User interface design

Week12: Practice of Interface Design: Agile UX, Design patterns, open source Resources, Tools for Interaction design

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Outline

- Introduction
- Agile UX
- Design Patterns
- Open Source Resources
- Tools for Interaction Design

Intended learning Outcomes

- Able to discuss the place of UX design in agile development projects.
- Able to identify and critique interaction design patterns.
- Able to explain how open source and ready-made components can support interaction design.
- Able to explain how tools can support interaction design activities.

Introduction

- When placed within the wider world of commerce and business, interaction designers face a range of pressures, including restricted time and limited resources, and they need to work with people in a wide range of roles, apart from stakeholders.
- Research and design are naturally messy, interaction designers need to step into roles that may initially feel outside their comfort zone and to help others understand the user perspective.
- In other words, being an interaction designer in practice means dealing with a range of complexities, and keeping up with new techniques and developments is a constant goal.

- Many different names may be given to a practitioner conducting interaction design activities, including interface designer, information architect, experience designer, usability engineer, and user experience designer.
- Today we shall refer to user experience designer and user experience design because these are most commonly found in industry to describe someone who performs the range of interaction design tasks such as interface design, user evaluations, information architecture design, visual design, persona development, and prototyping.

- ❖However, interaction design in practice varies across organizations and most companies need to transition from only developing GUIs to taking the wider UX perspective and that this transition has several drawbacks.
- ❖Examples are not paying attention to the characteristics of UX compared to usability alone and power struggles between different groups who want to be in control of UX practices.
- ❖Companies also have a greater awareness of internal and external stakeholders and their expectations than they had in the past.

- User experience designers draw on a range of support. Four main areas of support that impact the job of UX designers are;
- Working with software and product development teams operating an agile model of development has led to technique and process adaptation, resulting in agileUX approaches.
- Reusing existing designs and concepts is valuable and time-saving. Interaction design and UX design patterns provide the blueprint for successful designs, utilizing previous work and saving time by avoiding “reinventing the wheel.”

- Reusable components from screen widgets and source code libraries to full systems, and from motors and sensors to complete robots can be modified and integrated to generate prototypes.
- Design patterns represent an interaction idea, while reusable components provide implemented chunks of code or widgets.
- There is a wide range of tools and development environments available to support designers in developing visual designs, wireframes, interface sketches, interactive prototypes, and more.

Agile UX

- AgileUX is the collective label given to approaches that integrate techniques and processes from interaction design with those from agile methodologies.
- It represents the combination of UX principles and agile development practices to create a more holistic and collaborative approach to software development.
- AgileUX aims to ensure that user experience considerations are an integral part of the agile development process.

- Agile methodologies, with their emphasis on short iterations and rapid development, did indeed bring about changes that affected the way UX (User Experience) designers traditionally worked.
- The widespread adoption of agile methodologies and the increasing emphasis on organizational agility have indeed brought many benefits to software development and business operations.

- However, there are potential risks to the user experience when agility is not managed effectively.
- The potential danger for good user experience is that short iterations rush UX activities and that agility is used as an excuse for poor user experience.
- Advantages of an agile approach have also been recognized, however, there is an emphasis on conversations and collaborations, cross-functional teams that involve a variety of disciplines, and getting feedback on design ideas is fundamental to agility.

- The insights from Tiago Da Silva and colleagues (2018) regarding the dimensions of understanding in integrating Agile and UX highlight important considerations in the evolving field of AgileUX.
- These three dimensions represent critical aspects of achieving a successful integration of Agile and User Experience (UX) practices within a development environment:
- **Process and Practice Dimension**: This dimension involves the understanding and alignment of Agile and UX processes and practices.

- Achieving synergy between Agile and UX methodologies in terms of iterative design, user testing, and collaborative work processes is crucial for the success of a project.
- Teams that have a clear understanding of how these processes can complement each other are better positioned to deliver a seamless user experience.
- **People and Social Dimension**: This dimension pertains to the social dynamics and collaboration among team members, including UX designers, developers, and other stakeholders.
- Building effective cross-functional teams and fostering open communication are key factors for successful AgileUX.

- **Technology and Artifact Dimension**: The third dimension, which focuses on the use of technology to coordinate team activities and artifacts to facilitate team communication, appears to be less well understood.
- This dimension highlights the critical role of tools, technologies, and artifacts in streamlining the collaboration between UX and Agile teams.
- The efficient sharing of design assets, prototypes, and documentation, as well as the use of project management and collaboration tools, is essential in supporting the integrated approach.

