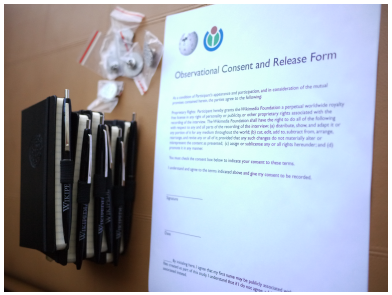


Mobile Research: India & Brazil
Conducted and Prepared by: Parul Vora and Mani Pande
November 2011
User experience research from India & Brazil

WIKIMEDIA FOUNDATION

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EXECUTIVE SUMMARY

Our mobile research in Brazil and India surfaced opportunities to improve the experience of Wikimedia Foundation's mobile offerings across the geographic regions, languages, and cultures of both countries. User experience research conducted in the United States shows a significant amount of overlap as well. It should be noted that our findings and recommendations are tailored for existing Wikipedia users, only some of whom use the mobile web, and are diverse as to gender, age, profession, device types, use cases, and user types.

The three opportunities with the greatest perceived impact are:

Improving our search functionality across all languages. Specifically, we can provide search suggestions, autocomplete, autocorrect and other tools that ease typing and search burdens on mobile devices; support search in all language Wikipedias as well as allowing users to chose and switch between languages; incorporate transliteration tools for languages with fonts and characters that have poor mobile support; support and even enhance users' existing habits to use Google to reach Wikipedia articles; and enable users to search within a Wikipedia page.

Optimizing our reading experience for mobile devices and generalized use. First and foremost, we can redirect the breadth of devices in use that aren't currently redirecting to our mobile site. Beyond that, on our mobile properties we can allow users to modify or set one-time preferences for the display of images, the font size, and any element that affects page load and size. We can also allow preferences for language and navigation; the ability to watch or bookmark articles; or save content offline; offer content in more digestible pieces, or with quicker access (i.e. preview or easy access to the first paragraph or new "mobile summary"); search offline, i.e., while in transit or without a data plan; and generally follow expectations set by mobile web interactions and standards. Though this research has tried to make recommendations regardless of whether these features live on a mobile site or within a mobile app, we do believe it is crucial to offer both an official iOS and Android app that offers at minimum a simple and easy search and reading experience.

Using the mobile platform to both increase user engagement and awareness of features on Wikipedia as well as providing new opportunities for participation. This is the least-defined of our high priorities, but the mobile site and potential apps provide many new paths for both engagement, participation, and contribution. At present, the mobile site can be used to build awareness around existing features on the site that current users are blind to (i.e. watchlists, accounts, editing, inter-langauge links, history); to provide features that make opening a Wikipedia account worth doing, something that the majority of our participants do not currently see any

reason to have; increase visibility of local language Wikipedias, especially in India; prompt users to download an official app when possible; and interface with other web content on mobile devices (Google, news, entertainment, and sports content, for example "Wikitap"). The contributions that showed the highest potential for adoption were adding photographs, "flagging" or "marking" something that needs to be edited, removing or marking vandalism, adding links, adding location or geodata, and potentially making small typing or formatting edits.

And finally, the mobile site can support the editing practice of existing editors by first offering current features in high use on the site in a mobile friendly format. Those with the highest demand and potential are recent changes, which is consumed like an update feed or email; accessing watch lists; making reversions, especially with respect to vandalism; logging in and accessing account and user pages; and serving discussion pages and article histories.

Opportunities: Use Cases

Readers turn to mobile Wikipedia under different scenarios offering us several new ways of engaging them.

- **"I need to know X":** Often readers use mobile site because they quickly need to find information so we should make it easy for them to find what they are looking for easily and quickly through improved search.
- **In transit:** Due to growing ubiquity of mobile devices, readers turn to them when they are on the move, we should provide reading opportunities like saving articles offline and quick search to enhance reading.
- **Saving Data & Money:** Even though data costs are falling rapidly, for many readers data remains a prohibitive cost, for these readers an offering like Wikipedia Zero or offline Wikipedia would be important to provide access.

Opportunities: Technology

Depending upon the kind of device that readers use to access Wikipedia, we have opportunities to tailor the Wikipedia experience.

- **Feature Phones**. We should focus on a better reading experience by providing the option to access the text only (WAP) site, and use of SMS to query Wikipedia articles.
- **Entry level Smartphone.** For smartphones that don't have an official app, our focus should be on an enhanced reading experience and some editing through the site.

- **iPhone/Android Smartphones.** Apps provide the most flexible framework for enhancing reading experience and enabling editing on mobile. We should develop apps that provide platform for contributions like uploading a picture, fix typos, fight vandalism, adding location relevant content. There are several reading enhancements that can be enabled through apps like links to similar content, improved glossary of content, search within Wikipedia page etc.

Opportunities: Geographies

Due to language diversity India and to some extent Brazil provide unique opportunities for enhanced reading, engagement and search experience.

- **Brazil.** Since majority of readers in Brazil read Portuguese Wikipedia, and the perception is that it has matured in the last few years and has good Brazil specific content, there is an opportunity to engage new editors on mobile who are willing to contribute content about Brazil; support input without characters, top used languages are clear (portuguese, english, spanish, italian, french),
- **India.** While English Wikipedia will continue to be popular in India, there will be new opportunities when new readers (especially from smaller cities and rural regions) of Indic Wikipedias come online via the mobile web. We should focus on transliteration tools, work with device manufacturers and browsers to ensure popular rendering of scripts, enhance keyword search across languages and provide India specific landing page on the mobile for easier navigation.

INTRODUCTION

In our recently concluded strategic planning process, the Wikimedia Foundation made it a priority to replicate our success in reaching Internet users in the developed world by expanding our reach in the Global South. We seek both to provide readers with quality content, and to help develop local editing communities in their native languages[1]. In this context, Wikimedia has identified mobile as an important channel for reaching current and potential readers and editors in the Global South.

To better understand and serve these mobile readers and editors, we conducted face-to-face interviews with 51 respondents in India and Brazil across five cities between April and June 2011. Based on this research, we have identified three broad themes that emerged from studying how users living in these countries read and edit Wikipedia. We also studied their usage of other popular websites like Facebook and Twitter to better understand how readers like these contribute online. This understanding is essential to providing a good mobile Wikipedia experience to users in these key geographies and beyond.

- **Growth of the Mobile Web:** Like many countries in the Global South, India and Brazil are experiencing rapid growth in the mobile web, with expansion of mobile networks, introduction of 3G services and increasing adoption of smart phones. People are turning to their phones to access the Internet when they are in a hurry, on the move, or when access is restricted, or simply because it is more convenient. The increasing popularity of Facebook, and the desire to stay connected with friends on Facebook has accelerated mobile web adoption, as has falling prices for data. Although more respondents still read Wikipedia on their PC than on their mobile, we found that in both the countries users read Wikipedia on the mobile during their commutes, and while at school or office when they didn't either have access, or access was restricted to a handful of websites.

- **Relationship with Wikipedia:** Wikipedia is considered both a reliable and an authoritative source of information -- "the best that can be found on the web." Wikipedia is viewed as more than a "starting place" for research and a quick reference for facts. But most users in India and Brazil were either unaware that anyone can edit Wikipedia, or as is the case elsewhere, felt that they did not have anything to contribute or lacked the requisite expertise. When prompted to try editing anyway, users were overwhelmed and found the editing interface unintuitive for anything beyond editing text. In India and Brazil, the local language Wikipedias remain far less developed than

[1] http://upload.wikimedia.org/wikipedia/foundation/c/c0/WMF_StrategicPlan2011_spreads.pdf

the English version, and those users that can read both a local language and English frequently check articles about local cities, customs, food, etc. in both languages.

- **Cross device experience:** In both India and Brazil, most of the participants in the study use more than one device to access the Internet, including Wikipedia. A small minority of participants, all in India, cite their mobile device as their primary access to the Internet. More often, participants are using desktops and laptops in their homes, offices, schools, or in Internet cafes. When reading Wikipedia, participants are looking for a continuity of experience across devices or a seamless experience that is not broken despite switching devices. For most respondents, mobile Wikipedia was not adequate as a standalone experience across devices and needs to be improved.

PERSONAS

Every participant in our interviews in India or Brazil, whether a student in Salvador or a mom in Delhi, had unique perspectives, and different habits, motivations and needs. They engage with Wikipedia in different ways and have different expectations and preferences. Nevertheless, some general patterns and themes emerged. We have created the following four personas to help with our development of Wikipedia mobile features and sites moving forward.

SMART TECH	PC TECH	LO or CELL TECH	ANY TECH
			
David	Mona	Mariana	Gautam
• Feature Rich/Smart Phones (prefer mobile) • Unlimited Data Plans • Integrated mobile + web accounts • Multiple devices • Separate work and home computer • Skew Younger • Phone, SMS, Email, Facebook, Music, Games, Apps, Location based Services, Wikipedia, News sites.	• Internet ready phones - high end feature phones to smart touchscreen devices (prefer PC) • Basic Data Plan • Mobile use is slave to PC or computer use • Multiple devices • Phone, SMS, Email, Facebook, Music, Games, other things pre-installed on device	• Feature Phone (primarily PC) • Basic, Prepaid, or No Data plan • Mobile Web access is very limited due to device and connection • Internet savvy • Shared computers at home and work/office/school •Phone, SMS, Email, sometimes Facebook, Games, Wikipedia	• Internet ready phones - high end feature phones to smart touchscreen devices (no preference) • Full or Unlimited Data Plan • Device savvy, not necessary web savvy •Phone, SMS, Email, Social Networking, News Sites, Wikipedia.

SMART TECH: Heavy mobile user, PC as well, always connected across devices

Gurmeet in New Delhi

David in Salvador

Helio in Sao Paulo

Deepa in New Delhi

Who Am I?

"My father pays for all my technology. I don't know the cost of my data plan or my phone"

David is a 18-year-old student, who recently graduated from high school. He lives with his parents, and twin sisters in a condo in a high rise building in an affluent neighborhood in Salvador. He also has two older half-siblings from his parents' previous marriages. They are both married and live elsewhere. David wants to be a doctor and is studying to take his qualifying state exams to enter medical school while enrolled in a local preparatory college. David spends hours everyday preparing for these qualifying exams, hoping to get into a government-run medical college, which in Brazil are more prestigious than private colleges. He believes his hometown of Salvador is "old fashioned" and wants to move to the South of the county to kickstart his professional life. David's father is a rich businessman who pays for all of his technology devices and services. David loves technology, and changes mobile phones often, always with an expensive data plan. David has many friends, some of whom live in the same building as he does. He often goes out with them to malls and restaurants to have fun. He is also a gamer, and plays World of Warcraft often.

My Devices: Mobile and PC

"I like my mobile phone because it provides me a fast connection anywhere. I have had 3G for two years. My connection is really good."

As a heavy user of technology, David owns two computers -- a laptop and PC. He doesn't share his laptop with anyone at home, but shares the PC with his sisters. He also has access to a public computer at his preparatory school. He has a high-end Blackberry phone that he recently chose over an iPhone because he wanted to use Blackberry Messaging (BBM) service to chat with his friends. He has a 3G connection on his phone with an unlimited data plan. He prefers to use his mobile phone over his computer because it is fast, convenient and available anywhere. He has installed several apps on his phone: Facebook, Whatsapp and Twitter. He is a heavy Twitter user, and has made over 11,000 Tweets; most of his followers are located in Brazil. He access Twitter both on PC and mobile, but prefers mobile. He is also a heavy user of Facebook, which he also prefers to access on his mobile phone. He likes Facebook because it allows him to "follow lives of people he likes." He used to have an account on Orkut, but doesn't use it very often any longer. He uses Four Square also on his phone, and frequently checks into places. He is very proud to be the mayor of several "important" locations.

Wikipedia Usage

"When I need to use Wikipedia I do it mostly on the mobile, example, when I am at the college and I have a doubt concerning a disease... then I just open up Wikipedia on my phone, and search for information about the disease."

David started using Wikipedia when he was in school, even though his teachers didn't like students to use it for assignments, believing it to be unreliable. He prefers to read Wikipedia on the phone because he can quickly find what he is looking for. He accesses Wikipedia during his classes at his prep school. He says that it is faster than asking the teacher, as there are about 100 students in the class. He primarily looks for medical information on Wikipedia, and thinks that the quality of medical content on Wikipedia needs to be improved. He knows that anyone can edit Wikipedia, but has never done so himself. He is willing to try editing since he believes that Wikipedia represents a great social and common good, and he would like to contribute to it. He is not intimidated by Wiki Markup Language, and if nudged or provided the right incentive, he could potentially become a proficient editor some day.

Opportunities

- **Provide cross-device experience:** A seamless experience across devices (PC, laptop, mobile and tablet) that doesn't break the reading experience.
- **Provide location-based information:** Geo-targeted articles near David.

- **Provide pithy summaries for when "I am in a hurry":** Summaries of articles (first 500 words) for the mobile phone.
- **Provide help for editing:** Since he is tech-savvy, he can be persuaded to become an editor. But he might need an initial nudge through mentorship, tutoring, and real-time help from fellow editors.

PC TECH: Heavy PC user, has a feature phone, uses mobile web rarely

Carolina in Salvador

Rosi in Sao Paulo

Manish in New Delhi

Anurag in New Delhi

Who Am I?

"Earlier I used to sit at home and be on Facebook the whole day and then I realized that this is not the life I wanted. So then I decided to go out to work."

