ATM **Redesign** for Rural India

Final Presentation

Deepak Singh
Interaction Design,
2010-12

Project Guide :
Prof Pramod Khambete

Overview :
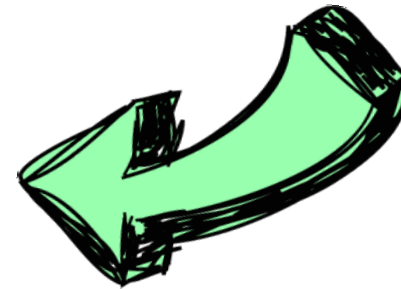
Why ?	**Needs and Opportunities**

Research and Design Process	**How ?**

What ?	**Deliverables**

Why ?

Needs and Opportunities

ATM as an Important Tool

But seldom utilized by

Illiterate/semi-literate users

Under Served

Unbanked

People living in remote areas

"Meant for Urban and educated users"

ATM as an Important Tool

Needs

Basic banking facility

Security

"Ease of use"

A suitable and simple product

Rural India

Considerations and approach

Financial Inclusion

ICT4D

Rural India

Project Brief :

- **ATM redesign to assist illiterate/semi-literate with banking**

- Providing services through familiar devices

- Net reduction in transaction processes

- Aim to help in financial inclusion policies

Research and Design Process **How ?**

Research :

Vortex Low cost ATM

GRAMATELLER iNDi

NCR Pillar

Literature Study

SBI ALW

IDEO

Research

Paymate- Corp. Bank -TATA -PCO

Obopay-Nokia-Yes Bank-Fino

SBI Eko

This *Kirana* store is a Customer Service Point

SBI ALW

Approaches / limitations

Current ATMs

Research

Current ATMs

- Physical security
- What card has the user entered?
- Accidental key press
- Interfaces often loosely-coupled
- No multiple-languages support
- Lack of assistance ship
- Inconsistencies in hardware
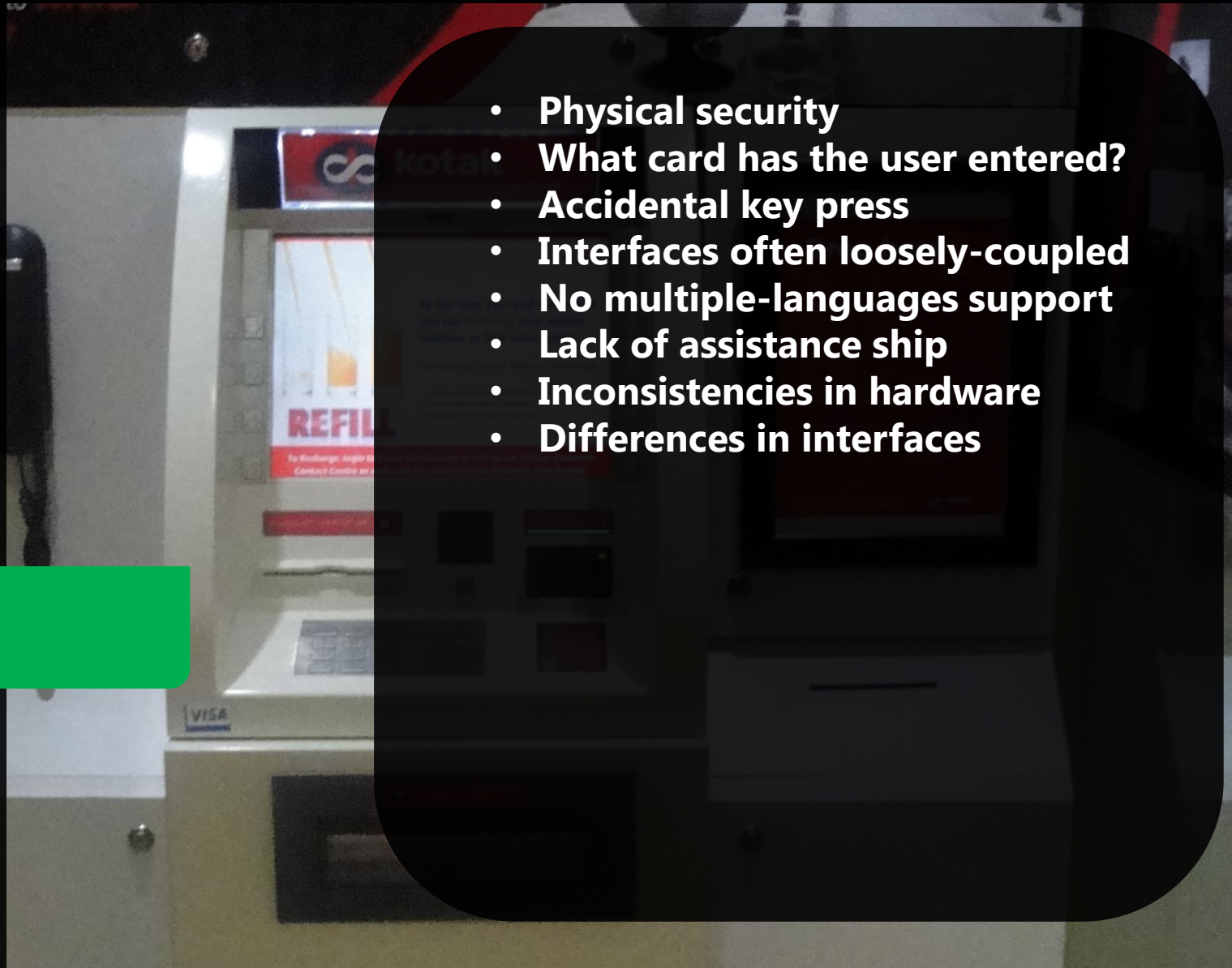- Differences in interfaces

Research

Current ATMs

- Physical security
- What card has the user entered?
- Accidental key press
- Interfaces often loosely-coupled
- No multiple-languages support
- Lack of assistance
- Inconsistencies in hardware
- Differences in interfaces

Basic banking services still inaccessible to rural population

- Installation
- Fear of new technology
- Literacy
- Resources

User Study :

Users : Profile

- 3 Bank Officers(Mumbai, Bhatinda)
- 1 Post Master (Lakhimpur Kheri)

