EcoContracept

ID: 130803

Challenge Name	Date Added
Autonomous Contraception Dispensing Stations	17/10/2024

Creator

SAADITHYA

Team Members

SAADITHYA

1. Participation Type - Please select how you are participating in this Challenge:

Solver (Individual)

2. Solution Level – Please select the Technology Readiness Level (TRL) of your solution:

Ideation (TRL 1-3)

3. Partnering - Are you interested in partnering?

Yes

4. Problem & Opportunity – Please highlight the innovation in your approach to the problem, its point of difference, and the specific advantages/benefits this brings (up to 500 words)

Access to contraception is a significant challenge for migrant women and girls due to barriers like lack of medical facilities, privacy concerns, and limited financial resources. My innovative approach leverages reused old smartphones integrated into autonomous contraception dispensing machines to address these challenges. By repurposing existing technology, we can create a multifunctional, cost-effective solution that enhances accessibility, provides self-screening capabilities, and maintains the privacy of users.

The key innovation lies in utilizing the built-in features of smartphones—such as cameras, sensors, touch interfaces, and connectivity—to enable essential functionalities without the need for expensive custom hardware. This approach not

only reduces costs but also promotes sustainability by recycling electronic devices. The advantages include:

- **Enhanced Medical Screening**: Smartphones can guide users through self-screening questionnaires and potentially use sensors like camera in combination with AI to assess eligibility.
- **Flexible Payment Options**: Integrated connectivity allows for various payment methods, including mobile payments, vouchers, or access codes.
- **Real-Time Monitoring**: Network connectivity enables restocking notifications and remote monitoring of machine status.
- **Temperature and Theft Management**: Sensors can monitor internal conditions and security, sending alerts if issues arise.
- **User-Friendly Interface**: The touch screen provides an intuitive interface for users to select contraception discreetly.

This solution addresses the IRC's requirements across technological, practical/mechanical, and behavioral categories, offering a scalable and sustainable approach to improving contraceptive access for migrant women and girls.

5. Solution Overview – Please describe the features of your solution and how they address the SOLUTION REQUIREMENTS (add supporting data, diagrams, etc. as attachments below) (500 words).

Integration of reused old smartphones into contraception dispensing machines to enable multifunctional capabilities, it comes with solar power panel, a mini cooler to maintain temperature, power back up, a charger and reused smartphone will bring in all additional features like internet connectivity & AI capabilities for guiding people select suitable contraceptives.

Features and Specifications:

1. **Medical Screening**:-
    - **Self-Screening App**: A custom application guides users through a health questionnaire to determine eligibility for different contraceptive methods.
    - **Sensor Utilization**: The smartphone's camera could potentially estimate heart rate variability as a proxy for health indicators.
2. **Payment Systems**:
    - **Multiple Payment Methods**: Supports cash payments via attached mechanisms, mobile payments through apps like M-PESA, and voucher codes distributed by NGOs.
    - **Secure Transactions**: Encrypted payment processing to ensure user data privacy.
3. **Network Connectivity**:
    - **Restocking Notifications**: Smartphones send automated alerts to central systems when supplies are low or nearing expiration.
    - **Remote Monitoring**: Real-time data on machine status, usage statistics, and potential issues.
4. **Temperature Regulation**:
    - **Sensor Monitoring**: Built-in sensors monitor internal temperature, triggering cooling/heating mechanisms as needed.
    - **Energy Efficiency**: Utilizes low-power components to maintain temperature within the required range.
5. **Theft Protection**:
    - **GPS Tracking**: Smartphones provide location tracking if the machine is moved without authorization.

    - **Tamper Alerts**: Sensors detect unauthorized access attempts, sending immediate notifications.
6. **User Interface**:
    - **Touch Screen Navigation**: Intuitive menus in multiple languages help users select products and receive instructions.
    - **Privacy Features**: Screen privacy filters and discreet operation to ensure user anonymity.

Meeting Solution Requirements:

- Addresses medical screening, payment flexibility, and connectivity for stock tracking.
- Enhances temperature management through sensor monitoring and supports theft protection.
- Improves user experience with a touch interface, ensures privacy, and provides information in an accessible format.

6. Solution Feasibility - Please provide supporting information and rationale, such as references and precedents, that will help the IRC evaluate and validate the feasibility of the solution (up to 500 words)

Supporting Information:-

- **Proven Technology**: Smartphones are reliable, widely available, and have the necessary features to support this solution.
- **Cost-Effectiveness**: Reusing old smartphones reduces costs associated with developing custom hardware still providing state of the art technology like AI guidance and assistance in contraceptive selection.
- **Sustainability**: Promotes recycling of electronics, aligning with environmental goals.

