



**UNIVERSITY OF COLOMBO**  
**SCHOOL OF COMPUTING**

**UsARE 2012**

## User Centered Scenario Based Approach for Developing Mobile Interfaces for Social Life Networks

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# Outline

- Broader Context
- Research Challenge
- Identifying Application Requirements
- Designing Mobile User Interface
- Conclusions and Future Works

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# Broader Context

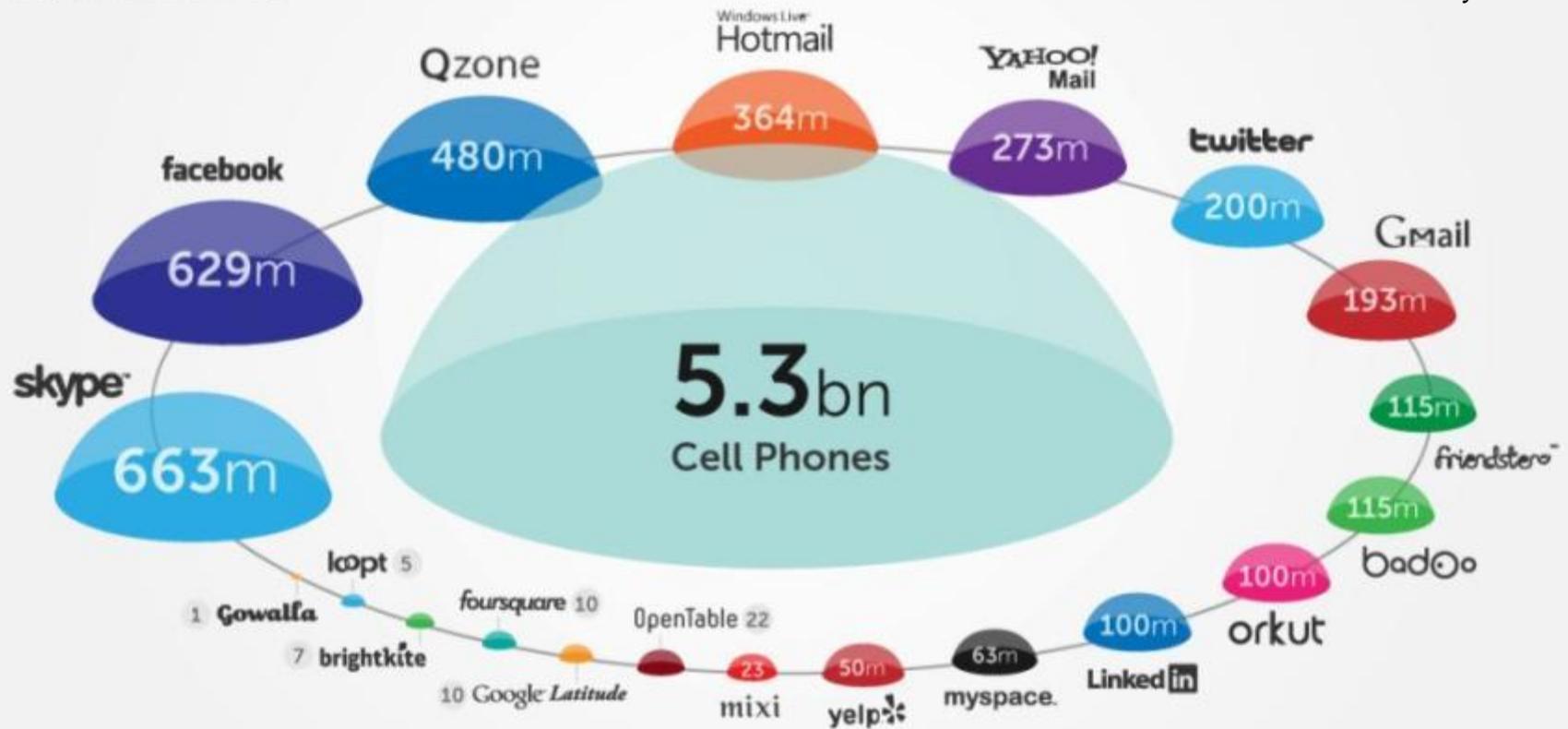
- Today nearly **5 billion people** use a mobile phone
- Over **3 billion** of them live in developing countries
- Majority of current mobile applications have been developed to support people living in developed countries
- **People in developing countries** need applications that can assist them with their **livelihood**



