

Human Computer Interaction (Hindi mein)

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User Perspective: Lecture 4 Part 1

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Namaskar Human Computer Interaction ke chauthे सप्ताह में आपका स्वागत है। इस सप्ताह में हम user perspective उपयोगकर्ता के दृष्टिकोण या परिपेक्ष के बारे में हम जानेंगे। जैसा कि अभी तक हम लोग ने seekha hai ki kisi bhi मानव केंद्रित system को बनाने के लिये हमें जो उपयोगकर्ता है उसको केंद्र में रख के उसके बारे में जानते हुए उसकी जरूरतों को जानते हुए उसके strength weakness in sabhi को जानते हुए उसके बारे में एक अच्छा system बनाना है जिसे कि वो अपना कर्मा सरलता से सुगमता से प्रभावशाली तरीके से कर सके। तो इसीलिए हमें यह बहुत जरूरी है कि हम user के बारे में जो उपयोगकर्ता है उसके बारे में कैसे ज्यादा से ज्यादा जानकारी हम पता कर सकें। जो भी उत्पाद या हम सेवा बनाना चाहते हैं। किस तरह के किन्ने भी प्रकार के जितने भी प्रकार के आपके उपयोगकर्ता हैं उनको दृष्टिकोण उनको ध्यान में रखते हुए उनके दृष्टिकोण के हिसाब से हम अपने उत्पाद या सेवा को अच्छे से बना सकें। तो चलिए आगे बढ़ते हैं। उसे पहले एक quick recap पिछले सप्ताह में हमने design thinking के बारे में seekha था। हमने design process के बारे में seekha था। हमने seekha था कैसे ये दो interaction design में एक अहम भूमिका निभाते हैं। उसके बाद हमने interaction design process के बारे में seekha था। हमने seekha था कैसे design thinking के मध्यम से हम पहले अपने user के बारे में ज्यादा से ज्यादा जान सकते हैं। उनसे सहानुभूति रख सकते हैं। उनकी जरूरतों को समझ सकते हैं और उनकी अपेक्षाओं को समझ सकते हैं। उसके बाद हमने design process के मध्यम से seekha था कि कैसे एक structured तरीके से step by step से कैसे हम जो भी हमारे उपयोगकर्ता हैं उनकी जरूरतें हैं कैसे हम उसको concrete तरीके से कार्रवाई कर सकते हैं। उसके बाद हमने interaction design process के उपर एक tutorial भी किया था जिसे आपको इसके बारे में और ज्यादा जानकारी मिली। हमने Figma tool पे व्यावहारिक hands-on experience भी किया था और weekly assignment के मध्यम से मैं आशा करता हूँ कि आपको design के बारे में interaction के बारे में जितना कुछ seekha था आप उसको अपने आप को मूल्यांकन कर सके होंगे। इस सप्ताह में हम जैसा कि हमने शुरू में mention किया था कि हम user perspective यांनी कि उपयोगकर्ता का परिपेक्ष या उसका दृष्टिकोण जानने की कोशिश करेंगे। उनकी कामियों के बारे में जानने की कोशिश करेंगे। हम यह जानने की कोशिश करेंगे कि जब हम किसी भी समस्या के उपर कर्मा करते हैं तो उसके एक मानव केंद्रित समाधान के लिये हमें user के हर दृष्टिकोण को समझने की जरूरत है। हमें यह जानने की जरूरत है कि किस-किस तरह के हमारे उपयोगकर्ता होंगे। वो पढ़े लिखे होंगे। वो अनपढ़ होंगे। वो बुद्धे होंगे। वो जवान होंगे, बच्चे होंगे। किस context में वो use करेंगे। ये सारी चीजें हमें एक अच्छा जानकारी देती हैं कि हमें

apne maanav kendrit system ko kaise banana hai. Hum uske baad batayenge ki hum kaise persona, persona kya hota hai? Persona kaise humein alag-alag upyogkartaon ke baare mein jaankari batata hai jo user centered design mein designer ko yeh batata hai ki kis-kis tarah ke hamare upyogkarta honge jo system hum banana chahte hain. Uske baad hum data synthesis ki baat karenge aur kaise data synthesis humein ek tarah se jaankari deta hai ki kis-kis tarah ke upyog karta hai aur kya unki zarooratein hain aur kya humein karna chahiye. Uske baad hum design thinking ko quickly revisit karenge aur dekhenge ki kaise uske jo alag-alag ghatak hain aur yahan pe hum user perspective mein jo cheezein seekh rahe hain woh kaise wahan par related hain. Hum user perspective ke baare mein ek tutorial bhi is saptah ke ant mein denge aur ek panel discussion ka bhi aayojan is user perspective ke baare mein kiya gaya hai. Is saptah hum Miro jo ki ek tool hai us pe bhi hum hands-on experience karenge aur aap dekh sakte hain ki uska use karke kaise aap apne overall design mein kaise use kar sakte hain aur last mein hum weekly assignment as usual karenge jisse ki aap mulyankan kar sakein apne kya seekha. Chaliye shuru karte hain upyogkarta ke drishtikon se. Toh user perspective Human Computer Interaction mein kya role rakhta hai? Kis tarah humein madad karta hai? Yeh hum jaante hain. Jaise ki hum dekh sakte hain koi bhi technology aap banate hain, koi bhi upkaran aap banate hain ya koi bhi seva aap banate hain toh usmein har tarah ke log use kar sakte hain. Jaisa ki humne pehle ke adhyay mein bhi discuss kiya tha ki humein apni solutions mein kaise usko inclusive aur accessible banaya jaaye. Aur jab hum inclusivity ki baat karte hain toh us samay hum baat karte hain ki kaise hum apne solution ko har tarah ke logon tak pahunchayein. Chahe woh male ho, chahe woh female ho, chahe woh padha likha ho, anpadh ho, alag-alag culture ke log ho, alag-alag bhasha ke log ho. Toh jisse ki hum zyada se zyada logon tak apni pahunch bana sakein. Uske baad accessibility mein humne yeh bhi discuss kiya tha kaise kisi bhi vyakti ko agar woh kisi bhi tarike ki disability se suffer kar raha hai chahe woh mental ho chahe physical ho toh bhi hum apne solution ko is tarike se banayein design karein ki woh uska laabh utha sakein. Toh user perspective are the lens through which we understand kaise ek upyogkarta system ko samajhta hai, perceive karta hai aur usse apna paraspar kriya karta hai. Kaise apne karya ko woh khatam karta hai. HCI focuses on designing systems that accommodate diverse user needs and behavior. Jaisa ki humne bataya ki HCI mein hum jab bhi koi bhi human centered system banate hain toh humein alag-alag tarike ke upyogkarta hote hain aur unki aavashyaktaayein bhi alag-alag hoti hain. Unka behavior jo hota hai woh bhi alag-alag hota hai. Toh kaise hum is alag-alag tarike ke logon ko consider karte hue hum ek aisa system bana sakte hain jo sabhi ke liye upyogi ho. Jaise ki pichle vyakhyan mein humne discuss kiya tha research paper ke madhyam se ki ek smartphone user ke liye keh sakte hain ki 382 tarike ke smartphone users ho sakte hain. Woh us samay us research paper ki baat thi. Abki smartphone mein bhi dher dheron tarike ke dheron tarike ke changes hue hain, features hue hain. Toh usi tarike se usko upyogkarta badhe toh yeh atishyokti nahi hogi. Agar main kahun toh ab 1000 se bhi zyada users ho sakte hain jo bhi aaj ke time pe jo smartphone users hain. Toh yeh thoda subjective number ho sakta hai. But more or less keh sakte hain ki yeh dher saare jo user hain kaise hum aaj ke time pe smartphone banayein jo in saare logon ki upyogita ko dhyan mein rakhte hue apna design karein aur unke kaam aa