- **30 users + (4 migrants)**

Education :Semi Literate, Illiterate
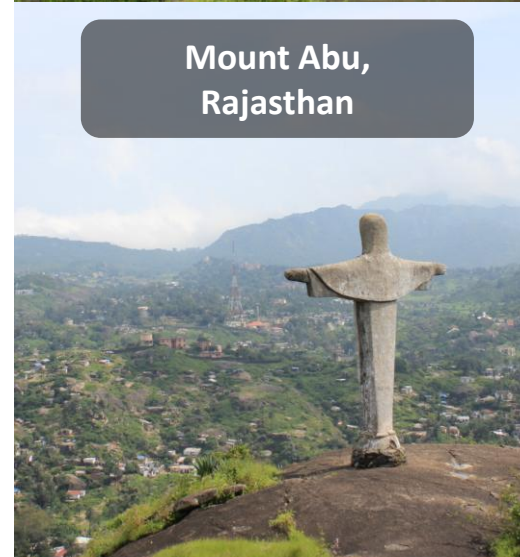
Income : up to 8000 pm

Occupation: Farmers, Small Business, laborers , Unemployed

Digital Literacy:
- Can use basic mobile phones,
- Comfortable with the IVR services

Methods:

- **Unstructured Interview**
- **Contextual Inquiry**

Bhivpuri, Maharashtra

Mount Abu, Rajasthan

Padari Village, Uttar Pradesh

User Study :

User Group

- Working in nearby cities
- Small business in village
- Low income farmers
- Daily wage workers
- Income depends on season (Mount Abu- Tourist place)
- Migrants
- Unemployed

User Study :

Do not have access to basic banking facilities

Fear of new technology

Income keeps fluctuating

Remittance is common among migrant workers

Not aware of banking benefits

Spending on festivals & weddings

They do not have any backup in case of emergency

Borrowing money from friends is very common

Mobile phones are used as family phones

Prefer to stay in a community

Monthly savings are minimal

Migrant Workers usually do not have Residential Proof

Observations

User Study :

Needs

Cash Deposit

Cash Withdrawal

Money Transfer

Security / Privacy/ Trust

Do not want to travel large distances

Transaction should be clear and simple

Less paperwork and confusing formalities

A suitable financial system

Scope

- Illiterate users, while familiar with currency denominations, are generally clueless about numerals which troubles them in using ATMs

- Users are familiar with Indian piggy bank "Gullaks" as a form of saving money

- ATM access has to be ensured to multiple users of a single account

- Users may not be able to read or write and require assistance in operating the machines

- Security is a concern as the users are vulnerable to information leakage due to their ignorance towards banking practices

