

# A Review Of interaction Design In The Animation Industry

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## Abstract

Interaction designers draw from many disciplines, including psychology, HCI, IA, and UX research to craft products that are optimal for their intended audience. This entails knowing where and how the product will be used, what the users' goals & habits are, and coming up with creative ways to meet those demands. In this paper review the interaction design in the animation industry.

**Keywords:** Animation Industry, Interaction Design, Disciplines, Psychology, Software Engineering.

## 1. Introduction

Interaction design, in contrast to fields like software engineering, prioritizes the needs of users and enhancing their experience within any applicable technical or business restrictions. Designing for user interaction encompasses more than just the final product or service itself; it's called "Interaction Design." While the phrase "Interaction Design" is most commonly associated with the design of human interaction with digital items, it is also relevant when considering how people interact with physical objects. [1]

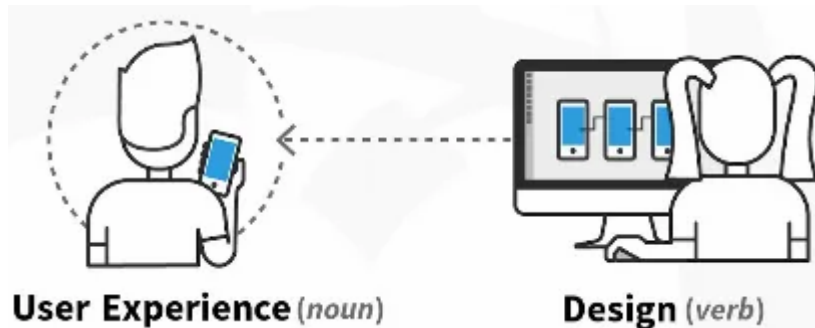
## 2. User Experience (UX) Design

Design teams use user experience (UX) design while aiming to create products that people will find useful and enjoyable. Branding, visual design, usability, and functionality are all parts of the bigger picture that go into UX design. planning an experience is more than just creating user-friendly software; it also include planning the marketing campaign, the packaging, and the after-sales support for the product. UX design's primary focus is on resolving user problems and satisfying requirements. No one will buy a useless product, after all. The phrase "User Experience Design" [2] is commonly used synonymously with "User Interface Design" and "Usability." However, usability and user interface (UI) design are subcategories of UX design despite their significance. UX designers [3] think about everything that goes into buying and using a product. This includes the product's identity, visual aesthetic, usability, and functionality. It's a tale that starts long before the product reaches the consumer. Great user experiences (like the iPhone) are the result of careful consideration given to every aspect of the product's lifecycle, from purchase to maintenance. UX designers, therefore, pay attention to more than simply functionality when making their products; they also think about things like user satisfaction, productivity, and entertainment. As a result, there is no universally accepted criteria for a satisfying user interface.[4]

A excellent user experience, on the other hand, is tailored to each individual user and their unique set of circumstances.[5] The first component of the definition of user experience refers to designers' inability to influence users' perspectives and reactions. They have no say on how a customer uses a product, such as how they react, what they do with their hands, or what they focus on. The second

portion of the description, however, emphasizes that designers have agency over the appearance and feel of the product, system, or service.

User experience design may be understood both as a verb and a noun. A user experience designer (abbreviated as UX designer) is someone who "designs" (ideates, plans, and implements) the aspects of a system or service that users' perceptions and reactions (abbreviated as "UX").[6]



**Figure 1.1** Interaction design foundation

### 3. UI Animation

Animating the user interface (UI) is a way to make a product more engaging and enjoyable to use. To help users navigate the interface, notify them of changes, sway their choices, and highlight connections between components, UX and UI designers often use animation. In addition to making websites and apps seem less mechanical, UI animation also makes them feel more natural and intuitive. It was typical practice in the early days of the digital era for designers to cram their interfaces with moving decorations and dazzling hues. However, as we gained insight into the human factors of digital interfaces, we saw that an abundance of animated flourishes actually detracted from the site's quality and drove away visitors.[7]

Designers have gradually come to appreciate animation for its practical purposes, evolving from a purely aesthetic addition to a tool for improving the user experience. The transition from linear movement to interactions that reflect real-world qualities like speed, gravity, and weight marked a major shift in the development of UI animation. This development resulted in the present day's realistic UI animations. User interface animation might have a practical purpose or be just aesthetic. Decorative animation is a crucial tool for narrative and branding, while functional animation leads and educates the user in real time.[8]

Every day, there are 10 times as many websites and applications released, raising customers' expectations for robust, useful, and distinctive interfaces that are also simple to use. In order to succeed in the modern market, digital goods must prioritize the user experience. Designers often use animation as a means to accomplish the aforementioned goals and more. Animation provides computer interfaces with a much-needed personal touch by emulating the feeling of handling a real-world item. This eases the mind of the user and provides a more natural interaction. User interface animations serve as guides from one location to another, frequently without drawing attention to themselves. Stress is also reduced since the user is constantly updated and given feedback thanks to animation.