sake. Toh user perspective basically guide karta hai development of interfaces that are intuitive, efficient and satisfying. Toh kis tarah se jo sampark bindu hai aur jo antar falak hai woh sahaj hai, kushal hai aur santushtidaayi hai. Aur yeh tabhi ho sakta hai jab hum user ki perspective ko dhyan dein. Jaisa ki humne pehle bhi discuss kiya tha. Hamara purpose Human Computer Interaction mein is tarah hona chahiye ki hum jo hamare users hain, upyogkarta hain unko hum zyada se zyada santushti pradaan kar sake. Aananddaayi experience provide kar sakein aur uske liye tabhi sambhav hai jab aap unko jaane jab tak aap unko jaanenge nahi tab tak aap unki madad nahi kar sakte tab tak aap unko achha se achha solution nahi provide kar sakte jisse woh aanandmay tarike se aaram se without any friction aapke interface ko aapke system ko use kar sake unse interact kar sakein aur apne karya ko khatam kar sakein toh Jacob Nielsen ne jaisa bola tha if you want to make things work for people agar aap logon ke liye chahte hain ki karya ho you have to design from user perspective tab aapko unke perspective se banana padega. Agar aap unke perspective se unke drishtikon se cheezein nahi banayenge toh woh unke kisi kaam ka nahi hoga. Bhale hi woh chahe kitni bhi advance technology takneeki ka use karke aap unko banayein. Toh chaliye jaante hain alag-alag aspect user perspective mein. Sabse pehli baat hai user needs jo upyogkarta ki zarooratein. Jaisa ki humne pehle bhi bola ki hum end of the day jo bhi human centered system banana chahte hain woh alag-alag diverse set of jo aapke upyogkarta hain unki zarooraton ko poora karne ke liye. Toh unki need ko samajhna, unki zarooraton ko samajhna bahut zaroori hai. Toh pehle hum kya karenge? Unko khojne ki koshish karenge, pata karne ki koshish karenge. Unki zarooratein kya hai? Toh discover what users are trying to achieve with the product. Jaise ek example ke taur pe dekh sakte hain. A project management tool prioritizing task organization for remote teams. Toh jo aajkal khaastaur par online ki duniya mein jab aapke team ke log aapke dost log door baith ke jab kaam kar rahe hain toh wahan pe ek project management tool ek tarah se aapko sahuviyat deta hai ki aapko kaun-kaun sa kaam kisko karna hai, kaise karna hai. Jaisa ki maine bataya ki end of the day human centered design mein human centered system mein humein user ke experience ko badhana hai. Uske upyogkarta ka jo anubhav hai usko khushnuma banana hai. Use achha banana hai. Usko enhance karna hai. Aur yeh tabhi possible ho payega jab aap apne user ko achhi tarike se samjhiye. Aur aapko agar pehle se pata hoga ki aapke jo utpaad hai ya jo aapka sevayein aap provide pradaan karne ja rahe hain woh kis tarah ke upyogkarta use karne ja rahe hain toh aap unko dhyan mein rakhte hue apne system mein unke zarooraton ko accommodate karne ki koshish karenge aur unko achhi se achhi seva pradaan kar payenge. Agar aapko pata nahi hoga ki kis-kis tarike ke user aapke system ko use karne ja rahe hain then aap aise keh sakte hain ki woh jo aapne system build kiya hai uske liye surprise ki tarah hoga. Toh surprise movies mein achhi lagti hai. Knowledge mein achhi nahi lagti. Right? Toh aur khaastaur pe hum agar isko smooth banana chahte hain, sahaj banana chahte hain, natural banana chahte hain toh humein is baat pe vishesh karke dhyan dena hoga ki designer ko pata ho ki yeh jo bhi aap seva ya product bana rahe hain, woh kis tarah ke log kis situation mein, kis context mein kaise use karenge aur isiliye user perspective ke madhyam se unki zarooraton ko hum achhe se samajh paate hain. Kis situation mein woh use karenge, kaise use karenge, kahan use karenge, usmein bhi humein madad milta hai. Toh user experience jo ki

ek holistic perception hai, kisi bhi product ka ease of use, functionality and appeal woh bada achha ho payega jab hum unke baare mein jaankari apne dimaag mein rakhein. Aise system ko develop karte samay. Jaise example ke taur par hum dekh sakte hain a weather app that clearly displays forecast with minimal navigation. Agar hum ek weather application use kar rahe hain. Khaastaur pe aap Delhi jaise sheher mein reh rahe hain toh aap janana chahte hain ki theek hai kal ka mausam kaisa hoga? Kal kitna pollution hoga? Kal ka mausam kaisa hoga? Kya mujhe bahar jaana chahiye? Khaastaur pe aajkal achanak se yeh storm aur aandhi toofan aa ja raha hai. Toh kya hum usse bach sakte hain? Kya hum un cheezon ko toh aisi cheezein jo latest hai jo humein pata hai frequently hai asked question hai us tarike ki cheezon ko humein minimal effort ke saath minimal navigation ke saath kam se kam samay mein bahut hi aasani se uplabdh karana hoga usse user ka upyogita badh jayega. Jaise ek aur example agar main dena chahun khaastaur pe aap digital payment app ka use karke alag-alag shop pe kuch paise pay karna chahte hain toh kaise minimal effort ke saath minimal navigation ke saath aap payment kar sakte hain. Jaise ki maine pehle vyakhyan mein bataya tha. Pehle pay karne ke liye aapko number type karna hota hai. Wahan pe galtiyan hoti thi. Contact ko import karna shuru hua. Woh bhi sahi hua. But uske baad usko kai number of steps karne padte hain payment ke liye. Toh uske baad QR code ka hai. Aap simply aap QR code dabate hain, scan karte hain aur directly jo bhi paise dene hain aap de paate hain. Toh yeh ek tarah se aapne user experience ko badha. Functionality wise same hai. Nahi, functionality wise pehle bhi aap ₹100 transfer kar rahe the apne jo vendor hai aur abhi bhi kar rahe hain. Lekin pehle us ₹100 ko transfer karne ke liye aapko teen-chaar baar pages pe jaana padta tha. Teen-chaar actions lena padta tha. Aap keval ek action se QR code scan karke aap kar sakte hain. Aapko pata hai ya nahi pata hai? Amazon jaisi company ne ek tarah se e-commerce ki sabse badi company aap bol sakte hain. Uske popularity ka sabse bada reason ek tarah se uska ek patent tha jismein usne bola one-click payment. One-click shopping. Usmein us patent mein yeh tha ki pehle kya hota tha? Pehle aisa toh hai nahi ki Amazon pehli e-commerce website thi. Uske pehle bhi the log lekin Amazon achanak se itna popular aur itni badi company kaise ban gayi? Woh apne innovation ki wajah se ban gayi. Aur woh innovation kya tha? Ek innovation unmein se yeh tha ki woh apne upyogkartaon ko dhyan mein rakhte hue unke zaroorat ke hisaab se apne app ko update kiya. Jaise pehle ke e-commerce website mein kya hota tha? Agar aapko koi saamaan khareedna hai toh har baar item ko aap select karte the. Us utpaad ko select karne ke baad aap apna address daalte the. Har baar, har baar aap apna payment detail daalte the aur uske baad fir usko order place karte the. Is tarike se hota tha. Toh kisi bhi item ko khareedne ke liye pehle kya hota tha? Aapko kai pages ke madhyam se jaana padta tha aur us navigation ke baad aap finally apna order place karte the. Ab kya hota hai? Unhone apne patent mein kya kiya? One-click order. Usmein kya hua ki jab bhi item aapne select kiya, simple aapne buy button daba diya aur woh place order. Kaise ho gaya? Ki jo cheezein aapko pehle se har baar daalni padti hain ya jo bhi aapka default option hai usko aap pehle se select karke rakh dijiye. Jaise aapka default address hai toh aapne address pehle se daal rakha hai toh ab woh us address par jayega. Aapne payment option pehle se select kar rakha tha toh wahan se seedhe us payment option se aapki payment le lega aur aapke ghar woh saamaan order kar dega. Toh yeh cheez ab aaj ke time

