



A Smart Computing Framework Centered on User and Societal Empowerment to Achieve the Sustainable Development Goals

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Smart Computing

- Smart Computing is an effective method to integrate
 - computer hardware, software,
 - social media and communication networks
 - smart devices, Internet of Things (IoT),
 - big data analytics,
 - Artificial Intelligence (AI)



Mitigate Hidden Hunger in Africa

EACH DISH CONTAINS THE SAME CALORIES
Only one contains vitamins necessary for healthy growth and development

e
CARBOHYDRATES
Found in rice, whole grains, oats and whole wheat pasta. They are a main source of energy.

Zn
ZINC
Foods like eggs, fish, meat and beans contain zinc, and help promote normal growth and development.

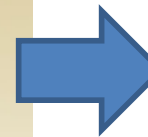
Fe
IRON
Fortified cereals, beef, lentils and most green veggies contain iron to help fight fatigue and disease.

VITAMIN A
Found in milk, eggs and darkly coloured orange and green vegetables, it is needed for proper immune function and vision.

VITAMIN C
Is best known for its role in preventing viral infections and is found in tomatoes, bell pepper, citrus fruit and dark leafy greens.

26% of preschool children in Kenya are stunted, 37% in Nigeria and 28% in South Africa

This line is the median height of 9-year-olds worldwide



Findings from University of Pretoria study



RM Research Matters



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Research Programmes

The solutions to change the world can be found in the research we do today. This page contains some of the research projects showcased by the University of Pretoria. Click on the buttons below to find out more about how UP researchers are Making today matter.

Food Security in Rural South Africa - Homegrown solutions for South Africa's hungry

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Grow Smart

Crop choice options to improve rural diets

Water Research Commission, Institute for Food, Nutrition and Well-being, LIMA

© Copyright: Water Research Commission and University of Pretoria (2016). This tool is based on research funded by the Water Research Commission (WRC No K5/2172/6). For more information, please contact Prof Sharyl Hendricks at sharyl.hendricks@wrc.ac.za. Programme design by Corne van der Merwe (cornevdm@gmail.com) and graphics by Marguerite Hartzberg (marguerite@activepace@gmail.com).

Search Crop

Area: Ingauza Hill

Food Group: Dark green leafy vegetables

Food Group	Crop	Can provide food	Supplemental irrigation needed	Notes
Dark green leafy vegetables	Broccoli	☀️ ❄️	☕	Click on the
Dark green leafy vegetables	African leafy vegetables	☀️ ❄️	☕	Click on the
Dark green leafy vegetables	Swiss Chard	☀️ ❄️	☕	Click on the
Dark green leafy vegetables	Beetroot leaves	☀️ ❄️	☕	Click on the
Dark green leafy vegetables	Pumpkin leaves	☀️	☕	Click on the

Legend

- ☀️ ❄️ Can provide food all year
- ☀️ Can provide food in summer
- ❄️ Can provide food in winter

Search Crop

Area: Ingauza Hill

Food Group: Dark green leafy vegetables

Food Group	Crop	Can provide food	Supplemental irrigation needed	Notes
Dark green leafy vegetables	Pumpkin leaves	☀️	☕	Click on the

Information

Can be planted from seeds or seedlings between March and July. As for beetroot, out of season planting can also cause problems. May be attacked by insects (caterpillars, etc.) and disease (mildew, clubfoot etc). Special care should be taken to protect the crop against these. Sensitive to high temperatures and may be attacked by insects and diseases.

OK

Legend

- ☀️ ❄️ Can provide food all year
- ☀️ Can provide food in summer
- ❄️ Can provide food in winter

Homegrown solutions for South Africa's hungry

60% of South Africans face hunger.

1 in 6 households struggle to get enough food every day.

1 in 4 are hungry most months of the year.

More than half live below the poverty line.

60% of South Africans are malnourished.

Over 20% of children under 5 are stunted.

Up to 14% of children younger than 9 are OBESSE.

Hunger and malnutrition lead to poor health and compromised learning.

Unhealthy citizens are economically unproductive.

The causes include:

- Climate change
- poor types of food
- poverty
- environmental damage
- Water scarcity

Households that grow their own food eat more essential nutrients.

Researchers worked with communities to assess the scale of the problem, their needs, and potential solutions. They made recommendations for which crops to grow based on:

- location
- amount of water available
- which crops can be grown
- seasonality
- dietary needs

Important information was shared with the community through brochures, posters and community meetings and researchers have developed an app that tells users:

- what to grow in their area
- when they should grow in summer and winter
- when they need extra irrigation

Developed by the Water Research Commission, the Health Research Unit and other researchers for the 'In the Garden' fund by the Water Research Commission for the Department of Agriculture, Forestry and Fisheries.

