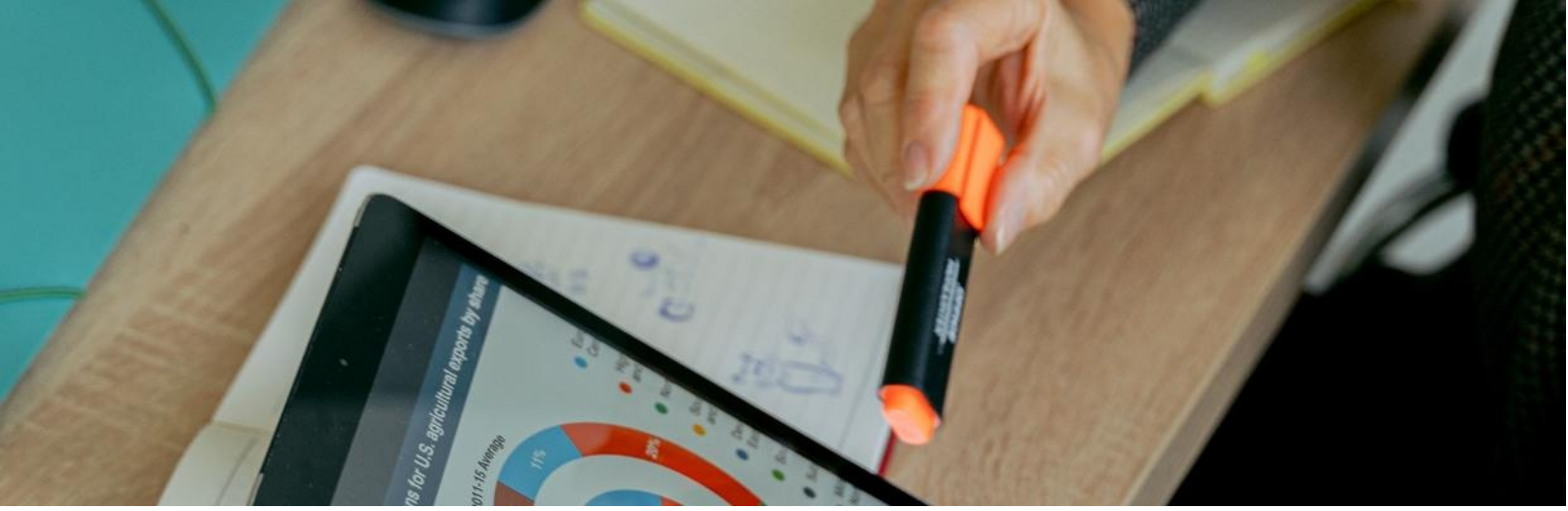

# Design Research for Healthcare


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# Design Research for Healthcare

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## Abstract

Importance of user-research for developing human centred solutions. In this article, Anmol talks about the role user research played in ensuring that their team's solution for rural healthcare was 'humans-first' and not 'technology-first'.

I have worked on multiple projects in the tech industry at this point as a design researcher - led the strategy for quite a few as well! I am currently a Customer Research Manager / Sr. Research Lead for Amazon Web Services (AWS). In my 7+ years of having worked as a design researcher, one project that continues to hold a special place in my heart is 'Project Kahinee' (storyteller). We were three young engineering students (Anmol Anubhai, Rahul Patel, Shashwat Sanghavi) who were keen to leverage machine learning (ML) / computer vision to design and build hand-held devices for accessible, cost-effective and accurate detection of oral cancer in rural parts of India. Our startup was incubated at Venture Studio, India, and we were being mentored by the Stanford Design School department. We had quite a few ideas for how to best shape the ML model and the types of scenarios to use it for - the idea seemed quite attainable! However, the first step that we were requested to take was to in fact take a step back and gain an in-depth understanding of our users' implicit and tacit needs through thorough in-field user research.