par aap alag-alag e-commerce, alag-alag grocery app, alag-alag jagah dekhte hain ki default payment option, default address jisse ki aap aasani se bade kam number of steps ke saath cheezon ko khareed sakte hain. Toh yeh ek tarah se patent jo tha, Amazon ke through aaya tha. Shuruwat ke kuch saalon ke liye ek tarah se unka us pe right tha. But uske baad ek tarah se yeh I think sabhi log use kar sakte hain. Aise aage badhta hai. Toh purpose yeh hai yahan pe, minimum number of karya, minimum number of effort agar user ko lagana pade kisi bhi karya ko karne ke liye toh usse user khush hota hai. Apne saare kaam ko karta hai. Aur sabse badi baat wahan galti hone ki chance kam ho jaati hai. Kyunki agar same task ko karne ke liye agar आपको 1, 2, 3, 4 kaam karne padte hain toh ho sakta hai ki address daalte samay address galat ho jaaye. Payment karte samay payment details galat ho jaaye aur is tarah se OTP daalte samay OTP wali details galat ho jaaye. Alag-alag cheezein ho sakti hain. Right? Toh lekin agar aap is tarah se karein ki jo bhi aapne seedhe item select kiya, order button dabane ke baad jo bhi aapka default payment option tha, default address tha wahan pe chala gaya toh galti ke chance bhi kam ho gayi, samay bhi kam laga, number of steps bhi kam laga toh is tarah se aap apne user ka experience badha paaye. Usability, upyogita, user end of the day jaise aap chahte hain ki jo bhi utpaad aap bana rahe hain, service bana rahe hain woh upyogi ho. Jo bhi karya karne ke usko banaya gaya hai, woh usko achhe se karein. Toh uske liye iska jo focus hota hai woh efficiency aur effectiveness of the interface pe hota hai. Jo bhi sampark bindu wahan pe aasani se kushalta ke saath prabhavshali tarike se agar apna karya kar pa rahe hain aur interface ke madhyam se woh cheezein आपको dikhti hain aur aap kya kar rahe hain woh pata chalta hai ki aapne kya action liya aur uska kya phal nikla. Toh jaise example ke taur par dekh sakte hain. A streaming platform with easy to navigate categories for finding movies quickly. Kitne aasani se aap apni manpasand picture ko movie ko kisi bhi streaming app pe dhoond paate hain with whatever the category or details that you have. Similarly accessibility kitni sugamta ke saath sabhi log regardless of their ability disabilities can use the interface. Jaise humne pichle class mein pichle vyakhyan mein humne bataya tha ki alag-alag interface jaise web browser pe agar screen reader waghera is tarike se hain toh unko aasani se woh padh sakta hai. Bhale hi woh visually impaired ho. Toh a reading app offers adjustable font size and dyslexia friendly mode. Toh us tarike se in tarah ke logon ko bhi jo ki font ko jinko chhote font ko padhne mein dikkat hoti hai woh aasani se isko dekh sakte hain, padh sakte hain, samajh sakte hain aur uske aage ka karya kar sakte hain. Toh jaise ki maine bataya, alag-alag tarike ke user ho sakte hain. Kuch aise bhi user ho sakte hain jo ki nausikhiya ho. Toh nausikhiya user ko kya chahiye? Simple aur intuitive interface chahiye. Basic clear instruction kyunki woh zyada dimaag nahi laga sakte ya nahi lagana chahte. Toh aise case mein jaise photo editing app offering step-by-step guidance for beginners toh aisa kuch kar sakte hain. Again agar woh aapka aakaar ko aur simplify kar de toh aur achhi baat hai. Unse aap expect nahi kar sakte hain ki aap kisi photo editing app mein photo ko edit karna hai toh woh daalein. Achha itne pixel se itne pixel ko select karo aur itne is particular color mein itna variant daalo yeh daalo. Woh sab cheezein nahi kar sakta. Toh usko aap kitna simplify tarike karke photo editing kar sakte hain woh aap dekh lijiye. Toh expert user aise hain jo ki zyada tar unko pata hai toh unko aap advance feature alag se de sakte hain ki woh apne cheezon ko aur tezi se aur achhe

se kar paayein. Toh looking forward for advance feature unke liye shortcuts jisse ki woh aur jaldi se kaam kar sakein. Jaise Excel sheet aap log maintain karte hain toh ek tarika hai ki aap manually 1, 2, 3, 4, 5 likhte hain. Agar aapko ek column mein numbering, serial number likhna hai. Doosra jo advance user hote hain woh one-two likhne ke baad usko drag kar dete hain neechे toh apne aap woh ek do teen charon sequence ko pattern ko follow karke kar deta hai. Toh again aap dekh sakte hain yeh simple sa example tha. Par aapke real life mein aap dekh sakte hain aise dheron example honge jo ki expert log bahut tezi se bahut achhe se bahut kushalta purvak usko kar paate hain. Jaise is case mein example hai a coding environment Visual Studio with customized features for development. Usi tarike se aaj ke time pe Jupyter Notebook aur dher saari aisi cheezein hain jahan pe aap coding karte samay shortcut ke madhyam se alag-alag tarikon ke madhyam se aap bade tezi se bahut tezi se coding kar sakte hain. Casual user bhi hote hain jo basically dono ke beech mein keh sakte hain balance chahiye. Toh need a balance between simplicity and functionality without overwhelming the options. Bahut dher saare option nahi chahiye lekin bahut kam option bhi nahi chahiye. Toh somewhere in between unko chahiye toh a fitness tracking app with straightforward activity logging, running app jahan pe aap normally run kar rahe hain. Apne activities ko log kar rahe hain. Apne milestone ko set kar rahe hain. Lakshya ko kar rahe hain aur apne jo lakshya ke prati kahan tak pahunche uska status check kar rahe hain. Toh is tarah ki cheezein ho sakti hain. Frequent user jo ki bahut baar aapki application ko use kar rahe hain. Bahut baar-baar jaldi-jaldi aise use kar rahe hain. Unko basically focus isliye ab toh unka jo ek tarah se unki requirement hogi usko aapko apne application aur service ko bahut efficient banane ki zaroorat hai. Uski usko aur tez banane ki zaroorat hai. Aisa nahi hona chahiye kyunki woh baar-baar use kar jaldi-jaldi use karein. Unke paas dher saara kaam hai. Toh aap jitna jaldi se jaldi kar payenge woh aage karke apna doosra kaam kar payega. Toh speed ek yahan pe bahut hi important factor hai. Familiarity with the routine task woh hona chahiye. Jo baar-baar ho raha hai. Kya hum usko aur simplify kar sakte hain? Kya hum usko aur tez kar sakte hain? Woh cheezein hum iske madhyam se kar sakte hain. Example ke taur pe aap dekh sakte hain. An email client with quick access folders and advanced search functionality. Toh ek tarah se aap kar sakte hain. Jaise email pe jo aapke paas saikdon hazaron email aate hain. Kya usmein aap alag-alag tarike ke filter se alag-alag tarike ke date range se alag-alag aur bhi tarikon se source, destination, alag-alag file attachment, file size un sabke madhyam se aap kaise aap alag-alag functionalities ko kar sakte hain. Toh jaisa ki humne bataya ki aapke paas diverse, dher dheron tarike ke users hain. Novice hain, expert hai, casual hai, frequent hai toh alag-alag tarike ke aapke paas user hain. Toh unki zarooratein bhi alag-alag hain. Jaise diverse user need designing a broad audience can lead to conflicting requirements. Ab yahan pe abki alag-alag tarike ke upyog karta hai toh unki zarooratein alag hain. Toh ho sakta hai ki kaafi aisi zarooratein hongii jo conflicting hongii. Example ke taur pe aap dekh sakte hain ki jo simple user hoga usko advance, kaafi advance overwhelming options nahi chahiye. Jo advance user hoga usko bahut simple option nahi chahiye. Jo frequent user hoga usko bahut tezi se answer chahiye. Jo casual user hoga usko theek hai chalega, aaram se bhi chalega. Toh kaise aap kuch conflicting requirements, zarooratein hain jo ek doosre ko contradict karti hain. Dono ko ek