# The Geo-Social Universe

Brought to you by JESS3

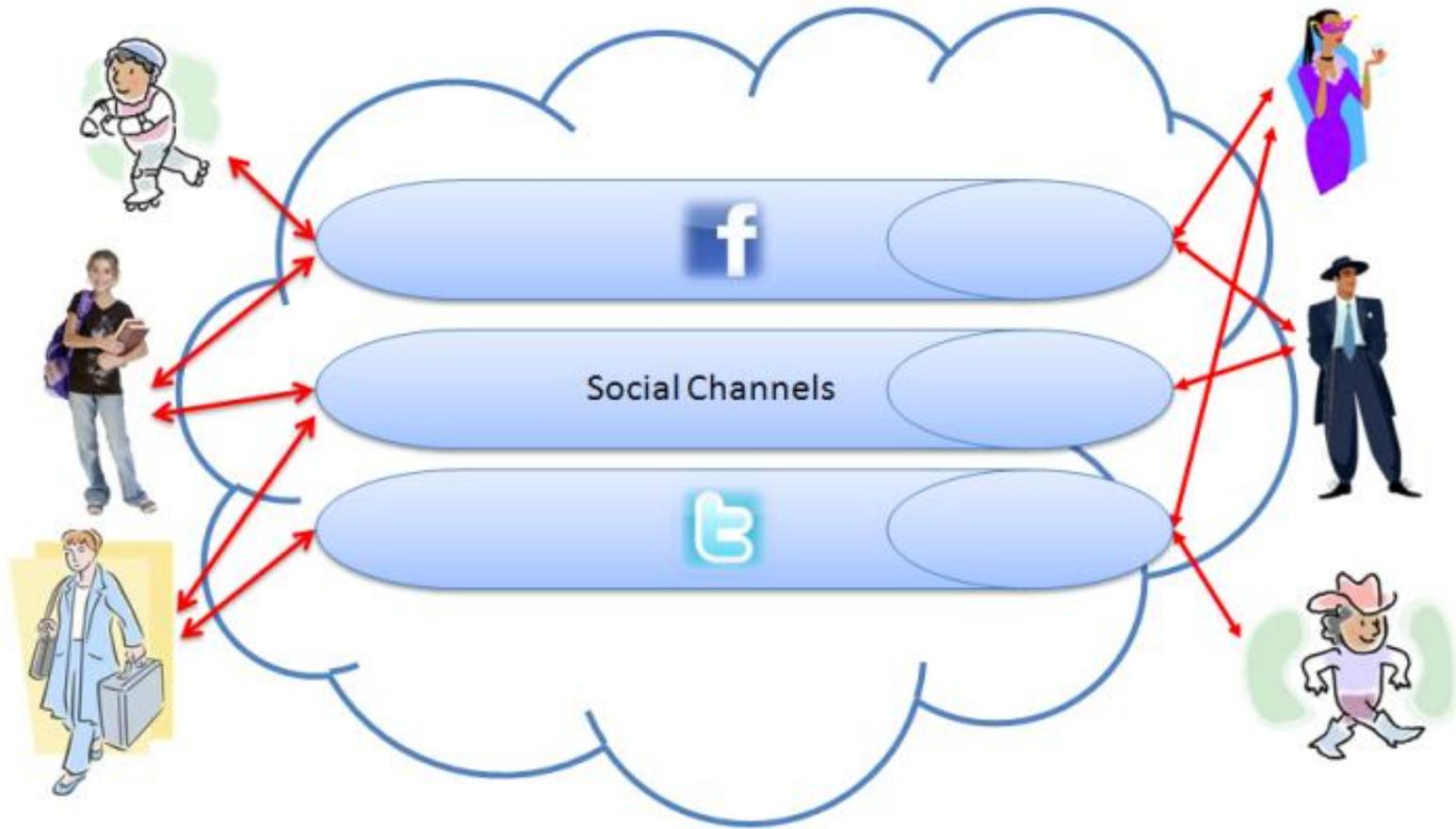
May 2011



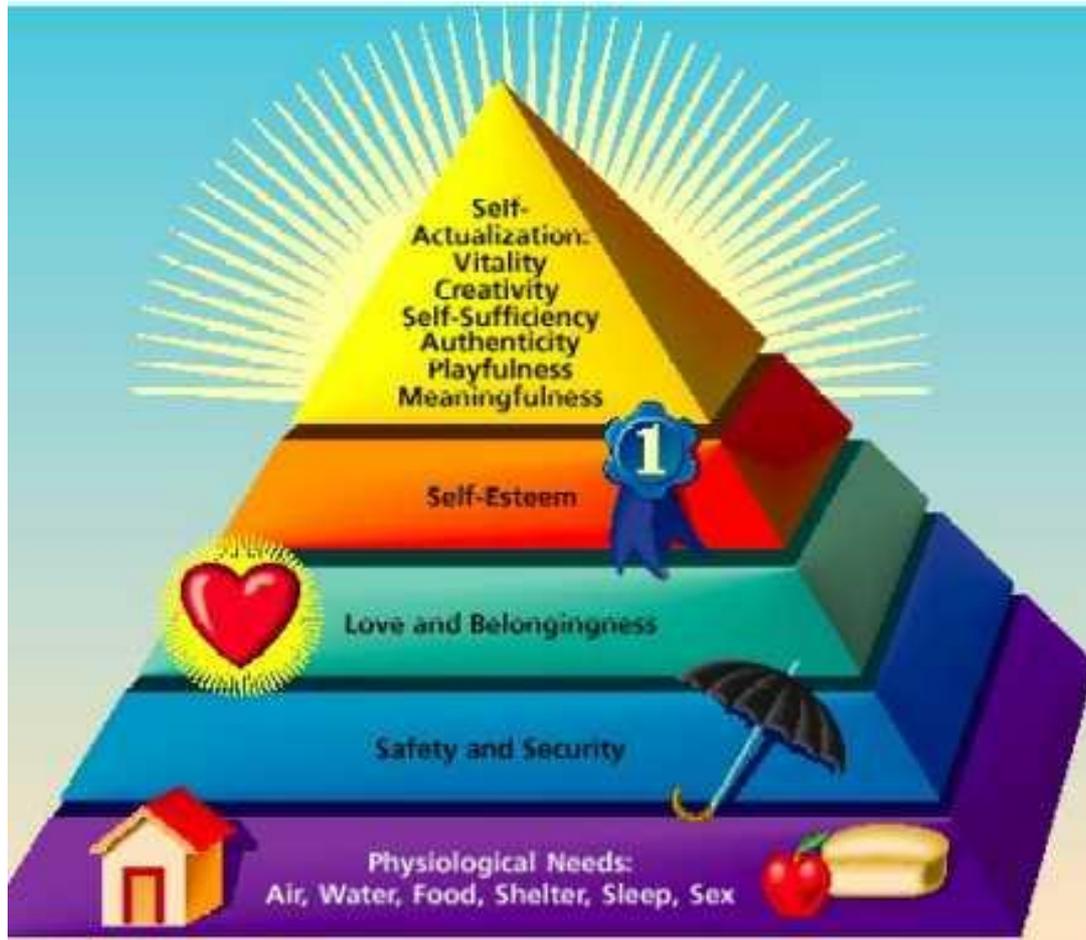
AMOUNT = ACTIVE USERS

Sources: TechCrunch | SocialMediaToday | Facebook | Wikipedia | Mashable | GeekoSystem | Daily Mail | LinkedIn | Loopt | SearchEngineLand | Brightkite | SocialTimes | Badoo | MobiThinking

