AgroFlow

Smart Irrigation System for Water Conservation

Team Representative

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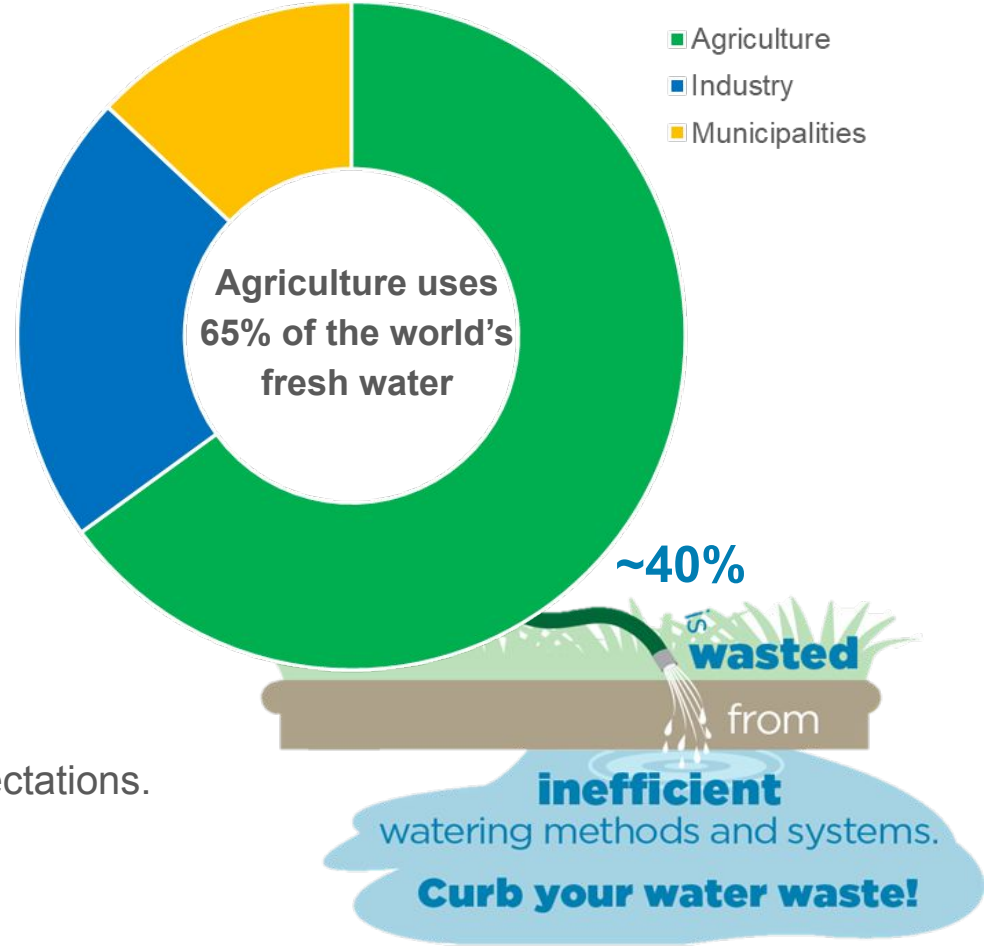
Problem

- Water is essential for agriculture

  but is being used inefficiently due to:
  - inefficient irrigation
  - evaporation
  - soil type
- Ineffective water management
  - causes waste
  - reduces farm productivity
- Current irrigation practices fall short of expectations.