Mona is a mom of three school-aged children, and lives in New Delhi. She is in her late thirties, and has been married for over 15 years. She has a part-time job as an account executive at a five star-hotel. Mona's husband is a businessman, who travels frequently so it falls to her to manage the home front. She likes her role of the "boss of the house" and is highly involved with her family, especially her children. She supervises their studies and uses Wikipedia to help them with their school homework. But she doesn't want to lose herself as an individual so she finds time to pursue her own interests, working towards fulfilling personal goals and ambitions. When she found the hotel job recently, therefore, she negotiated a flexible schedule with her manager so she can continue to take care of her home and family. Both Mona and her husband love to party and have fun. They have a large social circle of friends and family, and often throw parties at their house and stay up late into the night eating, drinking chatting with their friends, and playing board games. Mona loves to cook and to find new recipes for new dishes. She also loves to read, and often curls up with a romantic novel at the end of the day. She often unwinds by listening to music on her PC.

My Devices: Mobile and PC

"I definitely think that mobiles have come a long way and it is a necessity....and even though I don't still use it for Internet surfing, I do use Facebook on it at times."

Mona is primarily a PC user. She spends about two hours every day on the computer surfing the Internet. She checks her Facebook account daily on her PC, uses IM on her computer to chat with her family in Europe, reads Wikipedia, and searches for other information using Google. She shares her PC with her children, who use it primarily for school work and surfing the web. Mona has been using a Nokia 7210 (feature phone) for a long time now. She uses her phone primarily for talk, but uses other time management functionalities on the phone:. including watch, alarm clock, planner and organizer to keep track of her time, important dates and any other useful information. She hardly ever uses the mobile web because her phone doesn't have much screen real estate and she doesn't want to use too many bytes from her limited data plan, but she has made one exception. She uses Facebook often on her phone to check updates from her friends, primarily when she is commuting to work in the subway. This is as far as she is willing to surf on the mobile web on her current device.

Wikipedia Usage

"This site was shown to me by my daughter. She was told by her friends, they used to use Wikipedia a lot. She showed me the site and told me 'if you don't find something on Google, you can find it here.'"

Mona uses Wikipedia to help her children with their homework, and sometimes also uses it to look for information about current topics.
She used to struggle to help her children with their studies until her elder daughter found out about Wikipedia and showed her how to use it. For helping her children with their homework, Mona reads through the article, cuts-pastes onto a Word document, simplifies the language for her children and then asks them to write it out in their copybooks. She also looks for suitable pictures that they can then use. In trying to look for answers, Mona has explored not only the Wikipedia site somewhat, but Wikiquotes, Wiktionary, and has even sought answers through the reference desk. Mona only accessed Wikipedia once on her mobile phone, but she found it too difficult to do search on the small screen of the phone and since her phone didn't redirect to the mobile site she was served the desktop site that required too much data.

Mona wasn't aware that anyone can edit Wikipedia. She thought it was written by experts, but even after discovering that anyone can edit it, she is not willing to take the plunge because she believes that she is not an expert on any subject.

Opportunities

Read Offline: Since this user is not online 24/7 and is somewhat price conscious, provide her with the ability to read articles offline.

Wikipedia Zero: Every data byte counts, so Wikipedia Zero is a good option for this user, who wants to minimize spending on data and reads Wikipedia on a feature phone.

CELL (or LOW) TECH: basic plans and phones limit mobile access; otherwise internet savvy

Alexandra in Salvador

Shruti in Bangalore

Arun in Bangalore

Arjuna in Bangalore

Who am I?

"Free time, Do I have any? Sometimes."

Mariana is 23 and lives in Sao Paulo, where she is studying. She is taking four courses, works a part time job, and is starting to look for a "stable and professional job". She enjoys reading local papers, getting involved in local social and political meetings, speaks Portuguese primarily but also is fluent in English, keeps a private blog which she only updates occasionally semi-regularly, and likes going out shopping or to the theater with friends, and to gatherings of her singing group.

My Devices + Internet use

"If it's free, I'll take it."

Mariana is Internet-savvy and she primarily accesses it in public places where the connection is faster and free. Mariana has a Nokia feature phone that she selected from the phones that her Oi prepaid plan offers her for free. She has a basic plan, but she noticed a recent promotion for Internet access for Rs 0.50 a day which she is considering signing up for. When they become affordable, when she has the funds, or when there is a good deal from Oi or any other provider, Mariana intends to get a smart phone (or potentially a tablet) for visiting the diverse set of online sites and services she currently accesses via PC. She would opt to put more investment into a phone or

tablet than a new computer, but worries that smartphones and tablets draw more attention from potential thieves. At present, she uses a desktop computer at home that was purchased in 2009, and she shares it with her brother, mother, and father.

Wikipedia Usage

"It's not like email where you feel like you have to remember. I don't feel that way about Wikipedia."

Mariana started using Wikipedia in high school, which was her first introduction to the internet. She can't recall how she started using Wikipedia, but she reads it in both Portuguese and English. She has noticed that the English version of most articles is better than the Portuguese counterpart, but that the general quality of the Portuguese Wikipedia is improving. Mariana primarily accesses Wikipedia for school papers and other research, but she also uses it to regularly verify information or to look up something that she might have read about in GI, the national newspaper.

She accesses and contributes to other sites with user-generated-content and crowd-sourcing models, and is aware of the way that Wikipedia is created and edited. She has tried to edit once or twice, mostly to translate materials from a long article in English to a shorter version in Portuguese.

Mariana doesn't regularly access Wikipedia on her Nokia mobile as she does not have a data plan. When she looked at the mobile site on her phone, she found the format to be difficult. But more importantly, she says is more practical and less expensive to look something up when she is at a computer.

Opportunities

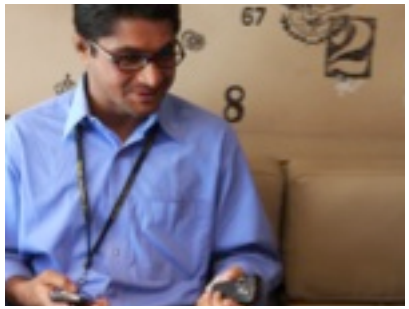
SMS Wikipedia Queries: Provide the ability for SMS queries and deliver the first 500 words or introduction from an article.

Wikipedia Zero: Free mobile Wikipedia access, potentially even a plan associated with this access.

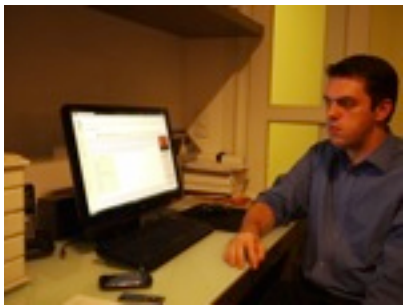
Offline: Save for later, save offline, and other mobile markers or reminders for later use on a computer.

Editing help: Participation and editing on boarding -- tutorials, mentorship, real-time assistance, ability to chat with other editors.

ANY TECH: Multiple computers, multiple phones, what's around and suitable.



Gautam in Bangalore



Carlos in Sao Paulo

Pablo in Sao Paulo

Syrana in Sao Paulo

Who am I?

"Five years from now, I want to be working in a very famous automobile company -- in Europe, not in India."

Gautam is a 28-year-old automobile engineer living and working in Bangalore. His passion for automobiles started in high school. He spends his free time, especially weekends, with friends: Eating out, taking motor bike rides, and sometimes traveling to nearby cities. He reads a variety of papers, blogs, and other sites regularly and likes keeping on top of current events, automobiles, technology, cricket, and entertainment news. This makes him a sort of "go to guy" amongst his friends. Beyond consuming information, he lightly uses Facebook and contributes to several automobile bulletin boards and communities. He is career-driven, and may pursue a PhD or start a company of his own in the future.

My Devices

"I'm a fan of technology and getting things done. People get used to their device when it should be the opposite."

Gautam sees himself as a power user of the Internet and spends a significant portion of his life online. He uses whatever device is around and most convenient and so would like synchronization between his devices. Gautam has a Blackberry phone given to him by his

employer, and he also uses a Nokia 5800 that he bought a year ago. He has been noticing the Android devices and wants to buy a Samsung Android device soon since certain apps allow for easier access to Internet sites.

The automobile company Gautam works for blocks access to his personal email and Facebook, so he has set his phone to receive notifications of these activities. Since he finds it easier to type through his Blackberry because it has a QWERTY keyboard, he opts to write or email either on his Blackberry, or (even better) a computer. He moves seamlessly between his computer at work and the Lenovo laptop he keeps at home.

Wikipedia Usage

"Or let's say I don't know about atheism or I have a few doubts about what atheism is, then I will go to Wikipedia. I will just type atheism wiki and I will go there."

For Gautam, Wikipedia is the first source for any information he needs. He says he can find detailed content as well as links to other relevant websites. He explains that he used Wikipedia heavily during his college days when he needed it regularly for references and project work, but he still ends up there through Google or by directly going to (en.)wikipedia.org and searching from there. He is aware of other language Wikipedias but has never read any of them since he always reads online content in English and most of his education has also been in English.

Gautam likes the range, breadth, and depth of information on Wikipedia, as well as its general quality and reliability plus the references. He does note that the pages and information sometimes seems comparatively static, especially given his inclination for accessing the latest information from a variety of online sources.

He would use Wikipedia on his mobile device in many situations, except that Wikipedia pages are not optimized for his mobile screen, and it is too cumbersome to manually zoom all the time. He also notes that there are too many elements on the mobile page that are not relevant to his needs. He might also be interested in an app for his device as he basically likes whatever works.

Opportunities

Fix mobile redirect: Provide a better reading experience.

Cross device experience: Provide login to have a seamless experience across devices.

Notifications/Updates: Since he values Wikipedia for being a reliable source of information and knowledge provide notifications about featured articles in Wikipedia via a login account.

DEVICE ECOLOGY

India

In India, based on mobile web browsing behavior, there are three distinct typologies:

Smart Tech	PC Tech	Cell Tech
 *Prioritize Smartphone*	 *Prioritize Computer*	 *No Mobile Web*
Mobile Web: Always connected to the mobile web, power users, prefer Internet on phone to computer since it is more convenient.	**Mobile Web:** Use mobile web sparingly, only when they don't have computer, prefer using Internet on PC.	**Mobile Web:** Don't use Internet on the phone, limited use of Internet on computer.
Browsing Behavior: Chat apps, Email (read and write), dictionary, Facebook (check and make status updates), jailbroken apps, download Bollywood music, check cricket scores.	**Browsing Behavior:** Check email, Facebook access, download and listen to Bollywood music, check cricket scores, chat apps.	**Browsing Behavior:** Only talk or SMS on the phone, SMS jokes to friends, listen to music on phone.
Devices: iPhone, Blackberry 8520, Samsung Galaxy 3, Samsung SGH-F480	**Devices:** Sony Ericsson Xperia, Nokia 7210, Nokia 5800, Windows Mobile	**Devices:** Local Chinese and Indian phones, Nokia Xpress Music

Brazil

In Brazil, based on mobile web browsing behavior, there are three distinct typologies:

Smart Tech	PC Tech	Cell Tech
 *Prioritize Smartphone*	 *Prioritize Computer*	 *No Mobile Web*
Mobile Web: Always connected to the mobile web, power users, prefer Internet on phone to computer since it is more convenient.	**Mobile Web:** Use mobile web sparingly, only when they don't have computer, prefer using Internet on PC.	**Mobile Web:** Don't user Internet on the phone, limited use of Internet on computer.
Browsing Behavior: Research, news, read and send emails, browse documents and images, access social networks, post and check updates, upload images, Tweet, check-in to places.	**Browsing Behavior:** Check email, but don't open attachments, access social networks, but no contributions.	**Browsing Behavior:** Only talk or SMS on the phone, don't have Internet set up on the phone due to high cost, and have a prepaid voice plan.
Devices: iPhone, Blackberry 8520, LG Scarlet, Samsung Galaxy 3, Motorola Milestone, Nokia N900, Nokia e72	**Devices:** Nokia 1800 xpress Music, LG Octane, Samsung S5230	**Devices:** Nokia X3, ZTE Mobile

RESEARCH OBJECTIVES

The key objective of this research was a deeper ethnographic exploration of Wikipedia readers and editors behavior:

- To get a broad understanding of how Wikipedia readers access, read, search, consume, or otherwise use Wikipedia content on mobile devices.
- To observe and understand Wikipedia editors' current editing practices, with an emphasis on mobile devices but also including desktop and laptop computers and other devices used in their editing processes.
- To get insights on cultural and technical ecology of Wikipedia in India and Brazil. Specifically to identify notable behaviors, preferences, barriers, mobile and data services, brands, and platforms, and content delivery that can develop our mobile growth.
- To identify both needs and opportunities for mobile accessibility and development in Brazil and India that can be extended to our entire community and users.
- To present needs and opportunities and prioritize in collaboration with the mobile business, product design and development team.

METHODOLOGY

India

Research was conducted in Bangalore and Delhi to provide us with the opportunity to cover several Indic language readers and editors (English, HIndi, Telugu, Tamil, Kannada, and Malayalam).

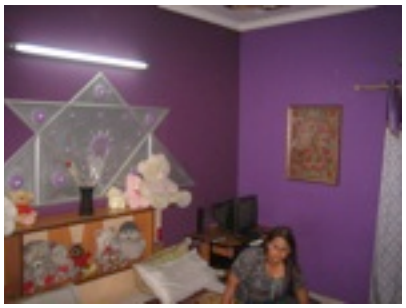
The Process

The research ensured multiple touch-points with the participants, both readers (current mobile readers and potential mobile readers) and editors.

