

# **COMMUNICATIONS AT KIC**

**ICT PROBLEM SOLVING EXPERIENCES WITH STUDENTS FROM DEVELOPING COUNTRIES**

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(WHAT DID I LEARN FROM TEACHING AT KIC?)

A few words about KIC and “Tankyu Practice”

Approaching **ICT** topics with our students

## Examples

1. Vianney
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3. Raymond
4. Emily
5. James
6. Andrew

Lessons from experience



# KOBE INSTITUTE OF COMPUTING



# KIC: ICT4D IN KOBE, JAPAN

THE ICT INNOVATOR COURSE: GRADUATE COURSE, ALL LECTURES IN ENGLISH



## Human resources to foster in the ICT Innovator course

We call at KIC a "TANKYU-type person" someone who can discover social issues, and solve them while polishing their own strengths (technology and human power), and we develop such human resources as the following:

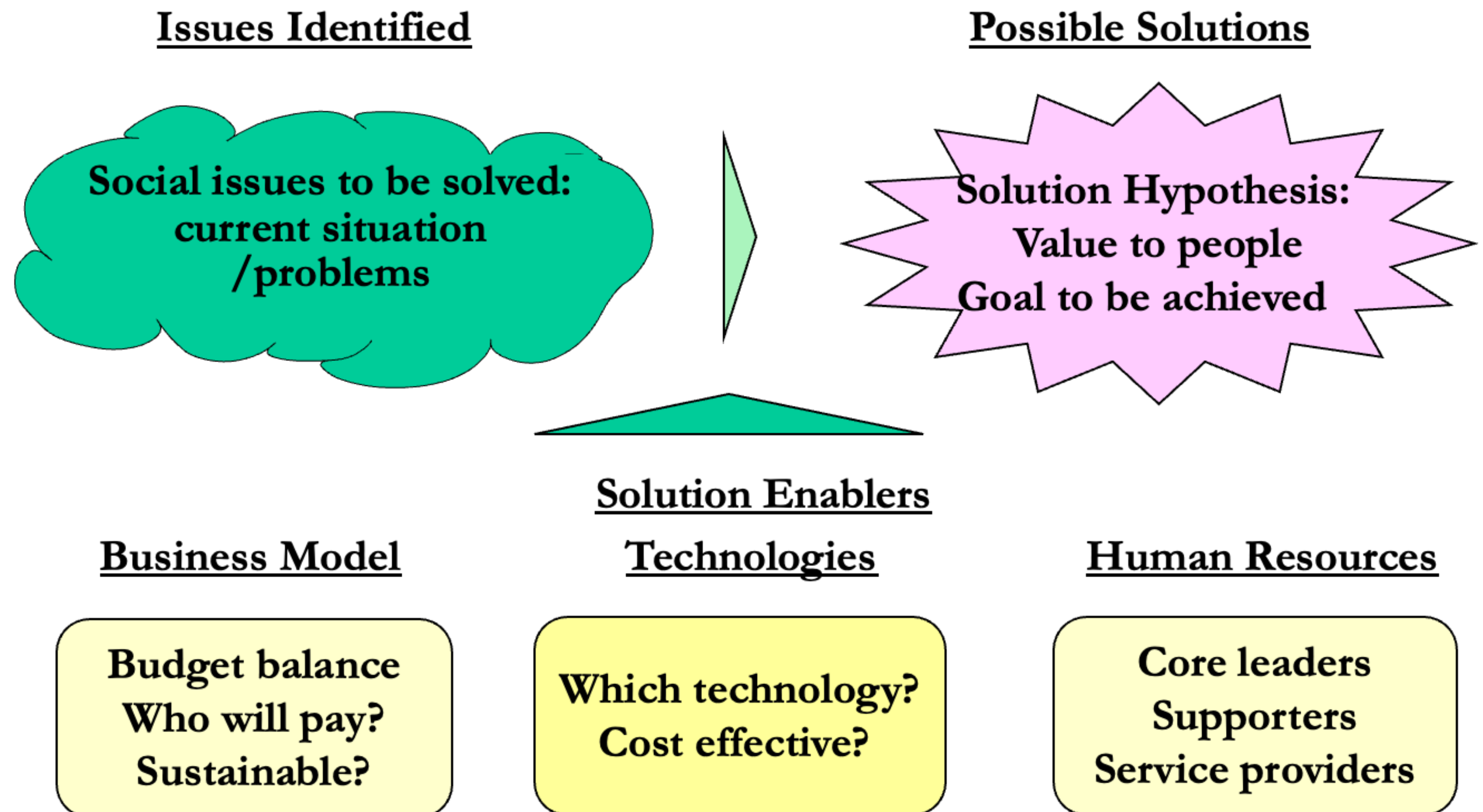
- Someone who can look at society with a new point of view, and is able to transform society with the help of ICT.
- Human resources who are able to open up BOP businesses.
- Human resources who are able to actively challenge growing overseas markets.

