

# VAXERA

Shielding Lives with Innovation



V-Team  
Group

[contact@VAXEra.com](mailto:contact@VAXEra.com)

# OUR GROUP MEMBERS



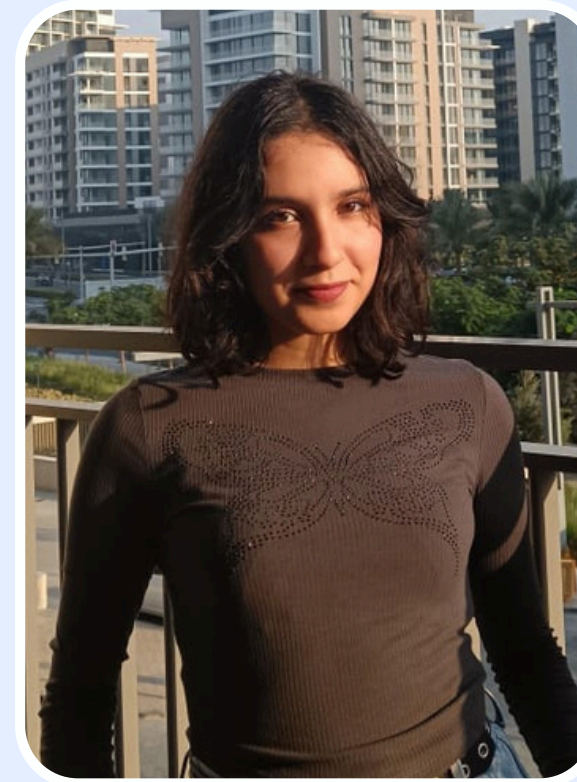
**Hedir  
Tekaya**



**Nour  
Soussou**



**Mouadh  
Mandhouj**



**Elaa  
Abidi**



**Firas  
Hassine**

**MP2 – ING**

# OUR PLAN :

1. Project Idea
2. Problem Statement & Current System Review
3. Competitor Study
4. Application Users
5. Functional Requirements: Modules & Roles
6. Non-Functional requirements
7. Sustainable Development Goals
8. Graphic Charter

# PROJECT IDEA

**Project Name:** VAXEra

**theme:** Smart Vaccination and Biological Research Center

**Objective:** Develop an intelligent application for the management of vaccination and biological research, integrating IoT and Arduino technologies for real-time tracking of vaccines, patients, personnel, equipment, and laboratory experiments.



# PROBLEM STATEMENT& CURRENT SYSTEM REVIEW

## PROBLEM STATEMENT



- Current methods rely on paper systems or local databases.
- Low traceability, inefficient management, and lack of technological integration.

## ANALYSIS OF EXISTING SYSTEMS

- Traditional non-automated management.
- No real-time tracking.
- Risks of human error and data loss



# COMPETITOR STUDY



No native IoT/Arduino integration.

Not specialized in real-time vaccine tracking or biomedical equipment monitoring.

The McKesson logo consists of the word "MCKESSON" in a bold, blue, sans-serif font. The letter "K" is stylized with a small orange square above its middle bar.

Focused on logistics, not patient histories or laboratory research.

No smart stock alerting via sensors or embedded hardware integration.



Geared toward public health reporting, not clinical or lab-specific equipment monitoring.

Lacks Arduino integration and real-time stock tracking features.

# APPLICATION USERS

- **Vaccine Management** : Pharmacist, Administrator
- **Patient Management** : Doctor, Medical Secretary
- **Personnel Management** : HR Manager, Doctor
- **Laboratory Management** : Researcher,  
Technician
- **Equipment Management** : Equipment Manager,  
Technician

# FUNCTIONAL REQUIREMENTS: MODULES & ROLES





# FUNCTIONAL NEEDS OVERVIEW

The app will include 5 modules, each featuring:

**CRUD  
Operations**

**Real-time  
Scenarios with  
Arduino**

**Role-based  
functionalities**

## Vaccine Management

**Users:** Pharmacists, Admin

- Statistics
- Alerts for expiry & low stock
- Filter and research by type, expiration date, vaccine name ...
- Generate a PDF document
- Vaccine History

## Patient Management

**Users:** Doctors, Medical Secretaries

- Vaccination history & alerts
- Appointment scheduling
- Medical history management
- Vaccination certificates generation