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Mobile based Information System for Africa



Geo coordinates

List of Crops that grow in the location

16 Questions to identify the food habits

Identifying missing micro nutrients in the diet

Identifying what food from the list of crops that grow in the location can address the identified micro nutrient deficiency

Information on nutritional value

Information on how to grow these crops

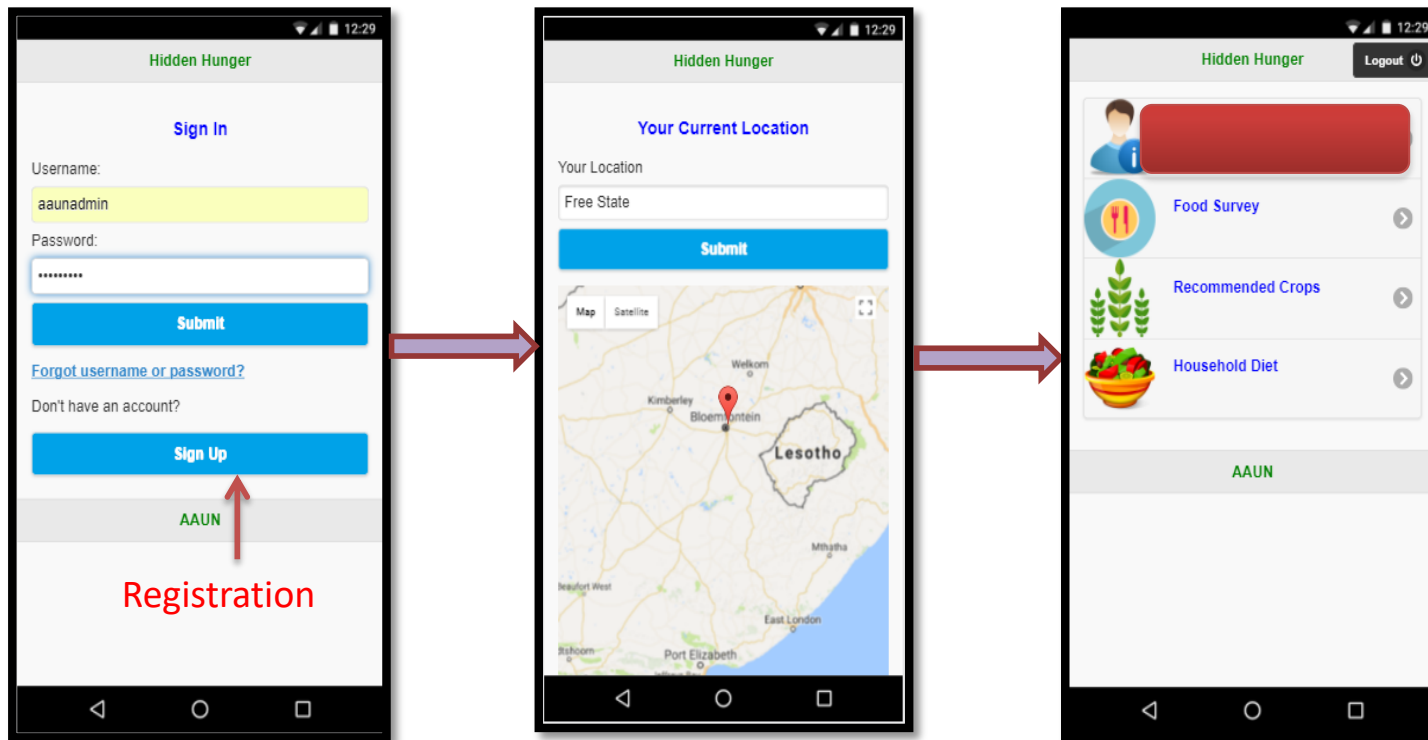
Recommended fruits and vegetables to be consumed