## Components of “Tankyu” Practice

1. Identifying Issues in workplace/society
2. Developing and applying your strengths to solve the issues
  - Technical Experience
  - Human abilities
3. Implementing solutions *in the field*
  - Hypothesis building
  - Testing them with trials and errors



## Tankyu Chart :Building Hypothesis



# **WHO, WHAT, WHY, WHERE, ...?**

## **COMMUNICATION IN DEVELOPING COUNTRIES**

**At KIC, our students find a task at home and try to solve it with ICT and human skills.**

**This requires communication:**

**machine to machine, human to human, ...**

**sending sensor data, advices, alerts, images, ...**

**over short, medium, long range, ...**

**We see both repeating patterns, and unique problems.**

**Let's take a look at some examples.**

# FLASH FLOODS

ONE OF THE MOST FREQUENT DISASTERS IN RWANDA

## HOW TO PREVENT IT?

Last line of defense

water level sensor upstream

warn villagers - HOW?

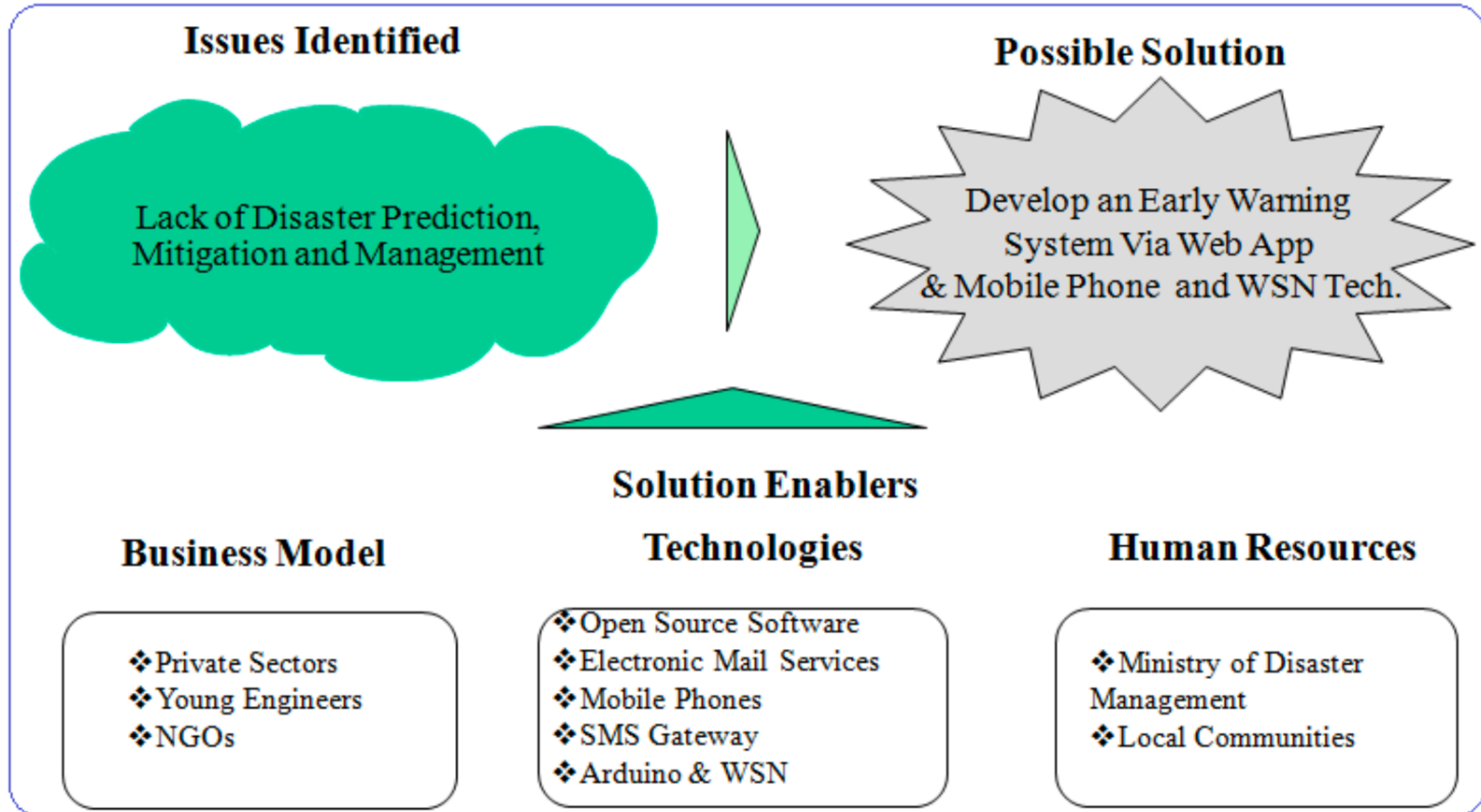
no smartphones (yet), working  
out in the fields