- It's important for organizations to recognize that all three dimensions are interconnected. A well-rounded understanding of AgileUX requires a balance between these dimensions.
- To address the gap in the "technology and artifact" dimension, practitioners and researchers can:
- Invest in appropriate tools and technologies that facilitate collaboration and communication across team members.
- Promote the use of design systems and style guides to maintain consistency and streamline the design and development process.

- Foster a culture of continuous learning and adaptation, allowing teams to explore innovative ways to use technology and artifacts to their advantage.
- Integrating UX design activities into an agile workflow involves adapting the traditional UX design process to align with the characteristics of agile methodologies, including short timeboxes, changing priorities, and minimal documentation.

- All of the techniques and principles that UX designers use are just as relevant, but how much of each activity needs to be completed at what point in the iterative cycle and how the results of those activities feed into development need to be adjusted in an agile context.

Large user stories when using agile

- In an agile development context, user stories are typically written to describe specific user features or functionalities.
- Epics are larger user stories that encompass a broader set of functionalities or requirements.
- Let's consider an example of four epics for a group travel organizer app:

❖**Epic: User Registration and Profile Management**

❖As a user, I want to be able to register an account, log in, and manage my profile information.

❖This epic includes features like user registration, login, password recovery, and profile editing.

❖**Epic: Creating and Managing Travel Groups**

❖As a user, I want to create new travel groups, invite friends to join, and manage the group's details.

❖This epic includes features like creating a group, inviting members, setting group preferences, and managing group members.

❖**Epic: Itinerary Planning and Collaboration**

❖As a user, I want to plan and organize trip itineraries, collaborate with group members, and share travel details.

❖This epic includes features like creating and editing itineraries, adding activities, sharing itineraries with group members, and real-time collaboration.

❖**Epic: Expense Tracking and Settlement**

❖As a user, I want to track expenses incurred during the trip and settle debts within the group.

❖This epic includes features like adding expenses, splitting bills, keeping track of who owes what, and facilitating financial settlements within the group.

- These epics cover high-level functionalities of the group travel organizer app. Within each epic, there would be multiple user stories breaking down the features into smaller, actionable tasks.
- These user stories can then be prioritized and worked on in agile sprints, allowing for incremental development and regular releases of the product.
- Remember that agile development encourages flexibility, so the prioritization and order of working on these epics may change as the project progresses and user feedback is received.

- Conducting UX activities within an agile framework requires a flexible point of view that focuses more on the end product as the deliverable than on the design artifacts as deliverables.
- It also requires cross-functional teams where specialists from a range of disciplines, including UX design and engineering, work closely together to evolve an understanding of potential users and their context, as well as the technical capabilities and practicalities of the technology.

User Research

- The term user research refers to the program of data gathering and analysis activities conducted to characterize potential users, their tasks, and the context of use.
- User research is typically done before product development begins, but it is equally valuable throughout it.
- In an agile project, data gathering methods that rely on a significant elapsed period of time such as ethnography do not fit within agile's short iterations, so technical development needs to be independent of any studies using that approach.

- More targeted activities that are focused on evaluating elements of the design, or clarifying requirements or task context, can be done alongside technical development.
- The approach proposed by Bob Thomas in 2021, which emphasizes lean user research, is a pragmatic method for involving technical and design team members in usability testing and quickly synthesizing their observations.

Lean User Research Approach

- Lean UX is a design approach that aims to develop a product in a collaborative, cross functional, and people-centered way.
- It prioritizes continuous learning to build evidence for design decisions and to create and deploy innovative products that meet business outcomes.
- It is linked to agileUX because agile software development is one of its underlying philosophies and it champions the importance of providing a good user experience.

- Lean UX builds upon UX design, design thinking, agile software development, and the Lean Startup ideas which emphasize iterative development, collaboration between all stakeholders, and cross-functional teams.
- Lean UX emphasizes waste reduction, the importance of experimentation to learn, and the need to articulate outcomes, assumptions, and hypotheses about a planned product.
- Moving the focus from outputs (a new smartphone app) to outcomes (more commercial activity through mobile channels) clarifies the aims of the project and provides metrics for defining success.

- The importance of identifying assumptions for example assumption might be that young people would rather use a smartphone app to access local event information than any other media.
- Assumptions can be expressed as hypotheses that can be put to the test more easily by building a minimum viable product (MVP) that can be released.
- Testing hypotheses, and hence assumptions, is done through experimentation, but before undertaking an experiment, the evidence required to confirm or refute each assumption needs to be characterized.