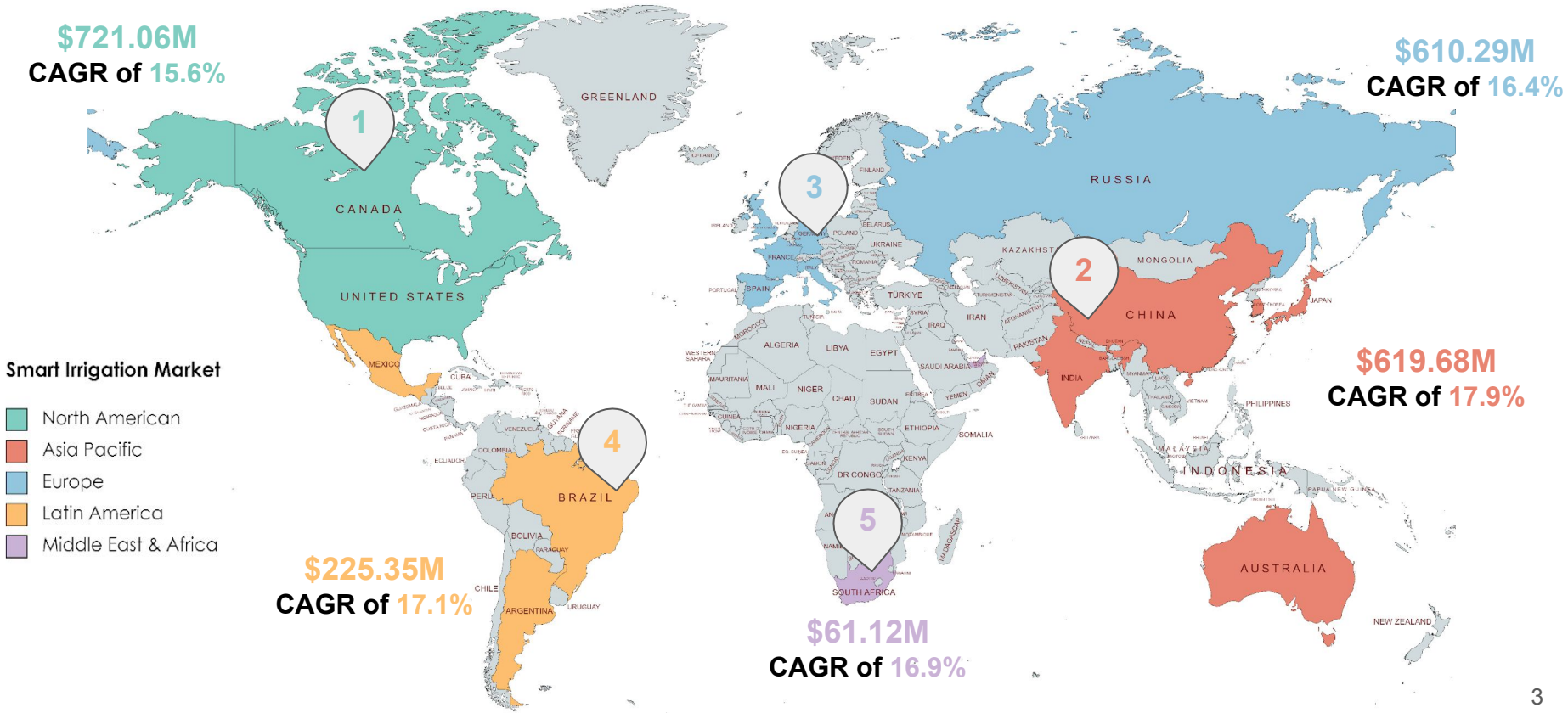
⇒ A precision irrigation system



https://www.schroders.com/en-us/us/individual/insights/why-agriculture-holds-key-to-tackling-water-waste/

Market Opportunity

Global Smart Irrigation Market Size expected from 2021 to 2026



Strategic Positioning

Existing Solutions

Drip Irrigation Limitations

- Pressure variation
- Clogging of pipes
- Energy dependency
- Risk of damage
- Root zone limitation

Drone Application Limitations

- Technical Expertise
- High Cost of Investment
- Limited Capacity
- Battery Time and Life
- Weather Dependency
- Security & Regulations

Analogues

Key Features	Products & Services		
	Our Solution	GramworkX	Conserwater
Software & Hardware Components	AI Precision Irrigation Software based Platform/App & wireless sensors	Iot device (with sensors) for data collection and app for alerts	Remote sensing data/Deep Learning techniques
historical data patterns for crops	Yes	No	No
24/7 online services	Yes	No	No
On-site support	Yes	No	No
Training services for efficient use	Yes	No	No

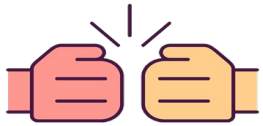
Research groups

- Department of Geography and Regional Planning, University of Benin, Benin City.
- Department of Electrical Engineering, Faculty of Engineering, Afyon Kocatepe University, Turkey.
- Department of Agricultural Machinery Engineering, University of Tehran, Karaj, Iran.
- Department of Computer Science, Sir M. Visvesvaraya Institute of Technology, Bengaluru, India.

