

## **Human Computer Interaction (Hindi mein)**

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**Interaction: Lecture 3 Part 2**

**Lec12**

[Music] Namaskar. Aapka punah swagat hai Human Computer Interaction ke is course mein. Is saptah mein hum interaction ke baare mein charcha kar rahe hain. Jaisa ki humne pichle vyakhyan mein discuss kiya. Humne design thinking ke baare mein baat ki. Humne design process ke baare mein baat ki. Humne interaction design ke baare mein baat ki. Aur kaise design thinking aur design process dono ek saath milke ek achhe interaction design mein hamari madad karte hain. Ek achha human centered system banane mein hamari madad karte hain. Toh chaliye hum aage interaction design process ke baare mein jaante hain. Toh interaction design process ek prakriya hai jismein hamara jo mukhya focus hota hai woh aapke upyogkarta ki zarooraton ko samajhna hota hai, nikalna hota hai, khojna hota hai aur designing the full to fulfill those requirement aur hum kaise ek achha solution nikal sakte hain un zarooraton ko poora karne ke liye uske liye humein prototype banane ki, namoonon ko banane ki zaroorat pad sakti hai aur un namoonon ko banane ke baad unka mulyankan karne ki zaroorat hoti hai ki woh sach mein hamare jo zarooratein hain usko poora kar rahe hain ki nahi kar rahe hain. Kya usko kushalta aur prabhavishali tarike se poora kar rahe hain ki nahi kar rahe yeh hum dekhte hain. Toh yeh focus karta hai jo hamare upyogkarta hai unke upar, unki zarooraton ke upar, unke lakshya ke upar aur kai baar humein ek tarah se humein trade off karna padta hai. Kaafi jo conflicting requirement hoti hain. Toh kyunki uh jo aapke upyogkarta hain unko zarooraton se matlab hai. Unko isse mar fark nahi padta hai ki yeh kitna possible hai, kitna sahi hai, kitna galat hai. Toh jab aap design karte hain, jab aap alag-alag expert se discuss karte hain, stakeholder se discuss karte hain, toh aapko pata hota hai ki yeh jo do zarooratein hain, do tarah ke useron ki zarooratein hain, woh conflicting hai. Toh hum kaise karein ki dono logon ki jo karya hai woh poora ho sake toh is wajah se kabhi-kabhi humein ek tarah se balance banana hota hai jo alag-alag conflicting requirement hote hain. Jaise aap bol sakte hain ki ek zaroor user aisa hai jo ki bolta hai ki usko turant uttar chahiye. Jaise agar aap maan lijiye ek Google search hai ya ChatGPT hai. ChatGPT suppose aap use kar rahe hain. Woh chahta hai ki mere liye aisa ChatGPT banao ki maine prashn jaise hi poocha turant mujhe aap ekdam achha sa uttar uttar ke do. Aaj ke time pe jaise ki hum baat karte hain ki LLM ke is time pe aap jab bhi koi problem dete hain woh aapke liye ek image bana sakta hai. Woh aapke liye ek video bana sakta hai. Toh jo aapka user hai woh kehta hai ki mujhe turant image bana ke do mere prashn ke liye. Mujhe turant video bana ke do. Matlab yahan par jo time time ek ek tarah se uski requirement hai. Ek jo doosra user hai jo ki kehta hai

ki mujhe best uttar bana ke do. Mujhe best image bana ke do. Mujhe best video bana ke do. Mujhe best audio generate karke do. Toh again agar aap achha se achha banayenge toh usmein samay lagega. Usi tarike se jo banda keh raha hai mujhe turant bana ke do. Aap jaldi banaoge toh aap utna achha generate nahi kar paoge. Toh ek tarah se humein usmein trade off nikalne ki zaroorat hai. Humein hum aise karein ki bahut late bhi na ho aur bahut bekaar result bhi na ho. Toh ek tarah se humein woh trade off ek tarah se aap aur bhi example aap soch sakte hain jo bhi aap upyog kar rahe hain. Chahe woh prakriya ho, chahe utpaad ho, chahe sevayein ho. So generating alternative and choosing between them is a key. Toh dher saare ek tarah se alternative ho sakte hain. Possible solution ho sakte hain. Unmein se hum kaise usko chunein jo ki hamara ek tarah se trade off maintain ho paaye. Toh iske four approaches hain. User centered design, activity centered design, system design aur genius design. Toh ab in four char approaches ke through chaliye dekhte hain yeh kya hai aur kaise yeh madad kar sakte hain. Toh user centered design mein toh yeh ek tarah se design process hai jo ki jo aapke end user hain jo aapke real upyogkarta hain upbhogarta hai unko aap center mein rakhte hain aur it basically course of every stage of jitne bhi aapke design ke stages hai usmein har kisi mein aap apne upyogkarta ko involve karte hain aur focusing on meeting their needs preference and limitation aur hamara jo mukhya uddeshya