Ensuring Responsible Outcomes from Technology

Aaditeshwar Seth

March 2020

Seminar @ University of Oslo
Ensuring responsible outcomes from technology: Key messages

• *Ethics by design* approaches are useful but not sufficient. Ensuring responsible outcomes from technology requires careful management of the technology once it is deployed.

• An underlying ethical framework should be used to guide ICT projects on their objectives, design, and deployment management processes.

• The ethical framework is ultimately operationalized by ICT project teams, and therefore factors affecting the approaches adopted by the teams are important considerations too.
The promise of technology...

Asia Buzz: Revolution
How text messaging toppled
Joseph Estrada
By ERIC ELLIS

January 23, 2001
Web posted at 2:00 p.m. Hong Kong time, 11:00 a.m. EDT

W3C WORKSHOP ON THE ROLE OF MOBILE TECHNOLOGIES IN FOSTERING SOCIAL AND ECONOMIC DEVELOPMENT
1-2 April 2009
Maputo, Mozambique
But can we ensure responsible outcomes from technology?
At least four layers at which to examine technology

- **User interface**: Ethics of persuasive technology, informed choice, appropriate design
- **Algorithms and data**: Data privacy, de-biasing of data, algorithmic fairness
- **System design**: Individual Vs collective, centralized Vs decentralized, private Vs assisted access
- **Socio-technical interface**: Interactions of the technology with society, shaped by societal dynamics

Design phase: Many approaches

Many unintended harms from technology arise due to poor management of the socio-technical interface
We try to show this through a case study of a community media platform

Variety of mechanisms

- Community radio
- Community video
- Wall newspapers
Mobile Vaani

1. Speak
   Users speak and listen to contributions over an IVR platform

2. Moderate + Share
   Content is moderated, then published on IVR, app, web

3. Connect to stakeholders
   Inputs connected to government (local + other), NGO partners, social enterprise partners
Jan 2021

- **10K – 30K** calls per day
- **100K** monthly users
- **70%** retention
- **8 min** avg. call time
- **150+ orgs** paying for service

**CURRENT TRACTION**

- **Partner networks** across 12 states in India
  - Mobile Vaani network: 20 districts in Bihar, Jharkhand, MP, NCR – internal content on hyperlocal news and discussions

**MONTHLY USERS**

- **Proven model**, running since the last 7+ years. Also adapted and leveraged by 150+ organizations across the country
- **Topics** span local news, agriculture advisory, government schemes, rights and entitlements, health and nutrition, local culture, and social accountability
- **Processes for structured feedback** from users helps understand the pulse of the community and provide them with information that will be useful for them
- **Not just an “online” platform** but supported by a large network of 200+ community volunteers who leverage the platform for offline action
Use of Mobile Vaani during the COVID-19 lockdown in India

2M+ calls during the first 100-days alone of the COVID-19 lockdown in India. 18,000 voice reports. 800+ impact stories, almost all related to securing relief benefits for people who had remained excluded from social protection measures.

Mira Johri, Sumeet Agarwal, Aman Khullar, Dinesh Chandra, Vijay Sai Pratap, Aadirshward Seth. The First 100 Days: How Has COVID-19 Affected Poor and Vulnerable Groups in India? Under review, 2020
Processes to manage the socio-technical interface of Mobile Vaani

DEALING WITH ASPECTS LIKE…  NEEDS  PROCESSES LIKE…

Existing social inequities and literacies  Creating technology and service literacy
Creating technology and service literacy

Offline processes

NEEDS DELIBERATE EFFORT TO ENSURE THAT EXISTING INEQUITIES ARE NOT PERPETUATED

Appropriation by the more skilled users

Representativeness along class, caste, and gender lines
Creating technology and service literacy

Most users are at least high-school educated young men, interested in local news and jobs oriented programmes

COST IMPLICATIONS AS WELL

Number of volunteer clubs

Cost per user acquisition (in rupees)
Creating technology and service literacy

COST IMPLICATIONS AS WELL

Users are from a mixed demography and less literate, with a heavy focus on agriculture and government schemes, local news, career counseling.
Creating technology and service literacy

Cost Implications as well

Exclusive women users, greater interest in health and children’s education
# Processes to manage the socio-technical interface of Mobile Vaani

<table>
<thead>
<tr>
<th>DEALING WITH ASPECTS LIKE…</th>
<th>NEEDS</th>
<th>PROCESSES LIKE…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing social inequities and literacies</td>
<td>Creating technology and service literacy</td>
<td></td>
</tr>
<tr>
<td>Remoteness between designers and users</td>
<td>Federated setup</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feedback processes</td>
<td></td>
</tr>
</tbody>
</table>
Federated setup