Porter's 5 Forces Analysis







Threat of New Entrants
(Low to Medium)

Entry Barriers

- Capital Investment requirement
- Lack of Branding

Power of Buyers
(Medium)

Obstacles

- Buyer's skepticism about the solution

Power of Suppliers
(Low)

Leverage

- Low Leverage
- Open-source software
- Abundance of hardware components

Threat of Substitutes
(Low)

Limited Substitutes

- Limited substitutes in this project area
- Traditional methods: less precise & less efficient

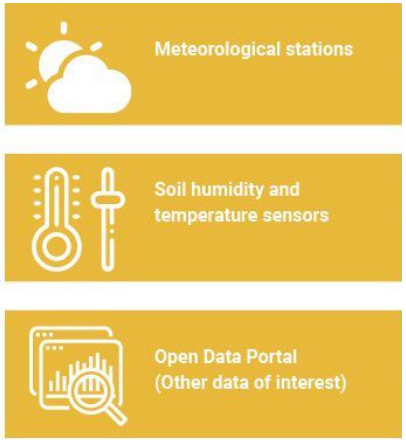
Rivalry among Existing Competitors
(Medium to High)

Market Growth

- Rapid growth in this market
- Expected to reach US $2.3 billion by 2026 at VAGR of 14.9%

Solution

Smart Water Management System to address water wastage in agriculture.



20.5%
reduction in water wastage, ensuring effective water management

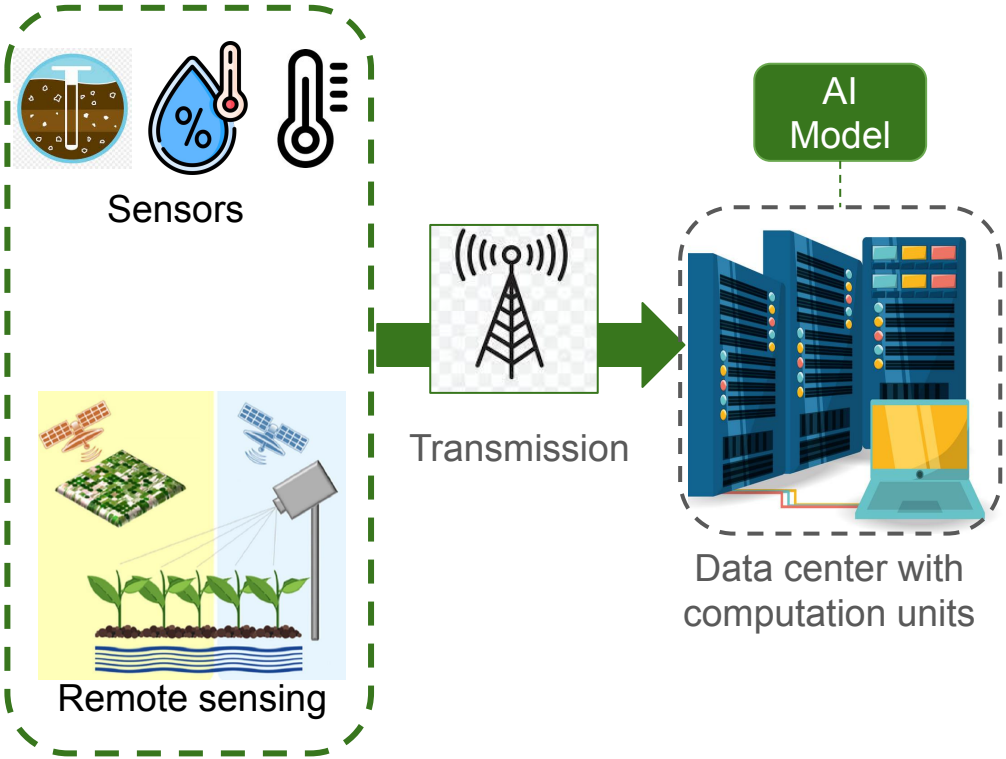
24%
Energy saving, ensuring sustainability in agriculture

Innovative Precision Irrigation:

Integrating diverse data sources, real-time regulation, and predictive modeling with advanced technology significantly improves water usage efficiency, fostering optimal crop growth.