## Staff Management

**Users:** HR Managers, Doctors

- Manage roles, schedules, certifications
- Assign consultations
- Generate activity reports

## Lab Management

**Users:** Researchers, Lab Technicians

- Manage experiments and samples
- Monitor protocols and results
- Publish research reports

## Equipment & Infrastructure

**Users:** Equipment Managers, Technicians

- Inventory of medical tools
- Maintenance scheduling
- Consumables tracking
- Equipment status monitoring

# ARDUINO INTEGRATION – USE CASES

01

## SECURE ACCESS CONTROL:

Uses a fingerprint sensor or RFID (INPUT) to authorize access, and a servo motor (OUTPUT) to open the door if access is granted.

02

## VACCINE TEMPERATURE MONITORING:

A temperature sensor (INPUT) continuously monitors the refrigerator's temperature, triggering a LED and sound alarm (OUTPUT) if the temperature exceeds a critical threshold.

03

## AMBIENT HEALTH SOUND DETECTOR:

A microphone captures ambient sounds (coughing, murmurs, commotion), an AI module analyzes these noises, and a directional speaker (OUTPUT) emits voice alerts in real time to warn people in case of an abnormal situation.



# NON-FUNCTIONAL REQUIREMENTS

**Strong data  
security**

**Compatibility with  
health protocols**

**Real-time  
performance  
and system  
responsiveness**

# SUSTAINABLE DEVELOPMENT GOALS (SDGs) :

## SDG 3: Good Health and Well-being

- Improve access to healthcare services
- Ensure effective vaccination and optimized medical follow-up

## SDG 9: Industry, Innovation, and Infrastructure

- Develop innovative digital infrastructure using IoT and Arduino technologies

## SDG 17: Partnerships for the Goals

- Facilitate collaboration between medical teams, researchers, and information systems



# GRAPHIC CHARTER





# VAXERA LOGO OVERVIEW

The VaxeRa logo combines a heart, a syringe, and a digital pulse line to symbolize the intersection of care, vaccination, and innovation.

- **Heart:** Represents compassion and healthcare.
- **Syringe:** Symbolizes vaccination efforts.
- **Pulse Line:** Highlights the smart, tech-driven monitoring aspect.
- **Color Palette:** Blue and green evoke trust, safety, and health innovation.



# VAXERA : VACCIN MANAGEMENT

Vaccine Management

sort by

search by

Vaccine Name

Type

Manufacturing Date

Expiration Date

Batch Number

Supplier

Stock Quantity

Add

Add

Modify

PDF

!

research

Home

Log-out

| ID Vaccine | Vaccine Name | Type    | Manufacturing Date      | Expiration Date         | Batch Number | Supplier        | Stock Quantity | Action |
|------------|--------------|---------|-------------------------|-------------------------|--------------|-----------------|----------------|--------|
| 1 1        | fghjhgfd     | Booster | 2025-01-01T00:00:00.000 | 2050-01-01T00:00:00.000 | 0125         | GlaxoSmithKline | 20             | Delete |
| 2 5        | abc          | Primary | 2025-01-01T00:00:00.000 | 2026-01-09T00:00:00.000 | 6            | Pfizer          | 22             | Delete |
| 3 3        | qwqert       | Booster | 2025-01-01T00:00:00.000 | 2029-01-17T00:00:00.000 | 15           | Pfizer          | 10             | Delete |
| 4 4        | covid        | Booster | 2025-01-01T00:00:00.000 | 2027-01-05T00:00:00.000 | 55666        | Moderna         | 50             | Delete |

# VAXERA : PATIENT MANAGEMENT

## Patients Management

sort by

search by

Enter search text...