1. Pre-interview tasks through online diaries, activities.
2. Face-to-face individual ethnographic interviews with a contextual "Show & Tell."
3. Some post-interview online tasks, reports after testing out Wikipedia on their mobiles.
4. A workshop where we brought together some readers and editors (mainly from Bangalore, with one participant from Delhi) plus some experts from the mobile space.

Indian Art

New Delhi airport



Respondent at home in Delhi

Living room in Banglaore

Sample

A total of **31 ethnographic interviews** were conducted across Delhi and Bangalore among Wikipedia readers and editors. We took care to ensure diversity across gender, age, and life-stage, as well as to cover Wikipedia editors in both English and Indic languages.

It should be noted that while we specifically recruited respondents that use Wikipedia regularly on their mobile devices, we had difficulty doing so in both Brazil and India. Also of note that it was particularly difficult to find editors who also read Wikipedia regularly on their mobile devices. In all of our recruiting, we found only one respondent who was editing Wikipedia both on a computer and on a mobile device.

	Bangalore	Delhi	Total
Readers	14	9	22
Editors	6	2	8
Total	20	11	31

Brazil

The research was conducted in three cities in Brazil: Sao Paulo, Salvador and Porto Alegre, to account for geographic, cultural and technological diversity in the country.

The Process

The research ensured multiple touch-points with the participants, both readers (current mobile readers and potentials) and editors.

1. An online questionnaire was sent to several mailing lists to identify Wikipedia readers and editors.
2. Respondents selected from the questionnaire participated in digital diaries where they provided their input to specific assignments.
3. Detailed face-to-face interviews with participants and cognitive walk-throughs.

Respondent in Salvador

Skyline Sao Paulo

Slum in Salvador

Pay phones in Sao Paulo

Sample

A total of **20 ethnographic interviews** were conducted in the three cities. We took care to ensure spread across gender, age, life-stage, occupation and income.

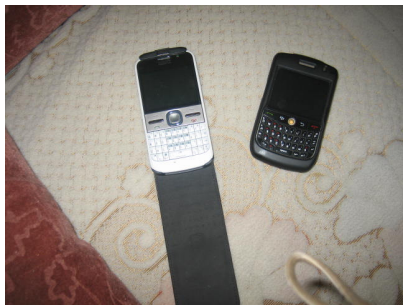
	Salvador	Sao Paulo	Porto Alegre
Readers	6	6	3
Editors	2	3	0
Total	8	9	3

FINDINGS: OVERALL MOBILE WEB EXPERIENCE

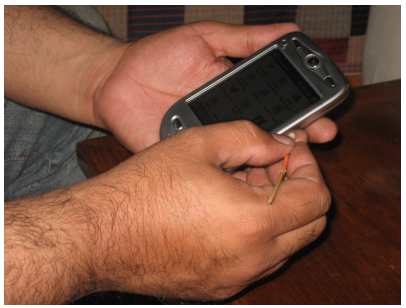
"I don't use the PC daily. I may not get on it for 4-5 days, but I am always on the phone."

-- Shristi, 16, Student, New Delhi

India and Brazil have experienced accelerating growth in the mobile web with expansion of mobile networks, introduction of 3G services and increasing adoption of smart phones in the last few years. People are turning to their phones to access the Internet when they are in a hurry, on the move, when access is restricted or simply because it is more convenient.



Chinese phone and Blackberry



Windows smartphone

iPhone and Blackberry

Mobile web ready feature phone

Indians and Brazilians seem to be constantly trading in and trading up for their mobile phones. In India, many respondents talk about buying the new "Android phone," which for most meant having a phone with a touch screen. In Brazil, the iPad was the most aspirational mobile device for the rich and poor alike -- " a lightweight device that provides connectivity when I am on the move." While Indians buy phones free of carrier contracts, most respondents in Brazil bought their mobile phones from their carriers (TIM, Claro, Vivo etc) in exchange for loyalty points, and were thus able to upgrade the phones at little or no cost. Although in both countries the mobile web can

be slow and intermittent, despite the promise of fast 3G services, this has not dampened the enthusiasm for mobile web among current users.

In India, 3G services just became broadly available this year. While the market is full of promotional trials for 3G, the plans remain too expensive for the majority of users. Of the approximately 40 million mobile Internet users, most today opt for a prepaid 2G, Rs 99 (about $2) per month for up to 2GB data plan that is offered by most carriers. India has the cheapest voice rates in the world, and intense competition among providers has made limited data plans affordable. Unlimited data plans continue to be extremely expensive, and can cost as much approximately Rs 4,000, or $100 a month.[2] The availability of the Rs 99 plan has led to the explosion of youth embracing the mobile web, using Facebook constantly and embracing chat apps like WhatsApp and eBuddy. For most mobile web users (especially youth) Facebook is the anchor for mobile computing. They are constantly updating their statuses, checking updates, and uploading pictures. Thus Facebook provides a key point of reference for how a site should work.

The Brazilian mobile web market is fragmented between North and South. While the data cost is very high in the affluent South (Sao Paulo and Rio de Janeiro), with users paying as much as $80 to $100 for data, there are cheaper plans available in the North (approximately $20 in a month). These data plans provide unlimited data access for a day for about R$ .50 or 30 cents. Like their counterparts in India, Brazilians, especially youth, are wildly embracing the mobile web to stay connected to their friends on Facebook or chat with their friends. In addition, most mobile web users in Brazil regularly access news websites on their mobile phones, since most carriers have links to popular news sites on the home portal.

Although more respondents read Wikipedia on the PC than the mobile, we found that in both the countries readers were accessing Wikipedia on the mobile when they were in a hurry, were looking for quick information, during their commute, while at school or office when they didn't have access, or where access was restricted to a handful of websites.

[2] http://strategy.wikimedia.org/w/index.php?title=File:Wikimedia_mobile_strategy_final01.04.11.pdf&page=1

Mobile Web: Google Search

Searches for Wikipedia content start in Google

The majority of searches for online information, including Wikipedia articles, start in Google. Although most users identify Wikipedia as a reliable online encyclopedia, they don't bookmark Wikipedia's home page in their browser (PC or mobile), install plug-ins or add-ons in their browser for easy Wikipedia surfing, or download Wikipedia app for a smartphone. In fact, most Wikipedia readers on both PC and mobile were unaware of these possibilities.

There is a consensus among Wikipedia readers that search functionality in Wikipedia is not the best, and it is often hard to find what they are looking for when using the site's internal search box. Many readers also pointed out that they miss the search box in Wikipedia because it is not prominently displayed. Mobile readers who were not redirected to Wikipedia's mobile site or started their search in the browser found the search to be even harder, since they had to start their search from the desktop portal. This forces them to type in a small search box and choose a language from a long drop down menu with about fifty options. But they expressed confidence in Google's ability to help them find what they are looking for. Articles from Wikipedia often rank highest in Google search results, and some readers interpret it as a nod of confidence in the reliability and credibility of Wikipedia. In both India and Brazil, we found that readers had improvised Google search by typing keywords plus 'wiki' in the Google search box, or by typing keywords in Chrome instead of the site URL.

India

By far the most popular way for readers in India, especially PC, to find Wikipedia articles is through Google's search bar. In Readers Survey[3] that we conducted recently in 16 countries, we found that readers are more likely to go directly to the portal on Pc or laptop v/s mobile in India (61% PC, 62% laptop and 37% mobile phone).

Readers choose Google over Wikipedia's search option for several reasons. First, they believed that Google offered them a wider set of choices (even though they admitted they most often ended on Wikipedia). Second, some readers believed that Wikipedia search was less refined than

> "I type the keywords along with the word wiki in Google, and Wikipedia is one of the first search results"
>
> -- *Kamal, 20, student, New Delhi*

[3] http://blog.wikimedia.org/tag/readers-survey/

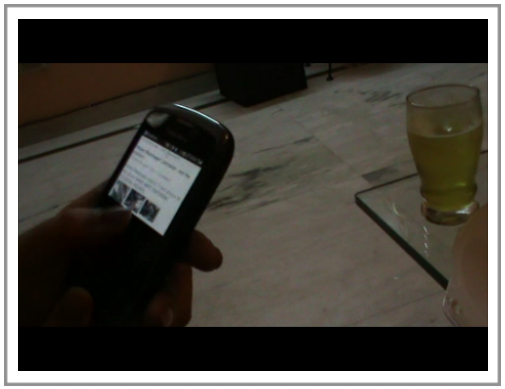
Google search, so by typing keywords in Google tool bar, along with the word "wiki," they can go directly to Wikipedia from Google. The least popular method is going to Wikipedia's portal (www.wikipedia.org) and selecting the language and then searching using the search tool bar.

When readers find what they are looking for in Wikipedia, they tend not to bookmark the article page. Instead, if they want to revisit it, they either use their search history to locate the same article again in Wikipedia, or they retrace their Google search.

About half of the mobile readers in India say they are not redirected to the mobile site, which forces them to start their search on the home portal, and which is a very cumbersome experience on a small screen with a very small search box and the need to choose a language from a long drop down menu.

"The search field is hidden. Search is on right and language choice is on the left side. This does not make sense "

-- *Carlos, 28, designer, Salvador*



Looking for Wikipedia content through Google on mobile phone.

Brazil

In Brazil most searches for Wikipedia articles and content begin in Google. According to the Readers Study, only 19% of readers in Brazil go directly to www.wikipedia.org compared to 40% on a PC and 53% on a laptop. Brazilian users believe that the advantage with Google search is that it provides more search results than can be found on Wikipedia alone. Since most Wikipedia readers in Brazil were introduced to Wikipedia in school, they have been advised by their teachers not to rely on Wikipedia articles alone for information.

Most Google searches are conducted in Portuguese, and most respondents primarily read the Portuguese Wikipedia. Readers said that when they wanted to switch from Portuguese to another language, they found searching to be hard since the search box is on the right and language menu is on the left side of the page. Brazilian readers have also improvised Google search by typing 'wiki' along with key words, or by typing keywords directly in Chrome instead of the URL.

Actionable Items: Now

- Fix mobile redirects to find it easy to find information in an article.

- Ensure that when readers arrive in mobile Wikipedia they don't have a cumbersome search experience starting on the portal where they have to type their keywords in a small search tool bar and choose the language from a long drop down menu.

- Ensure that the search tool bar in Wikipedia is prominently displaced at the top of the page. This is even more important for the mobile website because of small screen real estate.

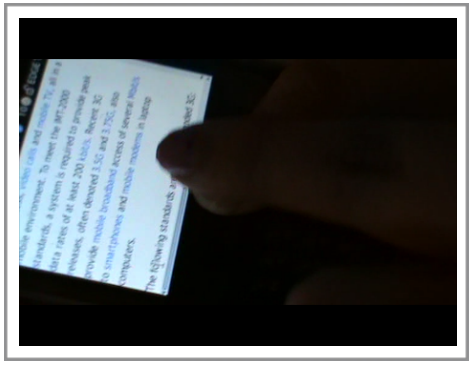
- Improve keyword search (auto-correct and auto-complete) in Wikipedia to ensure that readers can easily find what they are looking for.

- Since most Wikipedia searches start in Google, we need to work with Google to ensure that Wikipedia content continues to rank high in search in the future.

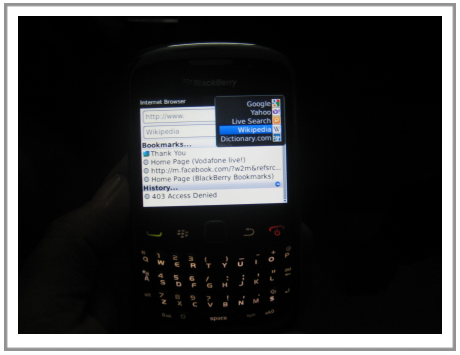
Actionable Items: Looking Forward

- Introduce search within page to help readers locate specific information in an article. Ensure that the search tool bar in Wikipedia is prominently displaced at the top of the page.

- Since apps provide a better search experience, we need to better market our apps (both Apple and Android). At the time of the study there was only one official iPhone app, but none of the users we spoke with were aware of it. Readers in India told us they discovered new apps by looking at featured apps in the app store. It might be fruitful to work with Apple and Android to have Wikipedia apps featured in the app store.



Reader demonstrates Wikipedia site on her Blackberry. She was frustrated since it didn't redirect to the mobile site.



Reader demonstrates how she chooses Wikipedia from the drop down menu in the browser on her Blackberry phone

Mobile Web: Language search

Search in Indic languages poses serious challenges

Searching for information in Indic Wikipedias poses serious challenges. By far the majority of keyboards on mobiles and PCs are in English and it is not possible to type in non-English languages while searching for information. Only some Indic Wikipedias, like Hindi, Tamil and Malayalam, have transliteration plug-ins on the desktop site that allow readers to phonetically write in native languages by typing in English. But this also often leads to irrelevant search results. Complicating search further in non-English Wikipedias is the lack of auto-complete or auto-correct functionality for search in all languages. This becomes a serious issue when searching for information on a mobile device since it is harder to type on them. In Brazil, by contrast, transliteration in Portuguese was not a challenge. With regard to search, most readers in Brazil complained about the unavailability of auto-complete and correct functionality in the mobile Portuguese Wikipedia, although auto-complete is viable in the Portuguese desktop Wikipedia.