Technology

Our technology is the combination of sensors, remote sensing, and trained AI model to produce irrigation scheduling



Is our Solution Realistic?

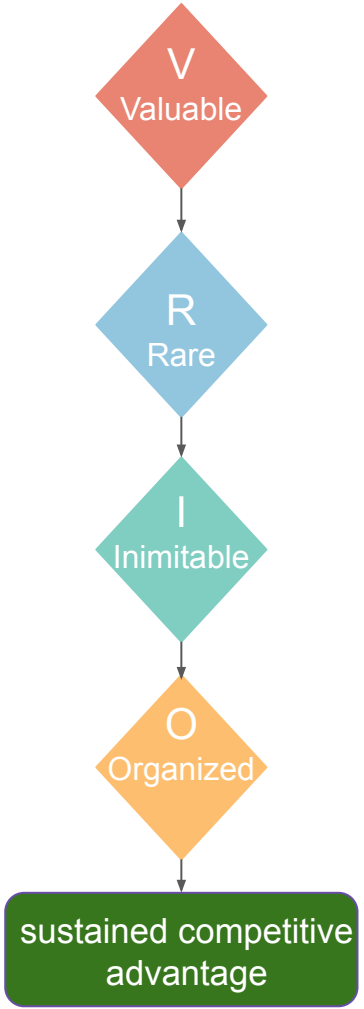
- ❏ AI is increasingly used to enhance irrigation.
- ❏ Benefits are proven by research.
- ❏ The required parameters have an impact on improving irrigation.

Feasibility?

- ❏ Required sensors available.
- ❏ Satellite internet for transmission.
- ❏ Rent servers for computation.

Resources

Resource or capability	V	R	I	O
Team with diverse backgrounds	✓	✗	✗	✓
Skoltech network	✓	✓	✓	✓
Skoltech labs and facilities	✓	✗	✓	✓
Skoltech patents	✓	✓	✓	✓



SWOT ANALYSIS

STRENGTHS

1. Innovative Technology
2. Cross-Disciplinary Team
3. Cost-Effective
4. Access to Skoltech's Resources
5. Adaptive Solution
6. Comprehensive solution

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WEAKNESSES

1. Skepticism from Buyers
2. Limitation in data collection
3. Absence of UI/UX
4. No client base

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OPPORTUNITIES

1. Growing Market Demand
2. Global Market Expansion
3. Technological trends

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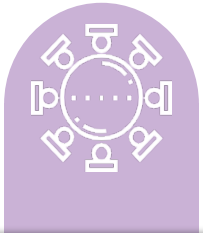

THREATS

1. Competitive Market
2. Regulatory Challenges
3. Initial Capital Investment

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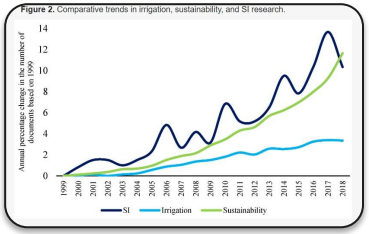
Market Trends

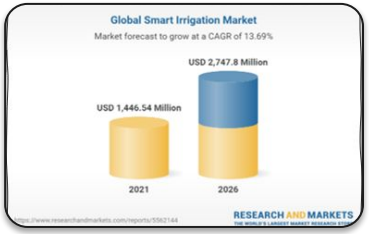
Farmers are increasingly investing in new irrigation technologies

