Fundamentals of User Centered Design A Practical Approach 1st edition Still Solutions Manual

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Chapter 2

Agenda/Learning Objectives

- ✓ Learn about fields that contributed to present understanding of UCD
- ✓ Review key thematic periods set the stage for our present sense of UCD
- ✓ Distinguish complex and simple systems
- ✓ Understand how UCD accounts for complex systems
- ✓ Review: Takeaways, Discussion Questions, UCD Quests

1) Learn about fields that contributed to present understanding of UCD

a) UCD is infused by user research, cognitive science (human factors and human computer interaction), ergonomics, and interaction design

b) UCD addresses user considerations from many fields:

i) How does the user engage with and understand information (interaction design)?

ii) What is the user capable of understanding, what can be done to maximize the user's capabilities (cognitive science)?

iii) What is the best physical environment for the user to use the product, or how can the product be designed physically to make the user's experience successful (ergonomics)?

iv) What does the user want, where does the user do the work, and what does the user need to be able to use the product successfully (user research)?

2) Review key thematic periods set the stage for our present sense of UCD

a) Studying Human Capability and Accommodation: The World Wars and After (1914-1976)

i) Changes in workforce safety measures and industrialization shed light on user performance (couldn't just "make" people work until they figured it out, balance between worker rights and production efficiency)

ii) Need to understand how relatively unskilled people (i.e.: military recruits and women entering workforce) could both efficiently produce and effectively use once expert-operated products

iii) Greater understanding that human error wasn't the source of *all* problems

iv) Failures during training and combat in WWII were attributed to physiological factors, such as a lack of oxygen or pilot fatigue. But early experimentation, asking pilots to carry out their tasks in simulations, showed that poor design of instrumentation and controls was a factor

v) Expanded research on users as benefits of UCD became evident

(1) B-17 "shape coding" – distinguished landing gear and flap controls

(2) American Sherman Tank vs. German Panzer Tanks (Sherman could be maintained on-site in field, by non-experts)

vi) Emphasis on study of human capability

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(1) Human memory: people are capable of retaining/using only a few things, "seven plus or minus two" (Miller 1956)
(2) Focus on how to improve thinking, capability, and memory = improved efficiency

vii) Emphasis still remained on creating better ***technology-centered systems***

viii) Rebellion against establishment or system-oriented thinking (i.e.: concern about negative aspects of technology, too much mechanistic/technological control)

ix) Greater focus on human/user as being in control

x) Participatory design methodology: moved us from technology to user focused design, user needs understood and integrated, environment considered, user active participant in design

b) Making the User Relevant: The Personal Computer (1977-1994)

i) Alternative movement dedicated to building technologies that challenged the previously accepted ways for building them (ex: Homebrew Computer Club 1975)

ii) Focus on user empowerment: making technology people wanted and could use when and where they wanted, for work or leisure

iii) Apple II, Commodore PET, and Tandy TRS-80 PC hit the market in 1977

iv) Focus on: "Do people want it?" and "Can they use it?"

v) Introduction of usability testing: "the extent to which a product can be used by specified users to achieve specific goals in a specified context of use with effectiveness, efficiency, and satisfaction." (International Organization for Standardization in ISO9241-11)

vi) Process: Usability testing entailed recording and analyzing user performance as they tried a product. Goal was to discover what about the product could be improved so that the people the test users represented would find it efficient, effective, and satisfying

c) Integrating Iterative Usability into Business: The WWW (1995-2006)

i) Usability testing expanded from making PC software "friendly" to the ability to "fix" problem web site interfaces

ii) Why 1995?
(1) Beginning of WWW's exponential growth
(2) Debut of Netscape Navigator, Internet Explorer, and Windows 95, all designed to enhance user interactions (i.e.: task bar, menu, start button) and required unique coding
(3) Useit.com (Jakob Nielsen): offers advice to experts and novices on how to build better products for users

iii) UX became more popularized among non-experts

iv) Discount usability testing (Nielsen):
(1) Made testing more accessible to non-experts
(2) Could be prepared and implemented quickly

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(3) Developers and designers could gather quick feedback about users (i.e. browser, database use)
(4) Involves 3 tests, 5 intermediate users per test (15 total)
(5) Different level of product fidelity for each test
(6) Find problems, improve the product for each test
(7) Have users carry out realistic tasks
(8) Focus on MEELS (memorability, errors, efficiency, learnability, satisfaction)

v) Discount usability testing (Nielsen): In contrast to waterfall design in which usability testing comes last and often—therefore too late to be effective— user feedback, through testing, is integrated as early as possible into the design process

vi) Usability as thermostat: test frequently, as a thermostat tests to gather data, and adjust the system accordingly so that the environment or user experience is ideal

vii) Issue with discount/iterative usability testing:
(1) Ex: Medical dispensation system case study
(2) Testing users one at a time, in a controlled setting, to provide feedback with the prototypes designers have created does not offer up any knowledge about how users will actually use the product in the real world.