- Mobile phones have become very common among the users

- Different channels for different transactions obfuscate the banking process

Considerations

Use of local languages with simple interpretations

Use of product metaphor to familiarize the user with the machine

Instructions and visual clues to assist them

Use of Voice based feedback in case of user illiteracy

Currency like denomination on screen instead of buttons

Display of output in local script

Big touch screen (user can visualize the complete transaction at the same place)
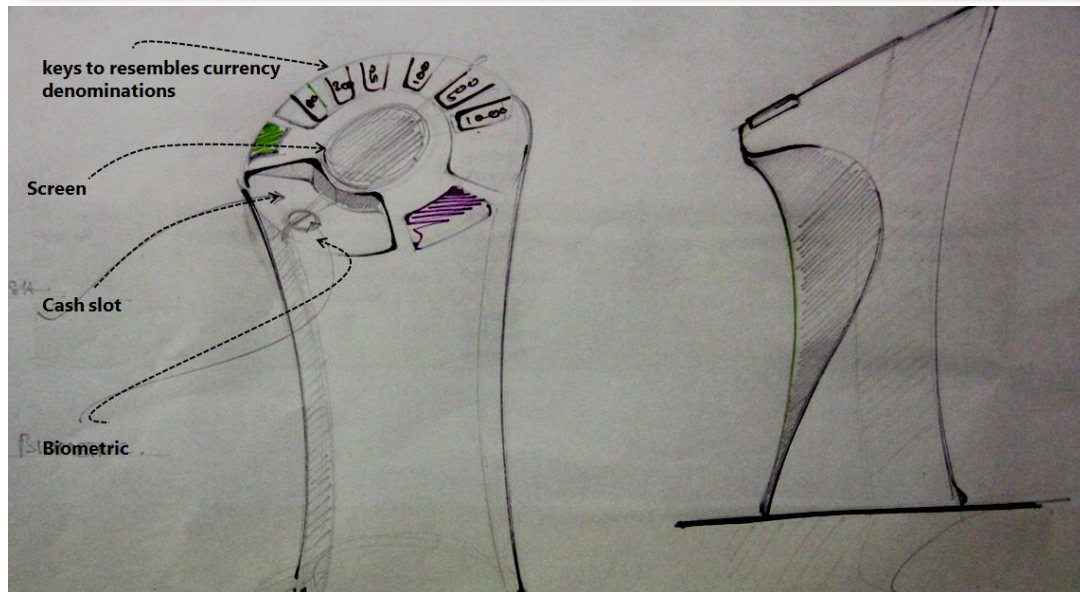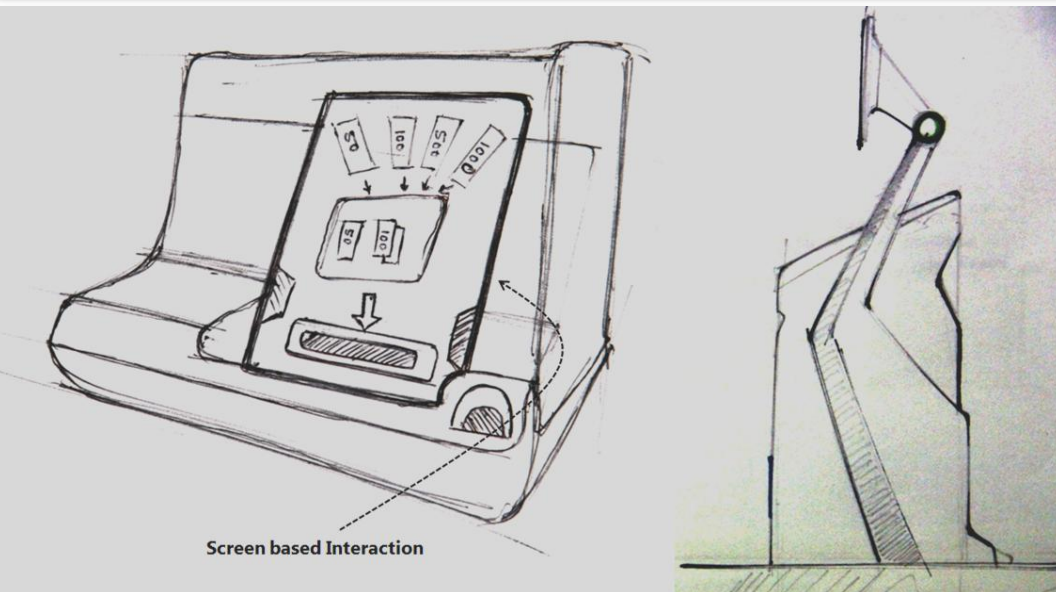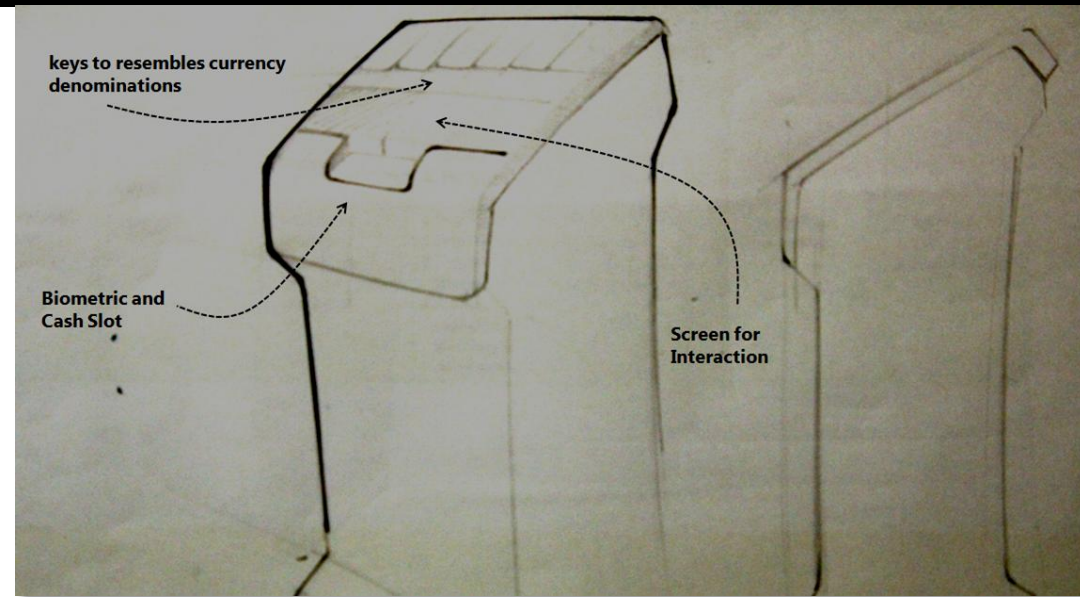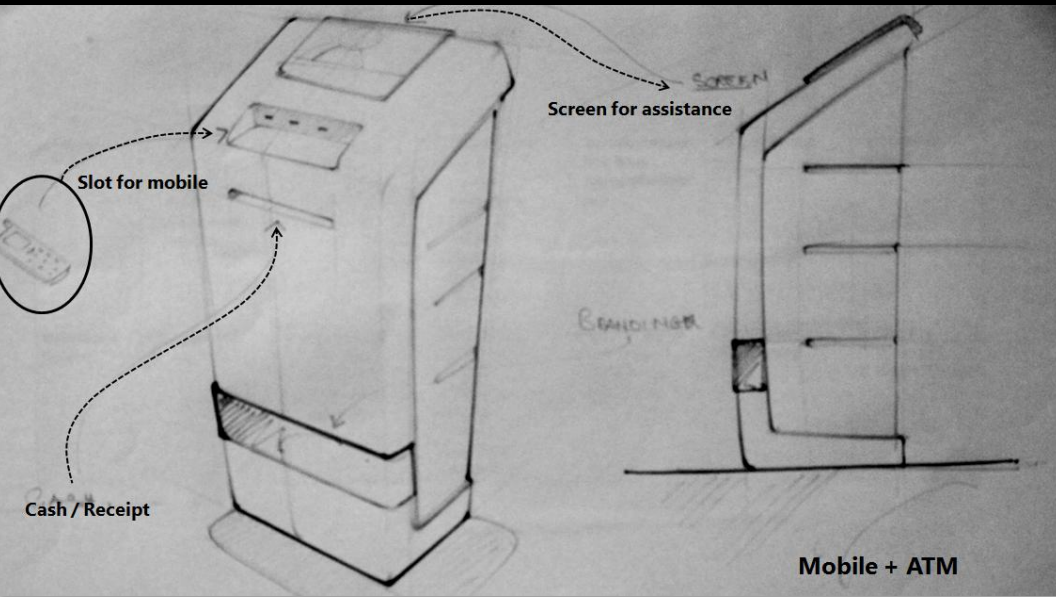
Use of Green and Red key (familiarity of the user with the low end mobile phones)

What ?

Deliverables

Ideations:

Screen for assistance

Slot for mobile

Cash / Receipt

SCREEN

BRANDING

Mobile + ATM

keys to resembles currency denominations

Biometric and Cash Slot

Screen for Interaction

Screen based Interaction

keys to resembles currency denominations

Screen

Cash slot

Biometric

Comparison

| Approaches	Features	Requirements
Card less Banking	Card less Approach Request through Mobile Save unnecessary transaction time	Mobile phone connectivity through ATM Primary operation through mobile phones
Banking through Postal Services	Banking from home Assistance through Postmaster	Postmaster has to carry a mobile and a printer with him Visit requester house on the basis of request
Branchless banking through mobile	Branchless banking through mobile Any Kirana or mobile store act as branches which is available even in remote areas	Mobile phones, cash coupons, Banking agent, and small shops act as branches for users
ATM mobile Synchronization	Mobile synchronized with ATM (NFC) Mobile keypad utilized as keypad for operation	Mobile phones, ATM kiosk, NFC (near field communication)
ATM with intuitive interface	An ATM without keypads With Voice, visual clues	An ATM kiosk with a touch based screen interface with voice feedback