solution: SIREN



# TANKYU CHART

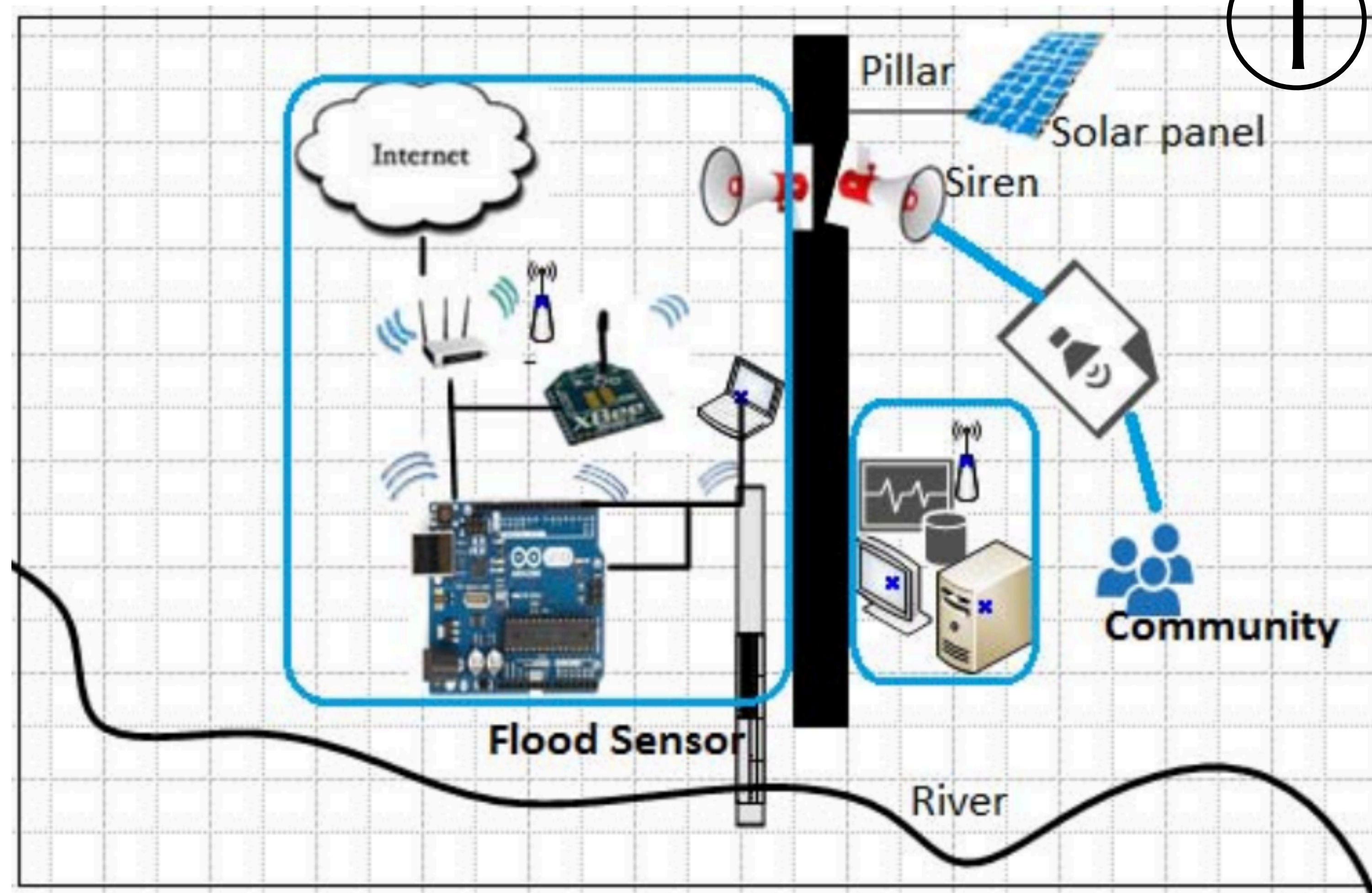
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# FLOOD SENSING FRAMEWORK BY ARDUINO AND WIRELESS SENSOR NETWORK IN RURAL-RWANDA