Aligning Work Practices

- Aligning work practices refers to the process of ensuring that the activities, processes, and methods used within an organization or team are harmonized and coordinated to achieve common goals and objectives.
- One of the interaction design principles is consistency, but a related goal for UX design is coherence.
- While consistency can generally be achieved by following a style guide, coherence is a more holistic quality that requires a macro view of the whole product.

- When delivering in short iterations, it is easy for this macro view to be lost and for the coherence of a product to be compromised.
- There is therefore a tendency for designers to develop complete UX designs at the beginning of a project to ensure a coherent design throughout.
- In agile terms, this is referred to as big design up front (BDUF), and this is an abomination to agile working.
- Agile development emphasizes regular delivery of working software through evolutionary development and the elaboration of requirements as implementation proceeds.

- In this context, BDUF leads to practical problems since reprioritization means that interaction elements (features, workflows, and options) may no longer be needed or may require redesigning.
- To avoid unnecessary work on detailed design, UX design activities need to be conducted alongside and around agile iterations.
- The challenge is how to organize this so that a good user experience is achieved while maintaining the product vision.

Documentation

- The most common way for UX designers to capture and communicate their design has been through documentation, for instance, user research results and resulting personas, detailed interface sketches, and wireframes.
- Agile development encourages only minimal documentation so that more time can be spent on design, thus producing value to the stakeholders via a working product.
- Documentation is useful for many purposes including for legal reasons and maintenance tasks and where abstractions or tricky design decisions need to be captured.

- Some documentation is hence desirable in most projects and minimal documentation does not mean “no documentation.”
- A key principle in agileUX, though, is that documentation should not replace communication and collaboration.
- A number of guidelines have been suggested to help people in agile projects to identify an appropriate level of documentation. For example, the following set of questions is commonly asked:

- How much time do you spend on documentation? If possible, decrease the amount of time spent on documentation and increase design time.
- Who uses the documentation?
- What is the minimum that readers need from the documentation? Try to aim for “just barely good enough” documentation. That doesn’t mean documentation of poor quality, but just enough to fulfill its purpose.

- How efficient is your sign-off process? How much time is spent waiting for documentation to be approved? What impact does this have on the project?
- What evidence is there of document duplication? Are different parts of the business documenting the same things?
- If documentation is only for the purpose of communication or development, how polished does it need to be? Perhaps finding better ways to communicate would be more effective.

- The CRUFT formula, as suggested by the Disciplined Agile approach in 2022, provides a framework for evaluating the effectiveness of a document based on five key factors:
- C = The percentage of content that is correct: This factor assesses the accuracy and correctness of the content within the document by measuring the extent to which the information presented is free from errors, inaccuracies, or outdated information.
- R = The chance the document will be read: This factor evaluates the likelihood that the intended audience will actually read the document.

- It considers factors such as the document's accessibility, visibility, and relevance to the target readers.
- U = The chance that the content will be understood: This factor measures the likelihood that the readers will comprehend and make sense of the document's content.
- It takes into account the document's clarity, comprehensibility, and the suitability of language and terminology for the audience.
- F = The chance that the advice will be followed: This factor gauges the probability that the document's recommendations, advice, or instructions will be followed by the readers.

- T = The chance that the advice will be trusted: This factor examines the trustworthiness of the document and its sources.
- It assesses whether the readers have confidence in the information presented and whether they trust the document as a reliable source.

Design Patterns

- User interface (UI) design patterns are reusable/recurring components which designers use to solve common problems in user interface design.
- Designers can apply them to a broad range of cases, but must adapt each to the specific context of use.

Why Design Patterns Are Such Powerful Design Aids

- Websites and apps have a conventional look and feel because of design patterns such as global navigation and tab bars.
- In UI design, you can use design patterns as a quick way to build interfaces that solve a problem; for instance, a filter pattern is a versatile tool that helps the user extract, enhance, or manipulate data to achieve specific goals.

- UI design patterns serve as design blueprints that allow designers to choose the best and most commonly used interfaces for the user's specific context. Each pattern typically contains:
- A user’s usability-related problem.
- The context/situation where that problem happens.
- The principle involved e.g., error management.
- The proven solution for the designer to implement to address the core of the problem.

- Why the reason for the pattern’s existence and how it can affect usability.
- Examples which show the pattern’s successful real-life application (e.g., screenshots and descriptions).
- Implementation some patterns include detailed instructions.