keys to resembles currency
denominations

Cash slot

Biometric
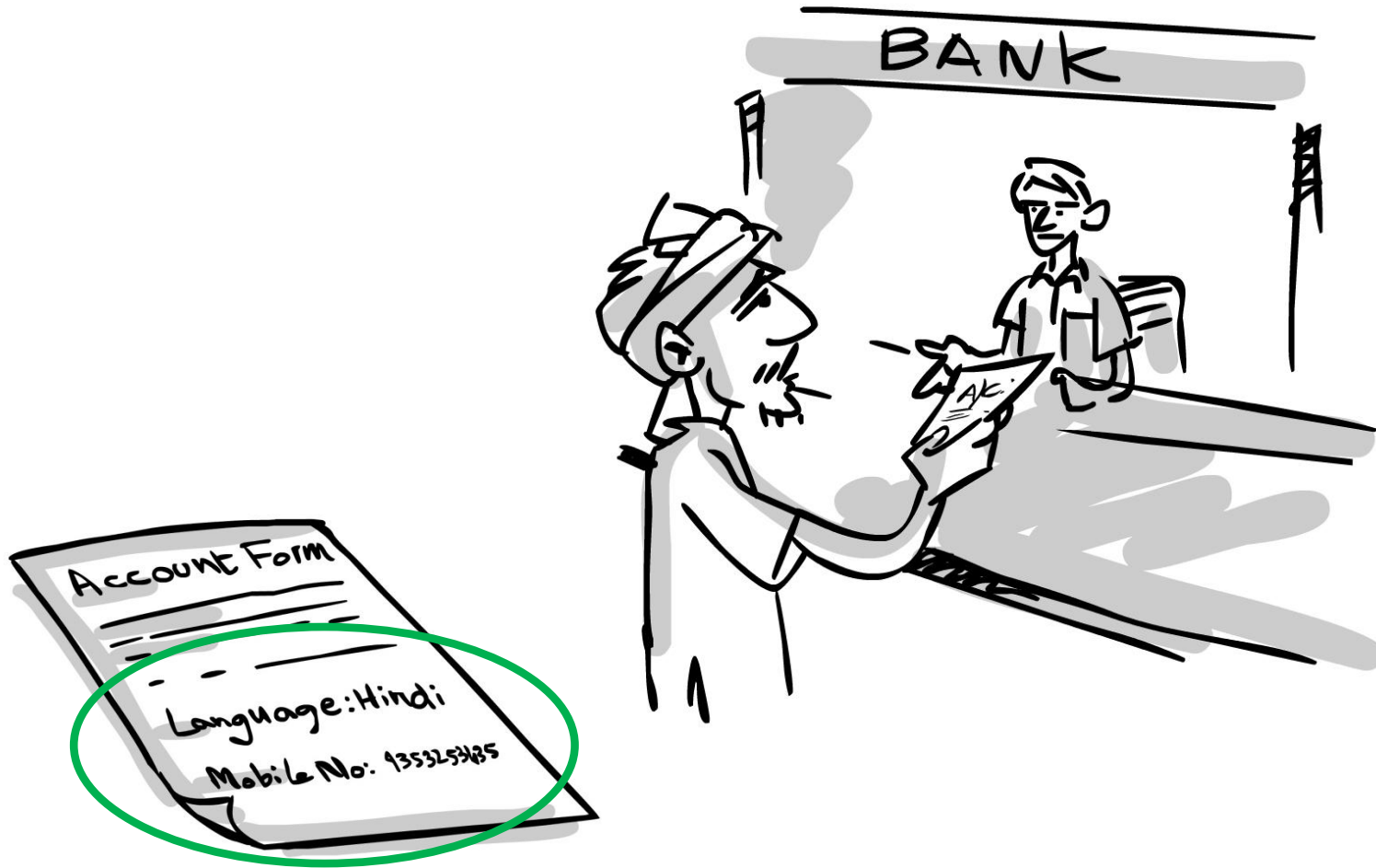
Detailing
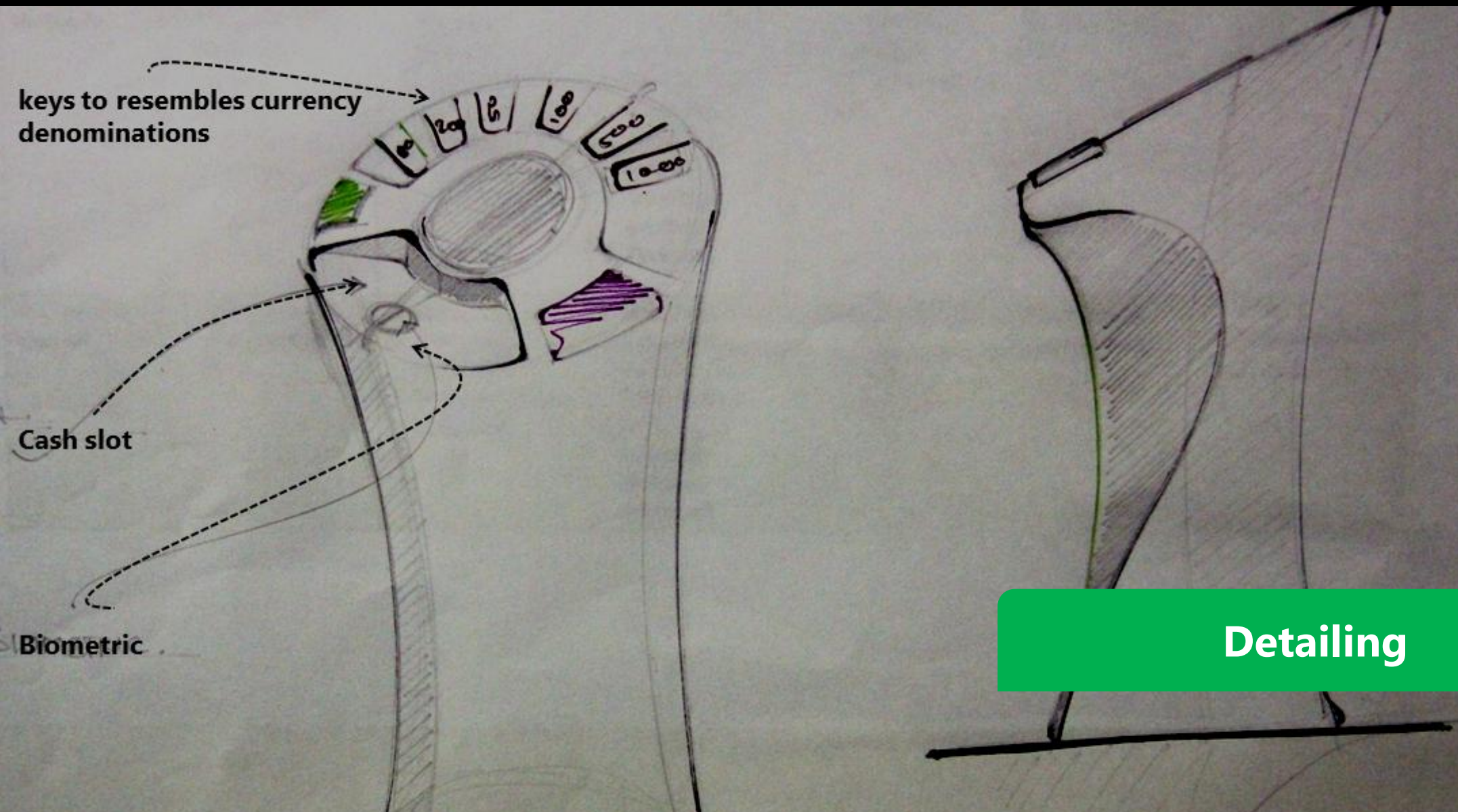