NEEDS CONTINUOUS LISTENING TO GUIDE DECENTRALIZATION IN THE DESIGN AND PROGRAMMING

Agriculture advisory in farmer dominated clubs

Career counselling programmes in youth dominated clubs

*Kamyab Didiyon ki Kahaniyan* and *Guru Mantra* in women clubs

Job advisory and support group counselling in channels for physically disabled users
Communitization of technology achieved through decentralization

Organizational control preserved through standardized processes to maintain the federated setup

CONSCIOUS CHOICE OF A DECENTRALIZED DESIGN TO ENABLE RELEVANT USE-CASES, YET WITH STANDARDIZED PROTOCOLS TO GOVERN USAGE
# Processes to manage the socio-technical interface of Mobile Vaani

<table>
<thead>
<tr>
<th>DEALING WITH ASPECTS LIKE…</th>
<th>NEEDS</th>
<th>PROCESSES LIKE…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing social inequities and literacies</td>
<td>Creating technology and service literacy</td>
<td></td>
</tr>
<tr>
<td>Remoteness between designers and users</td>
<td>Federated setup</td>
<td></td>
</tr>
<tr>
<td>Sustainability and internal accountability</td>
<td>Feedback processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mix of social and monetary incentives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Signalling the character of the medium</td>
<td></td>
</tr>
</tbody>
</table>
Mixed structure of incentives for the volunteers

Olson, M (1965). The Logic of Collective Action

“I don’t volunteer with MV for money, I don’t pay much attention to the payments, and they are such small amounts anyway. I work with MV for social work and personal development…”

– Male volunteer from Jamui, Bihar
Mixed structure of incentives for the volunteers

Olson, M (1965). The Logic of Collective Action

“… MV has helped women like me, come out of our conservative households, build our identity as community reporters and stand for ourselves for finding solutions to our problems… Before listening to MV, my husband never allowed me to go out of the house to attend meetings, but ever since he started listening to MV he has encouraged me go for club meetings… he is positive that I’ll learn something constructive out of it…”

– Woman volunteer from Jharkhand
Mixed structure of incentives for the volunteers

“*I like the concept of clubs because it gives us a sense of involvement. Working on the issues of our own area as a close collective gives us a sense of purpose. We have a local club leader, and we believe in future we can also became leaders of our clubs, so it gives us a motivation to keep working for the group...”*

- Woman Volunteer from Ranchi, Jharkhand

Olson, M (1965). The Logic of Collective Action
Mixed structure of incentives for the volunteers

Olson, M (1965). The Logic of Collective Action

Intended to reinforce the signals to build strong collectives, not to free-ride, and to bring observability to all members about individual contributions.
Mixed structure of incentives for the volunteers

- Social incentives
- Purposive incentives
- Monetary incentives
- Solidarity incentives

Olson, M (1965). The Logic of Collective Action

- Near zero attrition of volunteers
- Mutual accountability
- Negligible monitoring required
- Clubs have become institutions in themselves

CAREFUL MANAGEMENT TO FACILITATE MUTUAL RESPECT AMONG VOLUNTEERS
Editorial policies to handle:

- Grievances on cyber-bullying
- Politically motivated content
- Verification of allegations
- Filter on tone of messages

Information completeness as an editorial principle

GRIEVANCE RESPONSE AND STRONG SIGNALLING TO FACILITATE MUTUAL RESPECT AMONG USERS

<table>
<thead>
<tr>
<th></th>
<th>Strike update</th>
<th>Problems caused</th>
<th>Valid cause</th>
<th>Invalid cause</th>
<th>Request to Govt.</th>
<th>Request to para-teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Para-teachers</td>
<td>24%</td>
<td>7%</td>
<td>31%</td>
<td></td>
<td>37%</td>
<td></td>
</tr>
<tr>
<td>Activists</td>
<td>10%</td>
<td>24%</td>
<td>20%</td>
<td>12%</td>
<td>31%</td>
<td>3%</td>
</tr>
<tr>
<td>Students</td>
<td>43%</td>
<td>4%</td>
<td>17%</td>
<td></td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td>4%</td>
<td>38%</td>
<td>9%</td>
<td>9%</td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Govt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90%</td>
</tr>
<tr>
<td>Overall</td>
<td>13%</td>
<td>22%</td>
<td>21%</td>
<td>8%</td>
<td>34%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Mass Media