hota hai ki kaise hum unki zarooraton ko poora karein. Unki preferences jo hai woh poora karein aur kaise unki limitations hain uski wajah se unko koi pareshani na karna pade hamare utpaad ya sevaon ko poora karne ke liye iska hamara matlab hota hai. Toh yahan pe jo goal hai to create product that are highly usable accessible and align with the user expectation. Toh yahan pe jo abki hum apne upyogta ko kendra mein rakh rahe hain toh humein uski uske liye usse sahanubhuti rakhni padegi har tarah se toh empathy step mein understand the user needs, goal and the pain point, baar-baar punravritti karni padegi aur apne user ko baar-baar usmein involve karna padega. Toh continuous test and get feedback and refine the product involvement aapko jo aapka upyogkarta hai usko engage karna padega. Usko uska feedback lena padega. Usse poochna padega. Use test karana padega. Toh engage them in all possible steps to engage user throughout the design process to come up with the best possible solution. So is tarah se aap dekh sakte hain jo user design process hai ismein kai steps hain. So research jismein aap conduct user aap sarvekshan aur interview karte hain aur bhi cheezein karte hain. Design karte hain. Create wireframe a prototype with the user feedback. Uske baad mulyankan karte hain toh usability testing kar sakte hain. Refine kar sakte hain toh met adjustment based on the user testing. Mulyankan ke baad humein jo bhi cheezein ko usmein change karne ki zaroorat hai uske basis pe hum usko refine kar sakte hain. Toh Apple iPhone ek example hai. Jaise aap dekh sakte hain ki mobile phones were complex with buttons and interface that were not user friendly. Toh iPhone ne us poori tarike se change kiya aur apne user centered design tarike se apna solution diya. Toh ek cheez hum dekhte hain ki jab bhi iPhone ke naye-naye versions aate hain, woh ek ke baad ek naye navachar karke, innovation karke nayi cheezein apne users ko pradaan karti hain. Aur is wajah se woh market mein hamesha smartphone mein hamesha baaki companies ke peeche aage rehta hai. Toh, user centered design approach mein Apple conduct a in-depth user research to develop a touch base interface that was intuitive. Sahaj hai. Aap usko touch karke use karna bada

aasan hai. Simple and required minimal learning. Bahut kam aapko usko system ko mobile ko seekhne ki zaroorat hai. Woh kaafi intuitive hai ki dekhne se aap samajh mein aata hai. Achha humein unlock karna hai toh yeh karna hai. Humein scroll karna hai toh yeh karna hai. Humein koi functionality karni hai toh yeh karna hai. And so on. Toh iska jo outcome nikalta hai a revolutionary product that set the standard for smartphone focusing on seamless user experience with intuitive gesture toh ab yahan pe hum ek tarah se dekh sakte hain toh user centered design jo elements unhone kiya unhone kya-kya changes kiye unhone interface ko simplify kar diya intuitive gesture jaise pinch to zoom kar diya voice assistant de diya Siri ke madhyam se aur easy to setup jo ki naye aapke user hand ke liye. Toh is tarike se alag-alag design elements ka nirman kiya gaya. Toh iska jo outcome aaya yeh aaya ki jo aapka smartphone tha woh bahut aasani se koi bhi use kar sakta hai. Alag-alag tarike ke log use kar sakte hain. And focusing on seamless navigation accessibility. Bade aasani se woh usko use kar sakte hain. Alag-alag pages pe ja sakte hain. Aur even jo log alag-alag disabilities se suffer karte hain unko bhi bade aasani se apne karya ko complete karne mein madad milti hai. Which has contributed to the device global popularity. Toh agar hum aapko karya dein jis tarike se humne iPhone ke liye user centered design elements aur uske outcome ke baare mein charcha ki toh main aapse darkhwaast karunga request karunga ki aap Airbnb Dropbox Amazon Eco Duolingo Instagram Google search Microsoft theme course jo bhi aapko pasand hai jo bhi aap jisse aapne intact kiya ho aap unke baare mein jaiye aur alag-alag jo uske users design elements hain aur corresponding outcome hai usko banaiye aur usko likhiye jo ki aapko seekhne mein bahut madad karega ki aapko user centered design kaise banani hai. Agar aap inmein se iske alawa kuch aur bhi pasand karna chahte hain, choose karna chahte hain toh aap uske liye swatantra hain. Chaliye ab hum aage activity centered design pe focus karte hain. Toh activity centered design basically design approach hai. That focuses on task and activity users perform rather than individual user