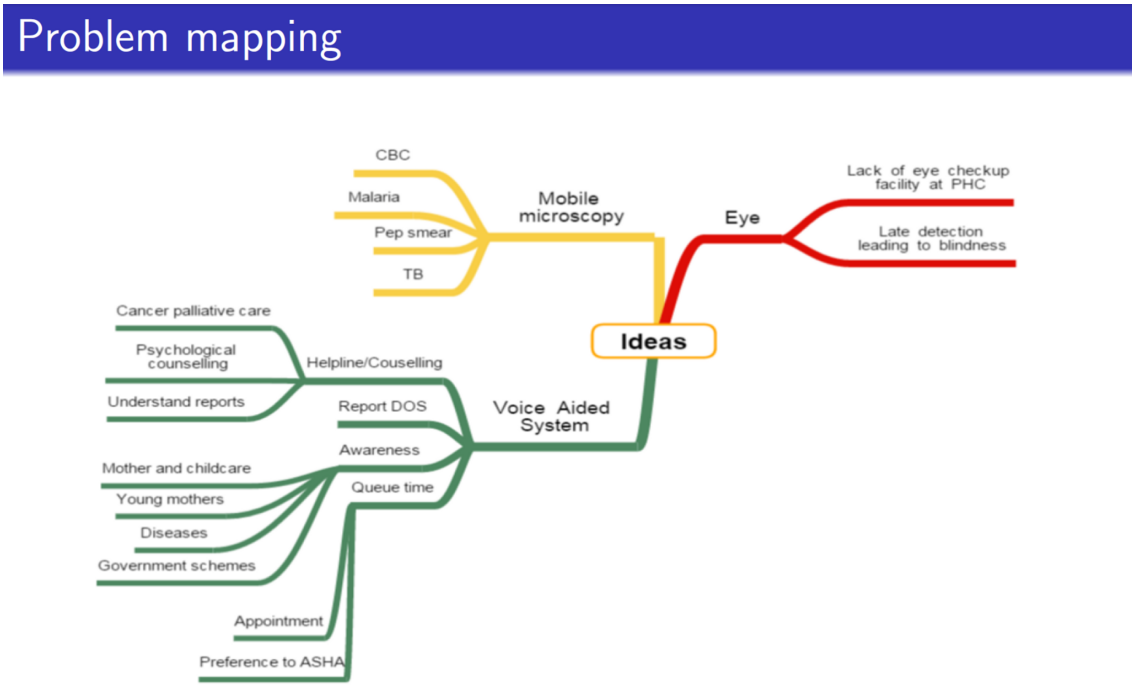
We conducted semi-structured interviews, focus groups and surveys with experts such as surgeons, psychiatrists, microbiologists, cancer specialists, gynaecologists, ayurveda doctors and physicians at city hospitals, local public healthcare centres (PHCs) and community healthcare centres (CHCs) in remote parts of Gujarat, India (see details and pictures here). Next, we conducted several rounds of ethnographic research and contextual inquiry in clinics and hospitals' waiting rooms to observe and learn from the conversations that patients were having among themselves as well as with nurses & volunteers. Some key insights that we distilled were: 1) Doctors in rural areas do not need fancy diagnosis devices; they are in fact in need of education tools & systems to help rural & tribal area residents understand the value of formal healthcare. A majority of patients there still believe in superstitions and go to the 'witch doctor' (Bhuva) 2) Child marriage is prevalent, and there is social pressure on women in these parts to give birth to a son. This often causes women to grow anaemic at a young age caused by blood loss due to multiple childbirths 3) Patients who visit hospitals & clinics struggle to read their own medical reports since they are unfortunately only available in English instead of their local language and dialect 4) Doctors try to come up with their own scrappy visual tools to help patients understand medical terms and jargons. We shared these key insights with the rest of our team in the form of a video documentary along with an in-depth research deck. We also led multiple brainstorming sprints where we categorised the insights into 'known knowns,' 'known unknowns' and 'unknown

unknowns'. Next we storyboarded ideas, conducted an in-depth SWOT (strengths, weakness, opportunity, threat) analysis, and discussed multiple solutions. The result of our research, as well as these sprints, was the team being able to gain a thorough understanding of patients as well as doctors' pain points. We decided to pivot and focus on building an interactive voice response system to educate families and especially mothers in rural parts of India about family planning, maternal healthcare issues and anaemia using audio folk plays & music. This system was made available on their simple mobile device and worked without the internet. We collaborated with folk musicians and artists to design audio skits & music in multiple local languages and dialects. Thus, due to the user research that we intentionally invested our time and energy in, we were able to ideate and design a solution that was simple i.e., didn't use fancy / complex technology like we had originally set out to! Yet, our 'user-research informed' solution met our sensitive populations' needs in an efficient and effective manner.

