



Disaggregating Mobile Services for Emergent Users

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Overview

- Emergent users
- Process: participatory design workshops
- Prototype design and studies
- Disaggregation: the Better Together framework

Emergent users

- People who are just starting to get access to advanced mobile devices and services
- Often resource constrained

Devanuj and Anirudha Joshi. 2013. Technology adoption by 'emergent' users: the user-usage model. In *Proceedings of the 11th Asia Pacific Conference on Computer Human Interaction (APCHI '13)*

Traditional HCI

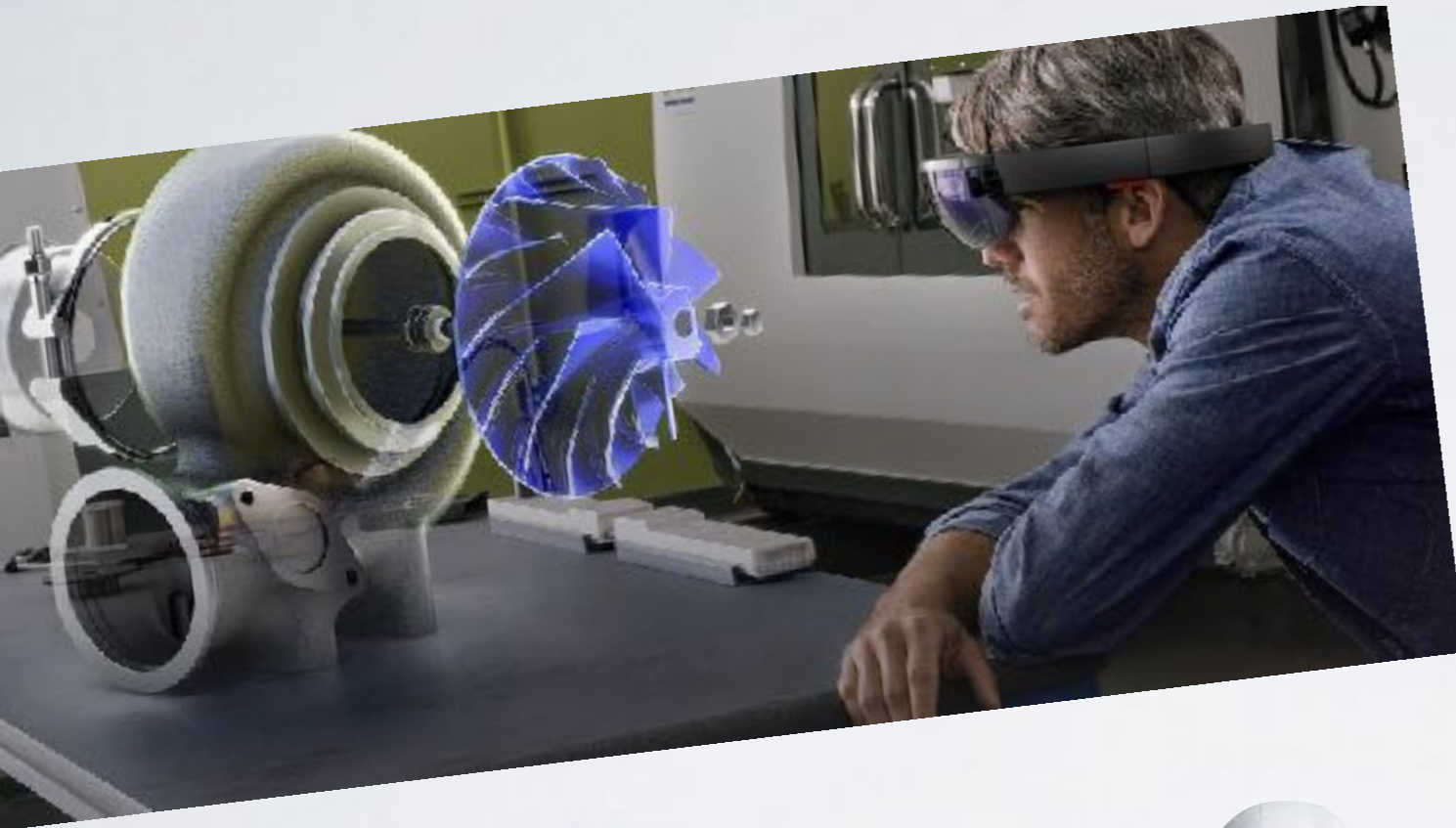


- Build things based on gaps in knowledge, problems with current systems, feedback from probes, etc

Traditional HCI 4D

- Innovating mobile solutions using current or older technology, adapting or appropriating where suitable

In contrast...