saath nahi kiya ja sakta. Toh kya hum usmein koi balance bana sakte hain? Kya usmein hum koi trade-off bana sakte hain? Toh yeh humein dekhne ki zaroorat hai. Usability versus aesthetics, jaise yahan pe humein bilkul achha dikhna chahiye. Aapka jo user interface hai, clean hona chahiye. Achha hona chahiye. But itna simple bhi na bana dein ki woh apna kaam hi na kar paaye. Toh isliye dono ke beech mein bhi ek trade-off nikalne ki zaroorat hai, banane ki zaroorat hai. Jahan pe prioritizing ease of use without sacrificing visual appeal. Toh a sleek interface that still provides enough functionality for an expert user. Toh agar hum aisa kar paaye toh hum usability maintain kar sakte hain without aesthetics ko sacrifice kiye hue. Toh dher saare ismein challenges ho sakte hain kyunki apne upyogkartaon ko samajhna itna aasan nahi hai. Bahut mushkil hai. Aadmi, vyakti apne aap ko achhe se nahi jaanta toh aap agle bande se kaise expect karte hain ki woh aapko achhe se samjhe. Aapki zarooraton ko samjhe. Jaisa ki humne pehle bhi vyakhyan mein discuss kiya tha. Agar aap mujhse pooche aapko kya chahiye? Agar main aisa kuch bana raha hoon toh pehle is itna aasan nahi hai batana ki mujhe kya chahiye. Yeh samay ke saath evolve bhi hoti hain. Isliye jaisa humne bola tha yeh punravritt kriya hai. Aapko baar-baar iterate bhi karna padega. Chahe woh zarooraton ko jaanna ho, chahe woh aise system ko banana ho. Toh user testing limitation aur selecting the right user demographic for accurate figure. Kyunki aap feedback chahte hain toh ek sahi aur achhe user ko select karna bhi bada mushkil karya hai. Toh agar aap chahein ki aap feedback lena chahein toh aapko kaise pata chalega ki jo bhi feedback aap le rahe hain woh soch samajh ke achhe se diya gaya ya randomly diya gaya hai. Jaise aap mein se kaafi log shayad kabhi koi survey karte ho, Google Form banate ho, logon se share karte ho. At least maine toh aisa bahut dekha hai ki kuch log kya karte hain randomly bharnae lagte hain kyunki unko bola jaata hai bharnae ke liye toh aap aise logon ko kaise hatayenge woh feedback toh unhone diya but woh galat feedback tha, random feedback tha aur agar aap usko rely maan ke, uske upar nirbhar hoke aage ka karya karenge toh aapka poora system bhrasht ho jayega. Toh isliye bahut zaroori hai ki aap sahi tarike se sahi logon ko apne user testing ke liye lijiye. Toh testing a gaming app with both casual hardcore gamers to balance the feature. Aur again sahi group ko bhi lena bahut zaroori hai. Agar aapke jo bhi gaming app bana rahe hain toh aisa toh hai nahi ki aapko hamesha expert milenge aur aisa bhi nahi ki aapko hamesha novice log milenge. Nausikhiya bhi nahi milenge. Aisa toh nahi hai. Aapko dono tarah ke log mil sakte hain. Beech ke log bhi mil sakte hain. Toh kaise aap in sabhi logon mein samanasya baithayenge? Apne app ko aise banayenge ki har tarike ke log isko achhe se use kar paayein without any frustration. Samay ke saath trends bhi badalte hain, vishay bhi badalte hain. Toh keeping up with evolving user expectation and the technology. Jaise jitne tezi ke saath generative AI aage badh raha hai toh unki expectation bhi badh rahi hai. Unki ab toh har koi chahta hai ki maine kuch bola aur turant generative AI uske liye poora uttar bana ke de de. Poora movie bana ke de de. Poora audio bana ke de de. Hum assignment likh ke de de, coding karke de de. Dheron, dheron aisi cheezein badhti ja rahi hain. Toh integrating AI features in response to rising demand for personalized experience. Jaise kuch log ko is tarah ke gaane pasand hai. Is genre ke gaane pasand hai toh kaise hum turant usko unke requirement hisaab se update kar paayein. Toh good design is a lot harder than it looks. Sach mein itna aasan nahi hai. It's essential