USTAWI Project

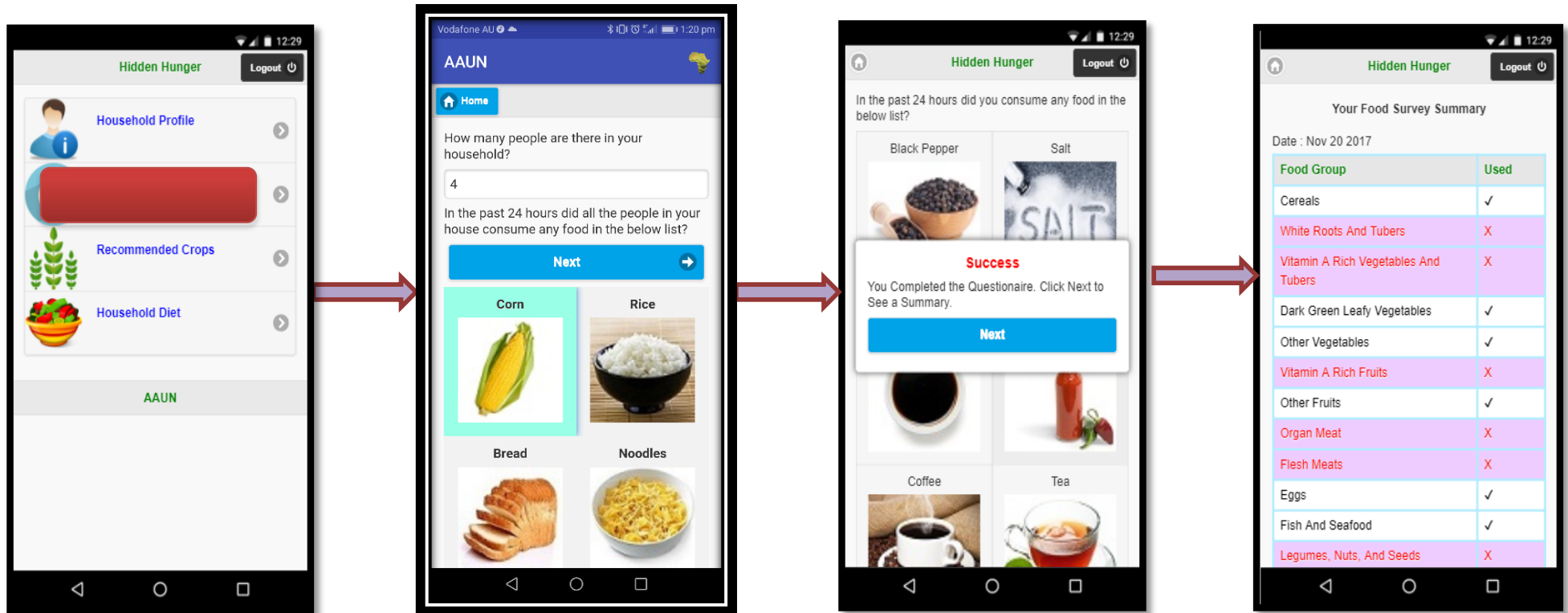


Phase	Detail
Phase 1 (2016-2018)	Organising the knowledge to generate actionable information to address food diversity needs. <ul style="list-style-type: none">• Household Level• Food Diversity Survey• Recommended Local Crops
Phase 2 (2018-2020)	Societal empowerments by developing a social network to meet the nutrition based food requirement as a community by exchanging different food types and raise awareness. <ul style="list-style-type: none">• Community Level (geographical regions)• Crops Map• User Connectivity