themselves. Toh yahan pe jo hamara main main aim hai jo aapke upyogkarta hai woh kya karya kar rahe hain kaise hum usko achhe se poora kar sakte hain aur humein thoda sa kam focus hota hai individual user ke upar toh yahan pe jo hamara mukhya uddeshya hai the to create intuitive and efficient solution by understanding the key activities the usering is engaged in and ensuring the design uh support the those activity. Toh yahan pe alag-alag key principle hai jo ismein madad karte hain. Focus on activity. Aap dekhiye ki kaun-kaun tarah se activity mein woh participate karte hain aur prioritize the task that user need to complete over individual user preference. Jaise humne bataya ki alag-alag user ki alag-alag requirements hoti hain. Toh aap yahan pe jo aapka main focus hoga woh kaam dekhiye. Woh kaam kya karna chahte hain. Kis tarah ke uh kaam ko zyada tar log uh prefer karte hain, karna chahte hain. Toh, yahan pe toh hamara jo uh pre priority jo hum denge toh jo karya woh karna chahte hain over individual user preference kushalta hum pe hum focus karenge toh jo bhi karya hum karna chahte hain apne utpaad ya seva ke madhyam kaise usko bade aasani se bade kushalta purvak hum kar sakte hain toh streamlining work flow to make completing activities easy and quick. Uske baad phir hum dekh sakte hain context consider the context in which activities occur to design more practical solution. Toh woh context bhi humein dhyan mein dene ki zaroorat hai. Kin context mein in

activities ko perform kiya jayega. Toh ek tarah se aap dekh sakte hain activity centered design mein. Toh hamara process jo hai identify key activities jo ki humein primary task aur action jo ki aapke user perform karte hain usko janne mein madad milti hai, samajhne mein madad milti hai. Uske baad hum usko analyze workflow karte hain. Jaise break down each activity to understand its steps, challenges and requirement. Kyunki agar aapko ek poora karya karna hai toh us karya ko karne ke liye user ne kaise chhote-chhote tarike se aage badha toh woh cheez aap usko chhote-chhote activities mein break down karke usko aur dekhiye ki har step mein usko kya samasyaon ka saamna karna pad raha hai aur uske hisaab se aap unki zarooratein kya hai use aise kariye aur finally design solution mein hum create feature that directly supports and enhance these key activities jaise ki hum udaharan ke taur par dekh sakte hain Microsoft Word jo focus karta hai more key activities jaise Microsoft Word mein aap editing karte hain, writing karte hain, formatting karte hain, alag-alag documents ko save karte hain. Jo bhi alag-alag activities aap karna chahte hain, us pe zyada focus hota hai. Is pe kam focus hota hai ki woh kis tarah ke log usko kar rahe hain. Toh yahan pe designing elements quick access to the key tools like front style, layout option, editing. Ab jaise in saare karya ko karne ke liye kaise aap usko sahuliyat usmein pradaan kar sakte hain. Kaise-kaise aap shortcut de sakte hain. Jaise aapko agar yaad hoga formatting ke liye aap upar dher saare alag-alag option hote hain. Jahan pe aap usmein se jo bhi text hai usko select karke usko bold kar sakte hain. Italic kar sakte hain. Size badha sakte hain. Color change kar sakte hain. Jo bhi quick cheezein hoti hain likhne ke liye, formatting ke liye, editing ke liye, save karne ke liye wahan pe saari cheezein di hoti hain. Toh ek aur example aap dekh sakte hain Google Docs ka jahan par Microsoft Word jo primarily hota hai woh more individual level par hota hai. Ek file ek aadmi change kar raha hai. Google Docs thoda sa aap keh sakte hain ki iska jo core concept tha ki same file ek se zyada log usmein edit write karenge. Toh yahan pe activity centered design jo approach tha focus on making document creation sharing jo ki yahan pe key hai editing easy and efficient prioritize and collaborate woh is tarike se karna hai ki agar ek se zyada log kuch changes kar rahe hain toh woh lost na ho usko aap maintain kar paayein activities like real time editing comments and version history jisse ki agar aap koi cheezein edit kar rahe hain agar aapko wapas pichle version pe jaana hai toh aap aasani se jaa sakein. Outcome iska yeh hoga ki user jo hoga same document pe ek saath ek se zyada log kaam kar sakte hain. Jisse ki overall productivity badhegi. Ek se zyada log kaam karenge toh apne part mein kaam karte hue kisi jo bhi given karya hoga usko bahut jaldi se kar payenge. It enhances collaborative writing and streamlining the