to understand that people are not designers. Toh jo aapke upyog karta hai agar aap expect kar rahe hain ki woh designer ki tarah sochte hain, designer ki tarah karya karenge, galtiyan nahi karenge, cheezon ko aasani se samajh lenge toh yeh aapki galti hai. Wahin par aap fail ho gaye. Aapko is tarike se apne system ko banana hai woh simple hai unko bahut zyada effort nahi dalna hai aur bahut aasani se bina effort daale, minimal effort daale woh apne karya ko achhe se kar paayein. Toh user-centered design principle mein basically in chaar cheezon ka hum zyada dhyan denge. Yeh involve karta hai user research. Jaise ki humein apne user ke baare mein janna hai toh hum user research karenge. Aur humne pichle adhyay mein discuss bhi kiya tha. Jaise yeh sarvekshan, ismein sarvekshan hota hai, interview hota hai, observation hota hai jisse ki aap jo upyog karta hai uski zarooraton ko samajh paayein. Bhale kabhi-kabhi woh explicitly aapko batayega aur kabhi-kabhi implicitly aapko khud se samajhna padega. Woh kehna kya chahta hai? Karna kya chahta hai unko observation ke basis pe aur jaise maine bataya yeh itna aasan nahi hai turant batana mujhe kya chahiye aur kya meri requirement hai kya apekshaayein hain toh samay ke saath even cheezein evolve hoti hain. Isliye yeh bahut zaroori hai ki aap constantly lagatar uski testing karte rahein. Usko refine karte rahein aur improve karte rahein jo bhi aapko feedback aapko apne upyogkartaon ke dwara mil raha hai aur kabhi-kabhi zaroori nahi ki woh feedback aapko upyogkartaon ke dwara mile jab bhi aap even aap as a designer as a developer bhi jab cheezon ko evolve karte hain toh based on your perception, based on your assumption aap kuch cheezon ko aur uske baare mein soch sakte hain. Usko validate kar sakte hain. Cross check kar sakte hain ki achha aapko aisa bhi chahiye kya? Agar main isko aisa karun toh kya aapko aur achha lagega kya? Toh yeh sab cheezon ka aap dhyan se dhyan de sakte hain. Aur in sab cheezon ko banane ke baad jaise ki maine bataya ki hamare upyogkartaon ke paas usko test karne ke liye mulyankan karne ke liye kuch tangible hona chahiye. Aur tangible kya hoga? Aapko kuch prototype banana padega. Kuch namoona banana padega. Woh alag-alag tarike ke namoone ho sakte hain. Jaisa humne pichle vyakhyan mein discuss kiya tha. Woh low fidelity ho sakta hai, mid-fidelity ho sakta hai ya high fidelity ho sakta hai. Toh feature wise, functionality wise jaisi requirement hai. Jis stage mein aap hain us tarah ke prototype ko aap use karein aur uske basis pe aage ke prototype ko banayein aur achha banayein. Us tarike se aap prototype bana ke user testing kar sakte hain. Aur ek tarah se feedback loop chalta rahega. Continuously integrating user feedback for enhancement aur continuously aap apne system ko use karte hain. Aur isiliye shayad aapne dekha hoga jab bhi aap koi app use karte hain agar aap about app mein jaayein toh woh usmein alag-alag version number hota hai. Jaise for example yeh start ho sakta hai version 0.0.1 matlab yeh ek tarah se testing phase mein hai. Example ke taur pe ab isko aap continuously improve karte rahe toh yeh one se two hua, three hua, four hua. For example yeh v0.0.7 pe jaake ruka. Ab aapko laga kuch toh concrete hua hai. Toh isko aap ek major development ismein karenge aur ab aap aa jayenge v0.1.0 matlab ek tarah se one of the stable version ho gaya. Ab ismein aap fir ek ek aur set of user se aur set of user se purane user se aur bhi feedback lenge aur yeh fir change hota rahega 0.1.1, 2, 4, 5, 6 is tarah se badhta rahega aur ek major version ke baad keh sakte hain v0.2.0 aa jayega. Uske baad ki is tarah se fir se cheezein continuously improve hoti rahengi aur aap ek major release ki taraf jaayenge. For example v1.0.0 ab main isko market

mein launch kar raha hoon. Fir yeh improve hota rahega. Aur for example agar aap jitne bhi app use karte hain about app mein jaake aap dekhein toh normally woh kaafi advance version hote hain. Jab se yeh launch kiya gaya hota hai. Toh jaise agar hum koi app ko dekhein toh ho sakta hai woh v7.2.3 aise karke aap just ek numbering nomenclature main bata raha hoon. Yeh thode variant bhi ho sakte hain iske comparison mein. But idea yeh hai ki is tarike se aap version ko maintain karte hain. Aur in version ko maintain karne ka ek sabse bada fayda yeh bhi hota hai. Kal ko aapne jo latest version hai usmein kai aise changes kiye. Uski wajah se system crash hone laga. Uski wajah se user complain karne lage. Toh turant aap purane wale version pe ja sakte hain. Jaise abhi aapka latest version agar abhi 7.2.3 hai toh aap turant wapas jaake 7.2.2 pe aa sakte hain jo ki stable version tha. Jahan tak aapke user happy the aur aap investigate karne ki koshish karoge kya dikkat aayi? Kyun aisa kya humne aise changes kiye jiske wajah se system unstable ho gaya. Kuch agar hum vastavik jeevan mein hamare example ko dekhein human centered design ke toh Airbnb, Apple iOS, Google search aise bahutere examples hain jahan pe ek tarah se aap dekhoge ki kaise user ko aap achhe se janne ke baad apne system ko bahut achha bana sakte hain. Bahut badi company bana sakte hain. Achha khasa laabh le sakte hain. Jaise ki Airbnb ke use case mein humne bataya tha 2008 mein, 2008 mein jab Airbnb thi toh concept achha tha, cheezein achhi thi lekin woh utne upyogkartaon ko, travelers ko, hosts ko apne platform pe nahi la pa rahe the. Kyun nahi la pa rahe the? Toh usko janne ke liye woh users ke baare mein aur janana chahe. Toh design thinking ke madhyam se jaise ki humne discuss kiya tha woh usko janne ke liye woh khud host banne lage. Woh khud traveler banne lage aur tab unko pata chala ki as a traveler kya-kya unko pareshaniyan hoti hain. Kya-kya unko dikkatein hoti hain. As a host mujhe kya-kya dikkatein hoti hai. Meri kya-kya expectation hoti hai. Kaise hum un dono ko achhe se handle kar paayein. Dono ko suvidhayein de paayein. Kyunki agar dono mein se koi bhi ek khush nahi hoga toh woh jo pipeline hai woh fail ho jaayegi. Kyunki traveler dher saare hain. Host karne wala koi nahi hai. Host dher saare hain. Travel karne wala koi nahi hai. Toh jab tak dono log bahutaayat nahi honge yeh jo business model hai woh kaam nahi karega. Toh isi wajah se unhone dono tarah ke user pe focus kiya. Dono tarahon, dono jo log hain unki samasyaon par dhyaan diya. Unko samasyaon ko hal kiya jisse ki aaj Airbnb itni badi company hai. A quick query quiz keh sakte hain. Y Combinator ne Airbnb mein kitne hazar dollar invest kiye the aur aaj uski value lagbhag kitni hai. Aap pichla adhyay agar dekhenge toh maine is baare mein discuss kiya tha on a lighter note. Chaliye Apple iOS ki agar hum baat karein but uske pehle Airbnb mein toh is tarah se it provides a seamless and trustworthy platform for both traveler and host toh ek tarah se dono ki jo jo bhi zarooratein hain chahe woh security ki ho, safety ki ho, finance ki ho woh cheezon ko aapko dhyaan dena padega. Similarly Apple iOS mein agar hum dekhein toh consistent design language across devices with easy feature of all users. Toh har tarah ke jitne bhi diverse set of user hain unko bade achhe se ek consistent design ki tarah se kyunki agar har tarah ke user ke liye aapne design consistent rakha hai toh aap ek tarah se unke liye aasan hota hai. Sabke liye aasan hota hai. Usko samajhna, usko use karna aur samay ke saath bhi jab ek iOS se agle iOS pe hum jaate hain toh koi major changes experience mein nahi hota hai. Kyunki jaise hi kyunki iOS jo bhi hain ek tarah se woh bhi toh upgrade hote