Trickle down
technology

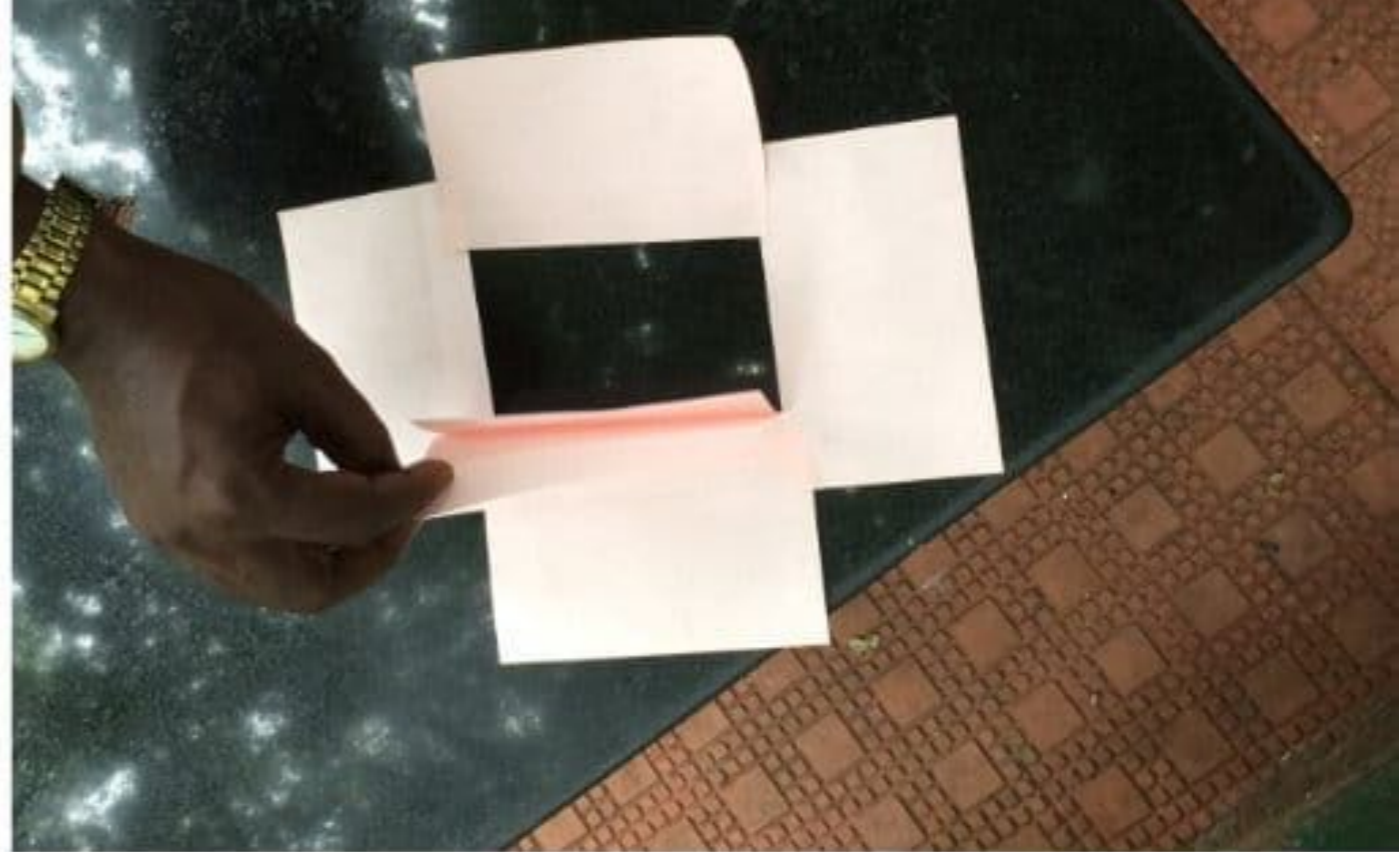
HCI4D: Our view

- Emergent users have unique perspectives
- Aim: direct involvement in the creation of far-off future devices and services

Our approach: Participatory design workshops

- This paper: several events over a two-week period
 - Workshops; summit; designing; refining
- 49 emergent users in Bangalore, Nairobi, Cape Town
- Help us think about future devices and services.





