Content Creation and Dissemination by-and-for Users in Rural Areas

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Motivation

why has the Internet dramatically changed our way of life?

Because it has enabled ubiquitous access to information and services at the click of a mouse
Motivation: World Demographics

Majority of the population in less-developed countries still lives in rural areas.

Source: International Monetary Fund (www.imf.org)

Majority of the rural population in India is not literate.
Motivation: Limited information access

Table 1 Access to sources of information and communications for the rural poor in India (per cent)

<table>
<thead>
<tr>
<th>Source</th>
<th>Personal ownership</th>
<th>Shared/communal</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio</td>
<td>77.3</td>
<td>22.3</td>
<td>–</td>
</tr>
<tr>
<td>Television</td>
<td>9.3</td>
<td>84.0</td>
<td>6.6</td>
</tr>
<tr>
<td>Telephone</td>
<td>–</td>
<td>66.3</td>
<td>36.7</td>
</tr>
<tr>
<td>Fax machine</td>
<td>–</td>
<td>0.7</td>
<td>99.3</td>
</tr>
<tr>
<td>Newspapers/printed sources</td>
<td>11.3</td>
<td>80.0</td>
<td>8.7</td>
</tr>
<tr>
<td>Computer/Internet</td>
<td>–</td>
<td>12.0</td>
<td>88.0</td>
</tr>
<tr>
<td>Family/friends</td>
<td>100</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Village head/community and political leaders</td>
<td>–</td>
<td>100</td>
<td>–</td>
</tr>
</tbody>
</table>

Note: Figures given are percentages

Most information sources for rural areas are global in nature. These sources (Radio/Television) lack locally relevant content.
Problem Statement

1. Current information sources for rural regions do not enable locally relevant content dissemination
2. Mechanisms for locally relevant content creation are missing

How to enable these is the problem we address in this paper
Approach Followed

- Perform a needs study to identify the information needs of this population

- Follow a participatory-design process to develop a low-cost solution for the less literate users

- Assess usability by observing the usage pattern of the solution for the rural population
Needs Study

Worked with the NGO – Byrraju Foundation

- Adopted about 200 villages in Andhra Pradesh
- One Nodal Coordination Officer (NCO) for every 3-8 villages
  - Graduate, knows English well
- One Village Coordination Officer (VCO) for each village
  - Intermediate, trained in nursing, does not know English usually
- A Grameen Vikas Samiti (GVS) consisting of 18 people of the village. Each person is responsible for one module (agri/aqua/water/sanitation/education/healthcare/...)
- A GVS convener – head of the GVS
- Villages that have an Ashwini centre will have an Ashwini centre Operator in addition
- NCO, VCO, GVS convener, Ashwini centre Operator run the show in the field
Needs Study: Field Visit

Information is usually provided through public address systems

Announcement about an upcoming health camp
# Needs Study: Field Input

<table>
<thead>
<tr>
<th>Village</th>
<th>Population</th>
<th>Households</th>
<th>Mobiles</th>
<th>Main operators</th>
<th>DTMF</th>
<th>Will pay?</th>
<th>Information</th>
<th>For Pilot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juvvala Palam (A hub, renting of transport vehicles)</td>
<td>3800</td>
<td>850</td>
<td>70% households</td>
<td>Airtel/Tata/BSNL/Vodafone</td>
<td>Voice is better</td>
<td>same as above</td>
<td>Community news, agriculture info, NO to train, no to Electricity, doctor visit, Teleconferencing information announcement, panchayat meetings, ankur channel program schedule. Hub village for 4 lakh population in nearby villages.</td>
<td>Yes for Pilot</td>
</tr>
<tr>
<td>Cherukumilli (Aqua – farming)</td>
<td>4047</td>
<td>1000</td>
<td>500</td>
<td>Airtel/Idea</td>
<td>Voice</td>
<td>After realising the value, they may. Not initially.</td>
<td>Information about village, Panchayat meetings, GVS meetings</td>
<td></td>
</tr>
<tr>
<td>Ibhimvaram (100% cell penetration)</td>
<td>4600</td>
<td>3000</td>
<td>Idea/Airtel</td>
<td>Voice</td>
<td>Yes</td>
<td>Tractor renting, electricians, etc. panchayat meeting, national fish rates, V-agri</td>
<td>GVS very interested for pilot.</td>
<td></td>
</tr>
</tbody>
</table>
VoiKiosk: A VoiceSite for Rural Population

- A voice application deployed as a village portal
- Available over an ordinary phone call through a voice interface

Kiosk-operator gathers local information from various sources:
1. Gets train schedule
2. Gets local news update
3. Gets blackout timings from electricity office
4. Gets weather information through internet
5. Gets crop pricing information
6. Doctor's visit schedule

Villagers upload information through a phone

Govt. uploads information

Info from Web

VoiKiosk builds a voice interface for people to access information through a phone