# Social Networks



# Going Beyond Social Networks



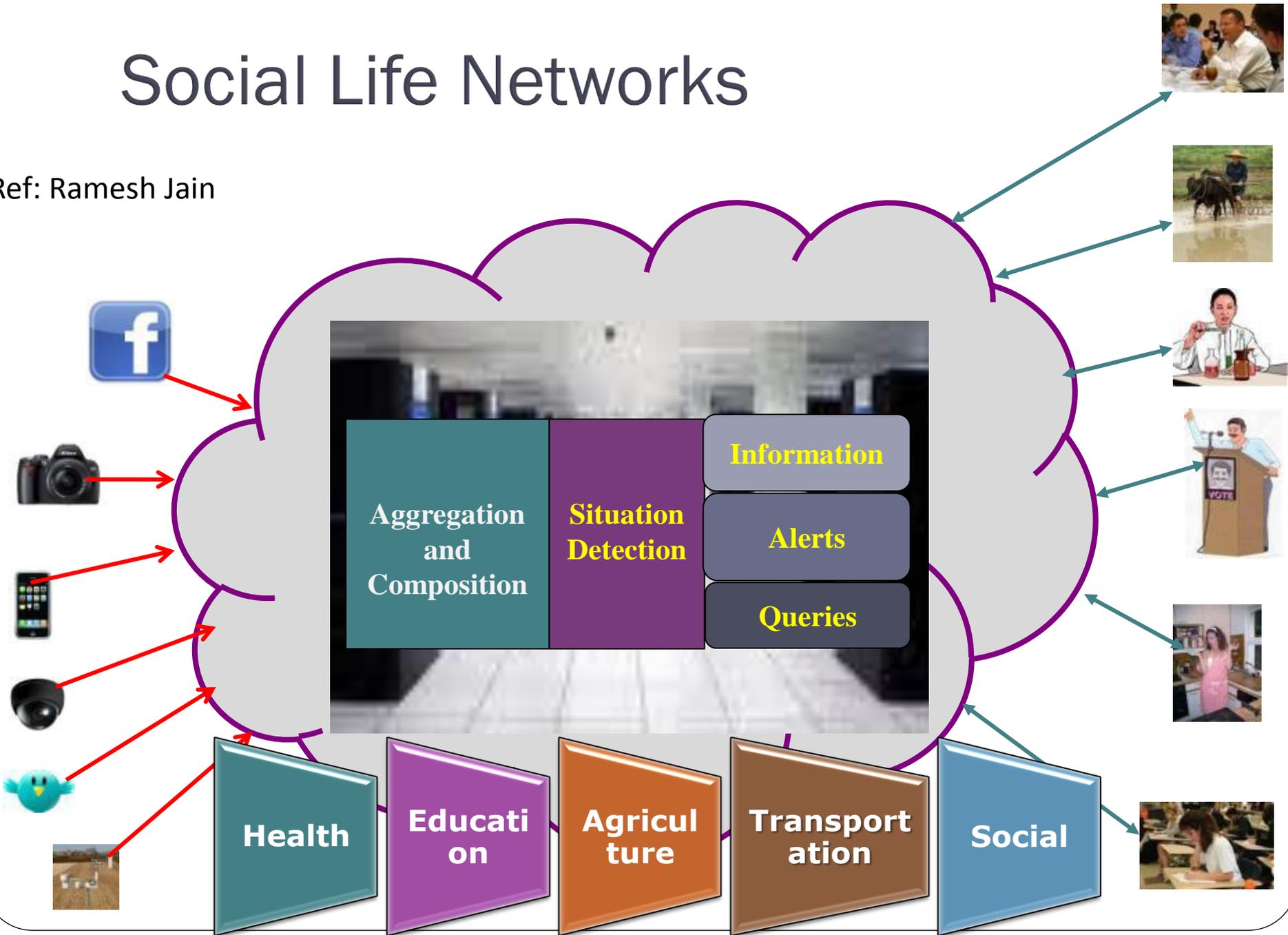
Current  
Social  
Networks

Important  
Unsatisfied  
Needs

Maslow's Hierarchy of Needs

# Social Life Networks

Ref: Ramesh Jain



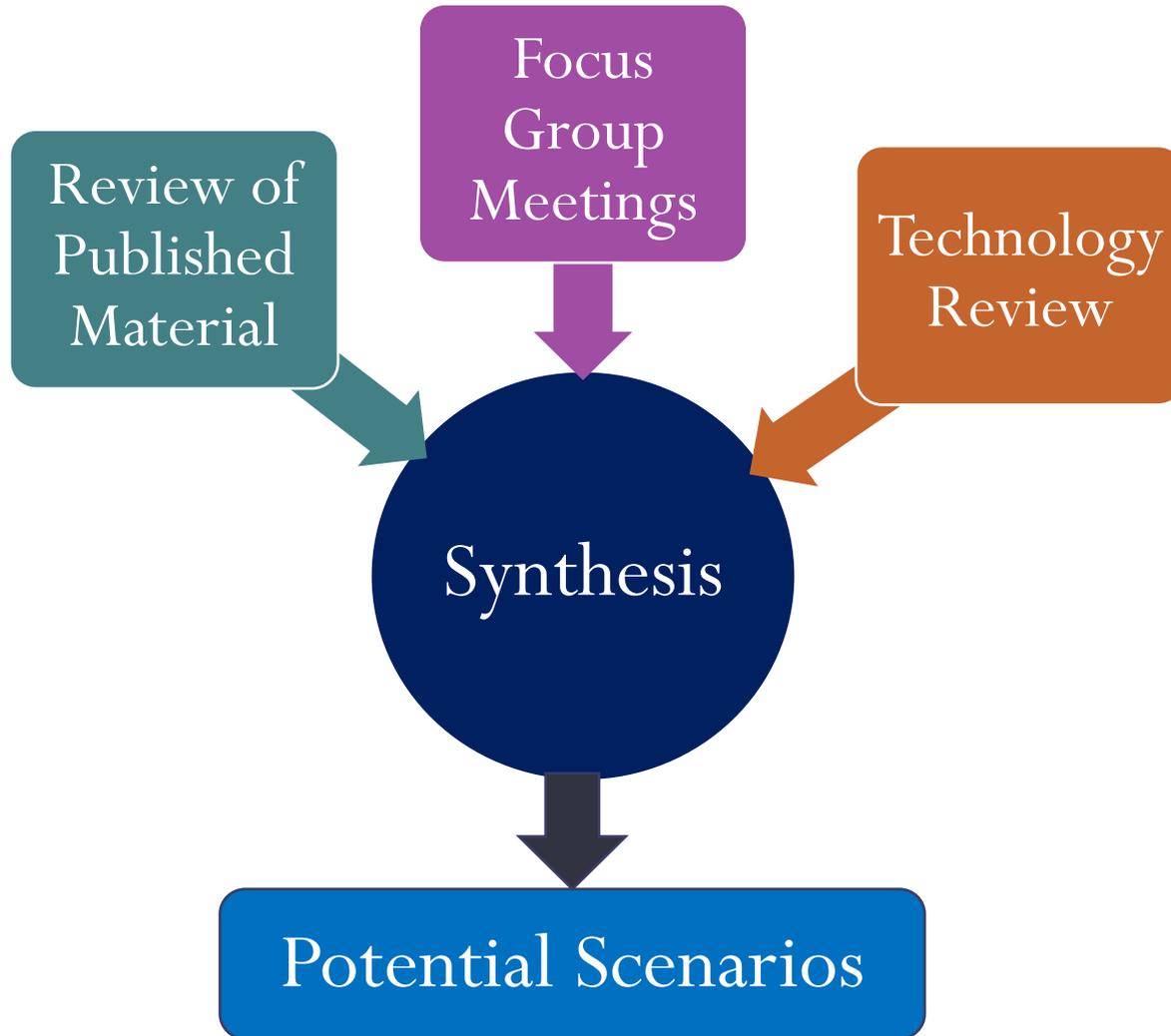