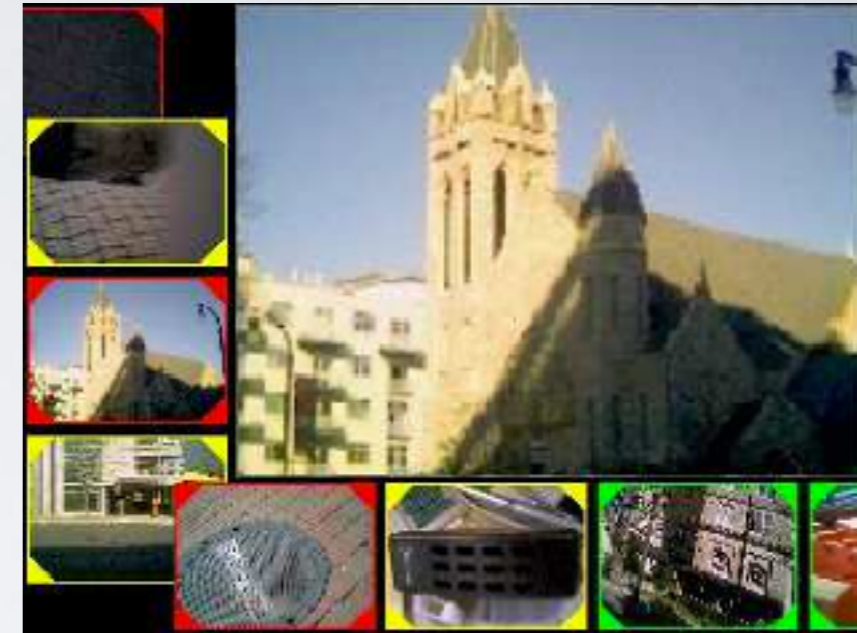
Related work



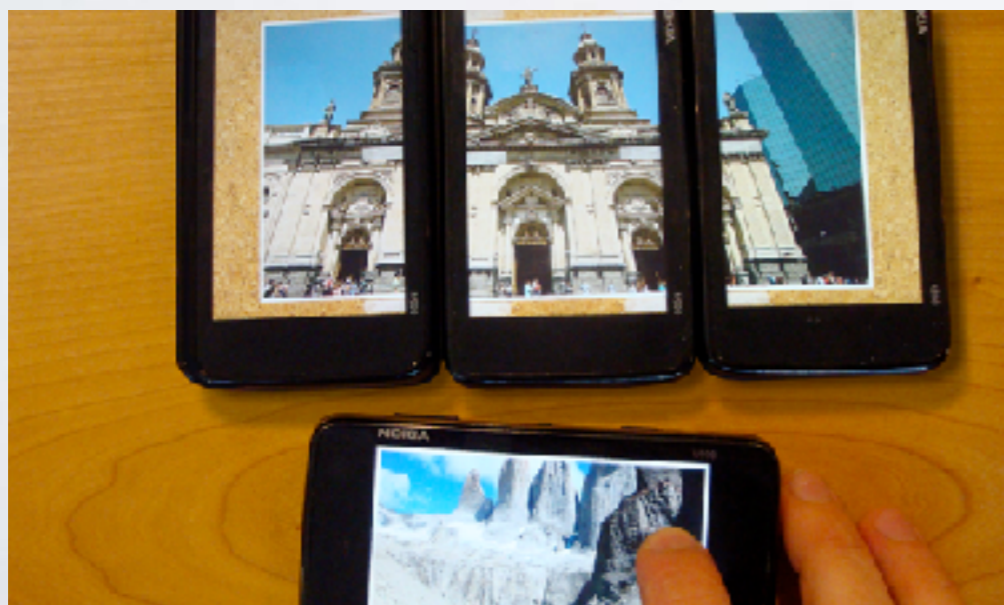
Migratory Applications [5]



Webstrates [19]



MobiPhos [6]



Pass-Them-Around [22]



Siftables [30]