- 53%
- 17%
- 23%
- 5%
<table>
<thead>
<tr>
<th>DEALING WITH ASPECTS LIKE…</th>
<th>NEEDS</th>
<th>PROCESSES LIKE…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing social inequities and literacies</td>
<td></td>
<td>Creating technology and service literacy</td>
</tr>
<tr>
<td>Remoteness between designers and users</td>
<td></td>
<td>Federated setup</td>
</tr>
<tr>
<td>Sustainability and internal accountability</td>
<td></td>
<td>Feedback processes</td>
</tr>
<tr>
<td>Social and institutional credibility</td>
<td></td>
<td>Mix of social and monetary incentives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signalling the character of the medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offline partnerships</td>
</tr>
</tbody>
</table>
Facilitating change through media

People reported on a few officials who were demanding bribes for UID enrollment. The site was visited by the block development officer and the officials were fined.

A village ignored by health agencies was reported to have had 3 malaria deaths in the last one week. A mobile ambulance was immediately dispatched, with fumigation equipment and first aid.

Fear of escalation and personal networks of volunteers can make things work at the local level.

Can be formalized for scale-up: Janta darbar, Jan Shakti Abhiyan, Escalation forwarding.

NEEDS DELIBERATE EFFORT TO MENTOR THE VOLUNTEERS AND BUILD RELATIONSHIPS TO EFFECTIVELY USE THE TECHNOLOGY.
Facilitating change through media

Partnerships with the government and other stakeholders can facilitate institutionalized links to improve citizen-government engagement.

Authorized to collect grievances on the RSBY health insurance programme and channel them to RSBY mitras, provide publicly accessible reports to the government authorities.

Citizen-based auditing of the cleaning status of waste dumping sites in Delhi. Review of disputes by the commissioner helped uncover several process flaws in the urban waste management system.

needs deliberate effort to create partnerships and facilitate new use-cases to effectively use the technology.
Processes to manage the socio-technical interface

DEALING WITH ASPECTS LIKE…  NEEDS  PROCESSES LIKE…

- Existing social inequities and literacies
- Remoteness between designers and users
- Sustainability
- Social and institutional credibility

IT IS COMPLEX!

WELL BEYOND THE TECHNOLOGY DESIGN

- Creating technology and service literacy
- Federated setup
- Feedback processes
- Mix of social and monetary incentives
- Offline partnerships

NEEDS CAREFUL MANAGEMENT, THE RIGHT SIGNALLING, COST DECISIONS, PARTNERSHIPS, CAPACITY BUILDING…
Let us compare with Facebook and other social media platforms

<table>
<thead>
<tr>
<th>DEALING WITH ASPECTS LIKE…</th>
<th>DOES !NEED</th>
<th>PROCESSES LIKE…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing social inequities and literacies</td>
<td>Appropriation by more skilled users: The new gatekeepers</td>
<td></td>
</tr>
<tr>
<td>Remoteness between designers and users</td>
<td>Community standards are made by Facebook, not the communities. Imposed by AI</td>
<td></td>
</tr>
<tr>
<td>Sustainability and internal accountability</td>
<td>Inadequate management tools to evolve strong internal norms. Reddit is better</td>
<td></td>
</tr>
<tr>
<td>Social and institutional credibility</td>
<td>Little effort to translate communication into action</td>
<td></td>
</tr>
</tbody>
</table>
Let us compare with Facebook and other social media platforms

**DEALING WITH ASPECTS LIKE…**

- Existing social inequities and literacies
- Remoteness between designers and users
- Sustainability and internal accountability
- Social and institutional credibility

**DOES !NEED**

- Appropriation by more skilled users: The new gatekeepers
- Community standards are made by Facebook, not the communities. Imposed by AI

**PROCESSES LIKE…**

- **A MANAGEMENT FAILURE:**
  - **NOT TAKING STEPS TO RE-DESIGN THE PLATFORM APPROPRIATELY**
  - **NOT GOING BEYOND TECHNOLOGY, TECHNOLOGY-SOLUTIONISM**
  - **NO CLEAR GOAL OTHER THAN TO IMPROVE “BUSINESS METRICS” OR EVADE REGULATIONS**

**DOES NOT**

- Little effort to translate communication into action
### Processes to manage the socio-technical interface

<table>
<thead>
<tr>
<th>User interface</th>
<th>Ethics of persuasive technology, informed consent, appropriate design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algorithms and data</td>
<td>Data privacy, de-biasing of data, algorithmic fairness</td>
</tr>
<tr>
<td>System design</td>
<td>Individual Vs collective, centralized Vs decentralized, private Vs assisted access</td>
</tr>
<tr>
<td>Socio-technological interface</td>
<td>Interactions of the technology with society, shaped by societal dynamics</td>
</tr>
</tbody>
</table>