rehte hain samay se, device bhi upgrade hote rehte hain. Toh kaise jo purana iOS user hai woh ek major changes nahi feel karega. Otherwise agar woh jaise hi woh major changes honge same cheez pehle jo aap doosre tarike se karte hain ab doosre tarike se karenge toh woh ek tarah se consistency break karta hai aur uske experience ko anubhav ko bekaar karta hai. Toh it emphasizes accessibility features like VoiceOver for visually impaired users jaisa ki humne baat kiya tha. Google search known for its minimalistic design, fast response and smart search prediction. Toh jaisa ki aap jaante hain humne I think pehle adhyay mein discuss kiya tha Google ke pehle Yahoo ek bahut badi company thi. Kisi bhi information search ke liye, kisi bhi data search ke liye ek tarah se uski monopoly thi. Aap Yahoo ke search engine pe jaate the aur apni query ko likhte the aur uska uttar paate the. Toh Google ne bhi us kshetra mein kaam karna shuru kiya but utni badi utna bada competition nahi de pa rahe the. Matlab theek hai theek-thaak kar rahe the. Lekin jo unke liye ek tarah se jo significant change aaya unhone ek knowledge graph ke basis pe search prediction karna shuru kiya. Jaise ki aap koi phrase ya koi sentence likhna chahte hain toh jis tarike se aapne pehla word likha toh uske basis pe aapko second words, third word ka prediction aana shuru ho jayega. Do you mean this? Toh woh knowledge graph based hota hai aur aapko likhne ki zaroorat nahi padi. Ek tarah se aapne apne jo user tha uska samay bachaya. Usko madad ki. Cognitive load ko kam kiya uske prashn ke poochne ko. Toh is tarike se mujhe lagta hai ki zyada tar logon ne aap logon ne Google search use kiya hoga. Toh is knowledge graph ke madhyam se woh bade aasani se smart search prediction kar paata hai aur again ab toh uske dher dher saare variants aa gaye hain aur woh honge. But the idea is ki kaise is naye innovation ke madhyam se Google ne Yahoo ko bahut peeche chhod diya. So yeh basically is tarah se balance simplicity for novice search and reward search for expert. Jaise Google mein bhi aapne dekha hoga ki normally default jo search hota hai, simple search hota hai. But bagal mein aap dekhte hain usmein dher saare advance search ke option hote hain. Search by copyright, search by date, search by file, search by person, search by many other things. Toh ek tarah se woh har dono tarike ke users ko handle kar raha hai aur ek basic minimalistic interface ke saath pehle woh zyada tar users ko handle, zyada tar jo upyogkarta hai unki zarooraton ko poora karta hai aur koi upyogkarta ki agar zarooratein aur advance hai toh wahan pe usko woh change karke aage badh sakta hai. Toh accessibility ki baat ki thi. Jab bhi hum alag-alag user ki baat karte hain toh humein inclusivity aur accessibility ko dhyan mein rakhna hota hai. Toh aur jab bhi hum accessibility ki baat karte hain toh humne bola ki kaise hum apne jo prastut utpaad hai ya seva hai uski upyogita ko badha sakte hain. Kaise uski upyogita ki jo reach hai keval kuch logon tak seemit na rakh ke sabhi logon tak pahunchayein. Irrespective of unka jo mental ho, physical ho, disabilities ho. Toh is wajah se aap dekh sakte hain yahan pe assistive technologies hain jo unko madad karte hain. Unke disability ke baawjood woh usko bade aasani se use kar paate hain. Jaise assistive technology like screen reader hai, alternative input text device hai, voice control hai. Iske madhyam se aap bahut aasani se samvad sthapit karke kriya pratikriya karke jo bhi aapko karya karna hai, bade achhe se kar paate hain. So, accessible design principle mein aap jaise is case mein dekh high contrast hai, keyboard navigation hai, descriptive alt text for images hai. Is tarike se aap in. Toh jaisa ki humne pehle bhi discuss kiya tha. Ab aaj samay ke saath yeh jo

accessibility aur inclusivity hai ab yeh fashion ke alawa ab yeh more guideline ki taraf ja rahi hai. Standard ki taraf ja rahi hain. Alag-alag deshon mein ek tarah se jis tarah ki service hai service ke hisaab se isko mandatory ya encourage kiya jaata hai ki isko aap follow kariye. Jaise WCAG Web Content and Accessibility Guideline. Yeh zyada tar bade organization ek tarah se ab yeh mandatory ho gaya hai unke liye follow karna. Toh designing for accessibility is not about keeping up with rules. It's about creating a world that includes everyone. So jaise ki aap dekh sakte hain hum user ka satisfaction kaise badha sakte hain. Toh us case mein uh discuss user feedback uh discuss how user feedback set the product design. Toh yeh cheez humne Airbnb ke case study mein bhi discuss kiya tha. Yahan par hum Spotify ke madhyam se dekh rahe hain kaise user feedback ke hisaab se Spotify ne apna jo sab kuch tha, interface tha aur features the usko ek tarah se update kiya. Toh jaise yahan pe dekh sakte hain Spotify redesign to focus on user playlist based on the listening habit. Toh rather than keval aise mein saare gaane ko de dein. Ab isko ek tarah se group kiya hai. Made for this, made for mix. Again jis tarah ki aapki requirement hai aap usko alag-alag playlist mein unke sunne ki aadaton ke hisaab se unke requirement ke hisaab se unke preference ke hisaab se unke feedback ke hisaab se aap unko de sakte hain. So this highlights the impact of iterative design to on customer satisfaction. Toh is tarah se jo aapka upyog karta hai woh zyada santusht hoga, zyada khush hoga aur is tarah se aap dekh sakte hain ki yahan pe information ko even visualize karna dhoondna aasan lag raha hai as compared to jo pehle wala tha aur yeh aesthetically aur better bhi lag raha hai. Toh naye-naye trend user centered design badhte ja rahe hain jo humein madad kar rahe hain hamare user ko aur janne mein unko aur behtar suvidha dene mein jaise AI in personalization predictive user behavior for personalized experience. Toh alag-alag useron ko alag-alag recommendation mil raha hai based on their requirement based on their preferences. Toh similarly voice interface hota hai jaise Amazon ka Alexa skill set based on the user command jo se pehle voice user interface mein increase adoption voice activated system jahan pe aap bol ke apne baaton ko rakh sakte hain. Apne prashn ko pooch sakte hain aur uske uttar ko aap alag-alag madhyam se receive kar sakte hain. AR and VR integration providing immersive experiences in gaming, training and healthcare. Similarly jaise IKEA ke AR app mein let user visualize furniture in their own space. Uh jaise agar aapko yaad hoga, let's have a quick recap. Augmented reality kya hai? Toh jaisa ki humne bataya tha augmented reality mein ek tarah se jo aapka real world hota hai usmein hum ek tarah se virtual map ko overlay karte hain. Virtual objects ko overlay karte hain. Toh is case mein yeh kya bol raha hai ki aap apne ghar mein baithe hain for example aur ghar ke kinare pe baithe hain. Aapko koi sofa chahiye, koi table chahiye. Toh VR app ke through jo aapka IKEA ka app hai aap apne ghar ke us kone ki taraf camera ko dikhayenge aur jo bhi sofa aapko select karna hai khareedna hai, select karenge toh woh aapko dikha dega is ghar ke kone mein yahan pe yeh sofa is size ka is color ka rakhenge toh yeh kaisa dikhega tab aap usko better visualize kar sakte hain. Aap better decision le sakte hain ki kis kis sofe ko aapko lena hai. Kis style ko lena hai, kis size ka lena hai, kis color ka lena hai, light kaisi honi chahiye jo ki ek aapko better informed decision lene mein madad kar sakta hai. Ek tarah se aap end of the day ek tarah se yeh upyogkarta ki jo anubhav hai, satisfaction hai usko aap badha pa rahe hain. Wahan pe galti ki