editing process. Toh ek tarah se is activity design centered design process ko follow karte hue aap activity focused kisi karya ko bade achhe se kushalta purvak kar sakte hain. Toh example ke taur pe aap dekh sakte hain ki write activity centered approach for the following jaise examples hain. Trello hua, Microsoft Excel hua, Fitbit hua, Adobe Photoshop, Adobe Express, Spotify, Zoom, Grammarly, Slack, Uber driver app inmein se zyada tar app shayad aap logon ne use kiye honge toh ab aap iske jo alag-alag activities hain us pe dhyan dete hue toh jo humne documents banaye the pichle discussion kiya tha ki kya activity centered design approach hona chahiye aur kya outcome hona chahiye. Again aap free hain kisi aur bhi topic ko, kisi aur bhi cheez ko leke isko detail mein likhne ke liye. Agla

jo hum baat karte hain woh system design ki baat karte hain. System design ek tarah se woh process hai defining karne ke liye architecture, components, modules, interface, data for a system to satisfy a specific requirement. Toh, yahan pe ek tarah se mukhya purpose dekhiye yeh hai ki ab aapko poore system ke baare mein baat karni hai. Yahan pe keval ek particular activity ki baat mein baat nahi karni. Jaise hum Microsoft Word ki baat kar rahe the. Toh aap yahan pe keval rating editing ki baat nahi kar sakte hain. Ismein overall system ki baat kar sakte hain ki kaise saari cheezein ismein hongii. Kaise alag-alag user alag-alag tarike se intact karega aur kaise aap alag-alag functionality ismein provide kar rahe hain. Toh yahan pe jo purpose hai to create structured and scalable solution that meet both technical and user needs efficiently. Toh ismein aap dekh sakte hain architecture aapko banana padega. Jo overall structure aur organization hoga system ka, components and modules jo honge jaise is poore karya ko karne ke liye alag-alag tarike ke karya hain. Ismein alag-alag components honge toh woh kya honge? Kaise hum chhote-chhote parts mein usko tod sakte hain. Kaise un saari cheezon ko phir se wapas connect kar sakte hain poore karya ko karne ke liye. Toh break down the system into smaller and manageable parts. Interfaces humein ek tarah se banane padenge jo determine karenge how components interact with each other with users. Data management humein karna padega jo ki manages the flow and storage of data within the system. Toh system design ek tarah se aap keh sakte hain ki poore bade khas taur par jab aap koi bada system banate hain toh system design ke bina usko karna ek tarah se kaafi mushkil hota hai kyunki aap chhote-chhote system ko toh handle kar sakte hain lekin agar koi bada system hoga toh usko chhote-chhote part mein tod ke hi kar sakte hain. So system design mein hum dekh sakte hain alag-alag jo process hai requirement analysis hai jisse ki again phir se hum jo aapke alag-alag stakeholders hain. Unki zarooratein aur aashaon ko hum samajh sakein. Design system architecture hoga jo ki create a high-level blueprint of the system's component and interaction. Toh ek tarah se aapke jo chhote-chhote components hain toh is poore system mein aap usko list down karenge aur kaise woh ek doosre se saath milke koi karya ko karte hain woh saari cheezein karenge. Toh ek tarah se component design detail specification of each component. Ab yeh jo chhote-chhote component hai uske baare mein aap phir se ek bada sa detail component ke baare mein jaankari denge. Uske baad aap namoone banayenge. Build prototype with and perform testing to ensure functionality. Alag-alag namoone banane ke baad phir aap ek tarah se unka mulyankan karenge alag-alag testing methods ke dwara aur aap ensure karenge ki jo functionality usko karni chahiye woh saari fulfill ho rahi hai ki nahi ho rahi hai aur based on the testing ke baad aap usmein further iteration aur refinement karenge aur finally phir se ek poore system ka nirman karenge. Example ke taur pe aap dekh sakte hain alag-alag ride sharing app hota hai jaise Ola, Uber, Rapido aur bhi dher saare hain. Toh jo bhi aap use karte hain wahan pe kya architecture hoga? Ek tarah se yahan pe client-server architecture hoga jo ki real time mein communicate karega aur real time mein communicate karne ke baad aap dekh sakte hain kaise front-end hoga, kaise back-end hoga, kaise real time jo information hai woh database mein store hongii. Alag-alag components kya honge? Jaise yahan pe user account hoga, driver account hoga, ride booking hogi, real time map hoga, payment processing hoga, rating system hoga. Toh jo uske alag-alag chhote-chhote components