Do people really want a **numeric keypad** ???
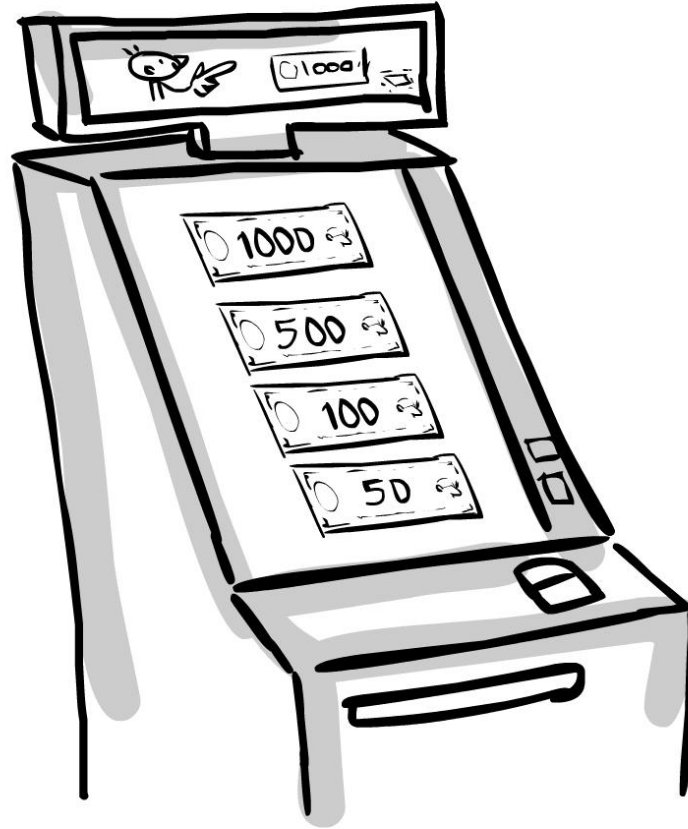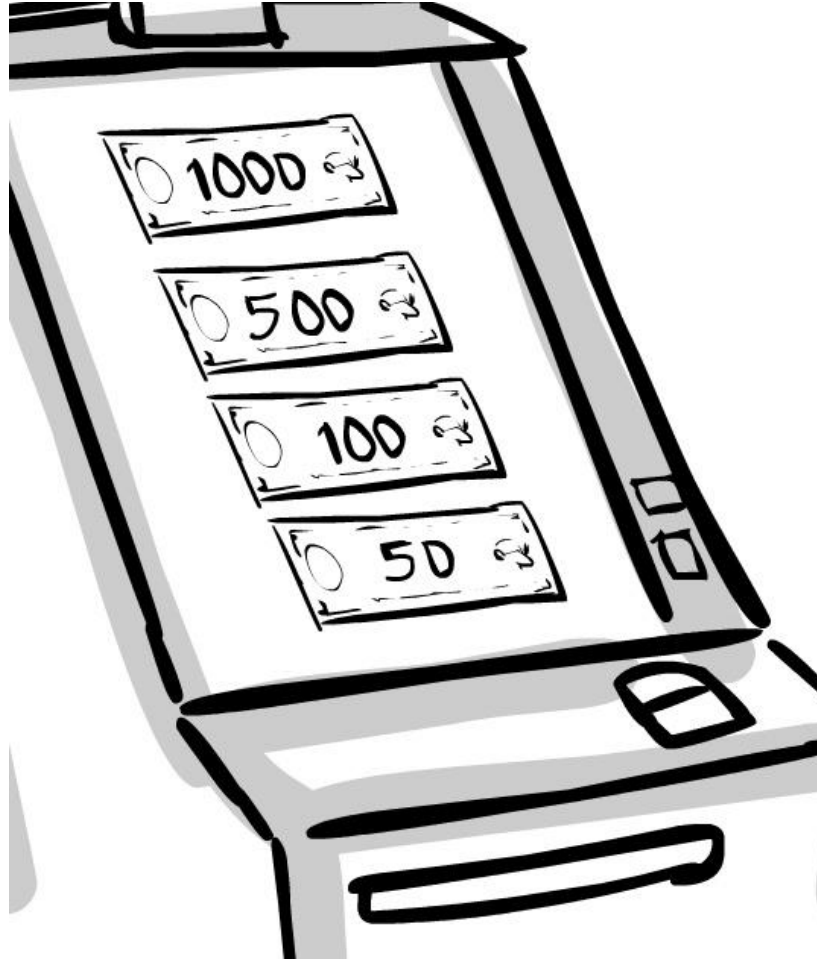
Scenario:

An ATM without a numeric keypad…..

Scenario:

Just register the operational language and mobile phone while opening the account

Scenario:

Special design of keys to resembles currency denominations

Scenario:

Simple and interactive interface

Scenario:

Biometric system for ensuring **security** of accounts
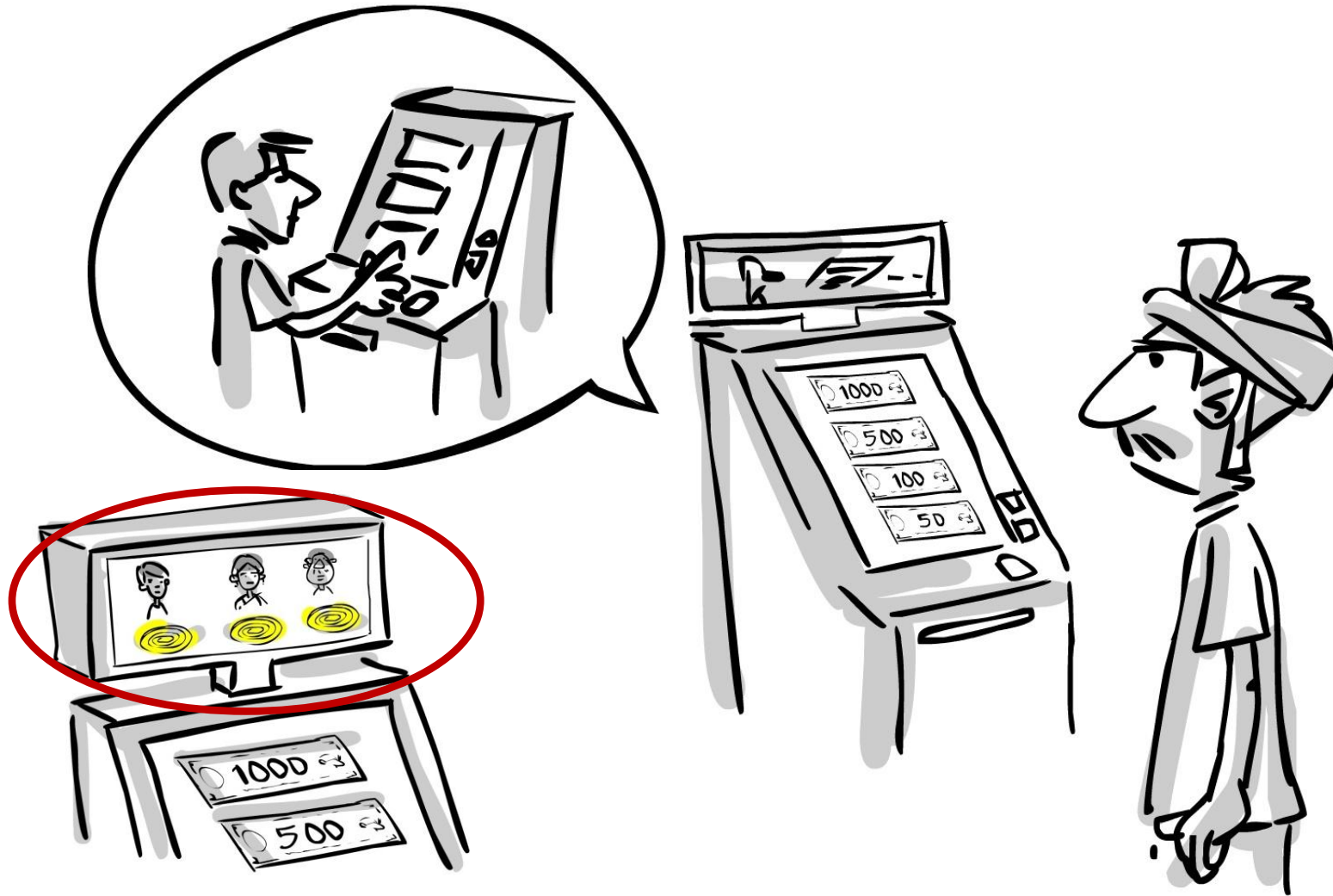
Scenario:

Intuitive keys for transactions

Scenario:

Use of ATM for depositing money (through sensor based slot for receiving notes)

Scenario:

Biometric details of all the **joint account holders** will be stored in account database to provide access at both hands **(Money Transfer)**

Scenario:

Videos, voiceovers and visual clues to provide both **feedback** and **assistance** in language of choice as per account database
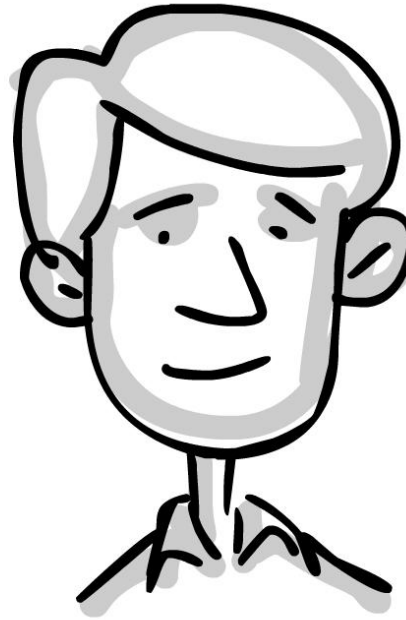
Scenario:

All the transactions through a single slot.

Scenario:

System aims at providing independent and self reliant Banking.

Scenario:

System aims at providing independent and self reliant Banking.

Elimination of middle men resulting in higher confidence in banking operations and reduction in process time.