# Research Challenge

*Our challenge is to support people living in developing countries to improve their lives.*

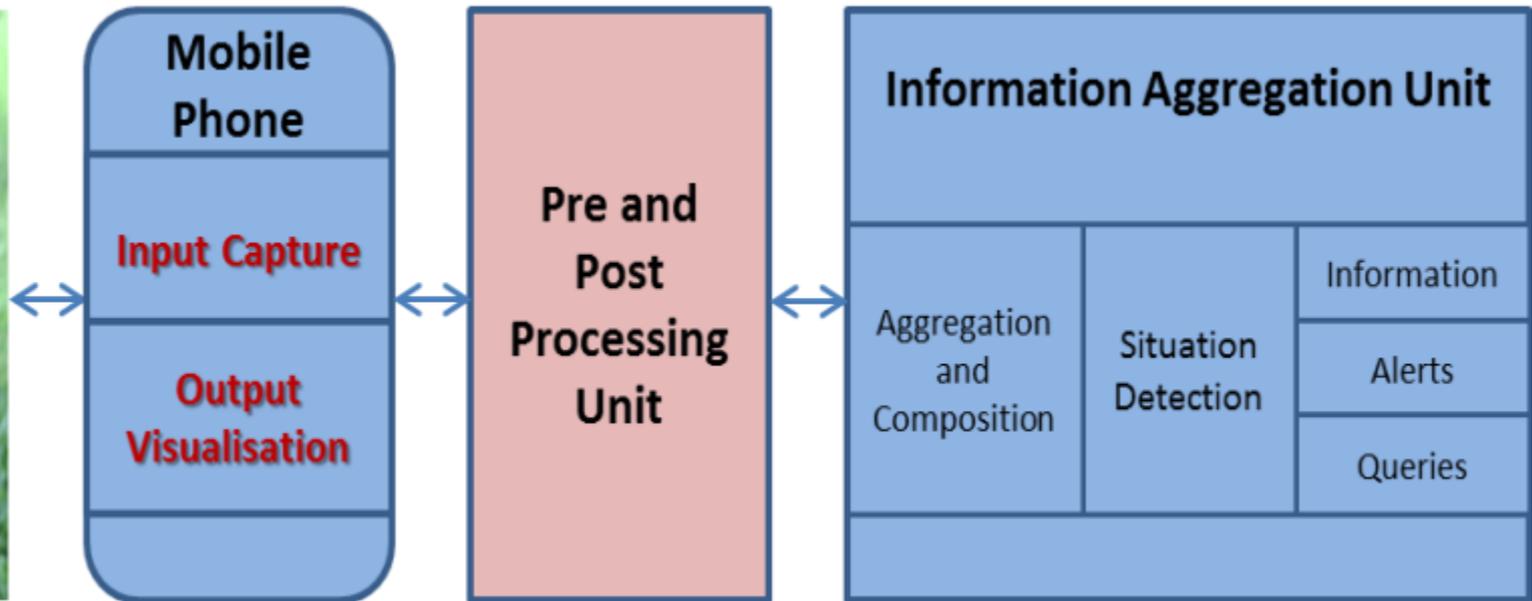
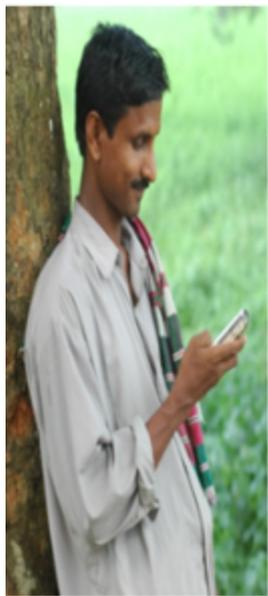
In particular we focused our attention on assisting farmers from rural zones of Sri Lanka in **optimizing their crops.**