Better Together design



Benefits

- Internet free
- Share resources:
 - Data connections; storage space;
 - Larger screens; better speakers
- Reconfigurable interaction area – show (or repeat) any component on any device
- Scaffold help for people who are less technologically savvy

Studies

- Lab study
 - 48 participants (Mumbai, Cape Town)
- Deployment
 - 48 participants (Mumbai, Cape Town, Nairobi)

Lab study system: shopping



Lab study system: shopping



Select a category
Which changes the items on the component phones

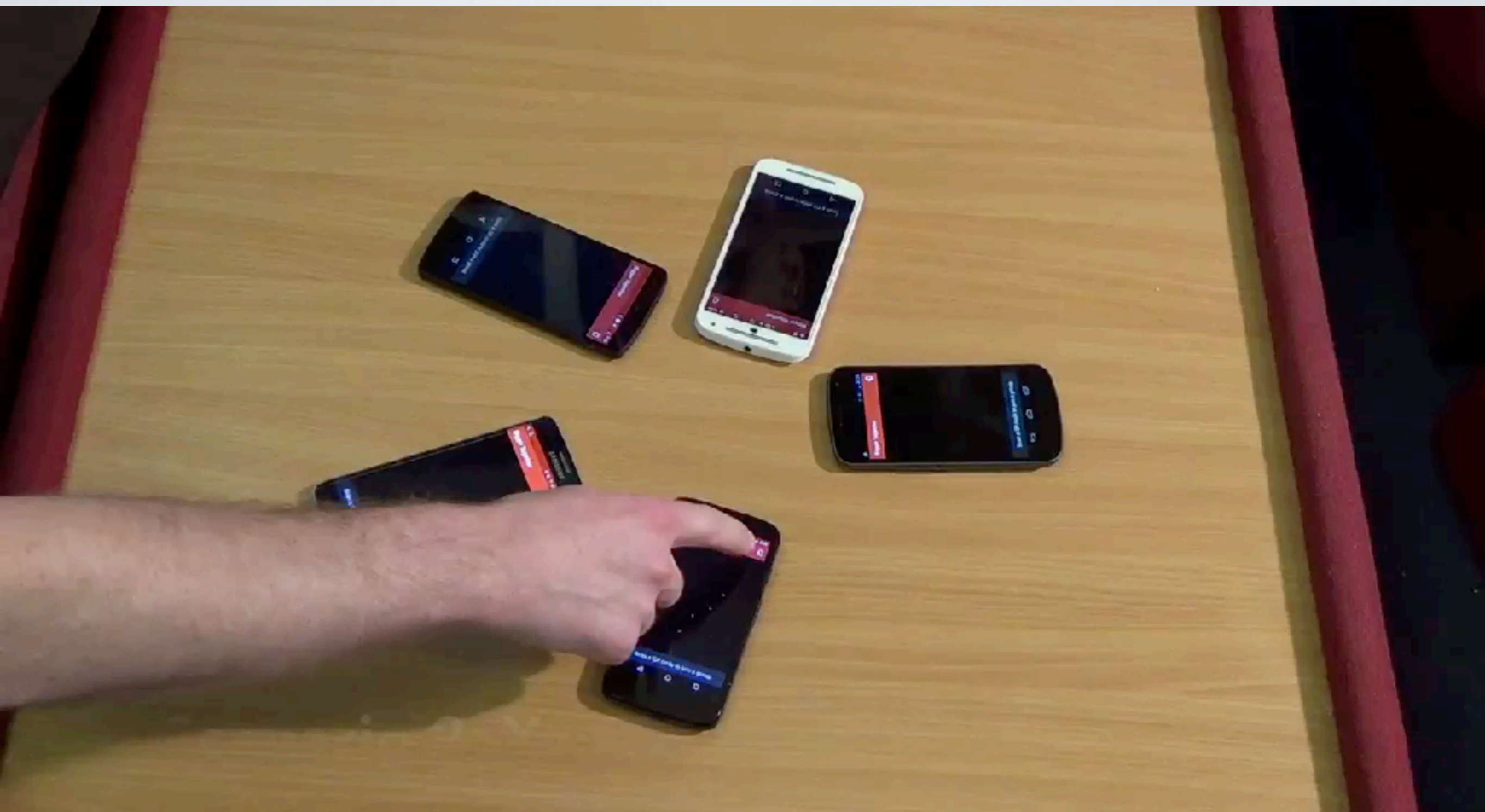
Lab study results

- Better Together performed as well as the standard interaction method
- Some aspects too simplified (flipping phones)
- Suggestions for other applications and more common group-based interactions
 - Watching video