- Rising cost of water
- Demand for higher crop productivity



Growing demand for sustainable irrigation solutions

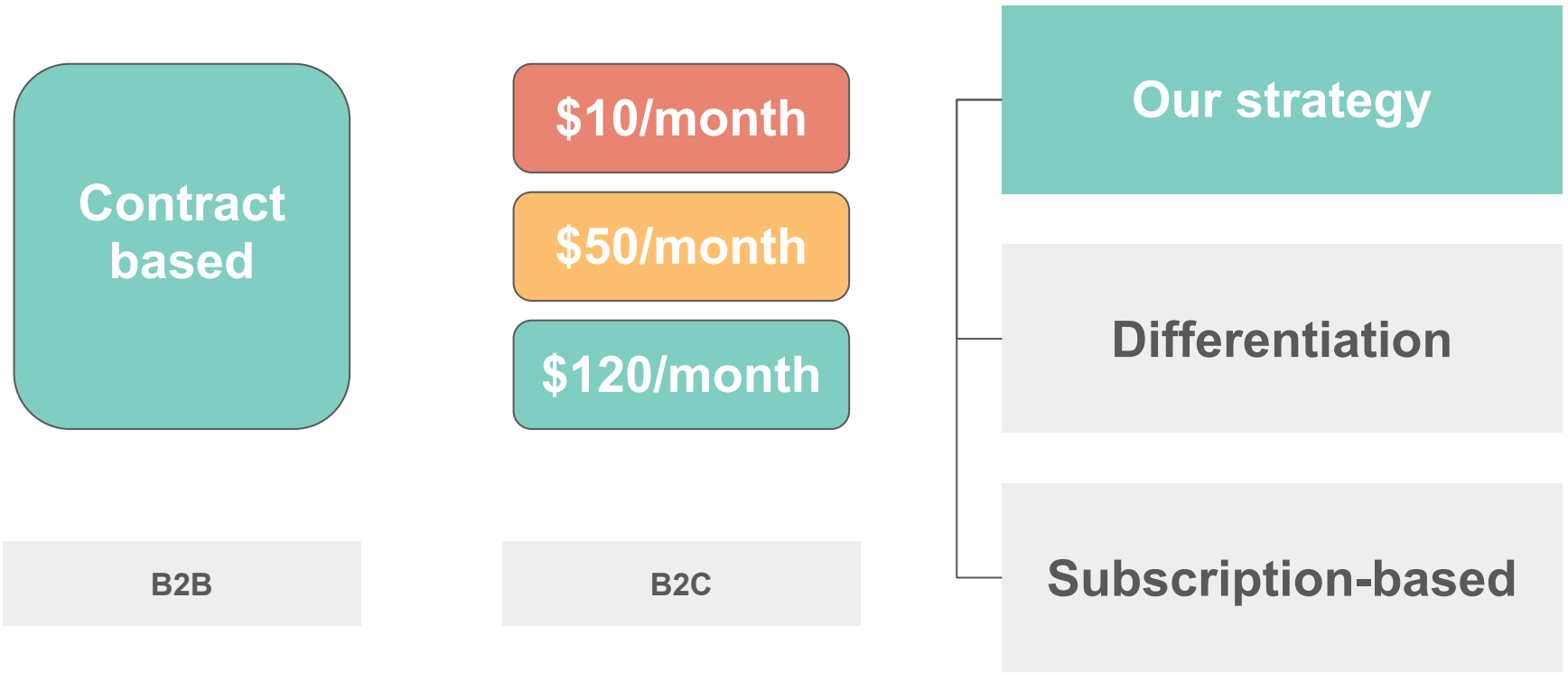
- Growing scarcity of water resources
- Increasing concern about the environmental impact