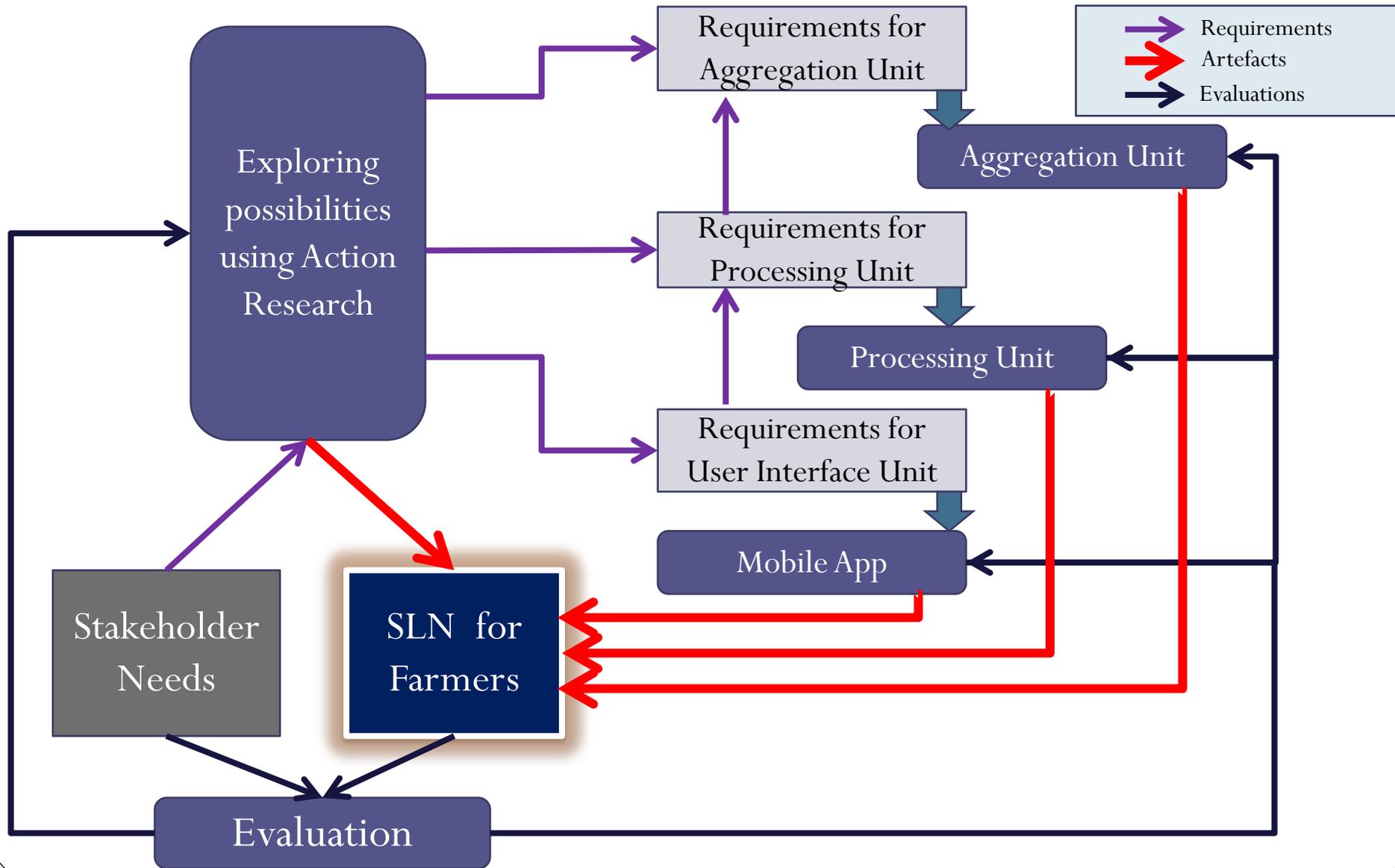
# Initial Analysis



# Initial System Architecture



# SLN4MOP Research Methodology



# Identifying Application Requirements



# Selecting Crops to Cultivate

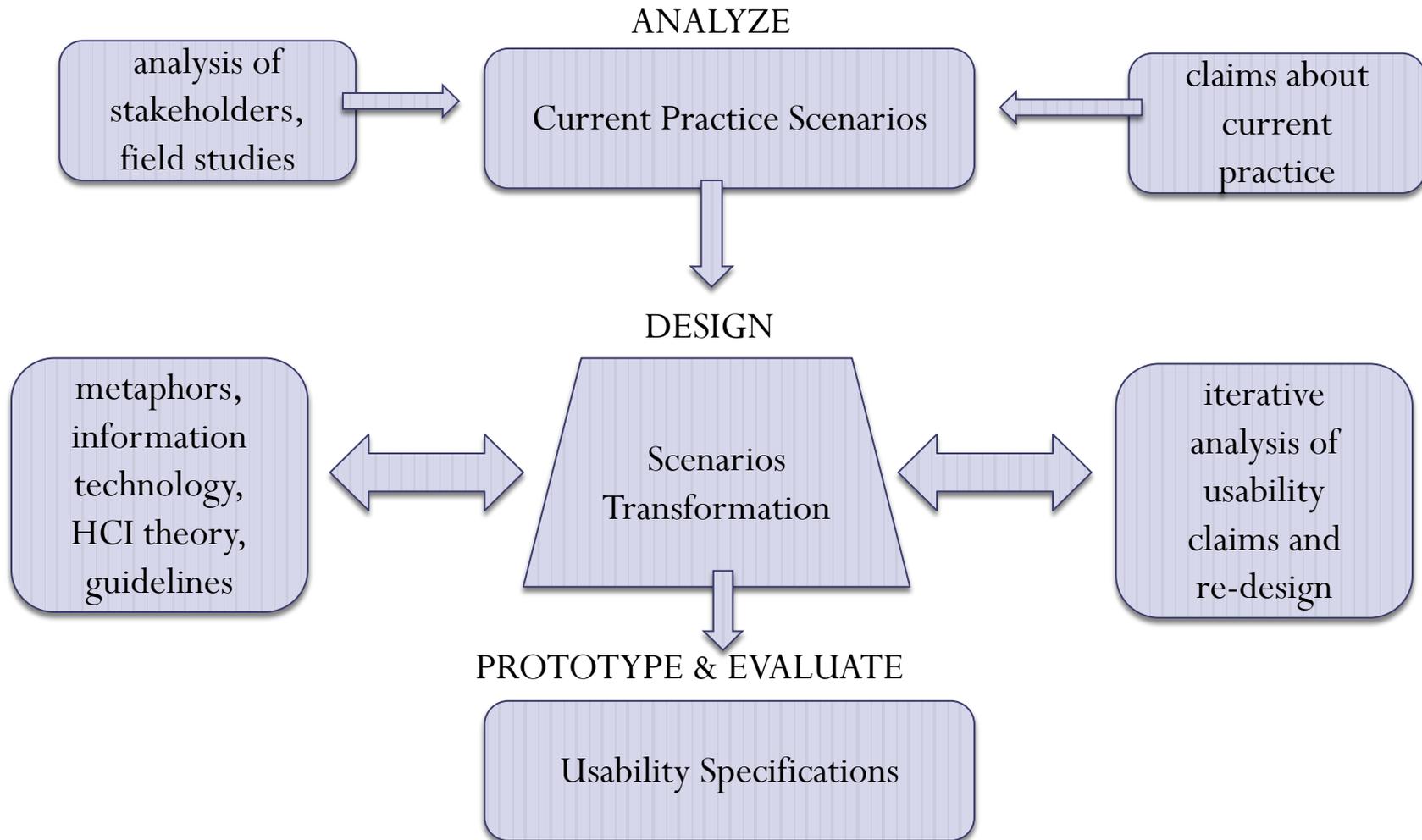
THE SUNDAY TIMES  
Sunday November 13, 2011



Leeks have dropped in price to Rs. 6 a kilo, good news for the consumer but disastrous news for the farmer

## Leeks cultivators desperate as price drops to record low

# Scenario Based Approach



# Actors - Sirisena

- Sirisena is a 45 years old farmer with long experience in truck farming.
- Is part of Sinhalese ethnic group.
- Attended the primary school, and has a basic knowledge of English.
- Does not have advanced technical skills,
- Is pretty distrustful of the technological support and
- During his work, is accustomed to rely on his farmer experience.
- Manages the crop production of his family farm.
- Takes decisions on the kind of production and the time to start . Moreover he establishes an indicative selling price.