VIANNEY



1

# VILLAGE MEDICAL CARE

DOCTORS LIVE IN CITIES IN RWANDA

## HOW TO PROVIDE IT?

Take the diagnosis to the doctor

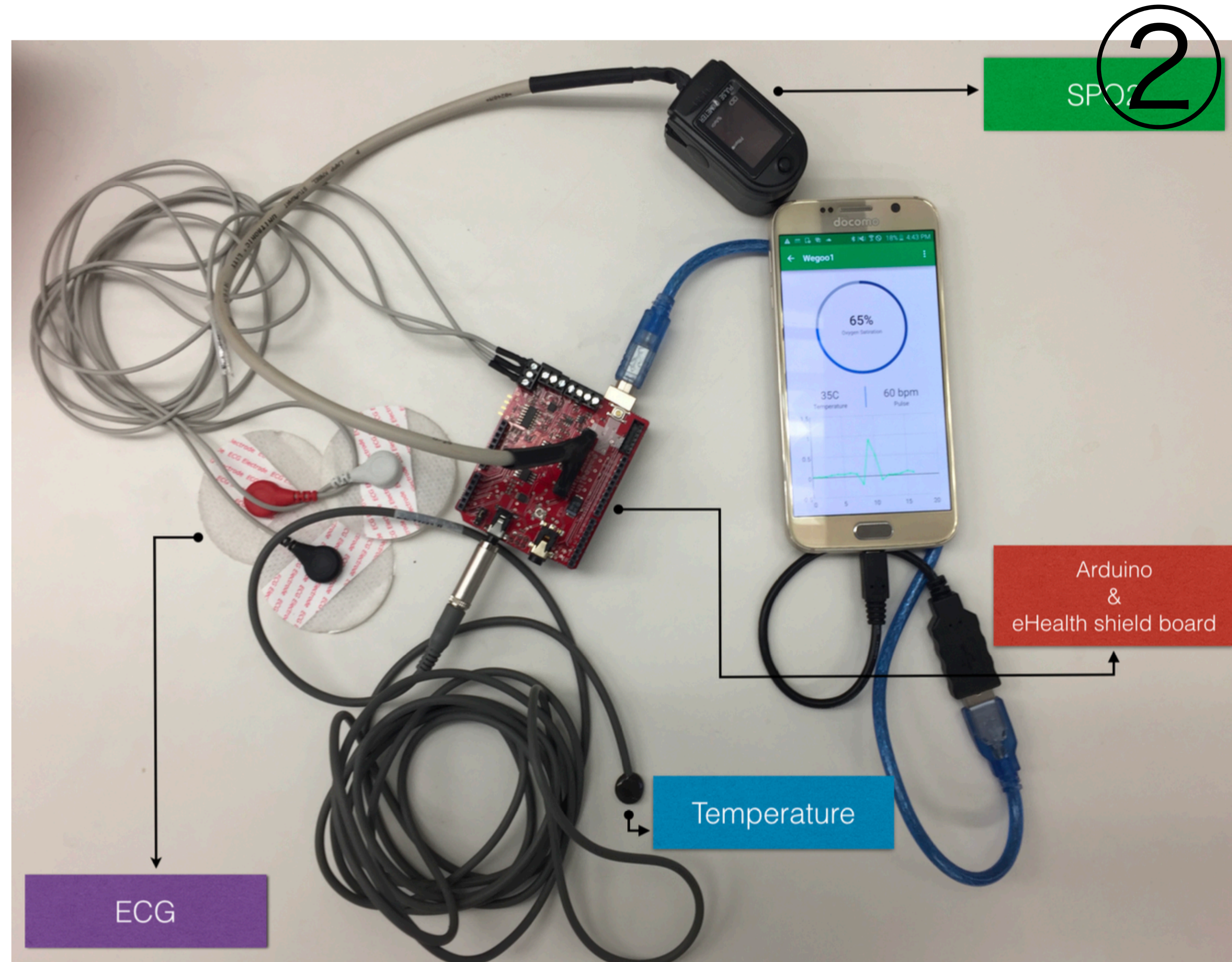
give local health workers IoT instruments with smartphone for remote diagnosis, and training

if the tests indicate possible serious condition, go to city hospital (time, cost...)