hai, kaise uska flow hoga, ek ke baad doosra hoga ya saath hoga, parallel mein hoga, woh cheezein aap dekh sakte hain. Interface kya hoga, kaise interaction hoga, alag-alag jo components hain, jaise map service hoga, kaise payment gateway hoga, kaise push notification hoga? Yeh saari cheezein aapko dekhna padega. Data management ke liye handling data ride, location tracking, user history and payment information yeh saari cheezon ka aapko dhyan rakhte hue ek overall system ka design hum karenge. Toh jaisa ki humne yahan pe Ola, Ubero jaise ride sharing application ke baare mein baat ki. Main aapse aasha karta hoon ki aap inmein se koi bhi application aap uthayein. Chahe woh smartphone system ho, chahe woh social media platform ho, chahe woh weather forecasting system ho, chahe woh inventory management system ho, aap as a system agar aapko design karna padega, toh aap dekhiye ismein architecture kya hoga? Ismein components kya honge? Ismein interface kya honge? Jo bhi data ismein generate ho raha hai, kaise unka manage karenge aur kaise woh ek doosre se baat karenge. Toh last hai genius design. Genius jaise naam se hi lag raha hai ki genius hai usko sab kuch pata hai. Ek baar mein ekdam perfect solution bana sakta hai. Toh genius design is an approach to user experience design where expert rely on their own knowledge, intuition and expertise to create solution. Usmein ek tarah se aap yeh bhi samajh sakte hain ki main genius hoon. Toh mujhe ab saare jo hamare stakeholder hain user uske baare mein mujhe sab kuch pata hai. Mujhe pata hai ki unko kya chahiye. Unko unki zarooratein kya hai? Woh unki aashayein kya hai? Yeh saari cheezein mujhe pata hai. Toh instead of extensive user research, designer leverage their experience, creativity and understanding of best practices to guide the design process. Toh ismein jo key features hain expert driven, fast process, high risk, high reward aur efficiency hai. Toh expert driven jaisa ki humne bataya ki expert ko sab pata hai. Toh woh apne se saari cheezein karta hai. Toh poori tarique se unke skill, intuition aur expertise ke upar designer nirbhar rehta hai. Aur kyunki humein isse jaldi se jaldi karna hai aur yahan pe kyunki user ka involvement nahi hai toh yeh thodi si jaldi ho jaati hain. Toh often quicker than user centered design due to minimal research and testing phase. Uske baad high risk high reward ki jab baat karte hain toh yeh depends karta hai heavily on the expertise of the designer. Agar aapka designer jisko aap soch rahe hain expert hai usko sab kuch pata hai. Woh turant kar leta hai toh it's more high risk high reward. Right? Agar woh so-called expert hai. Usko cheezein pata hi nahi hai aur bolta hai ki usko sab kuch pata hai aur uske upar aap rely ho ke aap jaldi-jaldi saari cheezein khatam kar lete hain without involving users. Toh ek tarah se woh high risk hai. Toh efficiency can be efficient when time or resource are limited. Jaisa ki humne bataya har company chahti hai ki aap jaldi se jaldi aap uska system complete karein. Best solution dein. Toh ek tarah se can be efficient when time or resource are limited. Jahan par aapke paas bahut zyada samay aur resource nahi hote. Paise nahi hote ki aap har tarah ke logon ko aap samjhein. Har tarah ke stakeholder ko samjhein, samjhayein aur unko involve karein. Unka feedback lein. Toh iska benefit dekhiye main yahi hai ki kaafi tez hota hai implementation mein aur ismein iteration bhi thodi jaldi-jaldi hoti hai aur it can lead to highly innovative solutions kyunki aap poori tarique se expert pe nirbhar hain toh woh agar uski expertise sach mein hai toh woh bada innovative solution nikal sakta hai. Efficient when dealing with well understood problem aur yeh ek tarah se wahan par zyada effective hota