d) Understanding and Designing for the User's Ubiquitous Computing Experience: Mobile, Smart Devices and Beyond (2007-)

i) Apple iPhone, iPad, and other smart devices
ii) How users use technology, and where they use it, changed dramatically
iii) PC/Laptop no longer only way to connect online
iv) Usability testing was exposed for its lack of context
v) Testing was being done for testing's sake but was not being given a purposeful role in the design process, and not taking into account new use scenarios and environments
vi) Mobile smart phone intertwined web with our everyday lives
vii) Connected everything else we did that was once separated into a complex, conjoined set of discourses
viii) Complexity, not complication, fostered by ubiquitous technology and information, brought about a new set of problems for users and developers

3) Distinguish complex and simple systems

a) Distraction and memory

i) Mobile smart phone intertwined web with our everyday lives
ii) Connected everything else we did that was once separated into a complex, conjoined set of discourses
iii) Complexity, not complication, fostered by ubiquitous technology and information, brought about a new set of problems for users and developers

b) Complex system (Albers 2004):

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i) Total system is more than just the sum of the parts (a complete description cannot be given)
ii) Multiple paths to a solution exist
iii) Information requirements to answer a question cannot be predefined
iv) Effect on the overall system of change cannot be predicted (a nonlinear response)
v) The system is open, which makes it difficult to break out and study a section in isolation

c) Usability fails complex systems (Redish 2007):
i) Too short
ii) Too 'small task'-based
iii) Not context-rich enough to handle the long, complex, and differing scenarios that typify the work situations that these complex information systems must satisfy

d) Simple system vs. Complex system

4) Understand how UCD accounts for complex systems

a) Movement not just to address the obvious complexity of ubiquitous computing, but also to replace limited applicability of traditional usability testing with a user experience (UX) methodology

b) Less attempts to make products work for users vs. construct a situation that better 'allows them…to successfully experience the interface'" (Still 2015)

c) Garrett's approach to UX:
i) UX design makes sure the aesthetic & functional aspects of something, like a clickable button, work in the context of what the user is trying to accomplish
ii) The more complex the product, the more difficult it is to deliver a successful experience for the user
iii) That's why user experience design must support product design
iv) We must create ways for the user to help us design for the user

d) Garrett's (2011) 5 Planes:
i) Surface—sensory experience of the finished product
ii) Skeleton—information, interface & navigation design
iii) Structure—define how system behaves/interacts w/user
iv) Scope—feature set & content requirements
v) Strategy—user needs and product goals
vi) Each plane is dependent on the plane below it, which is why good UX is about building from bottom up. You just can't test the surface three times and find all the UX issues. Often what is affecting a product's UX starts at the very bottom

5) Review: Takeaways, Discussion Questions, UCD Quests

a) Review key points

b) Group discussion and Q&A

c) Prepare UCD Quest assignments (or present on previous activities)

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Chapter 3

Agenda/Learning Objectives

- ✓ Introduce core principles of a UCD methodology: 10 UCD Commandments
- ✓ Introduce RABBITT process
- ✓ Review: Takeaways, Discussion Questions, UCD Quests

1) Introduce core principles of a UCD methodology: 10 UCD Commandments (Principles)

a) Practitioners, such as designers, developers, project managers, and any other positions tasked with implementing a design project, need to have:
   i) a reliable set of principles to guide what they do, to use to measure success
   ii) fundamental methods, housed inside a reliable, repeatable process, that they can carry out to involve users as the focus of their design

b) Thou must involve users early
   i) When is it too early to involve users? Never.
   ii) Design is exposed to more eyeballs—the important eyeballs of the users—and potential big problems are discovered and addressed before they become too big to be fixed

c) Thou must involve users often
   i) When is it too early to involve users? Never.
   ii) Design is exposed to more eyeballs—the important eyeballs of the users—and potential big problems are discovered and addressed before they become too big to be fixed
   iii) Users' needs and wants change, the environment where they use products change. Involving users often informs development and generates user knowledge for other products.

d) Thou must design for use in context (the product will be used in the real world so design accordingly)
   i) Must consider where, when, and how user will use product
      1) Environment?
      2) Distractions?
      3) Resources?
      4) Goals?
   ii) Ex: Palm Pilot
      1) Invented by Jeff Hawkins
      2) Wanted to know how users would want to use what, when, where, and how
      3) Carried around wooden prototypes in pocket to better understand use scenario and context

e) Thou must keep it simple
      1) Simplify, simplify, simplify!

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