# REMOTE PATIENT DIAGNOSING USING HEALTH CARE SENSOR NETWORKS IN RURAL AREAS, RWANDA

AMIRI



# BETTER COFFEE FOR REVENUE

CASH CROPS IN RWANDA: COFFEE, TEA

## HOW TO SUPPORT IT?

Quality control needs help

collect sensor data from washing tank, detect when out of range

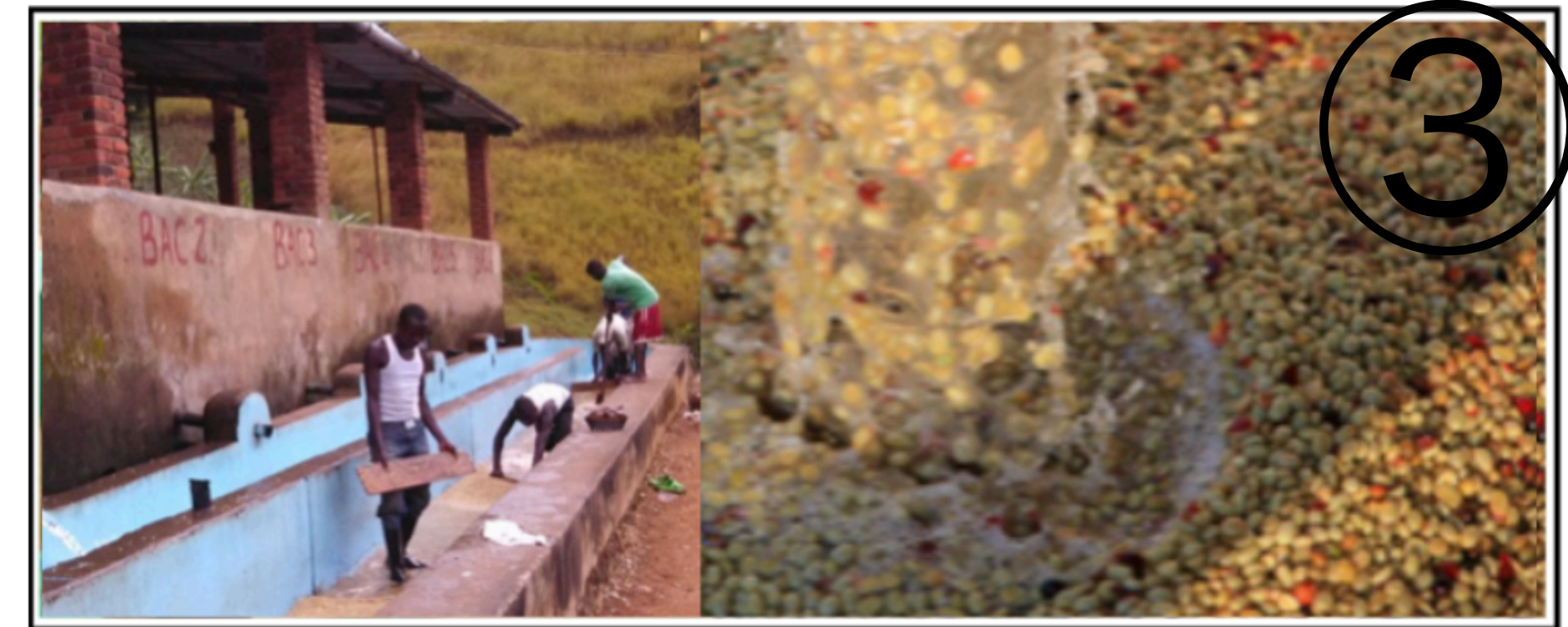
IoT communication + alert (siren)