We pitched our system to investors as well as IIPH (Indian Insititute of Public Health), Barakat Bundle (Startup incubated at Harvard Public Health School), and the Government of Gujarat, India. We received encouraging feedback from these groups and ran pilot studies in Bharuch, Gujarat, with our partners' support. During this time, we did iterative field research and conducted several rounds of home-visits, system walkthroughs, as well as focus groups with new mothers. We also worked on embedding our system into the government's information pamphlets in the form of push-buttons. We collected data on the topics that the women were choosing to listen to via Kahinee. We used this data to train our AI model that was ultimately used to help the government with efficient medical resource allocation in these remote parts. The feedback gathered from the local PHCs and CHCs showed a significant increase in the number of families & mothers who sought formal healthcare as well as took red iron tablets to battle anaemia due to our system. We were given 'The Innovative Trainers Award - ITA-2016' by the Indian Society for Training & Development ISTD. We also presented this case study at Human Computer Interaction (HCI), India, held at IIT Bombay. Thus, had it not been for 'user research' at 'stage 0' i.e., very early in our product development cycle, we would have designed and built yet another technologically advanced tool! However, this would have failed to be human-centred and would not have catered to real needs. We need to be 'user first and not technology first' - this is exactly the principle that design researchers follow when helping their multidisciplinary teams shape meaningful solutions. I have also led user research for The Seattle Times

newspaper and helped them shape a digital solution for young readers - learn about my process and journey here. Thanks for taking out your time to read my story!

# Appendix



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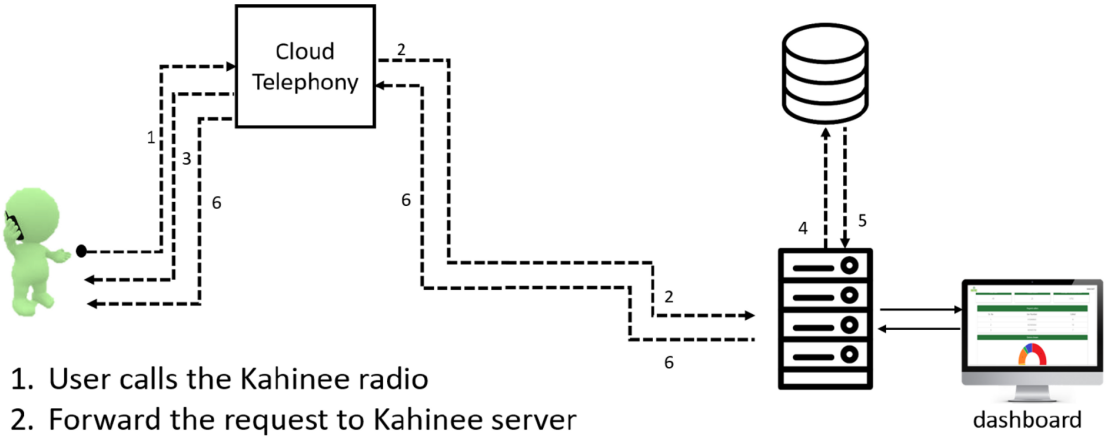
## How Kahinee radio works?




1. User calls the Kahinee radio
2. Forward the request to Kahinee server
3. Cut the phone
4. Store caller details in the database
5. Fetch content to be played in the call with particular user
6. Call back the user

# About the Author

Anmol is a human-centred design researcher, with international research experience and mixed research methods repertoire who is passionate about building meaningful emerging technologies. She has experience leading strategic qualitative and quantitative design research for spaces such as AI driven recommender systems, IoT data analytics, healthcare, education, journalism, mobile vision, virtual reality, multilingual chatbots and eco-friendly sustainable home appliances. Currently, Anmol is a Sr. Research Lead at Amazon Web Services (AWS).