research

Home

Add Appointment

View Appointments

First Name

Last name

Gender

Date of birth

Adress

Email

Phone number

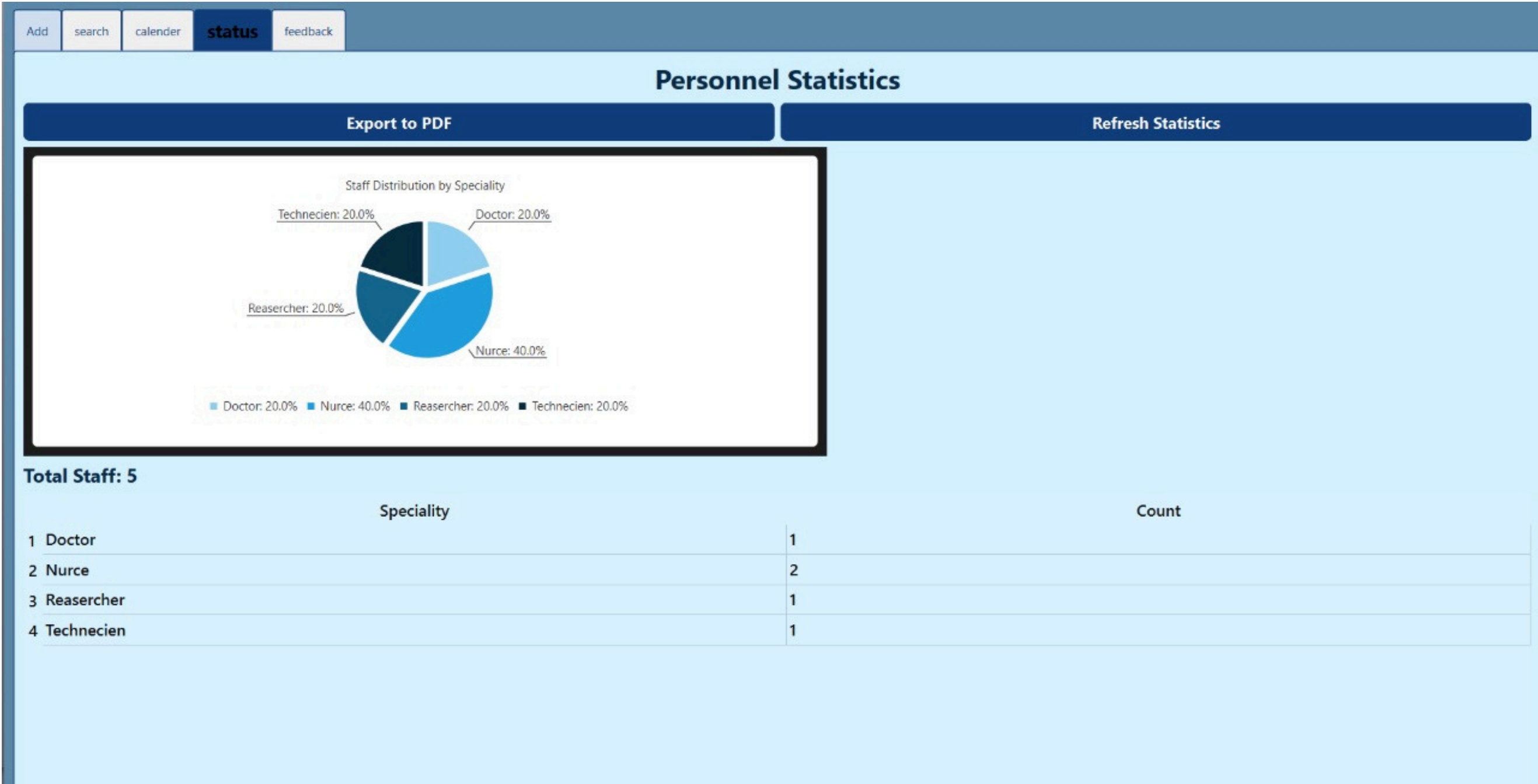
Add

Add


Modify

| Patient ID | First Name | Last Name | Gender | Date of Birth | Address | Email    | Phone Number | Action                              |
|------------|------------|-----------|--------|---------------|---------|----------|--------------|-------------------------------------|
| 1 8        | ddd        | dddddd    | M      | 2025-01-01    | ddd     | dd@jj.dd | 987654321    | <div>Modify</div> <div>Delete</div> |

# VAXERA : PERSONNEL MANAGEMENT



# VAXERA : LABO MANAGEMENT

 SMART VACCINATION AND BIOLOGICAL RESEARCH CENTER


create experiment

read experiments


Delete Experiment

Update Experiment

Actions


 EXPERIMENT DASHBOARD

Experiment ID :

 DEATAILS

Description :