hai jahan pe requirements ya useron ki zaroorat well defined hai. Bada pata hota hai achhe se ki yeh cheezein hain yeh cheezein karni hai. Jaise jaise aap bol sakte hain ki booking app bana rahe hain. Aapko book jo alag-alag book reading app hai. Matlab aapko well defined hai ki matlab ek tarah se yeh cheezein user karta hai book ke padhne ke dauran toh wahan pe probably genius design bade achhe se kaam kar sakti hai. Lekin aap ek bada sa finance system bana rahe hain jahan pe ambiguity ho sakti hai. Jahan pe alag-alag useron ki alag-alag zarooratein ho sakti hai. Bade mushkil zaroorat ho sakti hai. Galti ke chance zyada hote hain. Toh wahan pe genius design shayad utna achhe se kaam na karein. Toh aap soch sakte hain. Aap yeh map pe chhodta hoon. Alag-alag jo system aap apne jeevan mein dekhte hain, vyavaharik jeevan mein aapko kya lagta hai? Unmein se kaun sa genius design bade achhe se kar sakta hai? Kahan pe nahi kar sakta hai? Toh drawback of genius design yahi hai can lead to biased decision if designer assumptions are incorrect. Jaisa ki maine pehle hi bola tha ki agar usne jo pehle se soch rakha hai, uski jo dharanayein agar woh galat hai, tab toh phir aapka jo overall system hi hoga woh sahi nahi hoga. May not always align in actual user need without validation kyunki hum poori tarike se expert pe nirbhar hain. Toh user jo alag-alag tarike ke ho sakte hain un pe hum validation testing nahi kar paate hain jisse ki yeh ek dikkat ki time ho sakta hai hamare liye agar woh sahi se kaam na kare. Risk of designing in a vacuum without sufficient user feedback. Kyunki yahan pe hum user ko involve nahi kar rahe hain. Toh aap ek tarah se vacuum mein bana rahe hain. Vacuum mein design kar rahe hain. Aur woh agar complex system hai. Agar woh aapki dharanayein sahi nahi hai toh woh poori tarike se galat hongii aur risk hai ki isko aapne jitna samay lagaya aapne jo banaya woh use hi nahi hoga. But inmein kuch successful cases bhi hain. Jaise genius design case mein Apple original iPhone, Steve Jobs and his team relied on the vision and expertise to revolve the mobile iPhone without extensive initial user testing. Kyunki woh apne idea ko novel rakhna chahte the. Ek surprise ke taur pe logon ke saamne launch karna chahte the. Jaisa Steve Jobs yahan pe kar rahe hain. Toh it aimed at creative product that they knew user would love. Toh uske liye aapko sach mein aise logon ko involve karna padega jo apne area ke top log ho. Based on the deep understanding of tech and the user interaction. Toh jaisa ki maine bola main chahta hoon ki aap genius design ke aur bhi example mujhe batayein. Apne sehpathiyon se charcha karein. Kis tarike se genius design wahan pe achhe se work kiya aur aise bhi system banaye jahan pe genius design achhe se karya nahi kar sakta. Toh what is involved in interaction design ek tarah se agar hum wapas aayein toh so understand the problem space also involving user degree of user involvement, what is user centered approach, four basic activities of interaction design aur a simplified lifecycle model on interaction design. Toh chaliye samajhte hain in saari baaton ko. Understanding the problem space. So what is the current user experience? Abhi turant ka anubhav kya hai? Agar kuch change karne ki zaroorat hai toh hum usko kaise kar sakte hain? And how will this change improve the situation? Agar aur yeh change karne ke baad kya hum sach mein uska jo abhi bura anubhav hai usko sahi kar sakte hain? So articulating the problem space ek tarah se team effort hai. Explore different perspectives hai and avoid incorrect assumption and unsorted claims. So agla jaise humne bataya ki apne user ko involve karna bahut zaroori hai. Toh yahan par iska fayda yeh bhi hota hai ki aap expectation

management kar sakte hain. Realistic expectation set kar sakte hain. Yahan pe jo aapka user hoga upyogkarta hoga uske liye kuch surprise ki tarah nahi hoga. Usko pata hoga ki yeh cheezein feasible hai aur yeh cheezein ho rahi hain. Yeh cheezein nahi ho rahi hain. Toh no surprise, no disappointment. Timely training aap samay par unko training de sakte hain. Aap communicate kar sakte hain. Jo aap bana rahe hain bana sakte hain aur rather than ki aap pehle bahut badi-badi baatein karein aur jab aap unko system de bana ke toh kuch bhi na ho. Yahan pe jo aapke user hote hain, jab aap unko involve karte hain, woh khud ownership feel karte hain. Toh make the user active stakeholder more likely they forgive or accept problem. Kyunki jab aap unko khud se owner bana rahe hain, owner ki tarah unko treat kar rahe hain, toh woh ek tarah se kabhi-kabhi aapki galtiyon ko maaf kar dete hain. They accept the problem aur woh samajhte hain ki yeh galti kyun hui? Kyunki kabhi-kabhi kaafi constraint ki wajah se, trade off ki wajah se kuch cheezein us tarike se nahi ban paati hain jaisa aap pehle soch rahe the. So, it can make a big difference in acceptance and the success of product. Kis level par aapko user ko involve karna hai yeh bhi ek bahut bada prashn hai. Toh aap kai tarike ke member reh sakte hain. Full time rakh sakte hain. Part time rakh sakte hain. Short time and