India

Non-English Wikipedia readers in India complained about the lack of good search functionality in Indic language Wikipedias. While some Indic languages have transliteration plug-ins that convert English into Devanagiri script, readers said typing phonetically involves a steep learning curve since no one learns Hindi, Tamil, Telugu or Malayalam by typing in English. After a few failed attempts, many reported giving up. But readers reported that plug-ins yielded better results than a search in English in Indic Wikipedias, which more often than not returned erroneous results.

> "I wanted to type something in Hindi, but could not. Then my daughter asked me to write in English and she took it to some website and pasted then clicked..and it was converted into Hindi but the sentence did not make sense because the site simply translated each word"
>
> -- *Harminder, 38, hotel executive, New Delhi (talking about Google's Indic transliteration tool)*

Brazil

While transliteration in search is not an issue in Brazil, mobile Portuguese readers complained about the lack of auto-complete & current functionality in mobile Wikipedia.

Editors

We spoke with the Hindi editor who had developed the transliteration tool for searching phonetically in Hindi by typing in English. He believed that although there is a learning curve for using the transliteration tool effectively, it can be very helpful in finding information.

"I like the ability to type in Punjabi. I downloaded an unofficial app on my iPhone from Cydia so I could type my Punjabi poems "

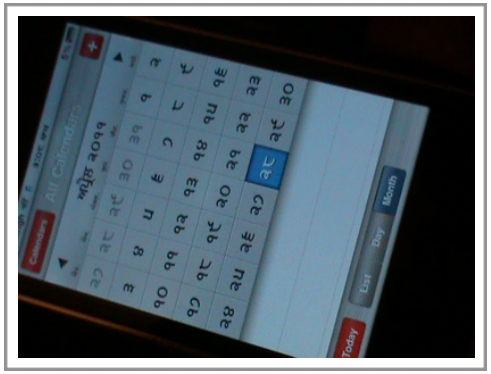
-- Harmeet, 20, student, Delhi

Actionable Items: Now

- Provide auto-complete and auto-correct in all languages, especially for the mobile website. When readers are searching for information on mobile, they want to find what they are looking for quickly, and auto-complete facilitates this quick entry and exit.

- Provide good search functionality in all languages. Ideally search should be available in all native languages. But this problem is compounded since phones don't have keyboards in all languages. An easy and fast fix to this problem would be transliteration plug-ins for key language Wikipedias like Indic Wikipedias where readers are fluent in English.

- Provide links to articles on the same subjects in different language Wikipedias. Specifically, for translated articles, provide a link to original articles to get more information. Often readers like to check the original article in English to compare the information. We found this to be true in India and Brazil, where both Portuguese and Indic language readers looked for the same article in English to compare the quality of the content.



Reader demonstrates an app that he has downloaded to type in Punjabi on his iPhone

Actionable Items: Looking Forward

- Create country-specific language landing pages to make searching for information easier on mobile. For example, the landing page for India should have a link to a few key Indic Wikipedias.

- Allow language specification in search. The mobile site does not currently allow users to easily switch languages or search in different languages. Providing a search front page that did this would not only support users' current practices, but would also build awareness of smaller Wikipedias that are more ripe for contribution.

A mobile reader in Bangalore accessing Hindi for the first time expressed interest in choosing which language he could search in.

Mobile Web: Home Wikipedias

Indic Wikipedias face awareness & image issues, Portuguese is perceived as richer for local content

The majority of readers compared the richness of content on home Wikipedias (both Indic and Portuguese) to English Wikipedia, even though they might not be reading English Wikipedia frequently. English Wikipedia remains the most popular Wikipedia in India, where very few readers read Indic language Wikipedias or have even heard about them. In Brazil, there is a consensus that Portuguese Wikipedia has richer and more reliable content about Brazilian topics, but this is not considered true for any of the Indic language Wikipedias. With 94 percent of page views in India going to the English Wikipedia, Indic language Wikipedias have serious visibility issues, and are not able to attract many eyeballs as a result. Most readers in India are not even aware that Wikipedia is available in their local languages, and even if they know about Indic Wikipedias, they expressed little interest in reading them.

India

The widespread reluctance to read Indic Wikipedias stems from a mixture of socio-cultural, technological and educational issues. First, most readers believe that English Wikipedia has richer content. We only met one respondent who said local language Wikipedias in India have richer content about India; he reads the Punjabi Wikipedia and told us that content about Punjab and its people is much richer in than in the English Wikipedia. Second, some of the readers pointed out that they had an "English medium education," and therefore they were not proficient in reading in their own mother tongue. Third, English is a language of the elites in India and is accorded higher status; those who are proficient in English enjoy higher status and better work opportunities. But a small minority of the readers in the study do read Indic language Wikipedia. They either cannot read English or are looking for information that is culturally specific and believe they can find richer content in the local language version. Lastly, technological issues like the inability to render fonts in Indic languages, both on desktop and mobile, proved to be a hurdle. Many popular phone models from Nokia, Samsung, and LG don't support rendering of

> " I saw that there was some option in Hindi, but I did not bother to check it out. I had a convent education and am very comfortable in English. Even otherwise I read only English novels -- can't imagine reading Hindi."
>
> *-- Anu, 35, hotel executive, New Delhi*

Indic scripts, leaving it to users to download plug-ins or browsers like Opera Mini that support Indic languages. However, we found that only editors will take the extra step of downloading tools to support Indic languages. Readers of Indic Wikipedias have trouble with the quality of content there, saying it appears to be either (1) machine-translated by mechanical bots, making it not intuitive and often erroneous or (2) written in very formal language as opposed to day-to-day conversational language. This makes reading difficult and tedious. But the editors, on the other hand, pointed out that if the language was not formal, Indic language Wikipedias would't qualify as "official and serious" information websites.

Rama reads Hindi Wikipedia, but complains that articles are hard to understand since they are written in "shudh Hindi" (not colloquial or spoken Hindi)

Brazil

Readers of Portuguese Wikipedia believe that it has matured in the last few years, to the point that it covers a wider range of topics and provides richer content on Brazil and Brazilian topics than does the English Wikipedia. Readers say that the the Portuguese Wikipedia has more articles, more links, more pictures and more topics, and an especially rich repository of information about Brazil.

"Earlier people had some difficulty. The English version was the only one that was available. In Portuguese there was nothing. But the database has grown in Portuguese."

-- Rosi, 28, executive, Sao Paulo

But even though for most Wikipedia is the go-to source of information online, some readers are quick to point out that it is useful to double-check information in Wikipedia with other online and offline sources. Most readers were introduced to Wikipedia in school and their teachers warned them not to rely on it as the only source of information. For many readers, therefore, Wikipedia remains a starting point for searches that include cross-checking with books, journals or other traditional sources.

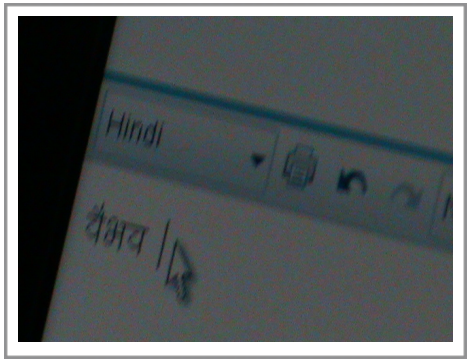
Just as in India, Portuguese articles are sometimes pointed out as looking like automated translations of English articles. Participants in Brazil are significantly more aware of interlanguage links in the left column because of their multilingual use of Wikipedia.

Editors

Unlike readers, editors in India took extra measures to ensure rendering of Indic languages on both their desktops and mobiles. If the language in which they edited was not supported, they had downloaded Unicode fonts, browser plug-ins and Opera mobile, which supports rendering in Indic languages. Many of them had bought an Android smart phone or wanted to buy one because of the availability of support for rendering of Indic languages.

Editors strongly believed that content in Indic languages about India was better in quality, more comprehensive and provided an Indian perspective that they believed made it more relevant for Indian readers. They noted that topics of local and cultural interest would likely be better covered in local language Wikipedias. Referring to the controversy about the naming of English Wikipedia page on river "Ganges" to "Ganga" an editor said that article on Ganga in Hindi Wikipedia was much better than the one in English.

Brazilian editors said that content about Brazil in Portuguese Wikipedia had improved over the last few years, echoing the sentiment of Brazilian readers.



A reader demonstrates Google Indic translator to show how to phonetically write in Hindi while using English keyboard

"People go back to Wikipedia because information is correct, for easy access, for the volume of information. Today, no one has an encyclopedia at home"

-- Carlos, 45, consultant Sao Paulo

Actionable Items: Now

- There is a clear need to raise awareness about local language Wikipedias in India. We should position local language Wikipedias (both Portuguese and Indic languages) as the Internet home of rich information about local culture, region, community and country. There are several ways to raise awareness about local language Wikipedias: (a) Use Wikipedia real estate to share key marketing messages about local languages, especially that they are home of rich local content. (b) Establish partnerships with cellphone providers that provide a link to local language Wikipedias either inside their walled gardens or default home page on the phone browser. (c) Add interlanguage links to the mobile site.

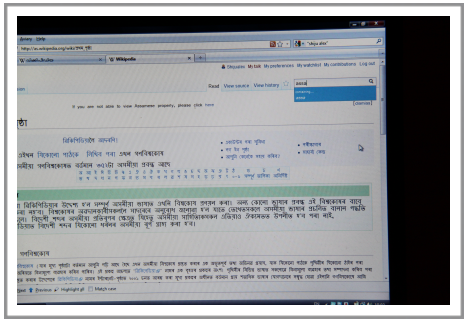
- Fundraising campaigns can be a platform to raise awareness about local languages, and possibly speak to the need for supporting local languages to provide rich culturally relevant content in native languages.

- Partner with phone manufacturers and browsers to ensure rendering of Indic languages across platforms and devices. In India, new and upcoming local phone manufacturers like Micromax and Karbonn are looking to differentiate themselves, so we could partner with them to provide free Wikipedia content bundled on their phones, and ensure correct rendering of Indic languages.

- Forging partnerships with vernacular schools and colleges in India through global education program will be key to create new content and raise awareness about Indic language Wikipedias. These programs should focus on creating content that is more India-specific (festivals, villages, small towns etc.) that might not find an entry on English Wikipedia. The global education program in Brazil should also focus on creating new content that is Brazil related.

Actionable Items: Looking Forward

- Tailor landing pages to have links to local languages for specific geographies. For example, English Wikipedia in India can have a drop down menu or link that highlights Indic language Wikipedias.



Searching In Assamese Wikipedia through keyword search in English

Few phones like this Samsung phone support rendering in Hindi

Mobile Web: Multi-Media

Readers want more multimedia

Wikipedia's sites (both mobile and PC) are perceived to be conservative, staid, and -- to an extent -- boring, due to the lack of multimedia content. The main grouse among readers is that Wikipedia has not kept pace with web trends on design. Readers pointed out that although Wikipedia has brought reference books and physical encyclopedias to the online space, it continues to deliver them in the same, text-heavy format without supporting images, videos and audio. Both mobile and PC readers want new and interactive visual ways of presentation. Despite slow connections, readers are not concerned about the impact of multimedia on the speed of connectivity .

India

A common refrain among readers in India was that Wikipedia is not very interactive or engaging, and readers mentioned that -- in addition to text -- audios, videos, graphs and other visual illustrations can be more helpful and intuitive in learning about a topic. But most readers also agreed that Wikipedia, as a knowledge site, should not become a frivolous, entertainment-type site. The consensus was that the format should be more engaging, approachable and inviting, especially since the intent is to make it more collaborative, and to convert readers into editors. Although mobile users in India are still in the process of switching from 2G to 3G, and broadband continues to be plagued with slow speed issues, not many were concerned that a more multimedia-rich site would slow down their connectivity.

"I'm a designer. I feel Wikipedia site looks like a website from the 1990s. It is very dull, gray and boring"

-- Fredrico, Designer, 28, Salvador

Brazil

Portuguese readers had similar complaints about Wikipedia format -- that the website is perceived to be boring, text-heavy without images, bereft of videos or accompanying graphs, and tables that facilitate understanding of complex topics. Readers also pointed out that when they

No reader had noticed the link that allowed them to see more images and accompanying multi-media about an article on the desktop site.

want more multimedia, they completely bypass Wikipedia and look at other sources like Google images.

"Today even schools are experimenting with new interactive forms of learning. It will be better to show a plant growing through animation than simply asking a child to read about it. Wikipedia should show animation and graphics on different topics. People will be interested in it "
- Shonali, 16, high school student, New Delhi

Actionable Items: Now

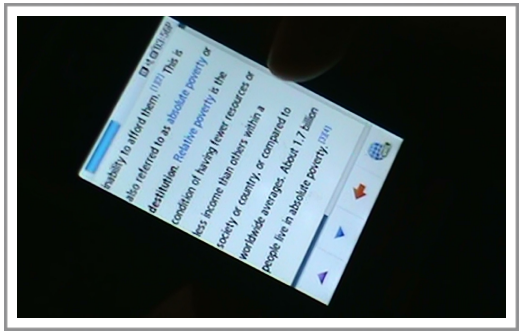
- Provide an option to set level of multi-media (photos, videos and art) for the mobile site to provide flexibility around speed of connectivity. Pictures and other multi-media can be stored at the back-end, and users can have the option of viewing them when they wish or have a one time opt-in into multimedia.