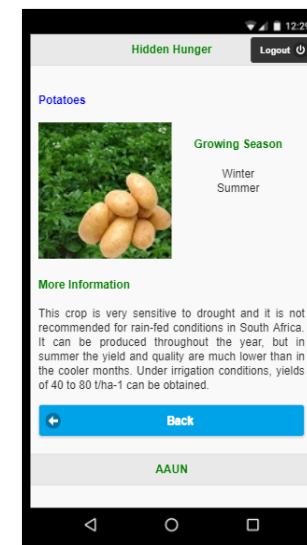
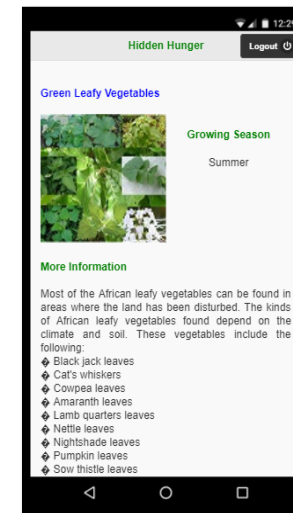
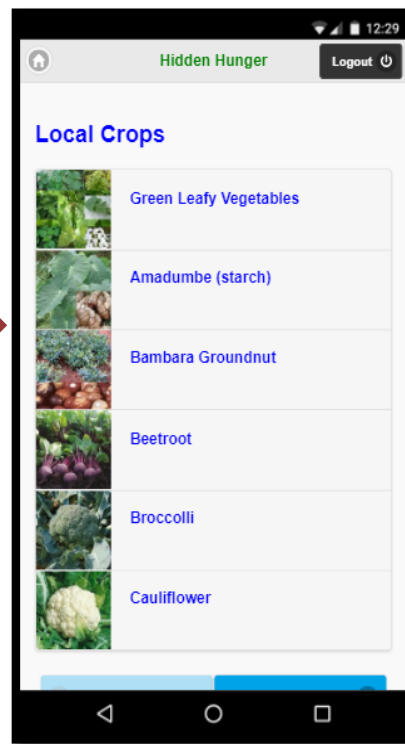
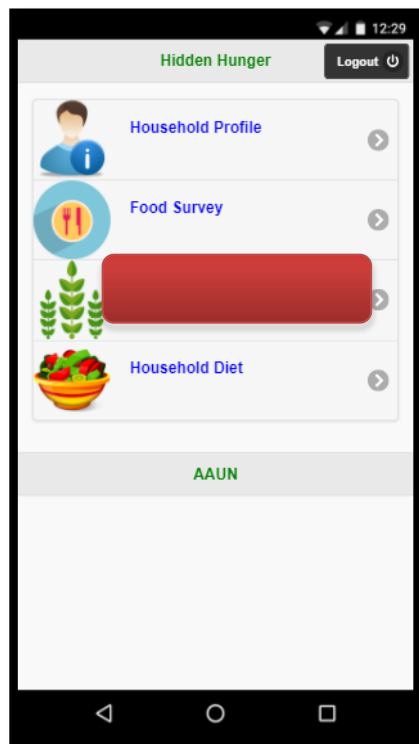
Ustawi: Registration and Login



Ustawi: Food Survey (24-hour recall)



Ustawi: Recommended Crops (Local Crops)



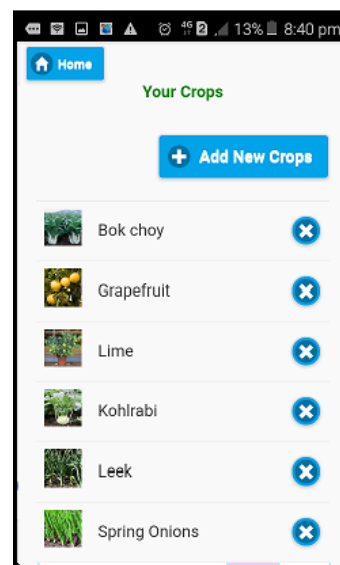
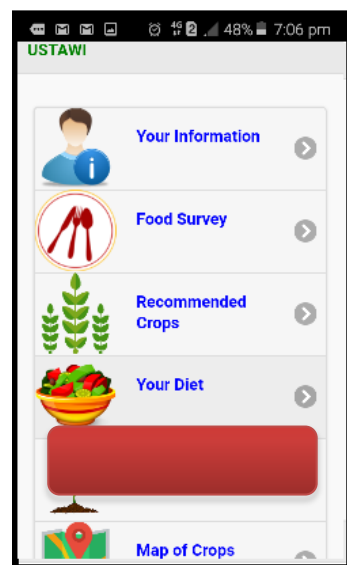
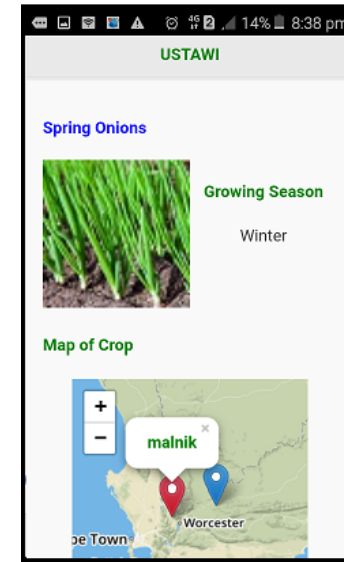
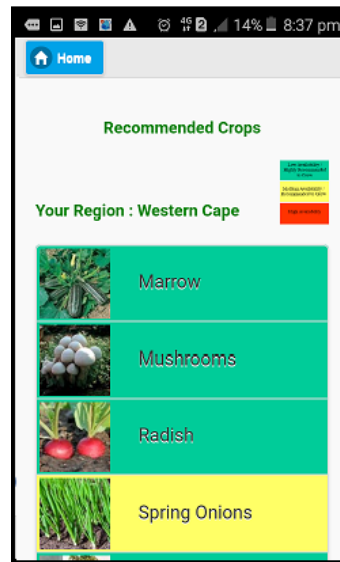
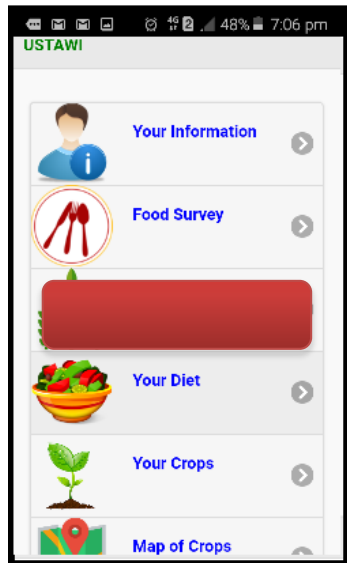
Field Test