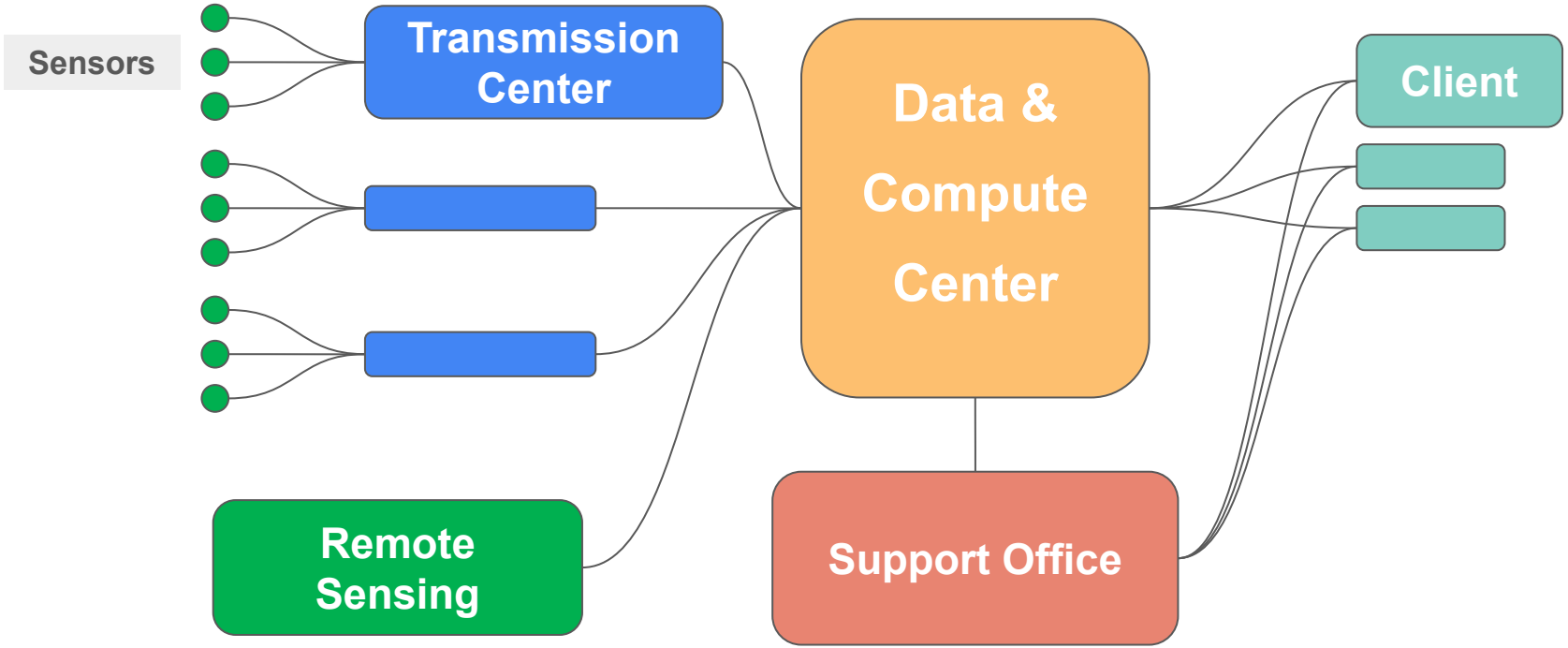
Market growth projection

- Demand for more food with less water
- Technological advancements

Commercialization



Platform Architecture



Strategic Alliances

Joint Product Development with Skoltech Agro center, to get fund and access to expertise. They will get a tangible product that serve their objectives.

Unequal Equity Joint Ventures with GramworkX, To share resources, risks, and rewards to achieve common business objectives

Joint Research with multiple research institute to get valuable research insights and access to their expertise like:

- Institute of Agriculture and Natural Resources (IANR).
- Department of Geography and Regional Planning,University of Benin.

Future Plan

Phase 1: Research and Development (Months 1-12)

Research and Data Gathering, Prototype Development

KPIs

- Label data from 3 regions in 3 months.
- MVP with core features in 6 months.
- Secure funding in 12 months.

Phase 2: Testing and Optimization (Months 12-24)

Prototype Testing and User Interface Development

KPIs

- Testing & improvement in the model in 10 months.
- Develop and demonstrate a functional UI interface in 6 months

Phase 3: Customer Development (Months 24-36)

Product launch, Marketing and Customer Development

KPIs

- Product showcase 3 identified events.
- At least 70% response rate from 10 potential customers.

Team Members

Project Manager

Fizza Munawar

Agricultural Expert

Applies in-depth knowledge to ensure the AI model optimally enhances irrigation for specific crops and environments.

Uyen Vo

Business Analyst

Assesses market demand, competition, and business needs.

Danil Ivanov

ML Engineer

Collect data, develops and fine-tunes the AI model.

Ivan Kudryakov

UI Developer

Designs and develops a user-friendly and intuitive interface.

Muhammad Afaq

Automation Specialist

Integrates AI-powered irrigation systems into existing farm operation.

Ali Alabbas

Robotics Expert

Enhances automation by incorporating robotics for precise tasks.

Move Forward

Research and Equipment

Customer Development

Product Testing

Thank you
for your attention!

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