small investment could bring huge increase in revenues

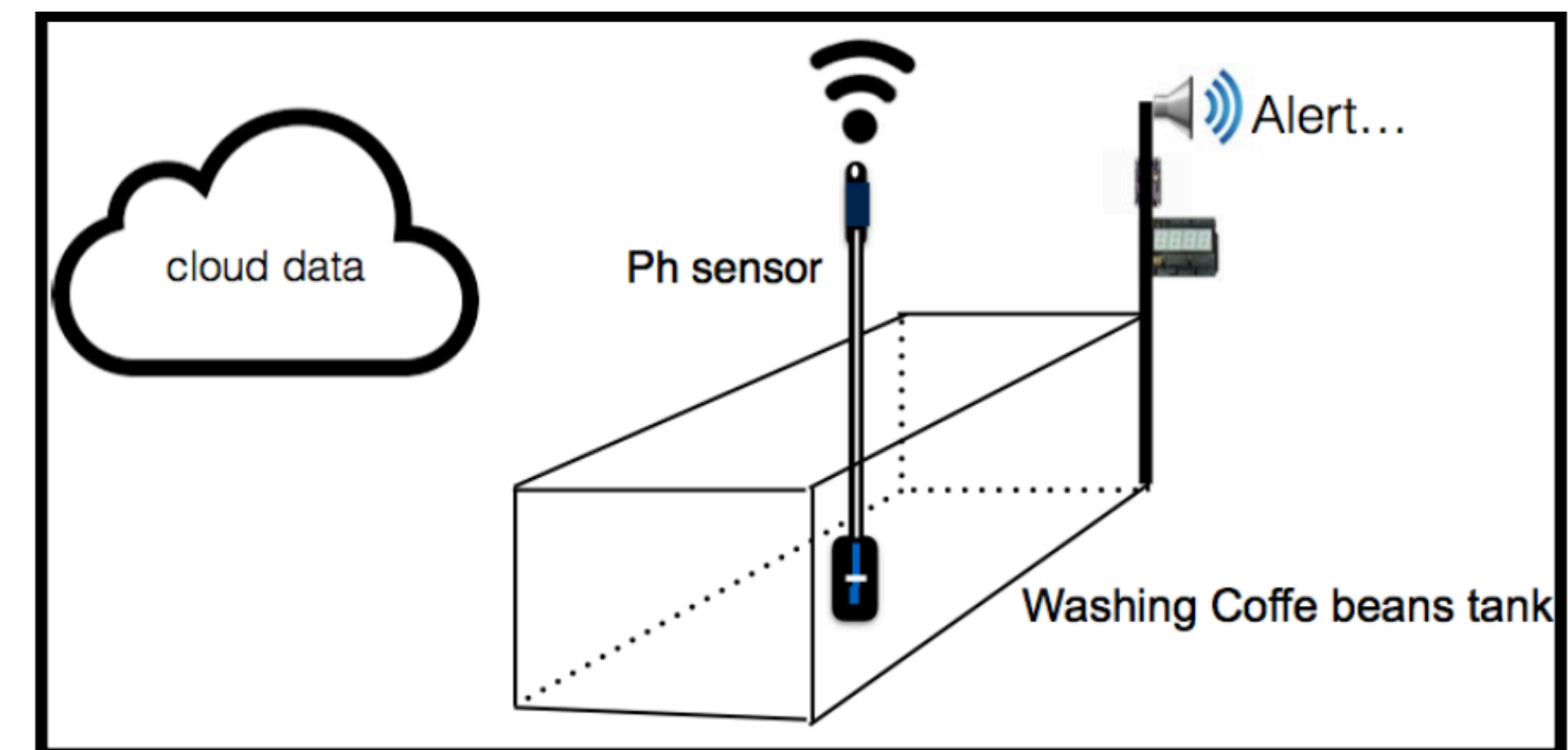


# IOT BASED COFFEE QUALITY MONITORING AND PROCESSING SYSTEM IN RWANDA

RAYMOND



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# REACHING ILLITERATE USERS

MALAWI: FEATURE PHONES BUT NO SMARTPHONES

## INFORMATION WITHOUT TEXT

**Interactive Voice Response**

**Greeting -> Press 0-1-...**

**Voice in local language is *universal***

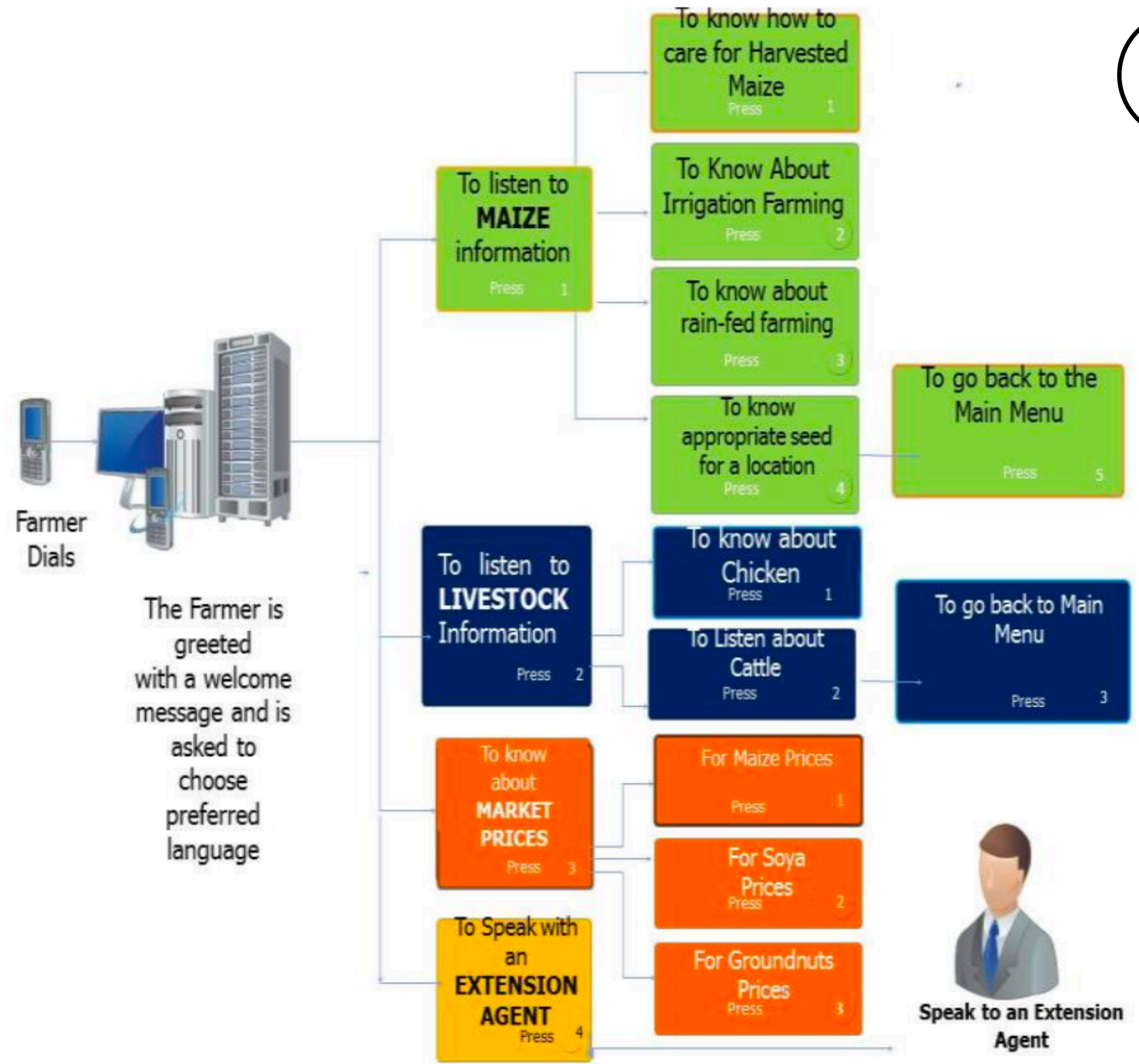
**Can redirect to conversation**

**Last interface is the human voice**



# ICT FOR UNIVERSAL ACCESS TO AGRICULTURAL INFORMATION: THE CASE OF MALAWIAN FARMERS

EMILY



# COMMUNICATION FOR USABILITY

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TANZANIA: BUS RAPID TRANSIT - CITY GOT NEW HARDWARE BUT NEEDS SUPPORT

## CONNECTING THE COMMUNITY

From personal experience,

Where is my bus now?

Which bus takes me to the market?

Commenting on route, stops, ...