Paper Prototype
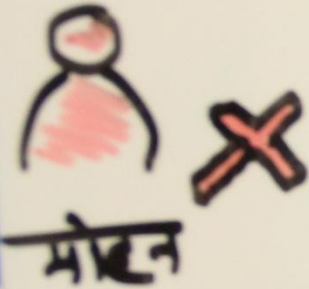
Paper Prototype

No of Users : 06
3 migrant workers living in IIT Campus

Age Group   : 18-60
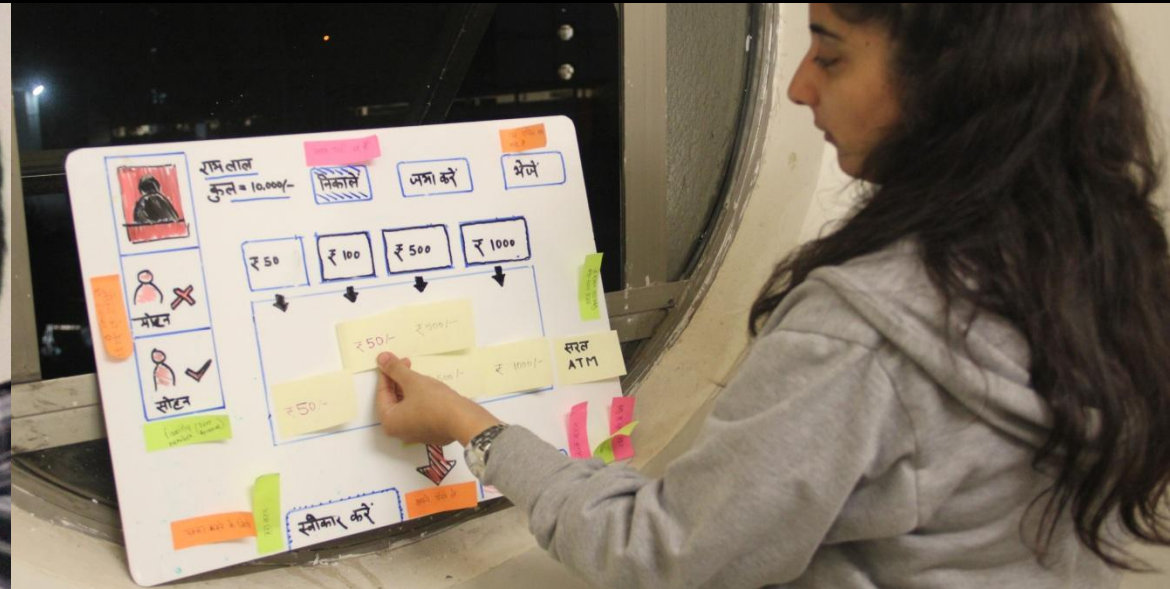
Testing

Paper Prototype

Results :

Observations :

- 04 out of 06 users expect different slots for cash IN and OUT
- Transfer section takes longer time to understand
- After completing the money deposition/ withdrawal process, transaction completion method was unclear.

Interpretation :

- There should be two different slots for deposit and withdrawal
- Location of red and green buttons led to confusion
- Money transfer methodology was unclear
- Once money is selected, there is no option for going back unless user has to cancel complete transaction.

Testing

Design

Design

राम लाल
कुल = Rs. 5,400/-
शेष / बच्चें = Rs. 4,900/-

निकालें   जमा करें   भेजें

महेश

सुरेश

Initial Interface

स्वीकार करें   रद्द करें

Design

Design

No of Users : 10
Place : Dhiksal Village,
IIT Campus
Age Group : 18-60

Focus :

- Learnability

- Speed of Use

- Ease of Use

- Ease of Communication

- Error free use

- Subjective satisfaction

Design

Results :

Observations :

- 03 users finds difficulties while interacting with the interface without voice based assistance (First time ATM users)
- It was still unclear that they are in which screen
- Transfer methodology was still unclear
- They completed their initial task very easily
- Understanding of text for illiterate users was difficult

Interpretation :

- Integration of voice feedback can decrease their difficulties
- More intuitive buttons required
- Money transfer process requires major changes
- Use of visual icons with the text also the voice based feedback

Final Design

SARAL BANK

सरल बैंकएटीएम में आपका स्वागत है

लेन-देन के लिए अपना अंगूठा यहाँ लगायें

Final Design

Prototype

SARAL BANK

सरल बैंकएटीएम में आपका स्वागत है

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Final Design

Error Case Scenario:

Ram Lal wants to withdraw Rs 1250 from the account but Rs 50 notes are not available
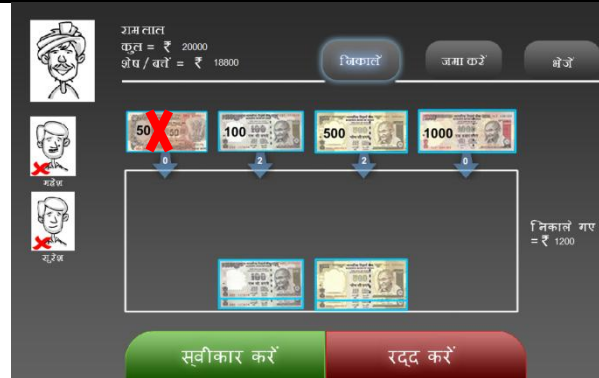
Ram Lal wants to deposit money, but during the transaction he accidently presses transfer or withdrawal button

Ram Lal wants to transfer money to Hari Ram, but during the transaction he selects the wrong amount

Final Design

Testing

Final Design

Testing

User Profile	
No of users	15 (09 male , 06 female)
Age group	18-60 years
Place	Karjat, Maharshtra

Final Design

Product Profile

Product Profile	
Product Description	ATM for Rural India
Domain	Communication, Banking
Platform	Kiosk through web

User Profile	
User Profile 1	Living in rural areas (age group of 18-60)
User Profile 2	Migrants (age group of 18-60)

User Profile	
Lowest level of technical usability	Can make phone call on low end mobile phones
Expected frequency of use	Few times in a month
Complexity of product	Simple
Motivation for the user	• Makes banking facility accessible • Makes things more convenient
Exclusion Criteria	• User should know basic banking operation like deposit and withdrawal • Can make a call on mobile phone
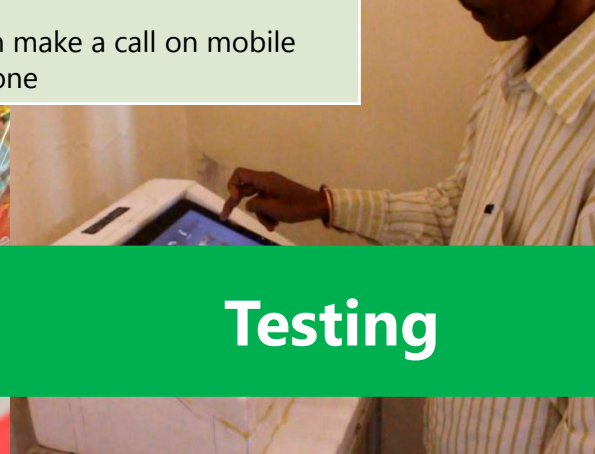
Testing

Final Design

Goals

Goals
User must be able to do the primary task / the most frequent tasks quickly, easily, at all times
Product should not load user's memory / product should not put cognitive load on a user
User should be able to complete frequent / critical tasks in specific time / no. of steps / in less efforts
Interface should clearly communicate the conceptual model
Intuitiveness: User should be able to predict the next step / task
Product should require no unnecessary tasks
Information architecture: Information should be well aggregated, well categorised, well presented
Communication should be clear / user should easily understand text, visuals
Product should give good feedback / display its current status
Product should tolerate user's errors / forgiving interface / should prevent errors
User should feel in control of the product / behavioural appeal.