Watching videos together



Deployment system: video



Deployment results

- 356 videos watched using the system
- Most popular in India; least popular in South Africa

	Total sessions	Ease of use
Mumbai	208	6.3
Nairobi	105	7.1
Cape Town	43	4.6

Feedback

- *“when watching, my phone was the screen because it had the bigger screen”*
- *“it’s fun because it’s like having a TV – there’s a screen and a remote control”*
- *“only one phone uses bundles”*

Improvements

- Technical
 - Connection method (speed and reliability)
 - Split other resources – audio, screen
- Social
 - *“we all have different tastes, so everyone had to compromise and take turns to select a video for everyone to be happy”*
 - *“the application is not for me – I don’t watch with friends and I enjoy being alone”*

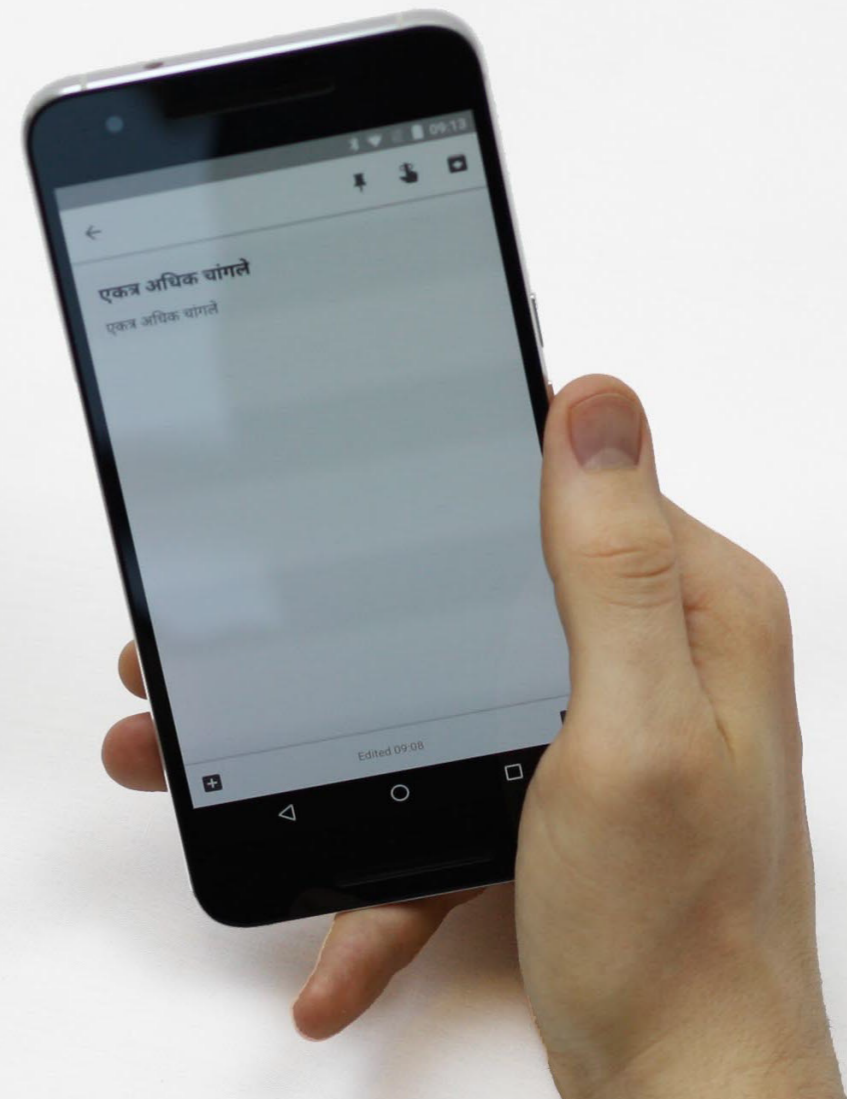
Open source toolkit

- Open-source, extensible platform
- Disaggregate the components of complex services
- Allows separate devices to each represent and provide a single component of the overall interaction