# Actors - Premasiri

- Premasiri is a 40 years old low price fertilizers seller.
- In order to raise his revenues he also acts as market middle man.
- He can speak English as good as Sinhalese and has a basic knowledge of Tamil, so his intermediary role is well recognized by the farmers of the area.
- During the market activities his responsibility is to negotiate the best selling price of the product trying to match the expectations of his clients.



# Scenario of Current Practices: Crop Business

**Farmer  
Activities**



Crop Selection



Crop Production

**Middleman  
Activities**



Getting the local  
market



Harvest selling

# Claims about Scenarios

| Situation Feature  | Pros (+) and Cons (-)  |
|--|--|
| <p>The farmer selects the crop cultivation on the basis of :</p> <ol style="list-style-type: none"><li>1. The period of the year</li><li>2. The crop producing high yield within a short time</li><li>3. The crop selling prices of the last year.</li></ol> | <ul style="list-style-type: none"><li>+ The process knowledge is transmitted from father to son as cultural heritage</li><li>+ Cultural level of Sri Lankan farmers is enough to perform basic computations</li><li>- the neighboring crops are paramount in the market business and are not considered</li><li>- clients are provided with a little variety of products.</li><li>- over supply may result from this strategy</li></ul> |
| <p>The selling price is established when the middle man gets the local market and estimates it on the basis of competitors' products.</p>  | <ul style="list-style-type: none"><li>+ The production is oriented to the local market economy</li><li>- the selling prices of crops change vigorously in few hours</li></ul>  |

# Requirements

| Requirement   | Rationale  |
|---|--|
| Users may need training provided by experts   | Users are not used to work with advanced technological instrumentation. Therefore, they may need training .  |
| The application has the access to data related to the distribution of crops located around user's farm. | Farmers are interested to get information just about neighboring crops that are supposed to be sold to the same market.  |
| The application should be easy to use and should require a little training effort.                      | The application is used manly in specific and not frequent tasks   |
| The user interface should be effective: it should provide a simple management of users mistakes.        | The application provides support to a critical task on the basis of data updated directly by users. Therefore, it is paramount to reduce the number of possible unintentional user mistakes. |

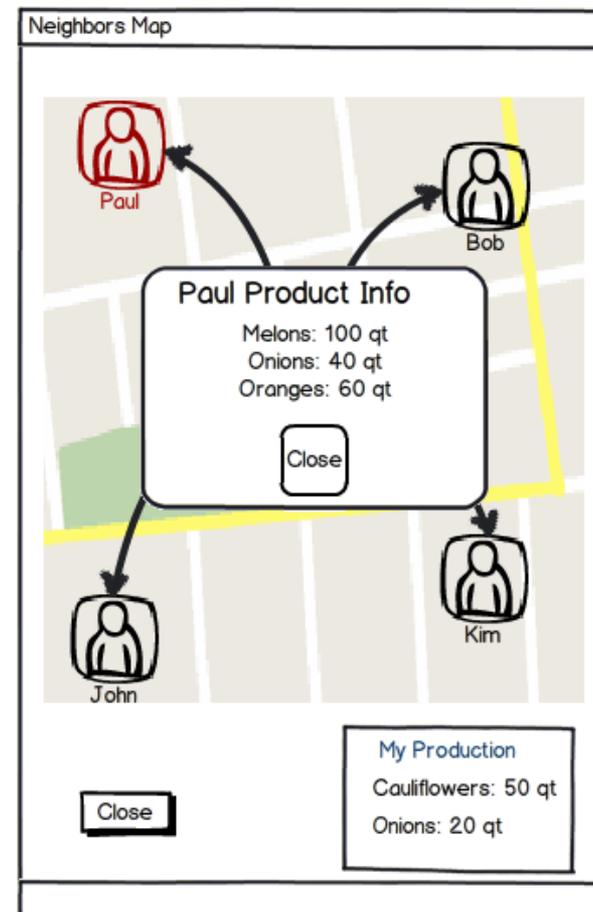
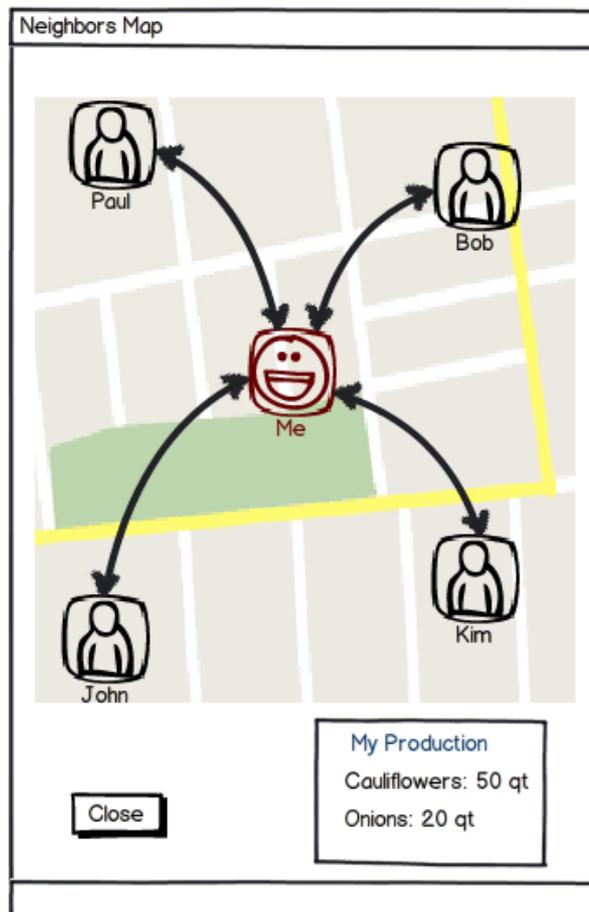
# User profiles

All of the information is carried out from the initial survey conducted directly in situ.