### 4. Interaction Design Methodologies And Tools

Interaction designers usually use a few methods and tools to create the greatest user experiences. Some of the most frequent: There are five dimensions, as well as goal-driven design, usability, personas, cognitive psychology, & poka-yoke principle.[9]

#### FIVE DIMENSIONS OF INTERACTION DESIGN

The interaction design scholar Gillian Crampton Smith presented the idea of four dimensions of a "interaction design language" in Bill Moggridge's book of interviews, *Designing Interactions*. The user's interaction with the screen can be broken down into several dimensions, which together form

the interaction itself. Words, pictures, real world objects/space, and time are the four primary dimensions. [10] IDEXX Laboratories' senior interaction designer Kevin Silver has just introduced a fifth dimension, behavior.

- **1D: words** should be written in a manner that makes the information they contain accessible to the reader.
- **2D:** Graphics, photos, and anything else that isn't textual are all examples of visual representations. Use them sparingly so that they don't become overpowering.
- **3D:** The term "physical objects or space" is used to describe the actual items with which a user engages, such as a computer's mouse and keyboard or a person's hand-held mobile device.
- **4D:** The amount of time a user spends engaging with the first three dimensions is time. Features like as audio, video, and several methods for the user to track their progress are all a part of this.
- **5D:** "What Puts the Design in Interaction Design," Kevin Silver introduced the concept of behavior. User experience (UX) refers to how a user feels and acts as a result of engaging with a product or service.

These five factors allow an interaction designer to focus on the user's actual experience when interacting with a technology.

### Goal-driven design

Goal-driven design investigates the ultimate purpose of a website or app page, as addressed by author Alan Cooper. Instead of focusing on the capabilities of the technology they supply, an interface designer should problem-solve & construct interactions with the user's end purpose in mind. Using this framework (available on Uxbooth), designers can better assist clients in accomplishing their goals through the use of their products or services.[11]

### Usability

Usability design is another fundamental framework used by interaction designers. The term "usability" refers to the study of how simple & quick it is to use a given interface. Jakob Nielsen developed ten "heuristics"—overarching guidelines for interface design—to facilitate usability evaluation. Heuristics are referred to as such because they are general rules of thumb rather than strict requirements for interaction design. UXbooth lists the following as examples:

Consider how easy it is to see the current state of the system. Most company websites have a status (or service health) indicator on their 404 pages for when they go down. Users can get real-time updates on the website's or service's availability, along with other useful data (such contact information). Usability is broken down into these three elements by Alan Dix & colleagues in their book Human-Computer Interaction:

1. Learnability: How simple is it for novices to go about after they've gotten used to the UI?
2. Flexibility: How many different methods are there for people to engage with the UI?
3. Robustness: How effectively do consumers get helped when things go wrong?

### Personas

Personas are fictionalized depictions of your perfect consumer that you create using data from real customers & market research. Each persona describes the typical user & discusses their motivations, characteristics, and habits. Personas are useful for interaction designers because they help them keep their target audience in mind while they work to create engaging experiences for that audience. It is important to do user research before moving forward with any interaction design. Check out our detailed tutorial on how to build buyer personas.[12]

### Cognitive dimensions

Thomas Green initially introduced the cognitive dimensions framework in 1989/91; it is a "broad-brush evaluation technique" that may be used to both interactive digital goods and gadgets and non-interactive notations. To help interaction designers evaluate the usability of an existing structure or design, the framework offers a lightweight way. Notations are a standardized language for investigating mental processes.[13]

## What are notations?

Notations are user-interactive interface elements. A few illustrations are:

- Interface metaphors – integrate the user's actual movements with the interface to facilitate a task. The email icon, for instance, is shaped like an envelope to represent the expectation that the recipient will open it and read the contents.
- Affordances – imitations of functional features in a user interface, such as a 3D button, presented in a visual form.
- Consistency – Patterns or symbols that help users navigate a system by appearing in the same places again; for example, the home icon.

## The Poka-Yoke Principle

Poka-Yoke, often known as mistake-proofing, was created by Toyota industrial engineer Shigeo Shingo. By imposing limitations on the user's freedom of action & presenting alternative suggestions, it aids in the prevention of elementary mistakes. This issue arises in interface design when users make unexpected or incorrect usage of a system. The user interface can prevent an inappropriate activity & provide alternative courses of action, such as in the case of an error message. The idea is to keep people going in the right path so they can reach their objective.[14]

## 5. History Of Interaction Design

Midway through the 1980s, Bill Moggridge and Bill Verplank came up with the phrase "interaction design," although it wouldn't become widely used for another decade. Verplank claims that the concept of user interface design, originally from computer science, was simply applied here. This was an improvement in Moggridge's eyes after he had first used the term "soft-face" in 1984 to characterize the introduction of industrial design into software-based products. Two of the first projects in the creation of interactive technology include the Visible Language Workshop, started by Muriel Cooper at MIT in 1975, and the Interactive Telecommunications Program, started by Martin Elton and subsequently managed by Red Burns.