Service delivery to villagers through (mobile) phones by a voice interface
Participatory Design

VoiKiosk
- It can be a central point of access for a community
- doesn’t rely on Internet connectivity
- In local language
- it allows end-users to directly interact with the services

Identified Service Categories
- Agricultural Advice
- Job Matchmaking
- Transport Rentals
- Health
- Aqua Prices
- People
- Entertainment
- Distance Education Program
- General info about the village
- Community news
- Pyr.mea.IT

Kiosk-operator uploading information on VoiKiosk

Villagers calling the VoiKiosk for information

VoiGen allows creation and configuration of VoiKiosk
Four categories of information on VoiKiosk

<table>
<thead>
<tr>
<th></th>
<th>Create:</th>
<th>Listen:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Message</td>
<td>Operator</td>
<td>All</td>
</tr>
<tr>
<td>Health Message</td>
<td>Operator</td>
<td>All</td>
</tr>
<tr>
<td>Health Message</td>
<td>Operator</td>
<td>All</td>
</tr>
<tr>
<td>Health Message</td>
<td>Operator</td>
<td>All</td>
</tr>
<tr>
<td>Ashwini Center Schedule</td>
<td>Expert</td>
<td>All</td>
</tr>
<tr>
<td>Agri/Aqua-culture Advice</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>Advertisement</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>Advertisement</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>Ad</td>
<td>All</td>
<td>All</td>
</tr>
</tbody>
</table>
The VoiKiosk call-flow

- The Kiosk operator can choose to
  - modify the welcome message for the VoiKiosk system, or
  - modify information in any of the four different categories

- Within a category, the operator is allowed to
  - create a new information message,
  - delete any existing message or
  - re-record an existing message
Participatory Design Modifications

People did not know when to speak to the system

- Provided a beep sound after every system prompt

Modification of prompts:

- Do you want information on Health or Agriculture or Ashwini Center Schedule or you want to know about the people in this village?

- Please say Health to know about health related information, or say Agriculture to...

- Increased duration of recording for agricultural experts from 10 sec to 30 sec.
Usability

- Increasing number of calls

- High frequency of updating advertisements by few users
Villagers can access the VoiceKiosk from a public phone.
Bike and Auto Mechanic uploading his advertisement on the VoiceSite
An Appey owner uploading his advertisement on the VoiceSite
The VoiceSite administrator uploading his advertisement
Pilot Statistics

- Pilot Launch: May 23, 2008
- Report Summary (as of Jan 28, 2009)

- Total number of calls received = 114782
- Number of unique callers = 6509
- Total time spent = 2135 hours
- Average call time spent = 0 hours, 1 min, and 14 seconds.
- Maximum call duration = 0 hours, 49 min, and 40 seconds.
- Minimum call duration = 0 hours, 0 min, and 0 seconds.
- Number of calls to Ashwini Center = 8399
- Number of calls to Health Center = 14216
- Number of calls to V-Agri = 13881
- Number of calls to Professional Services = 37112

No Advertising, No formal Launch, No Training
Summary

- A village portal for locally relevant information creation and sharing.

- People have a strong need for a channel to create and share locally relevant information.

- A local partner who understands the community is a great enabler.

- Voice over telephone provides easy access even to the illiterate.

- Local language enables acceptability and usage without formal training or advertising.
Thank you!
The field coordinator collects water sample from the pond

This sample is tested right at the pond-side while the water retains its characteristics

Previously, test results were uploaded through the Ashwini computer center. Now, this can be done by calling the VoiceSite.

Experts get the results and then upload advice to the VoiceSite

Farmers can access the VoiceSite at their farms through their mobile phones
V oiceSite C reation
e.g. a Plumber V oice Site

You have now created your voice site. Thank you for using this system.

VoiceSite Creation
e.g. a Plumber Voice Site

• V oiServ- In W oW M oM 2007

Pyr.mea.IT

ICTD 2009, Doha, Qatar
IBM India Research Lab
Key Concepts
- VoiceSites
- VoiLinks
- SurfLinks
- Browsing
- Search
- Transactions

WWTW - In SIGCOMM NSDR 2007
HSTP - In Hypertext 2007

WWTW, Doha, Qatar
IBM India Research Lab
What is the Telecom Web?

-The Telecom Web is a world wide web in the telecom network.
-Enables the individual subscribers to create, host and offer information and services produced by themselves.

-people can browse VoiceSites, traverse HyperVoilinks, even conduct business transactions, all just by talking over the existing telephone network.

-provides simple and affordable means to access IT services and applications currently available to WWW users.

-The T-Web can coexist and interoperate with the existing WWW.
-Web site content as VoiceSites and vice-versa.

-The T-Web will interoperate with Next Generation Networks too.
-Presence information from IMS can deliver real-time location updates triggering dynamic adaptation of the VoiceSite.