Common UI Design Patterns

- Breadcrumbs: Use linked labels to provide secondary navigation that shows the path from the front to the current site page in the hierarchy.
- Lazy Registration: Forms can put users off registration. So, use this sign-up pattern to let users sample what your site/app offers for free or familiarize themselves with it. Then, you show them a sign-up form.
- Forgiving Format: Let users enter data in various formats (e.g., city/town/village or zip code).

- Clear Primary Actions: Make buttons stand out with color so users know what to do (e.g., “Submit”). You may have to decide which actions take priority.
- Progressive Disclosure: Show users only features relevant for the task at hand, one per screen. If you break input demands into sections, you’ll reduce cognitive load (e.g., “Show More”).
- Hover Controls: Hide nonessential information on detailed pages to let users find relevant information more easily.

- Steps Left: Designers typically combine this with a wizard pattern. It shows how many steps a user has to take to complete a task. You can use gamification (an incentivizing design pattern) here to enhance engagement.
- Subscription Plans: Offer users an options menu (including “Sign-up” buttons) for joining at certain rates.
- Leaderboard: You can boost engagement if you use this social media pattern.

- Dark Patterns: Some designers use these to lead or trick users into performing certain actions, typically in e-commerce, so they spend more or surrender personal information.
- Dark patterns range in harmfulness. Some designers leave an unchecked opt-out box as a default to secure customer information. Others slip items into shopping carts.
- To use dark patterns responsibly, you must be ethical and have empathy with your users. Dark patterns are risky because user mistrust and feedback can destroy a brand's reputation overnight.

How to Use Design Patterns

- Freely available, UI design patterns let you save time and money since you can copy and adapt them into your design instead of reinventing the wheel for every new interface.
- They also facilitate faster prototyping and user familiarity.
- However, you should use them carefully and the wrong choices can prove costly for example, if you:
- Approach problems incorrectly because you’re over-relying on patterns.

- Don’t fine-tune patterns to specific contexts.
- Don’t customize a distinct brand image (e.g., your website ultimately resembles Facebook).
- Overlook management requirements. If you create your own patterns, you must clearly define how to use them and with what types of problems, version-control them, and store them for team access.

Future-Focused UI Patterns for Mobile

- Let’s look at common mobile UI patterns that you can use to design intuitive interfaces and speed up your design process.
- Future-focused UI patterns for mobile are those that leverage emerging technologies and trends to create more intuitive, engaging, and personalized user experiences. Some examples of these patterns include:

- Buttonless transitions: These transitions allow users to move between screens and features without having to tap any buttons. Instead, they can simply swipe or gesture to navigate.
- Voice interfaces: Voice interfaces allow users to interact with their devices and apps using voice commands. Especially helpful for hands-free tasks, such as sending messages or making calls.
- Augmented reality (AR): AR superimposes digital information on the real world, allowing users to interact with it in new and innovative ways. For example, AR could be used to provide directions, identify objects, or preview products.

- Gesture control: Gesture control allows users to interact with their devices using hand gestures. This can be more intuitive and natural than using traditional touch interfaces.
- Adaptive interfaces: Adaptive interfaces can adjust their layout and content based on the user's context, such as their location, device, or personal preferences.

Examples of how these patterns can be used in mobile UI design

- A navigation app could use buttonless transitions to allow users to swipe between different screens, such as a map view, turn-by-turn directions, and a list of nearby points of interest.
- A music streaming app could use a voice interface to allow users to search for songs, play and pause music, and adjust the volume without having to look at their screen.
- A furniture shopping app could use AR to allow users to visualize how different pieces of furniture would look in their own homes before they buy them.

- A gaming app could use gesture control to allow users to control the game characters and actions using hand gestures.
- A news app could use an adaptive interface to adjust the layout and content of its articles based on the user's reading preferences.

Open Source Resources

- Open source software refers to source code for components, frameworks, or whole systems that is available for reuse or modification free of charge.
- Design systems are commonly released in open source repositories for others to see and use, for example Microsoft's Fluent Design System.
- Open source development is a community-driven endeavor in which people produce, maintain, and enhance code, which is then provided to the community through an open source repository for further development and use.

- The community of open source committers are mostly software developers who give their time for free, but increasingly companies are also releasing open source code.
- The components are available for (re)use under software licenses that allow anyone to use and modify the software for their own requirements without the standard copyright restrictions.
- Many large pieces of software underlying our global digital infrastructure are powered by open source projects.

- For example, the operating system Linux, the development environment Eclipse, and the PHP development language are all open source software.
- Perhaps more interesting for interaction designers is that there is a growing amount of open source software available for designing good user experiences.
- The design pattern implementation libraries are but one example of how open source software is affecting user experience design.