1. Most users will be in the range of 20 to 45 years.
2. The range of the instruction level varies between Ordinary Level and Master Degree.
3. A large number of people can speak English well enough.
4. Most users are not familiar with technology, with the exception of mobile phones that are quite widespread.
5. Users are disposed to use some technological instruments on condition that they are not invasive.

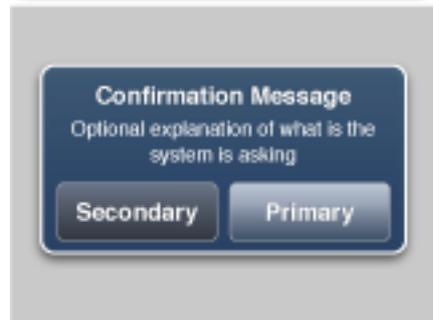
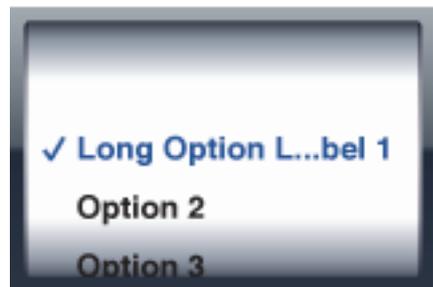
# Scenario Transformation Activity

- A software application aimed to assist farmers in diversifying the crop production can assist to avoid selling prices of crops changing vigorously in few hours.



# Design Claims about Scenarios

| Situation Feature  | Rationale   |
|--|---|
| Design claim 1. Using the geo coordinates provided by the integrated GPS module, farmers can access information about estimated quantities and the last selling prices of neighbouring crops | This allows farmers to select the appropriate crops in order to provide a larger variety of products and to make selling prices live up their expectations. |
| Design claim 2. Data presentation should be provided in easy and immediate way exploiting the communicative power of images and color language.  | This allows small screen of the mobile device to provide users with complex information.  |
| Design claim 3. The interface should provide users with a small number of menu levels and operations.  | Farmers use the application just few times a year so that they need to be able to use the application without requiring a long training effort.             |



HTML text field

HTML <select>

HTML radio button (off)

HTML radio button (on)

HTML Button

ON

ON

OFF

Immediate

Destructive

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
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# Designing the Mobile user interface

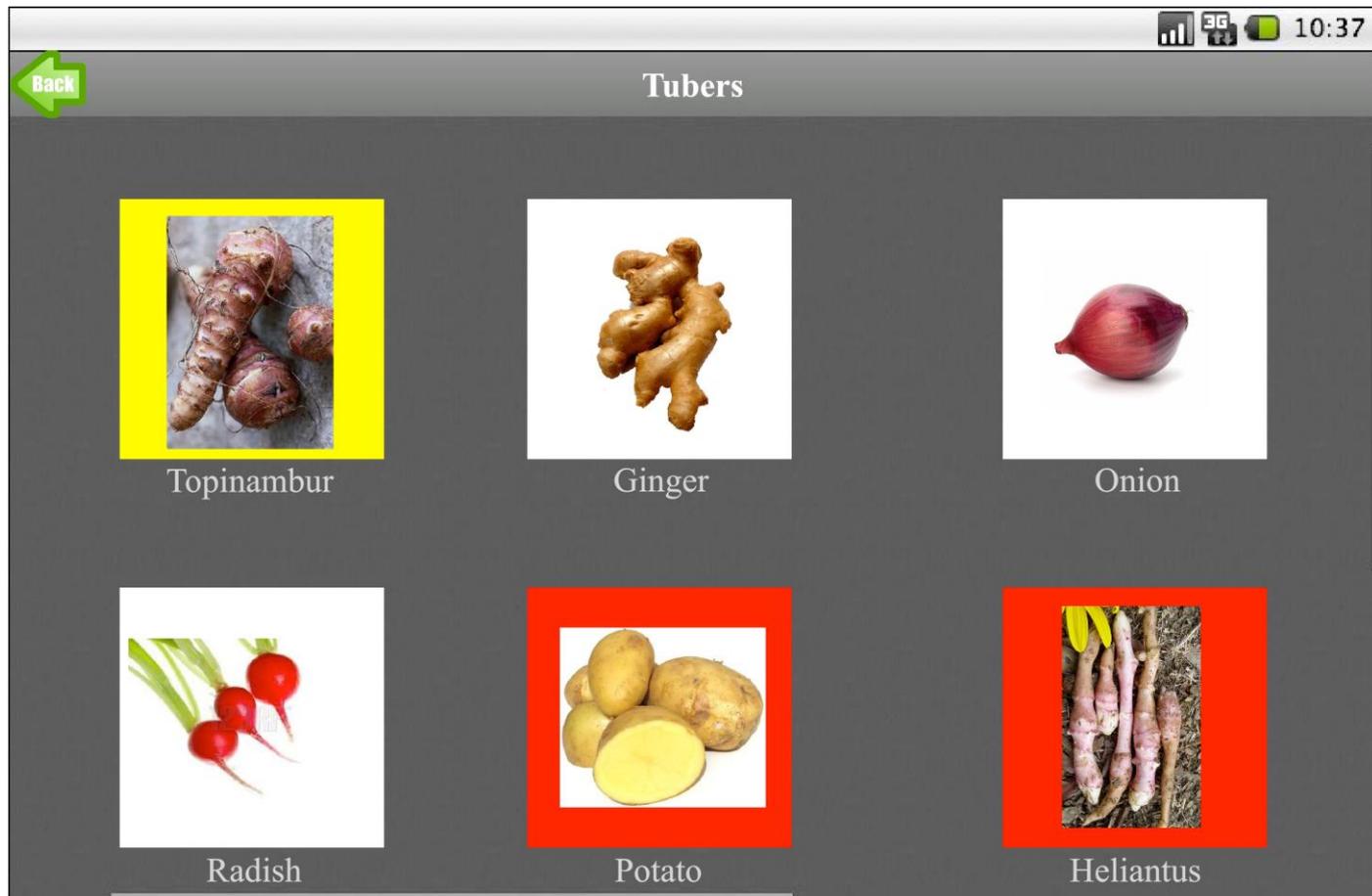
# Data Visualisation Requirements

| UI Functionality  | Rationale   |
|---|---|
| List of products, each one associated with a significant icon.                              | At any cultural level the user is able to quickly identify the visualized product.  |
| A visual colored cue associated to each product to indicate the estimated harvest quantity. | The visual cue is needed to inform a participant of the quantity of a given product of the list. It provides an intuitive way to understand the magnitude of the quantity.  |
| Interface provides users with language support, both in text and audio forms.               | Interface can exploit the multimodality in order to guarantee the right comprehension of the information in each situation. For example when the user is semi-literate or when he is working in a sunny or noisy environment. |