chances, otherwise pehle kya hota tha ki log aise khareed lete the, ghar le jaate the, fir replace karte the, return karte the. Usmein cheezon ka nuksaan hota tha, barbaad hota tha. Ab yeh cheezein kam ho gayi. Toh ek tarah se simple ek AR app banane se hum IKEA ko aap soch sakte hain kitna-kitna fayda hua hoga. Sustainable design. So focus on eco-friendly low energy interfaces. Aaj ke time pe jab hum baat karte hain ki kam energy preservation ek environment toh humein in sab cheezon ka bhi dhyan dena padega. So designing interfaces with dark modes to reduce energy consumption. Toh ek tarah se indirectly kaise aap environment ke prati sajag hain, kaise aap help kar sakte hain, woh dikha raha hai. Toh design is about making better for people and the planet. Hum insaano ki zindagi behtar banane ke race mein shayad environment ko bhoolte ja rahe hain. Toh yeh toh behtar hoga ki agar hum theek hai insaano ke jeevan ko behtar banaiye. Lekin yeh jo hamara samaj hai, mushayara hai, yeh hamara planet hai. Dharti hai, natural resources hai. Usko bhi hum somehow agar achha kar paayein toh isse behtar jeevan nahi ho sakta. Toh chaliye persona ke baare mein hum baat karte hain. Persona in user centered design. Toh persona basically kya hai? Ek tarah se yeh fictional hai, kalpanik hai. It's data driven representation of a target user based on real user research. Jaisa ki humne pehle bataya ki design thinking mein aap empathy mein aur jab design process karte hain toh user research, survey, questionnaire, interview, observation in sab ke madhyam se aap jaante hain ki kis tarah ke log hain. Toh in sab data ko use karke analyze karke vishleshan karke aap bata sakte hain ki hamare jo yeh jo utpaad hai ya jo seva hai woh is-is tarah ke logon ko, is tarah-is tarah ke log use karne ja rahe hain. Toh uska aap ek agar representative kalpanik paatra bana dein toh woh humein seekhne mein designer ko ek informed decision lene mein bahut suvidha milti hai. Toh persona isi tarike se hai ek fictional kalpanik paatra hota hai jo ki yeh batata hai data driven analysis ke madhyam se ki kis tarah ke user unki zarooratein kya hai? Unki strength kya hai? Unki weaknesses kya hain? Unki apeksha kya hai? Aur us is tarah ke kuch persona aap aap use kar sakte hain aur ek informed decision le sakte hain ki theek hai ab yeh is tarah ke log hamare system ko use karne ja rahe hain. Toh iska main jo uddeshya hai yeh hai to design, guide the design decision by understanding the goals jo lakshya hai, jo zarooratein hain, jo pain points hain and the different user segment. Toh iska mahatva yeh hai. Yeh designer ko madad karta hai. Keep the user perspective at the forefront of design process. Jab aap design process karte hain toh user perspective ko apne saamne rakh ke unki zarooraton ko saamne rakh ke unke pain points ko unke kamzoriyon ko unke taakaton ko saamne rakh ke aap informed decision lete hain aur usi hisaab se apna system design karte hain. Toh is tarike se aap kar sakte hain. Toh you can't create a great product without understanding who you are designing for. Kim Goodwin ne bola tha aur mujhe lagta hai ki aap bhi is baat se पूरी तरह से ध्यान देंगे और यह बात हमने पहले ही बोली है कि जैसा कि जब तक आप अपने उपयोगकर्ताओं को नहीं जानेंगे आप उनके लिए सिस्टम बना ही नहीं सकते. Toh chaliye ab jaante hain ki hum yeh persona banayenge kaise? Toh uske liye jaisa ki humne pehle bola aapko pehle conduct user research karna padega. User research mein again collective data, qualitative data, quantitative data ke madhyam se jo ki aap survey, interview aur analytics ke madhyam se collect karenge. Uska vishleshan karke aap alag-alag pattern nikalenge. Toh yeh vishleshan ke baad jo alag-alag pattern nikle woh ek tarah se batata hai ki yeh jo common tarike

ke log hain, unka common trait kya hai? Unka goal kya hai? Unka challenges kya hai? Uske basis par ab aap ek tarah se alag-alag tarike ke persona banate hain, paatra banate hain. Toh develop the persona profile toh woh basically ek detailed profile hota hai jismein usko ek aap keh sakte hain ki humanistic touch dene ke liye uska naam de dete hain, age de dete hain, background de dete hain, motivation de dete hain aur uska jo lakshya hai woh de dete hain. Aur yeh alag-alag persona banane ke baad yeh jo designer hai, woh us persona ko use karte hue alag-alag design process ko follow karte hue ek tarah se woh user ke need, zarooraton ke hisaab se apne system ko banate hain. Toh chaliye jaisa ki humne pehle vyakhyan mein discuss kiya tha ki hum Project WAVE ko apne is poore saptah mein saath le challenge ki kaise aap kar rahe hain. Toh chaliye yahan jaante hain Project WAVE mein connect beyond the words jahan pe hum jo beginner visual impaired log hain, students hain unko hum kaise Braille seekhne mein madad kar sakte hain. Toh yahan pe ek tarah se problem dekhiye jo hai uh the visually impaired student often struggle to learn Braille due to the lack of interactive tools and the guidance. Ki kyunki uh kaafi kam interactive tools aur guidance hai jisse unka seekhna uh bada mushkil ho jaata hai. Aur jaisa ki humne pehle bhi discuss kiya hai ki viksit deshon mein teacheron ki kami hai. Shikshakon ki kami hai. Aur khaastaur pe agar hum specialized teacher ki baat karein toh woh aur bhi kam hai. Toh Braille agar aapko yaad hoga toh jaise humne bataya tha ek tarah se yahan par do columns hain jinka number ek tarah se aap de sakte ho 1, 2, 3, 4, 5, 6 toh depend on kaun sa number activated hai uske hisaab se woh corresponding letter ya number hota hai, toh woh aap dekh sakte hain. So traditional methods are outdated and fail to engage them. Toh kaise hum unko aur engage kar sakte hain? Kaise unke learning experience ko badha sakte hain? Khaastaur pe is takneeki ki duniya mein toh ek tarah se hum dekhein toh jo hamara pehla kalpanik paatra lag raha hai woh ek tarah se aap dekh sakte hain yahan pe yeh hai jo ki student hai jo ki Braille seekhna chah raha hai. Doosri cheez jo ubhar ke aati hai use dekh sakte hain ki limited and inefficient teaching assistant lead to decreased instructor motivation. Ab kyunki bachhe seekh nahi rahe hain toh ek tarah se jo instructor hai uska bhi motivation neeche jaata hai. While existing tools make tracking progress difficult. Ab teacher ke paas ek samasya yeh ja rahi hai woh jo alag-alag chhaatra uske saath seekh rahe hain. Unka progress usko dekhna bada mushkil hoga. Kaise woh samay ke saath aage badh rahe hain. Kis tarah ke shabdon mein, vakyon mein, letters mein unko zyada samasya ho rahi hai. Kahan pe woh achha kar rahe hain? Kahan bura kar rahe hain? Kahan pe unko mehnat karne ki zaroorat hai. Woh sab cheezein jab tak ek progress tool nahi hoga wahan pe isko bada improve karna bada mushkil hoga. Aur teesri cheez jaisa ki humne pehle bhi discuss kiya tha hum isko scalable banana chahte hain. Alag-alag jo NGO, alag-alag jo government agencies hain kaise hum isko alag-alag language mein, alag-alag states mein, alag-alag PWD sector mein hum isko aur upyog mein la sakte hain. Toh chaliye dekhte hain. Toh pehla jaise ki humne bataya pehla user research. Aapko apne users ke baare mein janana hai alag-alag tarikon se. Toh aap sarvekshan kar sakte hain, question bana sakte hain aur efficient way to collect large scale data kyunki is tarah se aap zyada tar aur dher saare logon tak apni pahunch bana sakte hain aur unke baare mein jaan sakte hain. User interviews ismein aap dekh sakte hain ki yeh aapko mauka deta hai ki survey aur sarvekshan ke madhyam mein aap