long term full time aise honge jo lagatar aapke saath touch mein rahenge. Lagatar input denge. But lose touch with the user. Usse fayda usse ek tarah se nuksaan yeh hota hai ki jab aap usko full time ek tarah se involve karte hain toh jo uska user ka mindset hota hai wohi khone lagta hai. Part time ke case mein ek tarah se keh sakte hain ki patchy input woh aaya kuch deke chala gaya phir bhoor gaya phir aaya toh woh cheezein ho sakti hain. Toh kind of stressful hota hai. Short term inconsistent across project life long term consistent but lose touch with user. Jaisa ki humne pehle bataya face to face group or individual activities. Toh yahan pe online contribution from thousands of users jo crowdsourcing ke madhyam se aap le sakte hain. Unse feedback le sakte hain. Toh dher saare online feedback exchange system hote hain. Crowdsourcing design ideas hote hain. Toh unse aap basically aap involve karke aap apne alag-alag level par alag-alag tarike ke user se unka feedback le sakte hain. So user centered approach mein basically humein kya karna hai? Early focus on user and task directly studying cognitive and behavioral anthropomorphic and attitudinal characteristics. Empirical measurement ek tarah se jo evaluation aap kar rahe hain toh user reaction and performance to scenarios manual simulation and prototype jo bhi namoona aap bana rahe hain kaise aur usko observe kar rahe hain record kar rahe hain analyze kar rahe hain aur iterative design ke madhyam se jo bhi naye problems aapko milte jaa rahe hain usko usko fix kariye aur uske baad wapas se phir se user ko dijiye test karne ke liye validate karne ke liye. Toh yahan pe ek tarah se four basic activities of interaction design hai. Discovering requirement, designing alternative, prototype alternative and evaluating product and its user. Toh ek tarah se kaafi had tak kaafi similar hai jo ki hum pehle ke madhyamon ko discuss kiya humne humne aur bhi framework mein. Toh simple interaction design process ek tarah se dekh sakte hain. So ek doosra centered approach jo tha usmein aap dekh sakte hain requirement gather kiya aapne phir alternative banaya prototype banaya evaluate kiya aur ismein go forth hota rehta hai aur finally yeh sab karne ke baad iteration ke baad aap final product le sakte hain. Another life cycle model basically Google sprint hai jo ki hota hai ki jaldi se jaldi given bade kam samay mein aap ek

poora prototype banaiye. Uske baad phir feedback leke hum dobara karenge. Toh hum beech mein koi iteration nahi kar rahe hain. Yahan pe hum seedhe ek poora steps complete karte hain. Ise hum agile marketing bhi ek tarah se bolte hain jo ki kaafi popular hai aur similarly aap dekh sakte hain aur jo life cycle hai research in the world yeh ek tarah se ho raha hai. Usko aap dekh sakte hain. Research yahan pe diya hua hai. Aur iske practical uses hain. Aap kisko user bana rahe hain? What are the user needs? How to generate alternative design, how to choose among different alternative design and how to integrate interaction design activity with other life cycle model. Toh aap usi hisaab se design interaction design process mein different life cycle model use karke aap apna kaam kar sakte hain. Jaise humne bola ki who are the user. Clear nahi hota hai. Bahut dher saare tarike ke user ho sakte hain. Jaise is research paper ke madhyam se bataya gaya tha ki 382 tarike ke different type of smartphone ke user hote hain jo ki ab aur bhi badh gaye hain. Toh many products are intended to use by large section of population. So user is kind of everybody. Aaj ke time pe jo bhi bana rahe hain har koi user hai. Aur har user alag hai. Toh aap koi na koi ek tarah se aapko trade off nikalna padega. Constraint baithana padega ki jisse aap zyada se zyada logon tak pahunch sakun usko kuch limit karte hue. So more target goods associate with specific roles. Toh stakeholder jo hai larger than the group of direct user. Ab yahan pe kabhi-kabhi humein direct user dikhte hain jaise banking ke liye jo aapke upyog karta hai paise nikalne ke liye, jama karne ke liye, transfer karne ke liye is tarike se. Lekin jo stakeholder ki hum baat karein wahan par bank wala ho sakta hai. Wahan par investor ho sakta hai. Wahan par aur bhi saare log ho sakte hain. Web developer ho sakta hai. Designer ho sakta hai. So identify the stakeholder, identify groups to include in the interaction design activities. Ek tarah se yeh ho sakta hai user clearly aur yeh cheez bhi aapko dhyan dene ki zaroorat