Actionable Items: Looking Forward

- Provide a prominent link to access more multimedia from Wikimedia Commons about an article in the mobile and PC site. Currently, the PC site has a link that states you can access more multimedia from Wikimedia Commons. But since most users are not aware about Wikimedia Commons, they don't know that it is Wikipedia's sister site for pictures, so the link should explicitly state that users can find additional images and videos by clicking on the link.

- Provide a slideshow of related images from Commons.

- Provide an easy option or link to set the skin, appearance and fonts to appeal to different design sensibilities of readers on PC and mobile. We heard readers complain about the gray and dull look of Wikipedia, so we should experiment with bold colors and fonts.



Reader points out that Wikipedia site has no color, multi-media only text

Mobile Web: Quick and easy access to information

Readers turn to mobile on the go or when access is restricted

Research has shown that mobility patterns have a direct relation to technology usage. For example, wireless technology like WiFi was adopted at an accelerated rate in highly populated urban areas where people commute using public transportation, compared to suburbs where people spend more time in cars[4]. With commutes becoming longer as people move to suburbs in India and Brazil, people are occupying their time with mobile devices during their commute hours. Our research indicates that Wikipedia readers in India and Brazil read Wikipedia on their phone during their commute or when they are on the move. Indians and Brazilians also reach out to accessing Wikipedia on their phone when they find themselves with no Internet access (at school or college) and are looking for some quick information, or are in situations where their Internet access is restricted inside a walled garden (for example at work where their access is restricted to only work related websites).

India

Readers in India found it more convenient to read Wikipedia on their phone versus the desktop on several occasions: (a) while commuting to work, public transportation or being driven to work; (b) if they were at the office or school where Internet access was either not available or restricted to a handful of websites; (c) when they preferred to read Wikipedia on the phone to avoid going through the hassle of setting up an Internet connection on a desktop because they had to switch on both a modem/router and a computer. Wikipedia access on the phone provides quick and easy access on the phone or small bite-sized information; there is no wait time, and fewer hassles. Users search for the information, they look, and once they find what they are looking for, they leave.

> " If I want some information, I will not even wait to come back home before reading up on it -- I will look it up on Wikipedia from college"
>
> -- *Ashish, 20, Student Bangalore*

[4] SR1052, The Mobility Explosion, Shaping Innovation and Technology Trends, Institute for the Future, 2007

Brazil

In sprawling Brazilian metropolises like Sao Paulo and Salvador, commute time is increasingly becoming web time, and many readers turn to mobile Wikipedia during their commute when they want quick information. Just like Indian readers, they quickly search for information, and once they find what they are looking for they leave, since it is not very convenient to read or write on the phone. Readers in Brazil also pointed out that it is not possible to "linger on" or conduct multiple searches because it is not possible to have multiple tabs open in a mobile browser. Brazilian readers also read Wikipedia on their phones when they find themselves in places without any or with limited Internet connectivity. In such situations too they are looking for bite-sized information, i.e., search, find, read and leave. Show and hide functionality on the mobile site is universally liked because it allows readers to quickly zoom in on the information that they are searching for.

" I use my mobile phone when I am not in front of the computer because it is not comfortable to read or write on the mobile."

-- *Carolina, 35, executive, Sao Paulo*

Readers told us that it takes too long to go online on a computer, have to wait for computer to boot and modem to get connected, but it is much faster on mobile phone

" I use my phone when I need to check information and I don't want to turn the computer on. When I am outdoors, in the traffic or some sites are blocked in office....at my office sites like Facebook are blocked"

-- *Fabrigio, 28, Systems Analyst, Sao Paulo*

Actionable Items: Now

- Fix mobile redirect issue for all devices and platforms so finding information is easy on the phone and readers are not forced to start searching from the portal. Have a prominently displayed search box so users can find it easily, especially on the mobile site.

Actionable Items: Looking Forward

- Serve search results as an introductory paragraph (pithy narrative of article) with the option of expanding content on the mobile. Readers in India talk about the need of this functionality, because many mobile readers there use a dictionary application on the phone to check the meanings of words, and have become habituated to using apps that provide quick information of this sort.

Mobile Web: Partnership Opportunities

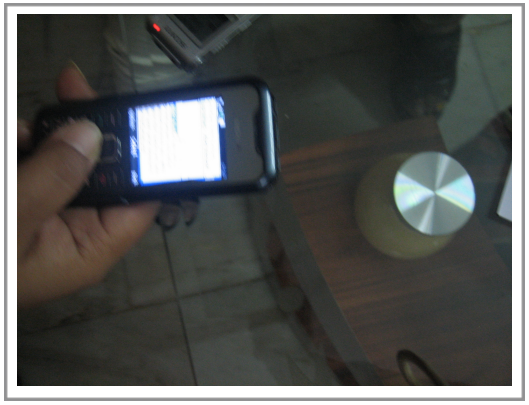
Phone provides increasing functionalities anywhere, anytime

The increasing popularity of smart phones and ubiquity of apps have made mobile phones faster and better than most computers from the 1990s. Just like mobile phone users in the West, users in India and Brazil are turning to phones to do tasks that were unimaginable a few years back, like email, listening to music, sharing updates with Twitter followers, finding information that is relevant to one's location, and completing financial transactions. While smart phone users are more likely to use the mobile web on their phones, we did meet one respondent in India who accessed Facebook on her feature phone.

With phones becoming central to the computing experience, and becoming an integral part of the rich technology experience of users, there are several possibilities of partnerships for growing Wikipedia's mobile site.

India

While mobile phones have been popular in India for a few years, the rising popularity of smart phones and apps is allowing users to do a variety of tasks that were earlier limited to their computer. Many smart phone users in India described their phone as their buddy, best friend or constant companion, and the most important gadget in their lives because it allows them the convenience of being online anywhere and anytime. We found that the following applications and services were the most popular among Indian users (a) Music: Indians users readily download and listen (and often pay) for music from Bollywood movies. (b) Chat: Many mobile phone users reported using chat applications on their phone like ebuddy, WhatsApp and BlackBerry Messenger. Blackberry was especially popular application among teenage girls. (c) Facebook: Many users reported that they activated a data plan on their phone primarily to access Facebook on their phone. (d) Dictionary applications: To quickly check the meaning of words (e) Email: Most business users emailed on their phones (f) Cricket scores: Most users had paid apps that



Checking Facebook updates on a Nokia feature phone

allowed them to follow their popular cricket games (g) Entertainment: Buying movie tickets on the phone is a popular application on the phone.

As pointed out earlier, we met one respondent in India who used Facebook on her Nokia feature phone. The Facebook website for her feature phone was optimized for a read-only experience with no multimedia. As the respondent told us, she "primarily checked updates from her friends on the mobile."

"I am always connected to Facebook.. I get notifications on the phone every time something happens on my Facebook account"

-- *Ashish, 20, Student, Bangalore*

Brazil

The mobile phone is becoming the gadget of choice for many users in Brazil. Most smart phone users browse the Internet on their mobile or would like to do so in the future. Based on our research, we found the following uses of mobile phone in Brazil: (a) News: Some wireless carriers had links to news sites like Global Television on the home page. (b) Twitter and Twitter clients: Twitter has become very popular in Brazil, and many respondents were using it or clients like TweetDeck on their phones. (c) Facebook: It remains the most popular service on the phone. (d) Location-based services: Only one respondent used services like FourSquare to share their location with their network. (e) Chat: Applications like Whatsapp were popular among the youth in Brazil. (f) Email: Is oriented towards business users on the mobile. (g) Music: Most users listened to music on their phone, and used Torrent to download music or music services like Shazam.

"I am always connected online on my phone. I get three notifications for everything. I don't want to miss anything that is happening in my friend's lives,"

-- *Shonali, 16, student, New Delhi*

"I am the mayor of my dentist's office and my building, I just like to tell my friends where I am,"

-- *Rodrigo, 20, Student, Salvador*

Actionable Items: Now

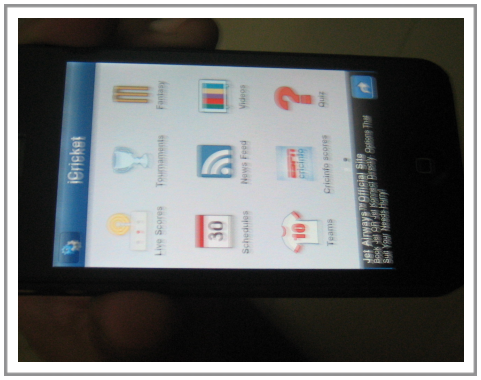
- Establish partnerships with cellphone providers that provide a link to Wikipedia on their home page to raise awareness about Wikipedia mobile. We found in Brazil that carriers like Tim had a customized home page on the mobile with links to Facebook, Global TV and other popular

websites. It would be an easy win to have a similar link to Wikipedia to drive traffic to Wikipedia's website.

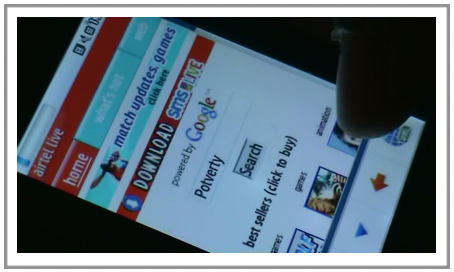
- Possible partnerships with music and cricket websites with the possibility of providing a link to Wikipedia article about a song, musician, cricket star or game when users download a song or check cricket scores for ongoing international and Indian Premier League (IPL) matches.
- Work with carriers in India and Brazil to provide Wikipedia Zero for feature phone users for a read-only experience without any multimedia.

Actionable Items: Looking Forward

- Establish partnerships with chat providers like Whatsapp to provide relevant links to Wikipedia articles.
- Raise awareness about Wikitonary or provide an offline version of Wikitonary to download on the phone in India.
- Work with newspapers in India and Brazil to provide a link to Wikitonary for difficult words in news stories and articles.
- Partnership with Twitter to push Brazil specific content/messaging since 25 percent of Internet users in Brazil are on Twitter.



Reader shows his iCricket app on his iPhone that provides live Cricket scores. It was the only paid app on his phone.



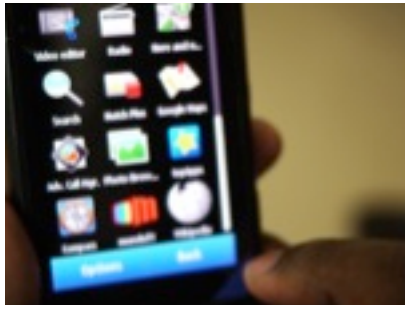
Airtel's homepage (powered by Google) with links to popular games and animation. It might be useful to look into the possibility of having a link to Wikipedia homepage on a provider's homepage.

FINDINGS: OVERALL WIKIPEDIA EXPERIENCE

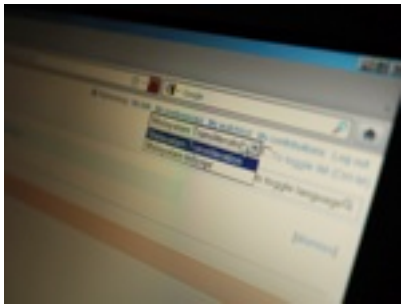
"People should know that Wikipedia is good. Google just gives you a good search. It's Wikipedia that gives you the answer."

-- Rahul, 26, Software Developer, Bangalore

Wikipedia users often first experienced Wikipedia on their PC and laptop computers. Those experiences guide how thy see Wikipedia as a site, as an information source, and as an experience on their mobile devices. Our findings in this mobile study reiterate and reaffirm perceptions and behaviors that we have seen in prior studies. Namely, that (a) Google drives and dominates access to Wikipedia,both on computers and on mobile devices; (b) Wikipedia is considered both reliable and authoritative in English, "the best that can be found on the web"; (c) Wikipedia is more than a "starting place" for research as well as a quick reference for facts; (d) The majority of users don't see a need to have an account, and if they have created one, they either never use it or have lost the login information; (e) The majority of users are blind to the interactive features offered on the site, including discussion pages, watchlists, history pages, and the entire contents of the left column, including printing and interlanguage links; (f) In India and Brazil, many users were either unaware that anyone can edit, or as we see more typically elsewhere they also felt that they did not have anything to contribute or lacked the expertise; (g) When prompted to edit anyway, users are overwhelmed and find the editing interface unintuitive for anything beyond editing text; (h) In India and to some extent Brazil, the local language Wikipedias remain far less developed than English (the standard against which others are measured), but for articles and topics of local cities, customs, food, and languages, local language Wikipedia articles are regularly measured against the comparable article in English when the user can speak both languages; and (i) People love Wikipedia and it is seen as simple and serving their needs, but it proves neither engaging, dynamic, or up-to-date with other web and mobile experiences.



Wikipedia app from Ovi store on Nokia smartphone in Bangalore.



Transliteration tools being used on Wikipedia on a laptop.

Showing a participant in Sao Paulo a discussion page for the first time.

Searching for search for Portuguese Wikipedia.

These perceptions and behaviors influence users' mobile experiences, which we discuss in further detail below, but it is important that the future development and designs of our mobile properties, especially the mobile site, maintain ties with the web experience -- improving on that through or with mobile work as needed. With the proliferation of not only many more varieties of phones and increasing functionality, there are also a number of tablets, e-readers, netbooks, and other computer devices that people may use to access Wikipedia. Apps, both our official iPhone app as well as third party iPhone, Android, and Ovi store apps, are being downloaded and used by our participants in India and Brazil, albeit in considerably smaller volumes than we see in the U.S. In the case where participants had applications, users showed a preference for an 'official' Wikipedia app over third party apps, but were sometimes not able to identify which or whose app they were using. With apps, readers, and tablets, and on our mobile site, it is important that we maintain consistency across experiences, while also optimizing Wikipedia contents and interactions for each device.