Society is too complex to have design alone be sufficient to ensure responsible outcomes. Continuous management is needed. What guiding principles can help build better processes to manage deployments?
Ethical underpinnings in the design and management of ICT projects

Rich history of diverse ethical systems to think about fairness, equality, power…
Ethical underpinnings in the design and management of ICT projects

Rich history of diverse ethical systems to think about fairness, equality, power...
Ethical underpinnings in the design and management of ICT projects

Rich history of diverse ethical systems to think about fairness, equality, power…
Ethical underpinnings in the design and management of ICT projects

- Actively address inclusion gaps
- Appropriate technology, algorithmic fairness, relationships of trust & respect
- Theory of change

Rich history of diverse ethical systems to think about fairness, equality, power…
Consistency test for adherence to a common ethical system

- Objectives
  - Data and algorithms
  - System design
  - User interface design

- Design
  - Deployment management

- Ethics
  - Mobile Vaani
  - Aadhaar
  - Facebook
Ensuring responsible outcomes from technology

How can we ensure that companies or governments building and managing these technologies, define and adhere to a consistent set of ethical principles?
How can we ensure that technologists pay attention to these layers?

Laissez-faire
rapid scaling
Vs Iterative
fine-tuning

Financial
objectives Vs
Social
objectives

Social
objectives Vs
Political
economy
priorities

Legibility and
simplification
Vs Citizen
empowerment

Technologies
created by private
enterprises

Technologies
adopted by the state

Technology designers and
managers

Management through...

Competition

Regulation

Consumer
awareness
How can we ensure that technologists pay attention to these layers?

- Technologies created by private enterprises
- Technologies adopted by the state
- Laissez-faire rapid scaling Vs Iterative fine-tuning
- Financial objectives Vs Social objectives
- Social objectives Vs Political economy priorities
- Legibility and simplification Vs Citizen empowerment

Management through...

- Competition
- Regulation
- Consumer awareness

Technology designers and managers
Political economy behind policy making

What can the media coverage of different policies tell us about the political economy around technology policy making?
Who is the most vocal, most featured in the mass media?

Aadhaar
- Nandan Nilekani
- Judiciary members: K.K. Venugopal, D.Y. Chandrachud, Dipak Misra
- Academic/activist: Jean Dreze

![Graph showing relative coverage by entity for Aadhaar related topics]
Who is the most vocal, most featured in the mass media?

Cashless Economy
• Corporate engaged people: Mukesh Ambani, Nandan Nilekani, Vijay Shekhar Sharma
Which aspects are covered?

- Topmost coverage is given to aspects related to the middle class, or state’s rationale to encourage the schemes
  - Development of smart cities under Digital India initiative (42%), FDI of multinationals in India
  - Aadhaar enrollment centers (17%), Court cases on privacy issues, LPG subsidy
Which aspects are covered?

- Topmost coverage is given to aspects related to the middle class, or state’s rationale to encourage the schemes
  - Development of smart cities under Digital India initiative (42%), FDI of multinationals in India
  - Aadhaar enrollment centers (17%), LPG subsidy

- Less coverage is given to failures in the implementation and problems of the poor:
  - Absence of physical infrastructure in smart cities (1%), Digitization of land records
  - E-PoS centers and problems with PDS (3%)
What do the power elite say?

"... its wider application in areas such as passport issuance, online identity verification and attendance in government offices will be seen in the coming days."

-- Nandan Nilekani

"When we started Jio we set a target of 100 million customers in shortest time. Even we didn't imagine we will do it in months. Aadhaar enabled us to acquire a million customers a day, which is unheard of in the industry."

-- Mukesh Ambani

"The Narendra Modi government must guard against allowing Digital India to become a surrogate for the interests of big corporations."

-- Rahul Gandhi

"The Narendra Modi government must guard against allowing Digital India to become a surrogate for the interests of big corporations."

-- Narendra Modi

Politics creates a veil of aspirational technology.
Mass media is a party to putting up this veil.
While state and capital closely cooperate (many reasons).
Focus on rapid scaling of technology.
Pay inadequate attention to social responsibility.

Mobile Vaani: Technology, Media, Development
How can we ensure that technologists pay attention to these layers?