Testing

S .No.	Task
1	Start
2	Introduction to project (About ATM redesign)
3	Verify Demographics
4	Test with some visuals (logos and pictures)
5	Demo of touch based interface
6	Let them try to interact with touch based interface
7	Give them Task and ask them to preform
8	Rate their performance
9	Help them to fill system usability scale (SUS)
10	End

Final Design

Tasks for the test

- **To create login (by biometric authentication)**

- **Withdrawal of Rs 500 from account.**

- **Check account balance**

- **Deposit Rs 750 to the account**

- **Give permission to family member (included in account / Joint account holder) for transaction.**

- **Transfer Rs 1200 to a friend (added for transaction)**

- **Terminate / Cancel the transaction**

Testing

Final Design

- The users were found to be quite **comfortable with the interface** though **2 of them** were completely **ignorant about banking and ATMs**
- **9 out of 15 users** completed the **withdrawal task in less than 10 seconds**
- **User photographs and illustrated denominations proved to be very helpful**
- **8 users** had **difficulties with finding transfer and deposit screens** and required **assistance in the beginning**
- **5 users required assistance** with **complex transactions** like authentication
- Every user **understood text, visuals and icons easily**
- Every user were comfortable with **biometric authentication**

- **Control :** Good / Satisfactory
- **Completion of task :** Very good / Not expected
- **Second time use :** Very comfortable
- **Predictability of next step :** Fair
- **Engagement :** Very High
- **Product appeal :** Simple, good, communicating

Testing Observation

Final Design

Objective Observations	High	Medium	Low
• Level of ease	✔		
• Intuitiveness of the interface	✔		
• Findability of the options	✔		
• Willingness to explore / learn/ follow the network		✔	
• Ease of navigation within the interface	✔		
• Communication of interface	✔		
• Prediction of next step		✔	
• Understanding of Information Architecture	✔		
• Findability of the information		✔	
• Ability to do primary tasks with easiness	✔		
• Understanding of text and visuals	✔		

Testing Observation

Final Design

- "Very Simple"

- "Should I tap the notes or should I drag them?"

- "Even illiterates can use it"

- "Voice feedback was really helpful"

- "Banks are really time consuming. It will save lots of time"

- "How do I go to the deposit screen?"

- "Sending money to family and friends is really easier"

- "Love to interact in my mother tongue with the machine"

- "Selection of denominations is an excellent feature"

- "There should be an option for selecting bigger amounts"

- "Deposits as small as Rs 10 & 20 will encourage savings"

- "Photos of users and currency are really interesting"

User Statements

Final Design

- **No language-based constraints**

- **Promotion of saving practices**

- **Simple and intuitive**

- **Visual and voice based feedback and assistance for illiterate users**

- **Less steps for transactions**

- **Allows users to withdraw money according to their needs**

- **Allows users to deposit and transfer money**

- **Cardless Banking: Go anywhere without carry anything**

- **Allows access to joint account holders through biometric authentication**

- **Biometric profiling ensures security**

- **Chances of errors are less**

- **Independent and self reliant banking**

- **Banking facilities available at all times**

**The good**

Final Design

- At some places more voice feedback is required

- Option of bigger amount with just one click

- Authorization should be more clear for joint account holders

- Transfer screen: Whether to select the amount first or the person?

- Feedback : when to press button and for what ?

- Most frequent transactions

- Different color for note counter (other than green)

Changes required

Final Design

- **Implementation of changes suggested by the users during Usability Testing**

- **More banking facilities can be provided by way of extending the present model depending upon the needs of users.**

- **Synchronization of mobile phones with ATM machine to perform more complex transactions.**
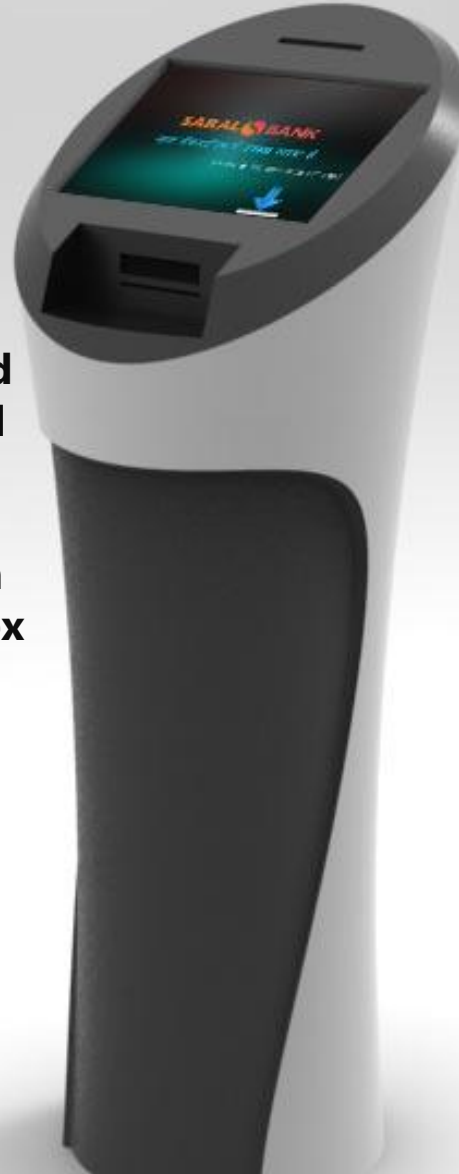
Future Scope

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A Little World : http://www.alittleworld.com/
NCR experience a new world of Interaction :http://www.ncr.com

Banker to the poor : Muhammad Yunus
SBI Eko
ALW Zero
Obopay-Nokia-Yes Bank-Fino
Paymate- Corp. Bank -TATA –PCO
State Bank of Patiala
Indian Post Office

Sincere Thanks to ..

Thank **You**

धन्यवाद

आपका लेन-देन पूरा हुआ

Deepak Singh
Interaction Design,
2010-12

+919757333873
deepak100485@gmail.com