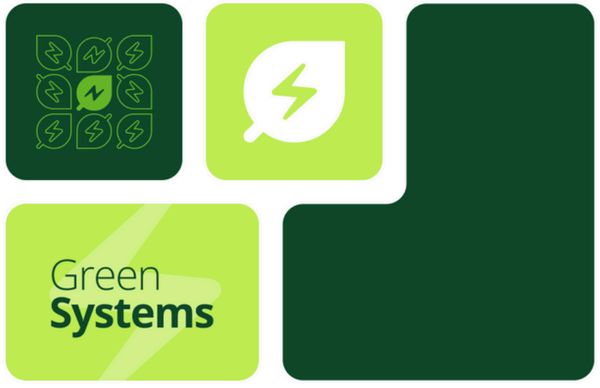
# The Prototyping



# The **Design**








The Green**Systems** logo combines elements of nature with modern technology symbols, embodying the fusion of eco-friendliness with advanced irrigation solutions.

The color palette features shades of green to represent growth, harmony, and environmental care, complemented by water-blue accents to symbolize hydration and life

**Plants design exemple:**


**Icons:**

**Bottons:**


**Colors:**

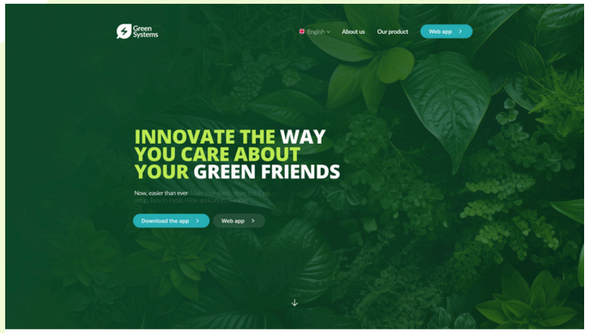

**Brand Name**: Emphasizes the eco-friendly aspect and theological approach to irrigation for mass usage in personal customer and agriculture industries.

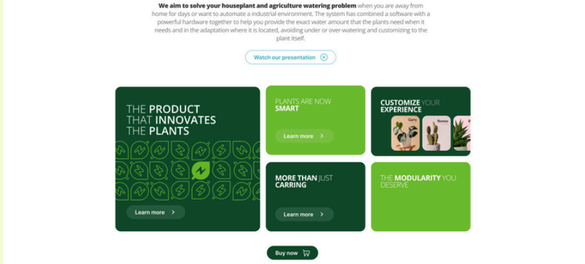
**Typography:** Open-Sans *font-family*

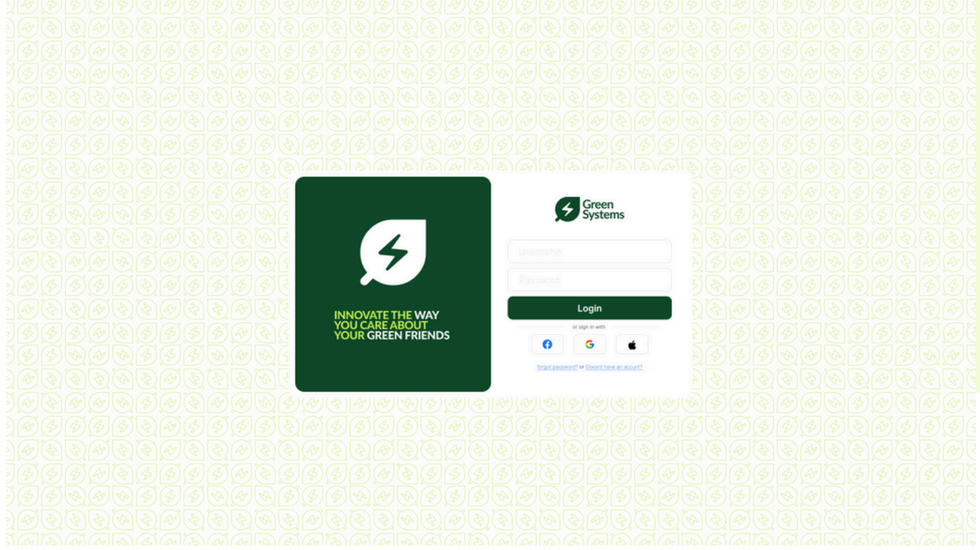
**Voice and Tone:**

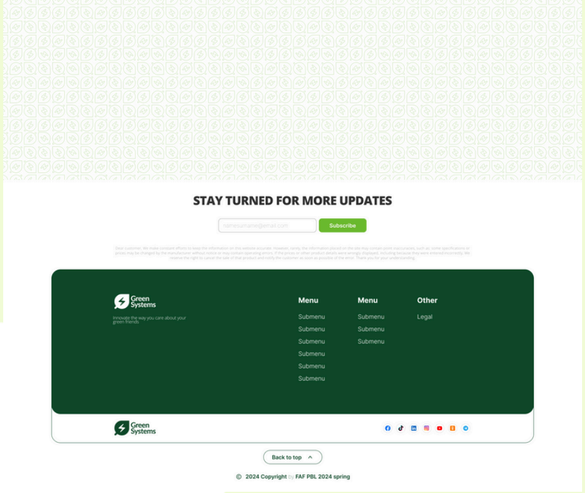
*Voice*: Informative, optimistic, and professional.

*Tone*: Friendly and accessible, with an emphasis on simplicity and the benefits of technology.


# Thank you for attention