UX Design Defined :: UXmatters

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Unfortunately, in the field of user experience, people often confuse terms like *information architecture*, *interaction design*, *visual design*, *usability engineering*, and *UX design*. In some cases, people use these terms almost interchangeably. This article provides a lexicon of these terms and more clearly defines the role of the user experience designer.

Information Architecture

Information architecture (IA) focuses on the organization of data—that is, how data is structured from a user's perspective, as opposed to the system, or technical, perspective.

At the level of an entire Web site, or application, information architecture determines what data is on each page and how pages relate to each other. For example, defining a site map is an IA activity. At the level of an individual page layout, information architecture ensures that data is logically grouped and interrelated.

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A major concern of information architecture is defining and using taxonomies—for example, information hierarchies—and classifying data within these taxonomies. So, defining menu and navigational structures is an IA issue. Doing this work successfully often requires eliciting information from users and domain experts, using techniques such as structured interviews and various types of card-sorting exercises.

Information architecture also concerns applying existing taxonomies when doing new development. Taxonomies may be proprietary—such as how to classify products a particular retailer offers—or standards such as the UK's Local Government Category List (LGCL). So, ensuring that a navigation bar at the left of a page is wide enough to contain all of the terms a particular taxonomy uses is also an IA issue.

This means that specialists in information architecture often come from an information management or library studies background. My experience is that some technical data modelers such as those who are excellent at Entity-Relation modelling with relational data bases—for example, with Oracle—or defining class hierarchies—for example, using the Unified Modelling Language (UML)—can also make superb information architects. This is not just because they understand how an information architecture maps to a technical implementation. Rather, it is because they have excellent generic skills in eliciting data relationships from users and domain experts, logically organizing data according to defined rules and principles, and abstracting key patterns in the data they're working with.

Interaction Design

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Interaction design concerns the controls, mechanisms, and processes that users require to perform their tasks on systems and so meet their goals. For example, an interaction designer determines whether to use a menu rather than a set of tabs, whether to use a drop-down list rather than set of radio buttons, and the process, or steps, for setting up a new email account using a wizard. This inevitably means that interaction design is about creating affordances—including defining what controls do and how to communicate what they do to users—that is, designing affordances.

Visual Design

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Visual design focuses on the aesthetics of a user interface, ensuring that it looks good, communicates the right image to users, and conforms to any brand guidelines. This means that good visual designers often come from a graphic design background—whether print or online—and often have excellent related skills—for example, illustration, animation, or photography—that they can integrate into their interface design work.

It is interesting to note here that the ability to design good layouts is a prerequisite for good visual design, good interaction design, *and* good information architecture, but each of these specialties uses the term *layout* in ways that are qualitatively different. This is because their rationale and goals for a layout are very different—visual design seeks good aesthetics; interaction design, good workflows; and information architecture, good groupings of information. Sometimes these things are synergistic, sometimes they're in competition with one another, and sometimes they're a bit of both.

Usability Engineering

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Usability engineering is primarily about planning and executing various types of usability studies that test how well people can use a user interface, then making recommendations for how to correct the problems that these studies identify. These recommendations may be very specific—like "make the **OK** button a stronger shade of red"—or very general like—"the IA needs revisiting."

To conduct usability studies, usability engineers must have skills in questionnaire design, interviewing, test facilitation, and the use of usability testing software such as Morae. The best usability engineers also have a good grounding in statistics, so they can apply the correct statistical methods and tests to quantitative study results. They may also be familiar with relevant standards such as ISO 9241 and the Common Industry Format for Usability Testing (ANSI/NCITS 354-2001).

Having skills in secondary research methods is also important for usability engineers, enabling them to avoid the time and expense of executing a new, or primary, study when a similar study has already been published. Usability engineers need to be able to identify relevant studies, assess their credibility, and determine the degree to which their findings are relevant to a system they're evaluating.

All of this is more difficult than it may sound, which is why the best usability engineers often have a very strong academic background or may still work mainly in academia.

User Experience Design

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So what is user experience design (UXD)?

Circa 2000, Melisa Cooper published an article that unfortunately no longer seems to be available online. It drew an analogy between a *User Experience Architect*—a more common term than *UX Designer* in the 1990s—and that of a conventional architect who designs houses. I have adapted and extended her analogy to make it more comprehensive and contemporary, as well as to put my own spin on things. When designing a new house:

information architect
would ensure that the master bedroom could accommodate a double bed, two bedside tables, and a large wardrobe; that the kitchen is next to the dining room; and that the only bathroom is

not
in the garage!

An

interaction designer
would ensure that the cold water tap is always on the right, the stairs have banisters, and the light switches are on the correct side of doors.

A

visual designer
would have a role that is similar to that of an interior designer—choosing the carpets, curtains, and furniture, so they coordinate well, are in keeping with the character of the house, and satisfy the home owners' personal taste.

A

usability engineer
would inspect the house after each of the key stages in the building project—that is, after conceptual design, using the architect's visuals and models; after the planning stage, referring to the technical schematics; once the building shell is completed; and once the entire building is completed.