Wikipedia Experience: Contributions

"The biggest barrier to editing Wikipedia is the way people see it. The perception is that it is just a way to access knowledge."

-- Alexandre, Editor, Brazil

Editing remains a blind spot for most readers

Most Wikipedia readers don't have a desire or see any immediate need to contribute. They often cite being lazy, not having enough time, not having anything to add, not knowing what to add, or not knowing the 'rules' as reasons they don't contribute to Wikipedia. When specifically asked, a few participants do express an interest in contributing to Wikipedia. But in practice, it almost never happens and is considered "something that PhDs and professors with thick glasses do." Wikipedia has a dynamic community of editors and changes to pages are regularly being made, but the site itself doesn't reflect this to most of its users. It is perceived as "cold" and while its interface for serving content gets the job done fast and efficiently, its contribution interfaces aren't accessible or intuitive. Generally speaking, Wikipedia is not openly inviting to new editors. If the PC experience is heavily skewed towards reading Wikipedia, the mobile experience is even more extremely skewed towards this consumption, since the mobile site does not at present enable any kind of editing. Generally speaking, improving the reading experience is of far more immediate value to the greater Wikipedia community than is supporting contributions. But mobile devices as a medium are fit for some lighter weight Wikipedia contributions, which could also lower intimidations, time concerns, as well as some of the technical barriers that are present in the full desktop experience.

On mobile devices, our participants' interactions with Internet content is primarily passive -- consuming blog posts, Facebook updates, news sites, sports scores, music and media, Twitter feeds, and other push notifications. Information and media pushes by users do take place, but a mobile device is rarely the preferred method for such activities, especially when text-based. It's described as uncomfortable with the small keyboard, and its slower and "more cumbersome" (see Contributions - Mechanics). Taking photos, short messages (SMS, tweets, status updates), short comments on blog posts, chatting, sharing music or videos, retweeting, "liking," or rating were the information pushes or contributions that our participants were the most positive about and were doing most regularly. To a lesser extent, we also observed participants pushing financial information like ticketing or banking transactions, as well as sharing location information

through services like Foursquare and Facebook Places. But participants could not perform tasks that require multiple tabs, copying or pasting or saving, and other more complicated interactions that they do on a computer with a keyboard and mouse -- for example , formatting text, including introducing accents and markings on characters, editing a blog post, translating text, or copying a link.

India

In India, where the majority of Wikipedia users rely on English Wikipedia, we heard from participants that Wikipedia "seems complete". Readers and even editors across all segments cited the extent and quality of the content, describing it as "exhaustive", "reliable", and "factual". Readers assume that Wikipedia is written by experts and is out of their league. It serves their reference needs and it serves them quickly and efficiently, and their behaviors reflect this. They search on their mobile device, find what they're looking for, and then move on, sometimes clicking on links to other articles along the way. The two areas that showed potential for mobile contributions included taking and uploading photos, as well as noting or flagging small errors or acts of vandalism.

Awareness of other language Wikipedias is low. Some participants discovered and saw the Wikipedia in their local language for the first time during interviews. Upon reviewing the content, these Indic language Wikipedias were seen as far less complete and presenting many more opportunities for contribution, but the motivation to contribute was still low. Participants were less comfortable in these languages, and they sometimes made comments like "maybe my mom" or "people in the villages" would be interested in this, implying that use of these languages is limited to an older generation or to those in rural areas.

Finally, participants in India also showed a strong affinity to the collective social good that Wikipedia serves and were particularly vocal about the "freeness" of Wikipedia. Wikipedia being free was a key point noted in their use.

"I don't want to gatecrash and start editing Wikipedia. I'm just an ordinary layman." --

-- *Mandeep, 45, executive, Delhi*

"I get what I want from Wikipedia, so I am not really bothered with who the writer is."

-- *Sheetal, 15, student, Delhi*

"I go to Punjabi Wikipedia when I want to search something that is Punjabi related. For all other things I go to English Wikipedia"

-- Gurmeet, 18, student, Delhi

Brazil

Unlike in India, participants in Brazil were primarily using Portuguese Wikipedia. Though English which was a distant second in order of use, it was still the standard that Portuguese articles were compared to. Spanish, Italian, and French were also used, and said to have higher quality and a greater breadth of articles, and so were consulted when a greater depth of information was needed. As we noted earlier, participants noted that the Portuguese Wikipedia had reached a level of maturity and reliability in the last few years -- not only has it become more reliable and respected, but participants notice the increase in topics, pictures, and links. Seeing the evolution of the project made those that used Wikipedia during this time much more aware of the dynamic nature of content on Wikipedia. Motivation to contribute was still scarce, however. Again we heard from users that they didn't have enough time, they didn't have the specific knowledge that was "worthy" of adding, and they didn't know about any topics that hadn't been covered. As in India, participants in Brazil showed the most interest and potential in contributing photos to Wikipedia from their mobile devices.

The cultural background of the average Brazilian posed a unique barrier to contribution, as writers, writing skills, and written works are not highly valued. According to our partners, those that know how to write well are in the minority. Additionally, there is a cultural tendency to be a bit suspicious -- participants often asked "How can I trust Wikipedia and it's contributors?"

Finally, Brazilians also expressed a sense of gratitude for the existence of Wikipedia and all that have contributed to making it such a reliable and useful information source. "Wiki is my oracle," one gentlemen in Sao Paulo remarked. Many participants in Sao Paulo, Salvador and Porto Alegre also stated that its being free is a much valued asset.

Editors

At present it is not possible to log in or edit on our mobile site. Editors in India and Brazil obviously have the motivation to contribute to Wikipedia. We did talk to an editor who bypassed the mobile site and contributed through his mobile phone, but these were exceptions that had the right technology, the right data plan, and strong motivations. The desire to contribute on a

"We Indians like things that are free."

-- Ramesh, 28, Engineer Bangalore

"It's a serious knowledge site, I don't know enough to contribute."

-- Madan, 40, executive, Delhi

"I do not edit because I'm more keen to read and never felt the need. I have never had such a close relationship with Wikipedia. I have always used it to satisfy my needs, and find answers. "

-- Sao Paulo Reader

"I never thought about it, but I am lazy. I do not have any particular knowledge about something new - that somebody has still not written about."

-- Synara, 25, Student, Salvador

mobile device is there in editors, but it is overshadowed by a stronger desire for other, more consumptive activities that are not currently supported, such as logging in, checking recent changes, accessing a watchlist, viewing or following a particular user or talk page, and checking the edit history of a page that one has contributed to. These activities mirror the types of activities we saw with readers on their mobile devices, such as checking email, chatting, etc.

Actionable Items: Now

- Use the mobile site to invite users to contribute. As people find personal value in Wikipedia, a request to edit could do a lot to remove assumptions that Wikipedia is complete. If this invitation also showed the breadth and variety of types of edits that are regularly made on Wikipedia, it could greatly reduce users assumptions that you have to have some great new piece of information before you consider editing.
- Allow Wikipedia contributors to push notifications of their edits, photo or video uploads or other contributions through email, SMS, chat or social networking sites such as Facebook and Twitter. Within the foundation and community, we know just how frequently edits are made. If we can share this information with users, it can encourage participation. If users see that people they know or "people like them" are editing, it will serve to further reduce their inhibitions.
- Introduce "micro contributions" through mobile devices that allow users to make contributions that are suitable to the technology. With current mobile technology, it is unlikely that any significant number of users will make large text contributions to Wikipedia through their mobile device. Creating methods for users to make smaller contributions, like fixing typos, reporting vandalism, rating a user or article, uploading a photo, adding a caption, add ing GPS information, bettering a translation, not only opens the site to mobile-friendly contributions, but also builds awareness of the lower-threshold edits that regularly take place on the site.

"Today I think [Portuguese Wikipedia] is much more reliable. It is much easier to access the internet and people with a little more knowledge can give their contribution. A teacher likes to contribute...he goes there and writes. This is why it is more reliable today."

-- *Norbert, Sao Paulo, Reader*

"We don't have a rich culture of the written word. Brazil needs contents on the internet, in Portuguese. There is much knowledge in Brazil and for some reason people don't show it, do not express themselves. "

-- *Alexandre, 32, Editor, Sao Paulo*

"It would be interesting to be able to post a picture on Wikipedia."

-- Helio, 28, *Sao Paulo Reader*

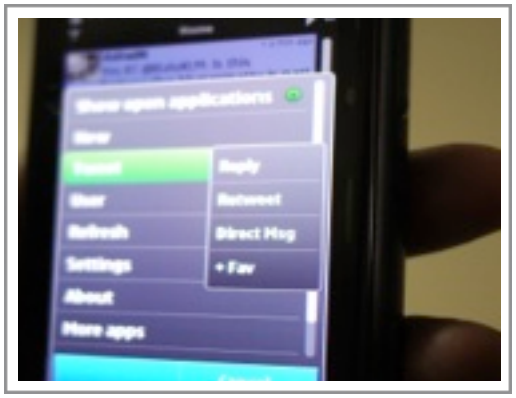
- Focus on contribution tools for editors. These tools would be significantly different than for readers. Most of the contribution tools can mirror activities done on a computer that are suitable for mobile use or heavily requested, such as recent changes, SMS updates, recent changes notifications, or view, login and watch-list synchronization, support of vandalism tools like Huggle, etc.
- Enable a mobile watch list and recent changes. These were the two most features noted as missing in the mobile version of the site.
- Turn vandalism, spelling, and translation tools into game-like mobile experiences.
- Use mobile features to induce account creation and greater community involvement. Readers show interest in saving articles offline, bookmarking and 'watching' articles, and rating articles/contributions/contributors. These features can also be an on-ramp for future contributions starting with creating an account.
- Create or curate location specific home pages and search. Using location information, provide a home page or search in languages that are specific to the region. For example, if in India, showcase the top 10 languages in India or the region rather than the top 10 global languages. Offer a map based language selection tool on larger screens.
- Add a feature to email, SMS, or otherwise share an article.
- Add a feature to allow users to "follow" an article and get updates on its evolution.
- We can have two fairly separate contribution goals: 1) Support functions that editors currently use on the website on the mobile site; and 2) Use contributions on the mobile as a path for engagement and first time contributors.

"I go to the talk page in the same proportion as I edit things. Sometimes I see [a mistake in] an article [and] I do not have enough time to correct it, but I post a comment on the discussion page saying "someone should look at this". I do this because I do not really like to edit Wikipedia on the mobile.

Fabrizio, *Editor, Sao Paulo*

Actionable Items: Looking Forward

- Build awareness around existing features and build more useful features. If more participants were aware of, found value in, and used features currently offered on Wikipedia, they'd be more likely to create and account and feel involved and invested in the community. Most participants don't notice the lack of features on the mobile site as they aren't currently using them.
- Create more dynamic article pages. Surface more of the activity on Wikipedia so that it becomes an ambient part of the Wikipedia reading experience.
- Allow mobile readers and contributors to make requests or "save for later". Readers and editors notice opportunities for contributions while consuming on their mobile devices but it is not always an ideal time to act. By enabling users to make a request or send themselves a reminder of something they've "saved for later," they can follow through when they are on a computer. Examples: Seeing no search results and requesting the creation of a new article or the translation of an article from English into a certain language, or encountering a copying and pasting task that is too cumbersome for a mobile phone.
- Build or commission an app targeted towards contributions. Allow contributions to happen through apps where the interface can afford more complex actions.
- Build reputation metrics and recommender systems for both content and content creators.



A participant in Bangalore shows us how easy it is to share media on his mobile device and comments he would share Wikipedia articles if it was so easy.

A young teacher in Bangalore currently uses a USB Drive to move content she's copied from Wikipedia between her devices at home and at school.

Wikipedia Experience: Contribution mechanisms

Mobile provides limited opportunities for contributions

Issues with motivating contributions aside, Wikipedia sites have significant barriers to contribution after the desire or impulse to create and edit an article or upload a photo. The mobile site at present does not allow a user to login and edit and it inherits Wikipedia's other barriers to contributions. With the Stanton Usability Grant and the Multimedia Grant we have identified some of the issues with contributing to both Wikipedia and to Commons, primarily on PCs and laptops. A few of the major issues that we also saw with our participants in India and Brazil:

- Most Wikipedia users don't know about and can't readily find the edit tab - the primary method for contributing to Wikipedia. When prompted, users are confronted with an intimidating amount of text - both content and 'wiki syntax' which is difficult to navigate and reads as "computer stuff" or "programming language". Editing text through the Wikipedia editor proved the most easily accomplished task, but doing anything more complicated - adding a link or a photo - was very difficult without copying an example from another portion of the page.

- What you see is not what you get. Simply put the editing interface does not adequately reflect what the users are doing. That combined with a difficult to intuitively grasp Wiki syntax makes for a lot of trial and error using multiple tabs.

- Though some users know that Wikipedia is an encyclopedia that is edited by everyone, the process is still veiled and confusing especially around who is allowed to edit what, what type of account or "level" of account you need to edit, what type of content could and should be added, and how and when that edit is reviewed and published if it is at all. Help and policy pages are too much to read on a full size computer screen, let alone a mobile device.

- Wikimedia Commons is not well known and used, even among Wikipedia participants and readers. New users to Commons are faced with a steep learning process to upload photos.