- Another example is the Bootstrap framework for front-end web development, released as open source in August 2011 and actively updated on a regular basis.
- This framework contains reusable code snippets, a screen layout grid that supports multiple screen sizes, and pattern libraries that include predefined sets of navigational patterns, typefaces, buttons, tabs, and so on.
- The framework and documentation are available through the GitHub open source repository (github.com/twbs/bootstrap#community).

- Open source resources require a suitable hosting service, that is, somewhere for the source code to be stored and made accessible to others.
- More than this, the hosting service needs to serve a huge number of users who will want to build, review, modify, and extend software products.
- Managing this level of activity also requires version control, such as a mechanism that retains and can reinstate previous versions of the software.

- For example, GitHub is based on the version control system called Git. Communities form around these services, and submitting code requires an account.
- For example, each developer on GitHub can set up a profile that will keep track of their activity for others to see and comment upon.
- Most hosting services support both public and private spaces. Submitting code to a public space means that anyone in the community can see and download the code, but in a private space the source will be “closed.”

- One of the advantages of releasing code as open source is that many eyes can see, use, and modify your work spotting security vulnerabilities or inefficient coding practices as well as contributing to, extending, or improving its functionality.
- Other popular open source repositories:
- GitLab is a self-hosted Git repository management and DevOps platform. It offers a wide range of features for code collaboration, project management, and continuous integration and continuous delivery

- SourceForge is a web service that offers software consumers a centralized online location to control and manage open-source software projects and research business software.
- Bitbucket is a Git-based source code repository hosting service owned by Atlassian. It offers both commercial plans and free accounts with an unlimited number of private repositories.

Tools for Interaction Design

- The variety and complexity of digital tools to support UX designers in practice has grown significantly in recent years.
- The role of UX in business and the tooling landscape that supports UX design are changing.
- Available tools support creative thinking and collaboration, design sketching, prototyping, simulation, evaluation, pattern library search, mind mapping, and more.

- In fact, any aspect of the design process will have at least one associated support tool.
- For example, Miro and Mural support collaboration and brainstorming so that ideas can be generated and explored jointly,
- Sketch supports the creation of a wide range of drawings and screen layouts, Balsamiq supports wireframing, overflow.io supports the production of playable user flow diagrams, and uxarchive.com contains a large number of reusable user flows.

- Along with the increasing popularity of design systems, several tools also integrate a range of different features in one place, including brainstorming, prototyping, wireframing, and UI design kits with code snippets and patterns.
- For example, Figma (figma.com) supports a wide variety of collaborative design tasks including generating wireframes and prototypes, and Adobe XD (www.adobe.com/products/xd) supports design, layout, animation and voice prototyping.

- Some of the popular tools are available as open source or with free trials, and it is worth exploring the different features of each.
- Other commonly used tools are Balsamiq (balsamiq.com), Axure RP (www.axure.com), and Sketch (sketchapp.com).
- Tooling to support visual and interactive products, particularly apps for smartphone, desktop, and mobile, is well-developed.

How to Approach the Right UX Tools

- Before reaching for any UX tools, you should consider:
- What you do matters more than the tool you choose – UX tools are instrumental to not guarantees of your success. As a designer, you can only make impressive and useful solutions if you know what goes where and why.
- UX experts and recruiters agree that skills come first. So, you should always start with important UX considerations and know what you want to achieve.

- Then, you select the best tool for the job at hand, even if it’s only pencil and paper.
- UX tools are constantly evolving; New tools and third-party add-ons to existing ones keep appearing on the market.
- So, it’s vital to stay grounded in the timeless principles of human psychology and your craft, instead of chasing the fleeting shadows of software’s freshest updates.

- ❖Organizations use different tools Company practices including choice of UX tools vary. Moreover, with time, they’ll switch to the next best thing for them.
- ❖Know your Tool like a Pro:
- ❖Learn by doing Practice makes perfect.
- ❖Take advantage of the tool-makers’ free tutorials – Intense competition means software brands must battle for customers.

- Overall, your brain is the most precious UX tool you'll ever have. Professionals are tool-users, but not all tool-users are professionals.
- What counts is that you can adapt to and learn different UX tools to apply your skillset.
- From the earliest design phase, you should guide your choice of UX tools with an eye for how your users might encounter your brand, move through subtasks and ultimately reflect on their experience.

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Thank you

Next Lecture We Shall Look At

User interface Evaluation