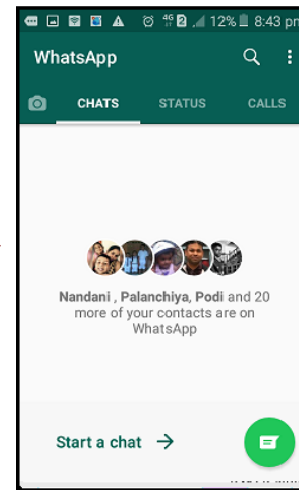
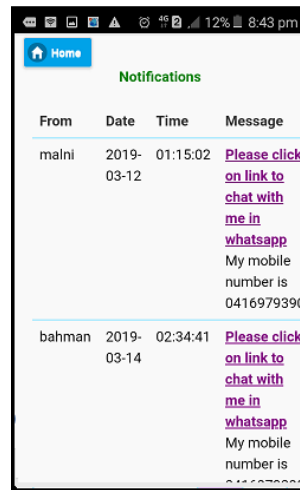
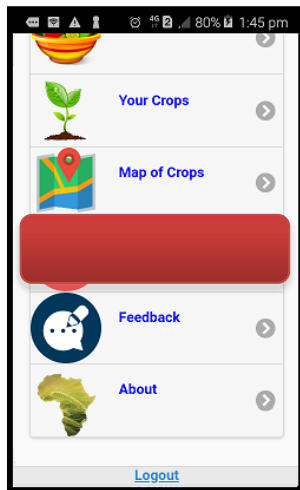
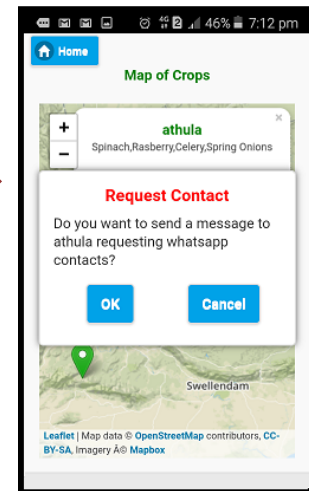
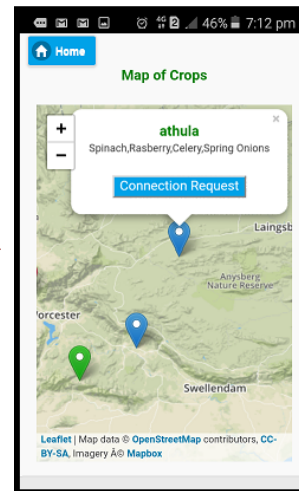
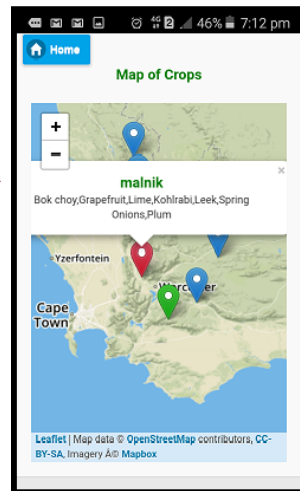
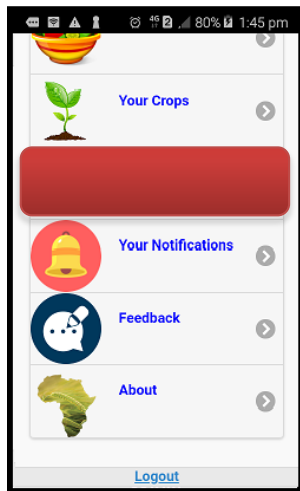
- Blantyre, Malawi
- 71% prefer to grow their own food
- 80% of mothers interviewed identify with the problem of nutrition
- 74% want more information on healthy foods



Ustawi 2: Available Crops



Ustawi 2: Map of Crops



Project Team

16 Researchers from 4 countries from Australia and Africa



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PROJECT EVEREST
VENTURES

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Thank You



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