Mobile devices present an opportunity to create methods for contributions that don't perpetuate these cumbersome processes. But on top of existing barriers, mobile contributions are constrained by the size of the screen and the keyboard, as well as by language and font

support, and controls. With these devices also come new functionalities that afford new types and methods for contributions, particularly small cameras, global positioning sensors, and SMS.

India

It is difficult to type a large amount of text on a mobile phone. Participants therefore restricted their text activity on a mobile phone to status updates, chats, and SMS message, no more than a couple of sentences here and there. Though it is easier for some with a QWERTY keyboard or a touch screen over a T9, contributing large chunks of text to Wikipedia on a small mobile device is still prohibitively burdensome in English. As stated earlier, in Hindi or other Indic languages, there are even greater obstacles. Most devices do not support the display of Indic fonts without the explicit download of Opera mini, and only one participant that was regularly accessing the internet had a multi-lingual keyboard. In chats and SMS, situations in which a participants sometimes used a language other than English, transliterated versions of the language (E.g. "Jaan Pehechaan Ho") are used. Indic language entry is a difficult problem on a computer, for which tools were only recently being adopted. Mobile devices with Indic language support do exist, but they are for a particular market that doesn't at present intersect with Wikipedia users. Touch screens can more readily support Indic language text entry. Android and touchscreen devices were two of our participants' most favored "next phones."

"It's so easy to write on Facebook and Twitter. Even commenting on a blog is easy but this looks very difficult."

-- Gautam, 28, engineer, *Bangalore*

On top of shorter text messages, participants readily took photos, navigated relatively elaborate menus, explored and downloaded applications, uploaded and downloaded music, sent and received text messages, stored personal information, and sometimes used location information with ease on their mobile phones, all of which present potential opportunities for contribution to Wikipedia.

"What's with the codes and stuff? I study [computer stuff] but when I don't want to do it for my exams, there's no way I will do it here."

- Gurmeet, 20, student, Delhi

Brazil

In Brazil, half of readers did not show any interest in contributing to Wikipedia. Few readers had an interest and confidence in the knowledge they had to add, but they either lacked the motivation, had tried and faced difficulties with the interface, or had tried and faced difficulties

"I only read [Wikipedia on my] mobile. The technology doesn't suit itself to much more. Maybe I could take some photos and upload them here and there."

-- Everton, Sao Paulo, Editor

with the rules and the community. Again, all of the examples they cited were on a computer with a full sized screen. Even then, they sometimes missed the messages explaining the reversion of their edit.

As with the participants in India, we saw a resistance against any kind of serious text contribution on a mobile device. As with Indic languages in India, Brazilians regularly omit accents and other difficult to enter characters on a mobile device in Facebook status updates, SMS and chat and messenger applications. Special characters for wiki syntax would be just as difficult, if not more difficult than these. When prompted, most users knew where to look but quickly explained that they'd never actually do that. Also mirroring what we saw in India, Brazilian participants with touchscreen devices showed the greatest desire and ease in contributing text in Portuguese and/or English. Taking and uploading photos, short sentences, push notifications, likes, ratings, "watch," "flag," "requests," or "save for later," and others hold greater potential and feasibility for Wikipedia contributions.

The number of rules to follow on Wikipedia is another serious barrier. One would-be-editor pointed out that "the other editors point[ed] out my errors, but [did not] teach me how to do it properly." She added "people started to pick on me".

Editors

With editors, there are too many pain points to contributing text on mobile devices. But editors noted that while reading on their phones, they would encounter things that they wanted to edit or would edit if they were on their computer. At present, some will make a comment on the discussion page so they can "find it again later when [I can write on my computer]".

Include information here about how people can't complete an edit they want to, so they do things to "save it for later."

Some editors expressed their reticence on mobile editing because they believed it would increase janitorial work because of the low quality of contributions, i.e., "there will be too many typos on the mobile."

"I tried to edit once but it was not easy. Wikipedia has a specific code that you need to learn in order to be able to edit. I think this makes people give up."

-- *Salvador Reader*

"I tried to do it as a test, but it did not go very well. Nothing is understandable. You must remember to insert quotation marks, brackets, etc."

-- *Sao Paulo Reader*

"I think it's not suitable for editing because you need to have all of these [HTML and Javascript] codes that do not exist on the mobile keyboard"

-- *Sao Paulo Editor*

"I do not use a 'copy paste' system on the iPhone, I did not even learn how to do it. For editing I often need Google translate, a minimum of two Wikipedia pages and another website. All of these pages in a mobile are too much."

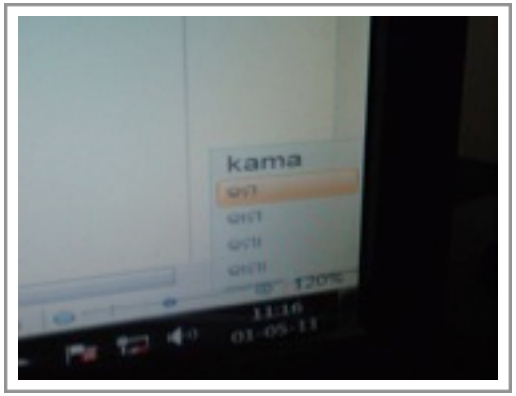
-- *Editor*

Actionable Items: Now

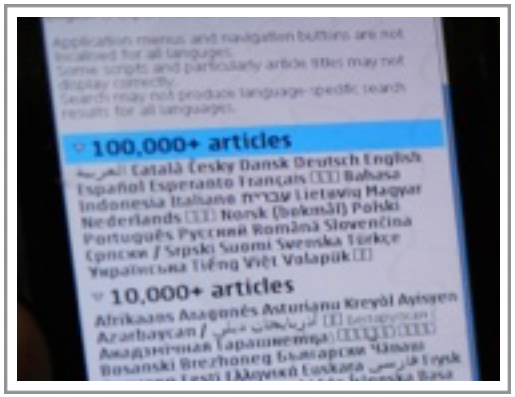
- Include autocomplete to minimize the burdens of typing wherever possible.
- Support transliteration for text entry.
- Support photo uploads to Commons from mobile devices.
- Allow users to either highlight, request, or mark sentences or articles for editing so they can find them when they are on a computer.
- Allow users to follow an article or contributor.
- Build features that let users add smaller pieces of information to articles - location information, dates and other infobox-like information, photo information and captions.
- As we have section edits, create controls and methods to edit at the sentence level.

Actionable Items: Looking Forward

- Look to touchscreen devices and partnerships with device makers and browsers for font/ language/text entry support.
- Create a mobile editor.



Close up of a third party transliteration tool in use for contributing to Odiya Wikipedia.



View of Wikipedia language display on a high end Nokia Smartphone from a regular Malayalam contributor in Bangalore. He added that before he can think about contributing in his local language, he should be able to easily read in his local language.

Wikipedia Experiences: Login Account

Readers don't see benefits in creating an account

Wikipedia does not require anyone to have an account to edit or otherwise begin participating on the site. This is an exception to most online participatory sites and increasingly to online references and some publications. As we learned from the Account Creation Improvement Project, an estimated 27.1 percent of users on all language Wikipedias and all Wikimedia projects created accounts with the assumption that one was required to edit. All of our non-editing participants in India and Brazil assumed one needed an account to edit Wikipedia. Although an account is not required to do so, having an account does give you access to features and actions not offered to non-logged-in users. At present, however, the mobile site does not allow you to log in and otherwise use your account. From the Account Creation Improvement Project we also learned that a whopping 67.4% of English Wikipedia users say the reason they created an account was "to be part of Wikipedia."

India

Many participants had not noticed that you could create an account on Wikipedia and log in. When asked about an account of logging in, readers said they hadn't considered doing so because the content is always available to them for free without logging in. They saw little value in signing up and wondered what features or advantages an account would offer.

Providing recommendations, ratings and metrics, and otherwise connecting them to relevant people and content frequently came up as potentially desirable. Being able to download, print, or save an article also came up frequently in both Bangalore and Delhi. These features are of course offered in the left column of the current interface, but readers are essentially blind to everything outside of the article contents, including these functions.

> "I've never registered. I've never come across a need to get features. If you have an account, what can you do? How would I even know that?"
>
> -- *Satyajit, Bangalore, Reader*

Brazil

We saw very similar behaviors and attitudes towards creating an account, logging in, and features of an account in Brazil, as in India. Even the heaviest of Wikipedia readers in Brazil had either not realized or noticed that you could create an account; or had created one and promptly

forgotten about it, much as the data from the Account Creation Improvement Project would suggest; or saw little need or value in creating an account and decided not to. When participants were nudged or shown features, they showed interest in bookmarking or 'watching' pages, something thinking this would lead to recommendations, and they also showed an interest in the discussion remarking that they'd be likely to read these pages in the future, but were unlikely to contribute.

"I don't have the habit of using an account on Wikipedia. Maybe it would tell me what I like?"

-- *Rafael, 28, Events Coordinator*
Sao Paulo, Reader

Editors

Most of the editors we talked to in India and Brazil regularly used an account. Of the editors that accessed Wikipedia on their mobile regularly, all particularly missed the features that they used on their computers. Some of these features are not tied to their accounts - for example editors of small language Wikipedias in India frequently check Recent Changes or History Pages. But many of them are - Watchlists, Discussion, and Talk pages were the features that were requested most frequently.

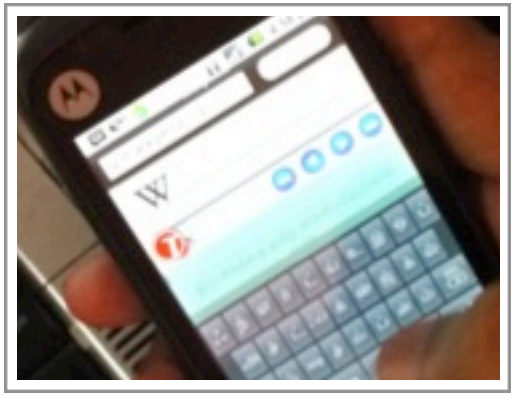
Actionable Items: Now

- Allow those users with an account to log in on our mobile site. Add support for the account features that are most suitable to mobile devices. Further research, either from our upcoming mobile survey or research focused only editors, would need to be done to investigate which specific features to support. But from this work, watch lists would be a good place to start.
- Build a simple and intuitive account creation flow for mobile properties both the site and apps. Allow users to associate their mobile number as well as their email address with that account in the process. Avoid some of the interface issues of the current PC account creation process.
- Associate viewing preferences with accounts and devices. Many users showed an interest in adjusting font size, controlling the display of photos and multimedia, layout and other display

A gentleman in Sao Paulo showing us the variety of services, accounts, and sites he accesses and uses on his Blackberry, provided to him by the events coordination firm he works for.

preferences. Allow users to associate these preferences with their account or devices. These preferences should be adjustable for all users, but being able to save them would be an added incentive to having an account.

- Build awareness around existing features.
- Use mobile features to induce account creation. Creating desirable mobile features can be an on ramp for account creation. Readers and mobile readers expressed an interest in saving articles offline, giving and receiving recommendations, sharing content via email or social networking sites, and taking photos (see Contributions). If these features required an account, it could build awareness of Wikipedia accounts and their features as well as creating a potentially better cross device experience.
- Viewing history. Especially for mobile where easy and quick access is key.



A regular commuter in Bangalore shows us his third party app that allows him to "bookmark" articles. He was unaware of Wikipedia "watchlists" and shows us that you can't find them on the mobile site.

Actionable Items: Looking Forward

- Use accounts as a means to communicate and connect with users. Welcome messages, tutorials, mentorships, product updates, and things of this nature all help users make more use of the site and increase their connection and relationship with Wikipedia.
- Encourage users to tie their Wikipedia accounts to their email addresses and communicate through email as well as through the Wikipedia messaging/talk interfaces. We heard from the few participants who had an account that they had started it and either found little value in it or had forgotten about their account. Most accounts online are associated with an email address, providing an easy way to recover your account as well as a suitable means for communication. Additionally, most online services with accounts send messages and updates through email as well as through the site (for example, Facebook messages go to your email and are accessible through your Facebook account; Flickrmail copies your email address and has a messaging service on Flick; and on). It is easier to log into one email account than to the 15+ accounts that our participants had on other sites.

- Create features for accounts that are desirable for Wikipedia readers as well as editors. When appropriate create both a PC, tablet, and mobile version of the feature.
- Create richer "user pages" that include photos. Most of Wikipedia's pages are walls of text and user and talk pages are no exception. Both in this research and elsewhere we see that most Wikipedia users want to know who "own" or "is behind" Wikipedia. Create better designed user pages and give greater access access to these pages by giving them more prominence. - for example, on an article page include a short list of editors that have most recently edited a page. This would increase users awareness of the activity on the site, give a more human touch to the site by giving otherwise anonymous names and contributors a face, and shows one of the values in having an account.

FINDINGS: CROSS DEVICE EXPERIENCE

All of the participants we talked to in both India and Brazil used more than one device to access the Internet as well as Wikipedia. A small minority of participants, all in India, cited their mobile device as their primary access to the Internet. More often, participants were using desktops and laptops in their homes, offices, schools, or in a dwindling number of internet cafes. Some of these machines are shared and others are uniquely owned or used. We did encounter two participants who shared mobile phones with other members of their families or households. In both of these cases, this was done to save money. While some participants wanted to be able to do everything that they did on their computer on their other laptops and mobile devices, others had very particular and prescribed uses of each device that did not largely overlap. The mobile Wikipedia experience is not a standalone and must be tailored to the mobile device while also maintaining a level of consistency across these computers, laptops, tablets, and phones.