References and Precedents:

- **Existing Vending Machines**: Similar projects like PSI's vending machines in Kenya demonstrate feasibility.
- **Technological Capabilities**: Smartphone sensors have been used in health applications, such as heart rate monitoring apps.

Feasibility Considerations:

- **Hardware Integration**: Smartphones can be seamlessly integrated into vending machine systems.
- **Software Development**: Custom applications can be developed to handle user interaction, medical screening, and backend connectivity.
- **Network Infrastructure**: Utilizes existing mobile networks; can function on low-bandwidth connections or store data offline until connectivity is available.

7. Do you have further relevant information you could disclose, consisting of IP rights you would only grant the Seeker subject to an acceptable award offer? If yes, you will be asked to capture the IRC’s interest (up to 500 words).

I am willing to grant full rights to the intellectual property associated with my solution, including the integration of reused smartphones in contraception dispensing stations. This includes all aspects of the design, algorithms, and technical configurations that enable advanced functionality such as temperature control, theft protection, and smart restocking notifications. I am open to transferring these rights under mutually

acceptable terms, ensuring the solution can be fully utilized and developed by the IRC for the good of humanity.

8. Experience – Please describe expertise, use cases, and skills you or your organization may have in relation to your proposed solution, and state your interest in potential partnership (up to 500 words)

I am an innovator with a degree in mechanical engineering and post graduate MBA in operations management, Micro masters in Technology & Innovation from RWTH University, Germany. I have 15+ years experience in crowdsourcing and innovation. I have won 60+ global innovation awards till date by cross pollination of technologies across industries solving technical challenges for companies around the world.

I am currently working as a full time professional for a real estate firm to create innovation in prop tech space. Within the constraints of my regular work I will do my best help the client to bring this solution to reality by providing with research, Innovation experience and my knowledge.

9. Solution Risks – Please describe any risks you see with your solution and how you would plan for this (up to 500 words)

There is a risk of theft or damage to the contraception dispensing machines, as they may be attractive targets in certain areas. However, this can be mitigated by utilizing the old smartphone’s camera as a CCTV-like feature, continuously monitoring the surroundings and providing real-time footage.

Additionally, connectivity issues could arise, especially in remote locations, potentially disrupting payment processes. To address this, we propose integrating a system similar to UPI that enables offline payments for smaller transactions, ensuring users can still access contraception even when network connectivity is unreliable.

10. Timeline, capability, and costs – Please describe what you think is required to deliver the solution, including estimated time and cost to total up your summary, capital, and operating costs and add as an attachment (up to 500 words).

To deliver this solution, the project would be divided into three main phases: research and design (6 months), prototype development (6 months), and a pilot implementation (1 year). The contraceptive dispenser will be built using affordable components such as a mini cooler for temperature regulation, a power bank for backup energy, and a small solar panel to ensure sustainability. The total cost of building the dispenser, excluding the recycled smartphone, is estimated to be around $100 per unit. This budget covers essential hardware and allows for scaling as needed in future stages.

11. Online References – Please provide links to any publications, articles or press releases of relevance (up to 500 words)

Here are some relevant online references that support the development of this solution:

1. **Recycling Old Smartphones for IoT Solutions**
   Article: "How Old Smartphones Are Powering the Future of IoT Devices"
   Link: https://ieeexplore.ieee.org/document/8102334
2. **UPI Offline Payment System**
   Article: "Explaining UPI’s Offline Payment Feature for Rural India"

Link: https://sabpaisa.in/blog/how-to-make-an-offline-upi-payment-without-internet/

3. **Smartphone Camera for Surveillance**
   Publication: "Utilizing Smartphone Cameras for Low-Cost Surveillance in Public Spaces"
   Link: https://pmc.ncbi.nlm.nih.gov/articles/PMC5972155/
4. **Sustainable Vending Machine Design**
   Article: "The Rise of Solar-Powered Vending Machines"
   Link: https://ijireeice.com/wp-content/uploads/2022/12/IJIREEICE.2022.101212.pdf

These references provide insights into key aspects of the solution, from recycling smartphones to enabling offline payments and enhancing security through smartphone cameras.

12. How did you find this Challenge? – please indicate what drew you to this Challenge, including any relevant advertising or marketing that you followed to this Challenge.

I have known this platform since it was Innocentive, I regularly check and participate in innovation opportunities here and I am grateful for having the opportunity to win multiple innovation awards from this portal.