Laissez-faire rapid scaling Vs Iterative fine-tuning
Financial objectives Vs Social objectives
Social objectives Vs Political economy priorities
Legibility and simplification Vs Citizen empowerment

Technologies created by private enterprises
Technologies adopted by the state

Technology designers and managers

Management through...
- Competition
- Regulation
- Consumer awareness
- Bring change from within
Reasons for inconsistencies in the ethical systems of technologists

• Inadequate sharing of insights across cross-functional teams → differences in user familiarity, empathy, priorities

• Clarity in the organizational mandate, deliberate ambiguity or selective propaganda with workplace segregation

• Power relationships within and across teams

• Political ideology of different team members. Mentorship vs. self-learning. White-collar vs. blue-collar workers.

Can technology designers and managers ensure that their labour leads to responsible outcomes? That their output reduces inequities in society?
Mechanisms to bring consistency

Can technology designers and managers ensure that their labour leads to responsible outcomes? That their output reduces inequities in society?

- Courses on the ethics of building information systems
- Co-determination in companies through worker representatives
- Lucas Plan, UK, 1976
- Bridge the gap between designers and users, to be able to manage the socio-technical interface better
In summary...

- Ethics forms a crucial foundation for thinking about ICT projects

- The socio-technical interface needs careful management. Design alone is not sufficient

- A lot is known on how to ensure that responsible outcomes arise from technology, but companies and states need to be held accountable to manage it

- One pathway is by empowering the technologists who design and manage computer-based information systems. Courses and curriculum. Networks of white-collar workers / blue-collar workers / and users. Bring change from within

- Also need to build checks and balances in the democratic regulatory framework to bring transparency and accountability in policy formulation (for technology)

Thanks for participating!
References

• A. Seth. A Call to Technologists. Journal of Information, Communication and Ethics in Society, 2020. [JICES link]

• A. Seth. The Limits of Design in Ensuring Responsible Outcomes from Technology. ICTD, 2020.


• A. Moitra, A. Kumar, and A. Seth. An Analysis of Community Mobilization Strategies of a Voice-based Community Media Platform in Rural India. ITID 2018

• D. Chakraborty, S. Ahmad, and A. Seth. Findings from a Civil Society Mediated and Technology Assisted Grievance Redressal Model in Rural India. ICTD, 2017

• A. Moitra, V. Das, A. Kumar, Gram Vaani, and A. Seth. Design Lessons from Creating a Mobile-based Community Media Platform in Rural India. ICTD 2016

Extra slides
Creating technology and service literacy

In-person trainings most effective in helping people to successfully record a message on IVRS (Koradia, et al., 2013)

Constant persuasion helped improve overall phone access and usage (Chakraborty, et al., 2019)

People learned over time how to use the platform more effectively (Chakraborty, et al., 2019)
The theory of change for how and why Mobile Vaani works

**Inputs**
- Creation and identification of useful content: Rights & entitlements, livelihood, health, education
- Identification and training of volunteers: Technology adoption, local reporting, train for local content generation

**Outputs**
- Growth in number of users
- Acceleration in local content generation, greater context & completeness in coverage, more ownership
- Empowerment of volunteers, acceleration in user growth, formation of linkages with local stakeholders

**Outcomes**
- More aware users, informed shaping of public opinion
- Communication facilitates collective action
- Actionable information initiates self-action
- Wider media links bring attention to issues of the poor
- Media presence improves success rate of redressals
- Advocacy with stakeholders helps shape policy

Increasing spheres of media influence
In our region, a lot of people suffer from skin and lung cancer; birth defects; inability to carry pregnancy... The number of people suffering from tuberculosis is also increasing day by day. Hence, we decided to initiate a weekly health advisory on our club by partnering with community health workers and local doctors to discuss the preventive and curative measures of diseases like tuberculosis, malaria, diarrhoea, and also help people point to hospitals and clinics where they can seek treatment for cancer, issues of reproductive health and others ...

- MV volunteer from Jharkhand
“... Mobile Vaani is like an ideal community media platform where people represent themselves the way they want to. They don’t need an external news agency or a journalist to cover their issues on their behalf... it is the people who own and run the entire MV platform right from choosing the issue they want to base their discussion on, to composing a report, a message, a song or poetry... and recording it on the forum with a view to encourage further discussion within the community or make a dent in government administration or giving mainstream media like our newspaper, material to base news reports on...”

– Caller from Jharkhand, working with a mainstream newspaper
Signalling the character of the medium

Platform managers can define fairness policies:
- Equal coverage to all aspects
- Max-min fairness with at least 5% coverage to each aspect

New content recorded → Reject noisy || blank audio → Remove periods of silence, get transcript from Google Speech API → Topic classification, gender classification → Route audio to volunteers for ratings and review → Ranking of content based on fairness and diversity policy

Biased data?

Community inquiry processes?