Respondent in Salvador with team

Reader in Bangalore

Editor in Bangalore

Editor in Bangalore

In the Device Ecology and Personas sections of this report, we outline different typologies of access to the internet and Wikipedia by device and user. In both countries, mobile Internet connections remain slow with limited connectivity. Only in the last few months have 3G services become broadly available and accessible. In India, the market is full of 3G promotional plans and low rates in comparison to those found in the United States (99 rupees per month for up to 2GB of data), resulting in an huge increase among the younger generations joining the mobile web. This with the increasing variety and popularity of Android devices at lower price points has led to a richer mobile web experience supplementing or supplanting a PC experience, leaving Internet cafes for those that are priced out of devices and rate plans. In our surveyed segment in Brazil, browsing the Internet on a mobile device is a real desire, and a growing desire, but it is not

omnipresent or even a norm at this point. 3G is also emerging in Brazil but at rates that reflect the country's inflated currency. Heavy import taxes also make most Internet-ready mobile devices unaffordable for lower middle and lower classes. We found recruiting Internet users from more diverse income classes to be very difficult in both the countries.

Cross Device Experiences: PC vs. Mobile

PC vs. Mobile - Usage, Advantages, and Disadvantages

Our participants detailed and showed us ways they access and use the Internet and Wikipedia on their computers and their mobile devices. Naturally these behaviors and uses varied considerably but there is some overlap. In general, computers and laptops are used at home and in the office for extended sessions. In both locations, but more prevalently in India, we saw that computers and laptops were often shared. Work done on computers was considered more serious and engaging; documents, media and accounts were frequently started and developed primarily through computer work; and they were the "base stations" for music, media, and other files that made their way to other devices.

By contrast, mobile use was most often on the go, to kill time, and also frequently for quick access even when a computer was nearby, for example in a classroom when a teacher mentioned an unknown topic, or at work to look up a conversion table for work being done on a PC. Participants expect mobile content to be concise and summarized; they do more monitoring or sharing of documents: They primarily consume media, yet many also take photos; look for entertainment over engagement; bookmark and save things for later rather than diving into one topic deeply; consider their mobile a personal device and do not share it; look to Wikipedia and the Internet on their mobile device for quick answers, and use their mobile to quickly communicate and give fast responses.

When reading or contributing to Wikipedia, the advantages a computer provides over mobile devices are: (a) A larger screen, and people universally prefer reading on a large screen; (b) The larger amount of real estate increases the quality of interface and types of possible interactions; (c) More accurate controls, not just a full-sized keyboard and mouse, but also local language keyboards; (d) Easier to complete complex tasks such as typing long text (including spell check!); (e) Multitasking through multiple applications, windows, and tabs; (f) Access to files including photos and music; (g) More customizable; and (h) Easier to install plugins and gadgets.

Disadvantages include, limited or no portability, and lengthy boot up and access time. In addition, some users cited multitasking as a distraction.

Mobile devices show an advantage over computers for: (a) Portability and universal access; (b) Quicker activities and quickly "looking things up"; (c) Urgent tasks and focused objective searches; (d) Immediate access both in terms of being in your pocket but also with no real "turn on" time; and (e) Being a personal device without the restrictions there might be with computers in schools and offices.

Disadvantages include (a) The small screen; (b) Fewer photos and multimedia; (c) Cumbersome navigation especially if not properly formatted or when the font size needs adjustment; (d) Small and uncomfortable keyboards; (e) Lack of language support on keyboards for searches and for contributions; (f) Battery consumption concerns; (g) Bandwidth costs for even limited packages; (h) Slower load times; (i) Limited connectivity; (j) Less multimedia, especially videos which require a lot of bandwidth; and (k) Less trust in the security of the device, especially with respect to personal or confidential data.

A small number of participants in both India and Brazil were using a Wikipedia app on their smartphones, which made it faster and easier to get to Wikipedia content. A preference was expressed for an official application, but participants had difficulties knowing if theirs was an official app or not. Of the few app users we talked with, most used it for the easier and faster access, but rarely used features beyond search.

"All of the stuff I can do on the desktop, I'd like to do on my mobile."

- Rahul, Bangalore, 26

"If I want some information, I will not even wait to come back home before reading upon on it - I will look it up on Wikipedia at my college [or on my mobile?]."

- Ashish, Delhi, Student, Reader

"I think mobiles have come a long way, but I still don't use it much. I do Facebook. I use my children's PC to look some things up when I get the time and they are not using it."

- Anu, 35, Working mom, Delhi

India

In India, where unmarried, working 20-somethings were living with their parents and siblings, shared home computers were much more prevalent. Work laptops were carried back and forth and were rarely used at home for anything other than work. Aside from the mobile usage described above, we heard from participants that they used their mobile phones to access Internet sites that were banned from their work computers. Dual sim phones were also much more prevalent in India than we see in the US, Brazil, or elsewhere, and phone turnover was greater, i.e., participants had likely recently upgraded their phone, or were planning to do so in the near future.

Looking at Wikipedia specifically, participants gave examples of when they accessed Wikipedia on their computer as opposed to their mobile device. Examples include: Reading the history of a

Lamborghini, learning about vehicle geometry for my work, copying sections on articles for my lesson plan, search for information about B.R. Hills in Karnataka, and to read about natural disasters like tsunamis for my son's projects.

When asked about when they accessed Wikipedia on their mobile devices, examples included: Asking what is scientology, finding out who developed Android, looking up stuff like Bermuda Triangle, looking for descriptions of some old novels like War and Peace. Though the inquiries appear similar, the interaction and what follows is not. On mobile devices, participants typically had a particular question or task, whereas on the PC examples, these tasks are more open-ended. On their computers, they would browse, open links in new tabs, sometimes follow an external link, or a reference, or move on to an altogether different task and then revisit. On their mobile devices, they would most often find what they were looking or an answer to their question and finish.

As pointed in the earlier section on multi-media, many participants explained that Wikipedia was not very interactive and engaging, sometimes explaining that there was little or no multimedia, especially photos and videos. Although Wikipedia on the PC is considered visually anemic, the mobile experience felt even less visual to our participants. Readers were quick to add that they didn't think it should look, feel, or be "frivolous" like entertainment or social sites, and that in many ways it's "plainness" was an asset, but most felt like it could use some more audio-visual aids. A sizable minority felt that a distilled and streamlined mobile experience was preferable.

One of the few app users, a reader in Bangalore with the latest Samsung Galaxy phone, had a third-party Android app that kept his "article viewing history," a feature that he found himself using regularly to quickly access articles on his mobile phone without having to search.

Brazil

In Brazil we saw a higher amount of netbook use in addition to computer, laptop, and mobile usage. Netbooks took the place of mobile devices in some of the on-the-go situations we had previously seen - for example one gentlemen used his netbook to access the Internet and Wikipedia on a commuter train ride.

" I use the internet on the mobile when I really need to and I'm not in front of the computer because it's not comfortable to read and write on."

-- Rodrigo, 18, Student, *Salvador*

"I need a search field and [after that] I need everything to be easy."

- Alexandra, *Sao Paulo Reader*

"I would use the mobile only for monitoring, to answer messages, it's excellent only for this."

- *Sao Paulo Editor*

"If I post a comment to a discussion page [on an article I see a spelling error or obvious acts of vandalism in], this helps me to find it again and edit on the computer later."

-- *Sao Paulo, Editor*

Aside from this, the way, places, and reasons for accessing Wikipedia across devices were much the same as we observed in India.

Editors

Editors described the same types of usage, advantages and disadvantages as the rest of our participants. The only difference in device and Internet use was with respect to Wikipedia. Though most editors still don't see the mobile as suitable for editing articles, they do want to view or monitor non-article pages currently not served on the Wikipedia mobile site. Some examples include talk pages, user pages, recent changes, watch lists, and article histories. Also, the editors we talked to mentioned scenarios in which they do find errors or motivations to edit when reading Wikipedia on their mobile devices. In these cases, they will sometimes use unnecessarily elaborate methods to "mark" this article to "save it for later" when they are at a computer where they can more easily edit it.

Actionable Items: Now

- Fix the redirect issue. Having to scroll the width of text heavy articles exacerbates many of the disadvantages of a mobile device. Given that we have the ability to format Wikipedia pages to smaller screens with our mobile site, it's a no-brainer to make sure that as many devices as possible redirect to this optimized site.
- Make an Android app.
- Consider adding a "mobile summary". In many cases, the first paragraph could stand in for this, but as the first paragraphs and "infoboxes" of Wikipedia articles often times prove sufficient for quick Wikipedia access, consider having an article format unique to mobile devices. This may also provide an interesting opportunity for mobile contributions in the future.
- Integrate with Wiktionary when only a definition is needed. Sometimes people look to Wikipedia for a definition and the encyclopedic content they are confronted with is

overwhelming. Given the mobile usage scenarios we heard about, a quick definition is sometimes enough. Integrating Wiktionary with the mobile site - or better yet an app - gets users what they need faster and also builds awareness of the project/resource.

- Save for later or save for offline. Some participants encountered articles that were overwhelming to read on their mobiles and wanted to "bookmark" them or do something that could help them remember them when they were back at a machine that was more suitable. Allowing people to email, SMS, or otherwise bookmark or save for later would accomplish this. Additionally, sometimes participants wanted to be able to save an article while they had connectivity for a time when they wouldn't have connectivity in order to digest the contents properly (i.e., on a train ride home).

- "Save for later" or "Save offline" lists or Reading history. A slight variation on the above. Some participants were appropriating browser and app features to create and save lists of articles that they wanted to regularly access. This allowed them faster access to these articles as they didn't have to type the search item or navigate through extra clicks. Building a feature that does this would remove the need for these workarounds.

- Allow users to mark an article, a part of an article, a sentence as a word as needing to be edited. Support editors' current practices of marking an article by commenting on a discussion page when on their mobile device in order to be able to find it later.

- Find ways to afford multitasking. A major disconnect between the PC and mobile experience of Wikipedia is the ability to open an "interwiki" link in a new tab (e.g. when reading an article on "Brazilian Food", clicking on the link to "Feijoada" and opening it in a new window or tab). Though participants access Wikipedia for quick answers, if given the right tools, they may seek lengthier Wikipedia browsing and "get lost" in Wikipedia as they do on their computers.

- Link preview. Mobile devices aren't great for multiple windows or multitasking. Having a preview of a link with enough information to either satisfy a users needs or to make a

decision on whether or not to click it may help translate some desktop Wikipedia habits to mobile devices.

- Contribute to talk pages via SMS
- Support the general interoperability of reading across devices. This can take the form of an app or allowing account login.

Actionable Items: Looking Forward

- Support a basic feature set across all apps through a platform like Phonegap.
- All current and future features should get mobile consideration and vice versa.
- Introduce preference settings for PC and mobile to customize the experience -- fonts, multi-media, login etc.

Cross Device Experiences: Customization and preferences

Readers want a customized experience

One of the things that our participants like the most about Wikipedia is that its familiar, consistent, predictable and reliable. Most importantly, it is easy to find, browse, and read information. Accomplishing this on our mobile properties - providing mobile access for easy reading and democratic distribution - will be half of the immediate battle. But we are starting from behind, and in the current web and mobile Internet landscape, most popular sites offer efficient mobile experiences while also offering tailored apps with full feature sets. In India and Brazil, the populations that use smartphones (and the associated apps) are still small in numbers. But with HTML5, the rise of affordably priced smartphones - especially Android phones, tablets, e-readers, and other mobile devices entering the scene, Wikipedia needs to think about how to be flexible enough to offer a reliable and consistent experience across devices while also allowing users to carry preferences and customizations between them. Accounts are a natural way to do this (see Accounts section), but very few Wikipedia users have or regularly use an account, as it provides little value to people primarily interested in consuming information. Browser settings are also a natural way to do this. Until we are at a place where we are confident in providing this consistency of experience, we should offer users the ability to control, adjust, or set preferences to achieve a satisfactory experience.

India

Many participants in India noted that they'd like to be able to change the font and the font size of Wikipedia articles when reading on their mobile devices. A lesser but still significant number of participants also expressed an interest in being able to have access to more photos, videos, infoboxes, and other media-rich article components. Some were more comfortable receiving updates through social networking sites while others were more comfortable reading through a long email than a long article, even if the content was identical.

"No need to load the whole page every time - just the first paragraphs and the links to detailed content. I can click on whatever section I want."

-- Satish, 40, Executive, Delhi

Brazil

Our findings in Brazil were similar to those in India. Namely that participants expressed an interest in adjusting font, font size, language preferences, and toggling the display of media rich

Keep the homepage simple and easy to navigate to find what one is looking for."

-- Ajay, 26, Salesman Delhi

elements such as photos and infoboxes on the Wikipedia mobile site. They also had individual preferences for where and how they like to both receive, send, and share information updates and such.

"I'd like to be able to change the font or the font size"

-- Indu, 45, Housewife, Delhi
(Hindi Wikipedia reader)

Editors

Editors brought up their use of gadgets and the possibilities of using them in a mobile experience. One participant was a particularly active and vocal proponent of 'huggle,' a vandalism fighting tool that he thought would be very suitable for a mobile phone.

Actionable Items: Now

- Whether with an account or not, allow users to customize their view of Wikipedia and save their settings.
- Investigate the feasibility of gadgets on mobile devices. Where possible, offer support for these gadgets and modifications.
- Stronger brand/identity between computer and mobile experience (regardless of device, site or app).
- Offer consistent functionality of all apps.