A

UX architect
conceives the whole experience of the home owner. This means having overall responsibility for the design, leading and briefing all of the people in specialist

Managing Overlap and Conflict

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Clearly, there is a high degree of overlap between the roles of the information architect, interaction designer, visual designer, and usability engineer, so potential for conflict exists across all of them. For example, the positioning of links on a page may relate to an IT system's information architecture, interaction design, *and* visual design; and usability engineers would, of course, test this positioning. Likewise, a visual designer might design an icon that looks fantastic and is on brand, but which has very low affordance and usability.

A classic example of overlapping responsibilities—and the conflict that can ensue—occurs in the definition of style guides. Visual designers often have sole responsibility for style guides—mistakenly in my opinion. Of course, it's essential that a style guide meet all visual design requirements; however, establishing style guidelines is also vital in, for example, communicating hierarchies, which is an IA issue, and affordances, which an interaction design issue.

This is why a key responsibility of a UX Designer or Architect is managing such overlaps and resolving conflicts across these areas whenever they occur—which they *always* do!

The UX Designer's Skillset

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Does a UX designer (UXD) need to be highly skilled in all four of these areas: information architecture, interaction design, visual design, and usability engineering? Well, there are certainly UX designers who *are* highly skilled in all of these areas, but such a skillset is *extremely* rare in my experience. After nearly 20 years working in this field, I can count the ones I know on one hand!

However, in my opinion, a UX designer needs to be highly skilled only in information architecture and interaction design—not necessarily in visual design or usability engineering.

Visual Design and UX Design

> A UX designer must be able to conceive the vision for the aesthetics of a user interface and manage the visual design process, but does not necessarily need to be skilled enough to actually undertake the visual design.

It is often a perfectly viable approach for a UX designer to craft a gray-scale wireframe design that is excellent in terms of information architecture and interaction design, then brief a visual designer on skinning it appropriately. This is analogous to interior designers weaving their magic on a new building. The activity takes place late in the design process after key design decisions have been made—that is, after the building has gone up.

Of course, this means UX designers *do* need to have a good appreciation of visual design, know a good-looking user interface when they see it, and be able to communicate a brief effectively to a visual designer. UX designers also have to be able to recognize—and know how to fix—the sorts of information architecture and interaction design problems that commonly get introduced during the visual design process.

To summarize here, I'm arguing that a UX designer must be able to conceive the vision for the aesthetics of a user interface and manage the visual design process, but does not necessarily need to be skilled enough to actually undertake the visual design.

Usability Engineering and UX Design

> If a UX designer is like a chief aeronautical engineer who has overall responsibility for the design of a new fighter plane, the usability engineer is like the test pilot.

Let's look at another analogy that describes the relationship between usability engineering and UX design. If a UX designer is like a chief aeronautical engineer who has overall responsibility for the design of a new fighter plane, the usability engineer is like the test pilot.

The implication here is that, although there is considerable overlap between the knowledge of UX designers and usability engineers, their skill sets are actually quite different! This is why there are many UX designers who would freely admit that they are not fully qualified to undertake usability studies. Likewise, there are many excellent usability engineers who would not dream of undertaking responsibility for UX design.

Rather, the *essential* skill for a UX designer is the ability to communicate well with usability engineers, ensuring that the right interactions get tested and that they fully understand the findings of a study and its associated recommendations. Again, just as in the aircraft analogy, a UX designer and a usability engineer being able work in close cooperation and have mutual respect for one another's specialist skills is essential to a successful design process. There is certainly no room here for a UX designer taking feedback from a usability engineer as some kind of personal criticism.

The best UX designers also have reasonable secondary research skills in usability engineering, so they can reuse tested design patterns that have already been proven to work in similar contexts and avoid those that have failed under usability testing.

We should also recognize that UX designers may also need to call on specialist information architects to help them with particularly challenging parts of a system's information architecture. This may be because a specialist in information architecture can simply work more efficiently or because they have expertise in a particular domain or taxonomy. In my opinion, UX designers should not see this as an admission of weakness in their skillset, but rather as their leveraging a strength: the value that a UX designer adds in recognizing when someone else has greater expertise in a particular area and having the skills to integrate that resource into the overall interface design process.

The UX Designer's Profile

> In … mentoring senior UX designers …, I often ask them to rank themselves on a scale of 1–10 in each of these areas, so they can define their UX profile.

In this article, I have identified four key areas in which UX designers may possess skills: information architecture, interaction design, visual design, and usability engineering. These UX skills are, of course, in addition to the generic professional skills that any senior IT professional should have—for example, good communication and project-management skills.

In my work coaching and mentoring senior UX designers in major corporations, I often ask them to rank themselves on a scale of 1–10 in each of these areas, so they can define their *UX profile*. I explain that a *10* in usability engineering means, for example, that you have published 20 plus papers on usability studies in major international journals such as the *Journal of usability Studies (JUS)*. A *10* in visual design would mean that you've led the visual design work on something as great as the iPad user interface. A *10* in information architecture might mean that you've led navigation schema design at eBay. A *10* in interaction design might mean that a wizard you've designed gets users through the entire UK online tax return process successfully more than 90% of the time! A *6* in any of these areas means that you are qualified to undertake these roles in a major commercial context.

Maybe you can take some time to define your UXD profile?!

Credits

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