Protocol :

 BASIC INFO

Experiment Name :


Responsible Name :


Status :

Start Date :

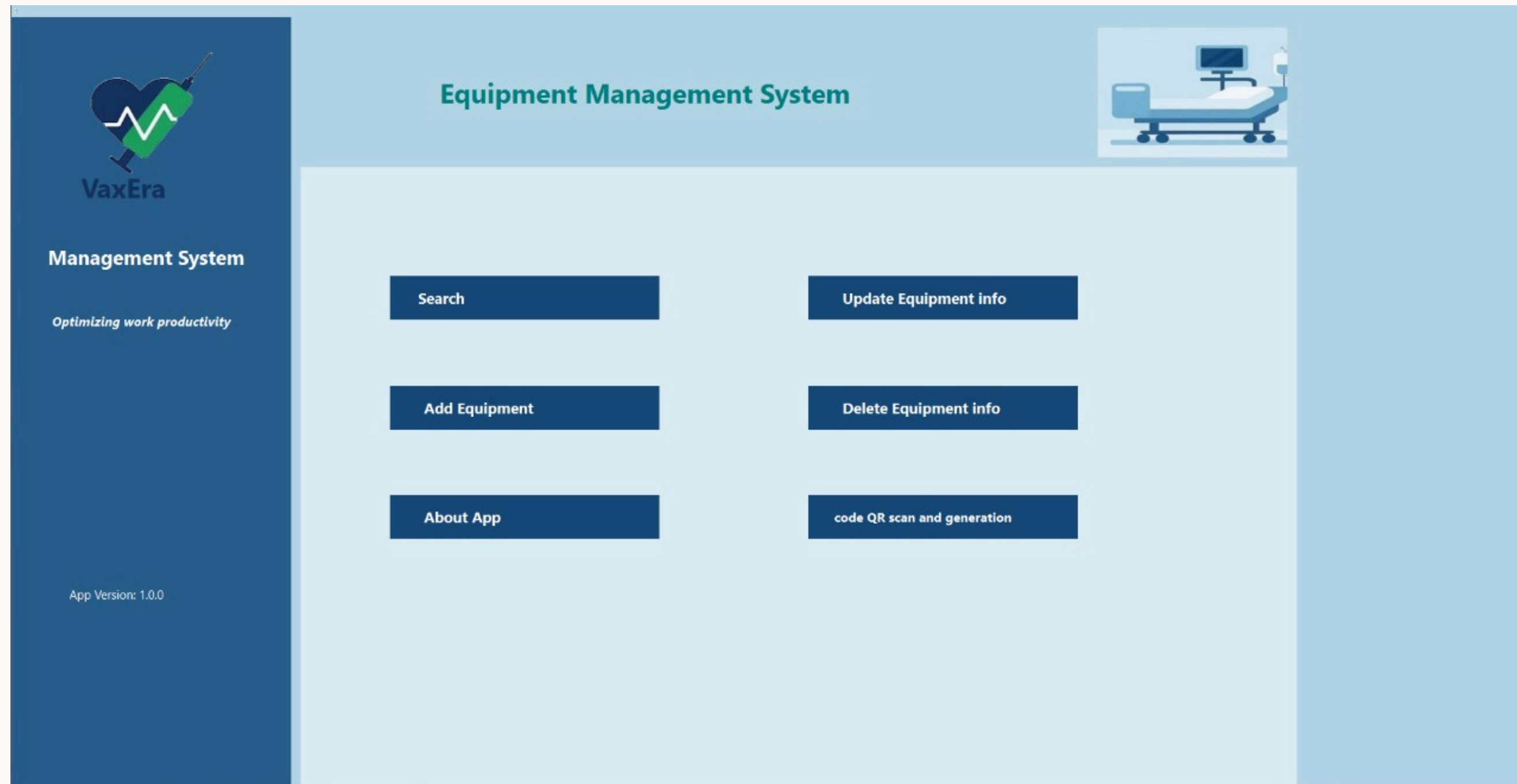
End Date :

Results Obtained :

 Add



# VAXERA : EQUIPMENT & INFRASTRUCTURE MANAGEMENT





# CONCLUSION



**VAXEra is a leap forward in vaccination and biomedical research management, combining technology and health innovation for a safer future.**