The Master of Design in Interaction Design program at Carnegie Mellon University was the first of its type when it was established in 1994. The program's initial focus was on digital interfaces; later, it shifted to the "big picture" elements of interaction between individuals, groups, cultures, services, and systems.[15]

In 2005, the Computer-Related Design MA program at London's Royal College of Art (RCA), founded by Gillian Crampton Smith and directed by Anthony Dunne, was rebranded as Design Interactions. Crampton Smith played a pivotal role in the 2001 founding of the Interaction Design Institute Ivrea (IDII) in the Italian city of Olivetti. Due to financial difficulties, IDII discontinued operations in 2007, at which time many of its colleagues founded the Copenhagen Institute of Interaction Design (CIID) in Denmark. After their success at Ivrea, Crampton Smith and Philip Tabor decided to bring their expertise in Visual and Multimedia Communication to the University of Venice in Italy, where they developed a focus in Interaction Design (IxD) as part of the curriculum. The Swedish Foundation for Strategic Research founded the Interactive Institute in 1998 to do research on interface design.[16]

## 6. Interaction Design Concepts

- **Goal-driven design:** Why does your site or interaction exist? Figure it out and make sure your application does this one thing exceptionally well.
- **Interface as magic:** You don't even really see the best interfaces. "The best interaction designs
- **Don't exist:** they don't take a long time to load/respond; they don't make users think; and they don't give user's cause for grief."
- **Usability:** "Interfaces which make the state of the underlying system easy to understand and use are favored."
- **Affordances:** "The best (industrial/interaction) designs are those that speak for themselves; in which, as the saying goes, form follows function."



- **Learnability:** “A great deal of what comprises a usable interface is made up of *familiar components*. ... The best interaction designers don't reinvent the wheel every time a similar design challenge comes. Rather, they call upon a set of patterns.”

## 7. Animation Tools For UI Designers

What, then, do UI designers utilize to generate such stunning and useful animations? There is presently an abundance of high-quality UI animation solutions and applications to choose from. Here is a summary of the three most well-liked entry-level UI animation tools:

### Adobe after Effects

Adobe after Effects is a highly sought after and very effective UI animation application. After Effects is the gold standard animation tool and visual effects program, and it allows you to add hundreds of different effects to your projects. Everything from animated logos to motion graphics (with audio!) is doable with this program. What's even better? Integration with other Adobe products, like as Portfolio, Fonts, and XD, is smooth.[17]

### Motion.UI

When it comes to user interface animation tools, Motion UI is the fresh face. Motion UI provides over 20 pre-made animations and transitions to help you get started fast, but you can also make your own from scratch. It's easy to prototype thanks to the included code instruction for the animations.

### Flinto

Animated prototype maker Animating applications and webpages with smooth transitions is a breeze using Flinto. It's easy to use, works with popular design programs like Sketch and Figma, and provides helpful previews so you can see how your animations will appear to the end user even before you finish making them.[18]

## 8. Early HCI

Human-Computer Interaction (HCI) focuses on the study and improvement of how humans interact with digital devices. Since the early 'man computer symbiosis' envisaged by Licklider in 1960, the area of research has evolved into a synthesis of a number of different scientific ones. Ergonomics, physiology, and applied psychology all contributed to the human aspect of HCI. The goal of ergonomic design is to make machinery user-friendly for the widest possible audience. The challenges of making machinery usable by people with limited sensory and motor abilities give rise to human factors, which is related but distinct.[19]

In the 1950s, a more experimentally-oriented field concerned with human information processing and performance emerged from the intersection of concepts from communications engineering, linguistics, and computers. The use of humans to operate computers posed additional challenges in areas such as cognition, communication, and interaction. This study was first used in military and large-scale industrial control systems using mainframe computers with limited input and output capabilities. Simultaneously, cognitive psychologists focused on how people learned to use these and earlier CBT/CAI systems, how knowledge was transferred, what was represented in people's heads, and how well they performed. Studies of "Man-Machine Integration" emerged in the 1960s in response to the proliferation of microcomputers and time-sharing systems; subsequent contributions from the fields of computing science, software engineering, and information and systems science steered HCI research toward desktop computing and its attendant issues. [20]

## 9. Conclusion

When it comes to animation, interaction design is crucial since it greatly improves the user experience and engagement across a wide range of media platforms. New possibilities for creating interactive and immersive narratives are opening up for animators and designers as technology develops. This not only meets the needs of the ever-changing tastes of the audience, but also provides new opportunities for creative storytelling and business models.

Video games, online apps, and augmented reality experiences are just a few examples of the kinds of engaging and interactive media made possible by the complementary fields of animation and interface design. These advancements have broadened the animation industry's scope, allowing it to better meet the needs of the modern digital era.

In addition, the animation business has benefited from the user-centered approach of interface design, which has increased accessibility and inclusion. It has also made it easier to include social and collaborative features, which has helped users feel more connected and encouraged them to communicate with one another.

Interaction design is becoming more crucial in the animation business. The industry as a whole will keep looking into new technologies, expanding the limits of what can be done in terms of narrative and user involvement. The success of the animation business will hinge not just on the quality of the animation itself, but also on how well the accompanying interactive features and user experiences work. To this end, interaction design has been a driving force in the animation industry's progress, helping to keep animated material not only visually appealing but also interesting and timely for today's viewers.

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