prashn banate hain. Toh aap iske bhi kai constraint hote hain. Aisa bhi nahi hota hai ki aap 100 question de denge, pooch lenge. Toh aap limited question pooch sakte hain. Toh kaafi aise prashn hote hain aapke dimaag mein jo ki subjective hote hain jo ki aap survey aur questionnaire mein nahi daal paaye. Yahan pe ek mauka hota hai usko aur alag-alag paripeksh mein janne ka. Toh woh cheez aap yahan pe kar sakte hain user behavior aur needs ko in-depth understanding karne ke liye. Jaise generally used to improve accessibility hum kaise kar sakte hain? Field studies. Ab jaisa ki maine tak keval aap literature survey, keval question interview ke madhyam se nahi jaan sakte unki zarooratein kya hain? Kyunki main jaisa maine pehle hi bataya ki aisa bhi nahi hai ki woh apni zarooraton ko jaante bhi hain ki unko chahiye kya? Toh aur kabhi-kabhi woh jaante bhi hain toh usko explain karna bada mushkil hota hai. Jise hum bolte hain semantic gap. Woh requirement kuch aur hai. Woh bol kuch aur rahe hain. Toh field studies karna zaroorat hai. Jahan par aap jo aapke real user hain unko aap observe karte hain in the natural environment for contextual insight ki woh kaise use kar rahe hain. Unko kya dikkato ka samna kar pa raha hai? Kya cheez woh achhe se kar pa rahe hain? Kya cheez woh buri kar pa rahe hain? Kya cheezon ko unko prayog karne mein zyada kathinaiyon ka samna karna pad raha hai. Toh uske baad aap usability testing, yeh bhi testing karte hain. Dekhte hain ki kaise aapka jo user hai woh interact karta hai system mein real time mein aur yeh bhi dekhte hain ki agar do version hai of a home page toh kisko woh zyada pasand karta hai. Toh is tarike se aap yeh jo alag-alag techniques hain aap pata kar sakte hain ki aapke jo upyogkarta hai uski pasand kya hai? Uski napasand kya hai? Woh kis mein achha hai? Woh kis mein bura hai? Woh kya karna chahta hai? Woh kya nahi karna chahta? Uski pasand kya hai? Uski napasand kya hai? Yeh saari cheezon ko dhyan mein rakhte hue aap apne system ka nirman kar sakte hain. Toh jaisa ki maine bola pehle hum survey questionnaire ke baare mein baat karte hain. Toh survey questionnaire are the structured tools used to collect quantitative and qualitative data from the users. They are valuable for understanding the user demographic, behavior, preference and attitude. Toh yeh wahi saari baatein hain jo abhi तक हम discuss kar rahe the. Aur iska mukhya uddeshya yeh hai ki hum kaise zyada se zyada information unke baare mein directly jo hamare target user hain unse hum nikal sakein aur hamare dimaag mein kai assumptions hote hain. Usko bhi jaisa ki maine pehle bola keval aap assumption ke basis pe koi cheez design ya solve mat kariye. Aap unka validation kariye. Aap usko confirm kariye. Toh ek tarah se yeh jo survey questionnaire hote hain usko in ke madhyam se validate karna bhi bada aasan hota hai. To identify trends and common common challenges among the user group. Jaise maine bataya takneeki badi tezi se aage jaati ja rahi hai. Toh kaise inka upyog hum kar sakte hain alag-alag challenges ko door karne ke liye. Toh survey bhi kai tarike ke hote hain. Toh ismein close-ended question hote hain. Jahan par ek limited aapko option diya jaata hai. Jaise yes/no, strongly agree, agree, neutral, disagree, strongly disagree. Multiple choice jo aapke paas option hote hain aur aap usko rating scale mein de sakte hain alag-alag tarike se. Toh ek tarah se aapko pata hai ki aapke paas yeh limited set of options hain aur isi mein se kuch aapke upyogkartaon ne chuna hai. Doosra hota hai open-ended question jo ki free text response hota hai. Jaise aap is system se kya chahte hain? Toh wahan pe aap apne shabdon mein kuch likhenge ya bolenge aur woh ek tarah se thoda sa detailed information hota

hai but at the same time thoda usko process karna thoda mushkil hota hai. Wahan pe ambiguity ho sakti hai. Wahan woh aapke hisaab se answer nahi de raha hai. Woh apne shabdon mein apni answer de raha hai. Toh wahan pe usko process karna bhi thoda mushkil hota hai. But at the same time wahan pe aapko user ka jo motivation hai, jo experience hai uske baare mein bhi jaankari milti hai. Toh ek tarah se yeh rich set of information hai. Example ke taur pe aap dekh sakte hain. Gaming company uses a survey to ask users about their favorite game genres to prioritize new feature development. Toh kaise ek naye jo game genres hain uske baare mein jaankari leke unke preference ke hisaab se ek informed decision leta hai. An e-commerce platform conducts a questionnaire to measure customer satisfaction with the mobile shop navigation. Toh kya woh jo upyogkarta hai sugamtapoorvak bahut aasani se saare karya ko kar pa raha hai? Ek page se doosre page, ek option se doosre option pe aasani se woh karya kar pa raha hai. Toh yeh hum kar pa rahe hain. Toh iski achhi baat yeh hai ki yeh easy to distribute to the large group hai. Dher saare logon tak hum apni pahunch turant bana sakte hain. Khaastaur pe aaj online zamaanon mein aur cloud platform ke madhyam se. Yeh efficient hai gathering a broad range of user opinion kyunki ab zyada tar logon tak pahunch rahe hain toh zyada opinions mil rahe hain. Zyada aapko feedback mil raha hai. Results are easily quantifiable for data driven. Jaisa ki maine bola close form question mein ek tarah se isko chand seconds mein aap Excel sheet mein saare jo analysis hai vishleshan aap kar sakte hain aur turant uske hisaab se apna karya kar sakte hain. Toh iske negative points yeh hain ki limited depth compared to qualitative methods like interview. Ki ab yahan pe jo upyogkarta hai woh aapke prashnon ke hisaab se limited set of options mein kaam kar raha hai. Ho sakta hai koi kai ismein options ho jo ki suit hi nahi karte hain. Toh wahan pe woh randomly kuch fill kar dega. Toh risk of biased responses if questions are not well designed. Toh agar question dhang se nahi design kiya gaya hai toh ek tarah se wahan pe biased response mil sakta hai. Users may rush through question often affecting. Jaisa ki maine pehle hi bataya is lecture mein ki agar aap koi question de rahe hain kisi ko toh wahan pe quality control bada mushkil ho jaayega. Woh randomly fill kar raha hai ya question padh kar fill kar raha hai yeh batana bada mushkil hota hai. Lekin uske kai isko handle karne ke liye kai aur tarike hue hain. Hote hain jaise alag-alag consistency checks hain jo humein kuch had tak pata karne mein madad karte hain ki jo aapka surveyer hai, jo jo survey mein participate kar raha hai. Questionnaire mein participate kar raha hai. Usne dhang se padh ke response diya hai ya randomly bas koi bhi response bhar diya hai.