Plugin-based

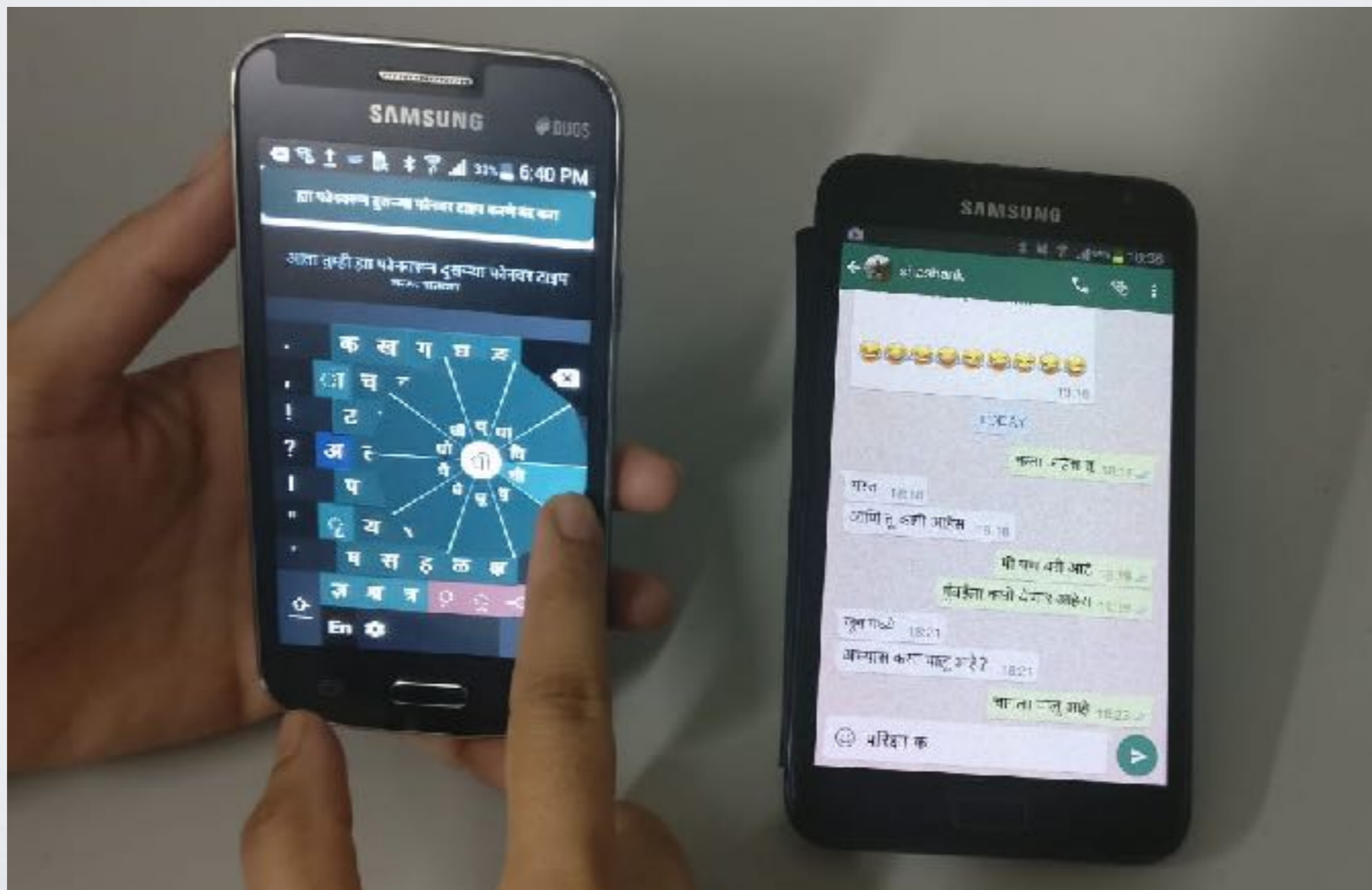


Swarachakra



Swarachakra

- Standalone keyboard (i.e., use in any app)



Resources

- Code: bettertogether toolkit.org/source
(GitHub - Apache 2.0 license)
- App: bettertogether toolkit.org/app
- Swarachakra keyboard:
bettertogether toolkit.org/keyboard
- Contact: apps@bettertogether toolkit.org



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