# Data Entry Requirements

| UI Functionality  | Rationale  |
|---|--|
| Interface avoids requiring text input. Whenever it is possible multiple radio buttons are used. | Text input is a common annoying source of mistakes. Radio buttons are easier to interact with.   |
| Interface limits the number of interactions, hiding operations that can be automatized.         | Some operations require unnecessarily user interactions exploiting the advanced device features. |

# The crops catalog



# Product selection

Onion



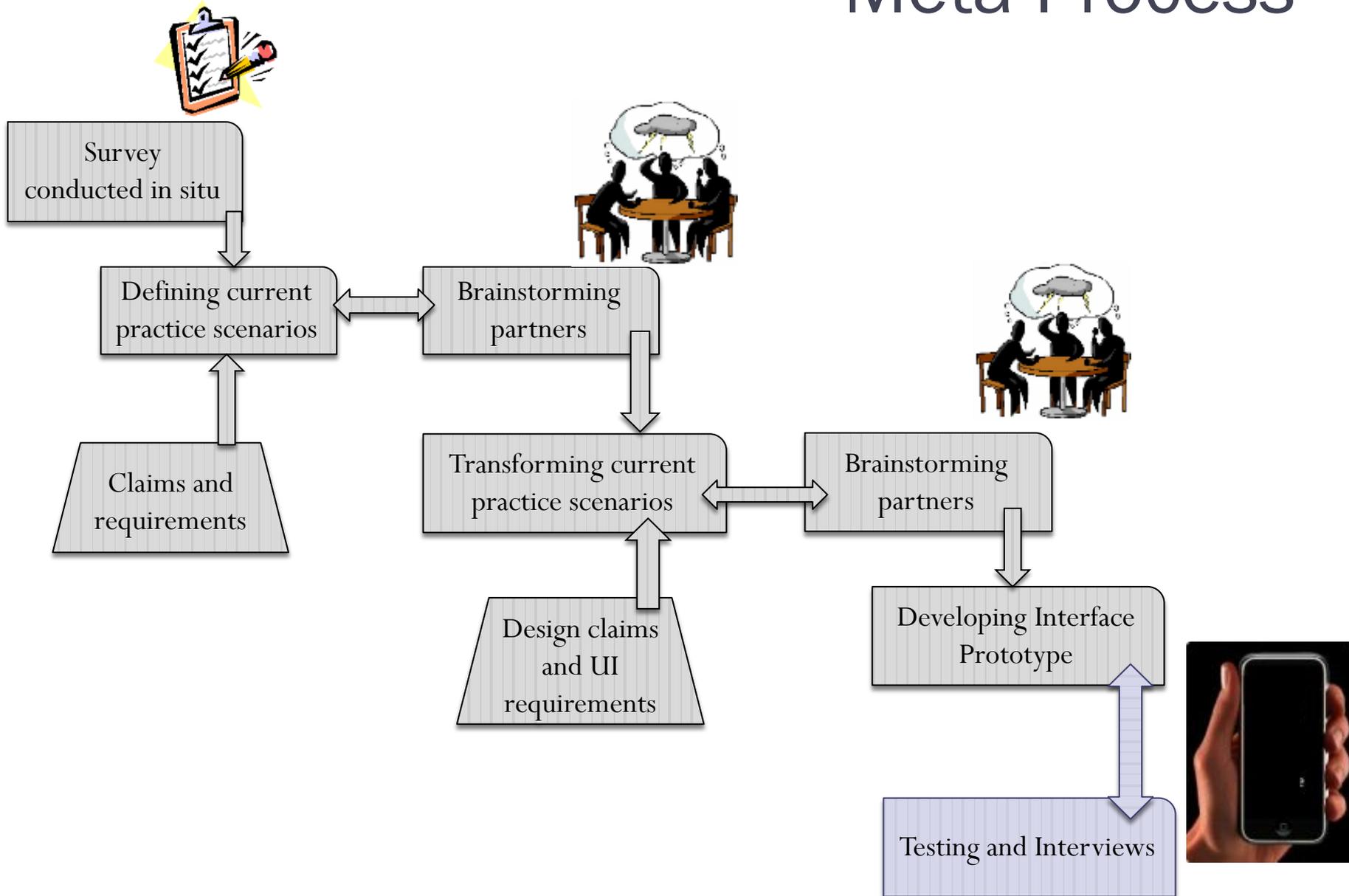
last selling price: 0.80 Rs  
estimated production: 1 ton

1 to 5 Kg     11 to 15 Kg     over 20 Kg

6 to 10 Kg     16 to 20 Kg

The image shows a mobile application interface for product selection. At the top, the title 'Onion' is displayed. Below the title is a photograph of a single red onion. To the right of the image, a grey box contains the text 'last selling price: 0.80 Rs' and 'estimated production: 1 ton'. Below the image and text are five radio button options for weight ranges: '1 to 5 Kg', '6 to 10 Kg', '11 to 15 Kg', '16 to 20 Kg', and 'over 20 Kg'. At the bottom right, there are two large, semi-transparent buttons: an orange 'X' and a green checkmark.

# Meta Process



# Next Step

- Data models are getting developed to support the identified UI functionality.
- Algorithms for predicting the production levels are being investigated.
- Auto generation of mobile interfaces to be adaptable to local crop types, users' language, culture based use of colours is being worked on.
- Plan is to finish this work by November 2012 and perform field testing for UI usability with a group of farmers in December 2012.

# Creating a Bright Future