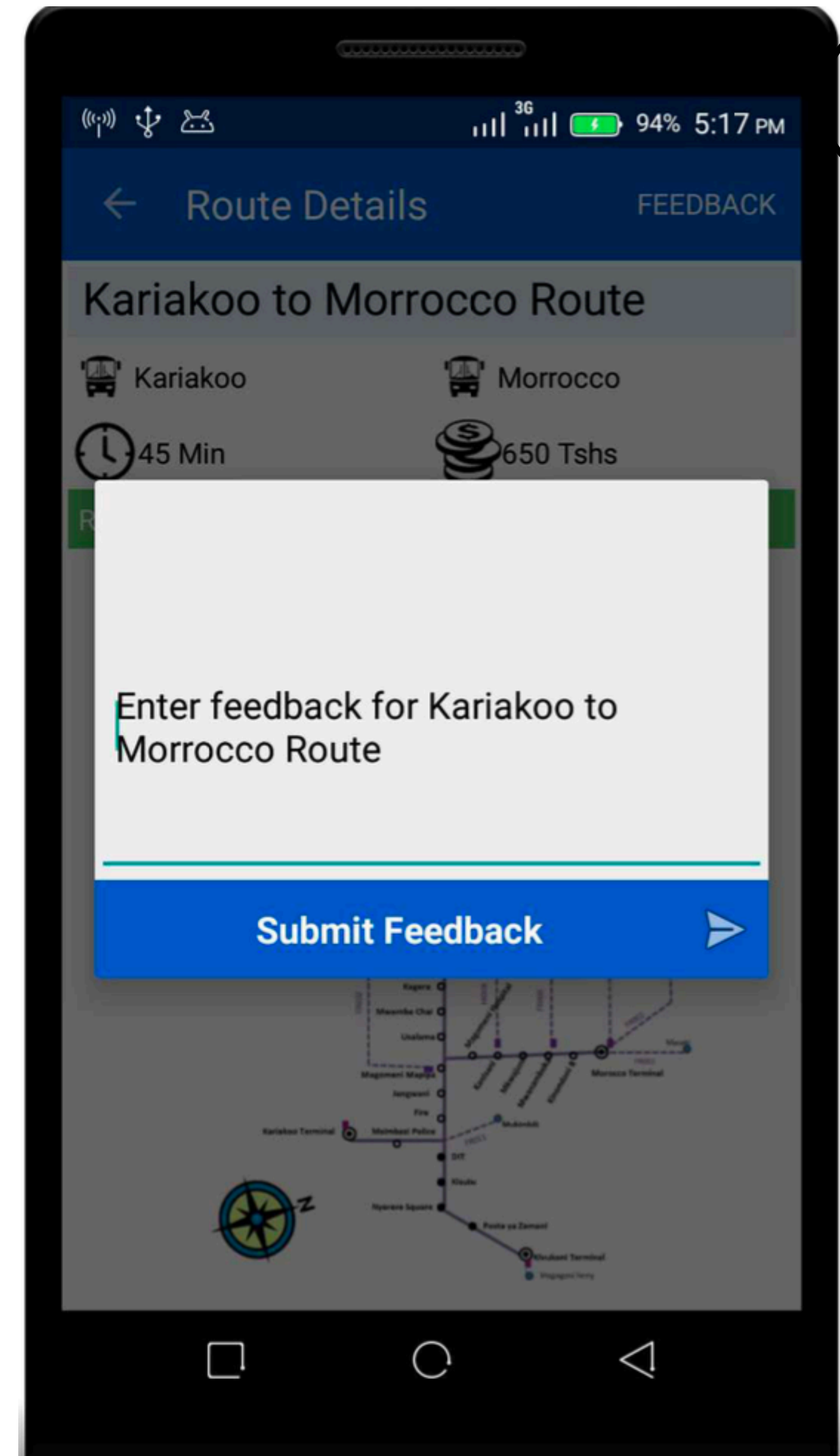
GPS + IoT + mobile network + app





# MOBILE APPLICATIONS FOR REAL TIME INFORMATION DELIVERY ON RAPID BUS TRANSIT SYSTEMS IN TANZANIA

JAMES



# INFORMATION AT THE WORKPLACE <sup>6</sup>

**KENYA: POWER PLANT MAINTENANCE NEEDS SUPPORTING INFORMATION**

## **MANUALS WITHOUT PAPER**

**Power plant: a tough environment**

**Heavy equipment, tools, oil,...**

**Printed manuals get destroyed**

**Reaching workers with guidance**

**AR + image processing + WiFi**

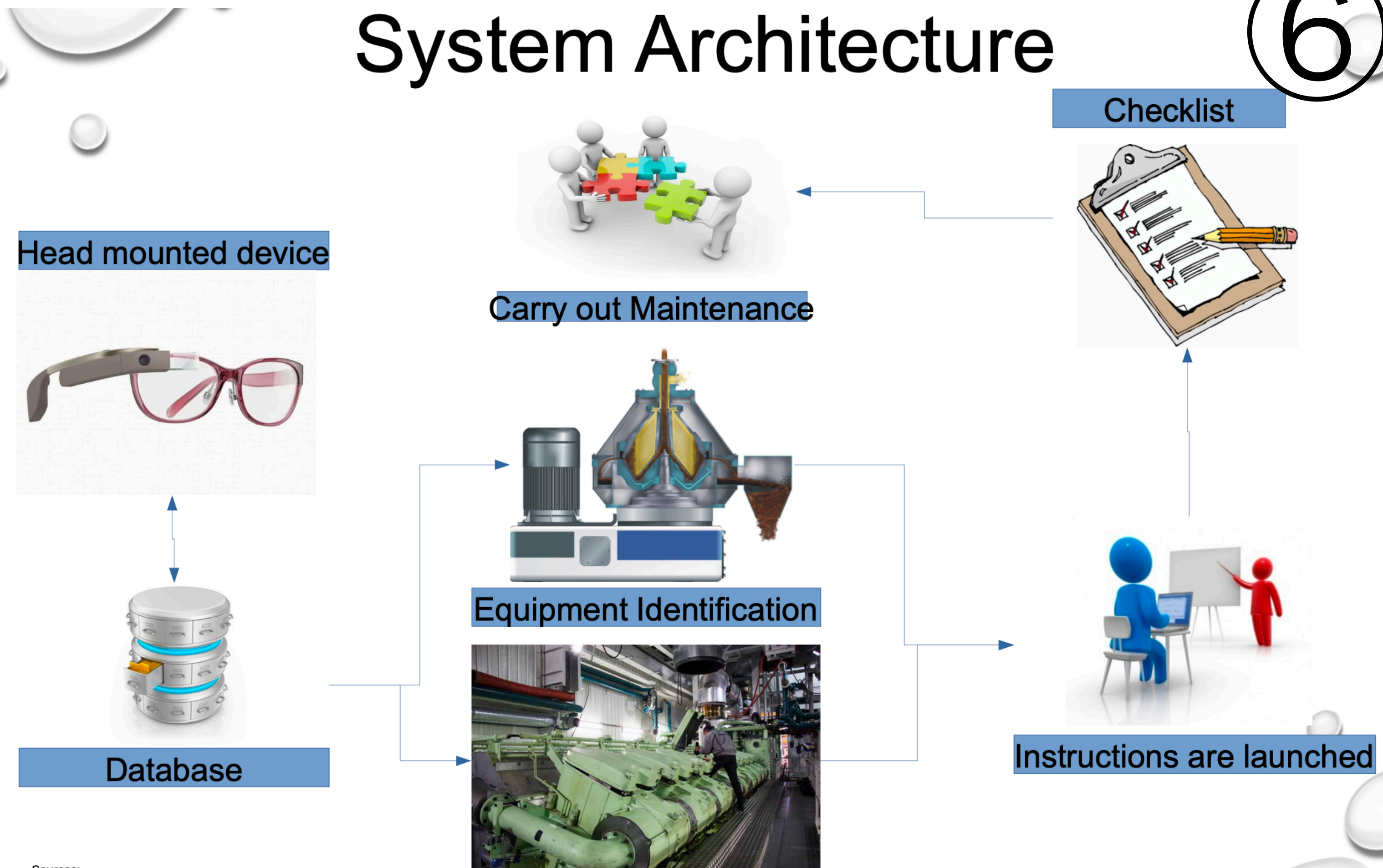


# THE USE OF AUGMENTED REALITY IN THE MAINTENANCE OF MECHANICAL OBJECTS

ANDREW

## System Architecture

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# **SOME LESSONS**

## **FROM COMMUNICATION TASKS IN DEVELOPING COUNTRIES**

**Ultimate target of communication is the *human*: in the field, in a plant; hard to reach.**

**Many limitations: available devices, literacy, language. But huge expectations!**

**Imperfect solutions are still better than no solution.**

**Gradual improvements rather than magic bullets.**

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