Understanding and Designing for Intermediated Information Tasks in India
Multi-User Interfaces for Developing Countries

- Most of the research in Computer Supported Cooperative Work (CSCW) has been aimed at Developed World.
- Developing countries
  - Different? In what way?
  - Multi user interfaces - a natural requirement
- Understanding Information tasks
  - A taxonomy
  - Equality of access, role of users
- Experiment
  - Deployment of mobile based app in a microfinance setting
- Design considerations
Information Tasks - A Taxonomy

- **Basis of Classification**: level of direct access to secondary user.
- **Secondary User**: End user
- **Primary User**: Acts as proxy, has direct access to the device
  - Illiteracy
  - Comfort level / Experience / Training in handling the device
Cooperative

- Equal or near equal access.
- Hole in the wall.
- PC kiosks in villages.
Dominated

- Some users may dominate in a cooperative scenario.
- Cybercafes.
- Railway Reservation Kiosks.
Intermediated

- Secondary User doesn't have direct access to the device.
- Community Kiosks.
- Secondary Users must trust the proxy user to enter the query, convey the full results, and safeguard their privacy.
Indirect

- Similar to Intermediated but secondary user can't observe operation.
- Bus/Railway Reservation.
- Bank Transactions.
The Indian Context

- Low individuality Index (Hofstede)
  - Countries with high individuality index like USA attribute importance to individual achievement.
  - Low individuality index => strong interpersonal relationships (joint family system), collective approach to life and work.
  - Different norms of privacy

- High power-distance index (Hofstede)
  - High inequality of power and wealth amongst society
  - Deepens access inequalities
The Indian Context

- Huge population, limited means
  - Sharing of technology becomes inevitable
  - Urban cyber cafes, rural community information centres
- Illiteracy
  - Intermediation with technology becomes a requirement

Claim: Segregation of users into secondary and primary roles.
Experiment

- Microfinance group setting
- Requirement: to record transactions
Mobile App Features

- Intermediated Information task
  - Primary user: NGO member
  - Secondary users: Group members
- Medium of Information transfer between primary and secondary users - Voice
- Secondary Users must ensure that data entry is correct
- Secondary users unaware of other services provided
Primary user performance

- To measure effect of external 'participation'
- To record a number of transactions using the app
  - Group of primary user peers v/s Individual setting

<table>
<thead>
<tr>
<th>Condition</th>
<th>Average execution time (mins)</th>
<th>Average errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>7.19</td>
<td>1.80</td>
</tr>
<tr>
<td>Individual</td>
<td>5.68</td>
<td>0.68</td>
</tr>
</tbody>
</table>
Secondary user feedback

- Liked the new system but prefer to keep the passbook and receipts too.
- Insisted on using the Ledger till they get a complete understanding of the new system.
- Using a printer for receipts was preferred to keeping written records.
Design Considerations

- Cooperative vs Domination
  - If dominance is unavoidable, include explicit intermediate element in the application.
- Intermediated and Indirect
  - Consider secondary user's perspective.
  - Methods of information exchange should be clearly demarcated to avoid bias and corruption.