hai. Humein lagta hai ki hum user se poochenge. Aapko kya chahiye woh aapko bata dega. Lekin hamesha aisa hota nahi hai. Kaafi time aisa hota hai ki unko user ko khud nahi pata hota unko chahiye kya. Woh confuse hote hain aur woh cheezein aap ek tarah se nikal sakte hain alag-alag tarikon se based on your expertise, based on expert comment, based on keh sakte hain ki jo jis tarike se aap unko use karte hue dekhte hain observe karke interview se survey se toh ek tarah se explore the problem space investigate who the users are investigate user activity to see what can be improved and try out ideas with potential user sir. Toh yahan pe jo focus hota hai people's goal hota hai, usability hota hai, user experience goal hota hai rather than expect jo aapke stakeholder hai woh aapko batayein ki unko kya chahiye, unki zarooratein kya hai. How to generate alternative design toh human tend to stick with something that works. Toh yahan pe aap alag-alag alternative aap jalai nikaliye jaise humne pehle bhi discuss kiya tha brainstorming kar sakte hain aur bhi cheezein kar sakte hain toh yahan pe ek tarah se alternative design ke liye flair and creativity research synthesis kar sakte hain. Cross fertilization of ideas from different perspectives kar sakte hain. User can generate different design, product evaluation based on changing use. Aap inspiration dekh sakte hain. Jaise aur bhi jo similar product domain existing system se jayein jo exist karti hain woh kya kar rahi hain? Kaise kar rahi hain? Agar aapko usse achha kuch banana ho toh aap kya kar sakte hain? Different product and domain jaisa ki hum baat kar rahe the. Balancing constraint and tradeoff jo alag-alag constraint hai usko aap dekh

sakte hain aur kabhi-kabhi woh conflicting hoti hai. Kuch cheezein possible hoti hai. Kuch cheezein nahi hoti hain. Toh kaise aap balance karte hue trade off karte hue apna solution de paayein aur un jab ek baar aapke paas alag-alag alternatives aa gaye toh again jaisa humne pehle hi bataya ki alag-alag methods hain jiske madhyam se aap choose kar sakte hain kisko lena hai. Toh evaluate with the users or peer. Similarly AB testing kar sakte hain. Quality threshold kar sakte hain. Toh yeh kuch cheezein humne pehle bhi discuss ki thi. Toh main ismein detail mein nahi jaa raha hoon. But I hope aapko yeh cheezein samajh mein aa rahi hain. So how to integrate interaction with design activities within other model. Toh us case mein aap yahan pe dekh sakte hain integrating interaction design activities in life cycle models from other discipline require careful planning. Aur software development life cycle models are prominent. Dher saare jo humne software development life cycle ki baat ki woh ek tarah se use hote hain. So unko aap agile software development model ke through promising tarike se kar sakte hain. So it incorporates tight iteration, it champions early and regular feedback and it handles emergent requirement jo ki samay ke saath nayi-nayi requirement aur bhi aa sakti hain. Kyunki jaisa maine pehle bataya kabhi-kabhi zyada tar useron ko pata nahi hota unko chahiye kya. Agar hota bhi hai toh samay ke saath aapne unko kuch diya uske basis bolta hai achha achha yeh hai achha mujhe tab toh yeh bhi chahiye mujhe woh bhi chahiye so it aims to strike a balance between flexibility and the structure. Toh key points aap ek tarah se dekh sakte hain four basic activities in friction design discovering requirement, discovering alternative, prototypes and evaluating aur user centered design basically the three principle early focus on users and task empirical measurement and iterative design aur summary ek tarah se yeh hai jo humne teen major teen cheezein discuss ki. Is saptah mein design thinking ke baare mein humne baat ki. Humne design process ke baare mein baat ki. Humne interaction design process ke baare mein baat ki. Kaise woh dikhne mein similar dikhte hain. But alag-alag tarike se complementary tarike se ek overall manav kendrit solution banane mein hamari achhe se madad karte hain. Is saptah mein hum tutorial lenge interaction design process ke upar aur tool hum Figma ke upar baat karenge aur assignment denge. Yeh further study ke liye aage aur bhi padhne ke liye aap yeh kuch chuninda aapke paas resources maine provide kiye hain. Aap inko dekh sakte hain. Inse aur seekh sakte hain, samajh sakte hain. Aur isi ke saath saptah teen ka yeh yahan samapt hota hai aur milte hain agle saptah mein punah dhanyavaad. [Music]