Design Thinking Approaches in IT Projects

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Design thinking in IT uses the designer's sensibility and methods to define and match people's needs with what can be converted into technical innovative solution that will have a value for the customers and market opportunity. The article presents a design thinking process and it's stages.
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Introductory part. Nowadays, the IT industry in Ukraine is particularly important, because despite the general economic and political crisis, it is able to develop rapidly, ensuring the functioning of other related industries. The IT sector of Ukraine continues to grow at a higher pace than the country's economy as a whole, and in 2017 IT market grew by 20%, and in 2018 it is expected to reach 30%. IT services in 2017 ranked 3rd in the export of services from Ukraine, and according to the results of the first half of 2018, they became the second largest export service sector (more than 20% of all services) [1].

Despite the spectacular growth, the Ukrainian IT market continues to remain globally small at around 1% of the global rate. Therefore, breakthrough ideas are needed in order to ensure the further growth of the IT market in Ukraine. Nowadays our companies starts to deviate from outsourcing, offering customers innovative turnkey products and ready-made solutions for business tasks [2].

In the last decade, the success of innovation throughout the world (and not only in IT) is facilitated by design-thinking - a methodology for solving engineering, business and other tasks, which is based on a creative, not only analytical approach that allows to create human oriented services and products [3].

The development of the concept of design thinking, based on the interdisciplinary approach, was started by B. Fuller, and developed by scientists from various fields of science: R. McCim, G. Simon (first doctrines of design thinking: rapid prototyping and testing through product user monitoring), D. Norman (user-oriented design), V. Papanek, B. Lawson, N. Cross, D. S. Mellon, R. Buccanevent, S. Johns, E. Sanders, R. Martin and others. Today, leading international companies such as Facebook, Google, Apple, Samsung uses design thinking to create innovations. Also it is taught at the best business schools and universities in the world, including Stanford [3-4]. Design thinking in Ukraine is still not used enough, so the purpose of this article is to describe the approaches of using this methodology in IT projects, in particular, in Web-projects, products of which are websites, at the stage of designing web-design.

Main part. Nowadays, the profession called "web designer" has been transformed and acquired a new name and meaning: "UI / UX designer", which means - a specialist designing user interfaces. UX (user experience) and UI (user interface) are two different design directions (user experience from product work and visual product appearance) whose creation tasks are closely interrelated and therefore performed by a single versatile specialist.

According to design thinking UI / UX design specifics [5], designers needs to understand the theory of color, typography, composition, ergonomics of the site (principles of usability, convenience and rules of usage of interface elements), as well as the basics of marketing, business analysis, psychology.

For more effective communication with developers it would be a benefit for designer if he have HTML / CSS skills and basic knowledge, understanding of JavaScript and frameworks. However, the first and most basic skill in part of the UI is to master the graphic editor, the most popular of which is Sketch, Figma, Adobe Creative Suite (Adobe Illustrator, Adobe Photoshop, Adobe After Effects), Principle, Zeplin. In our opinion, Zeplin is the best tool for UI designers and front-end developers to collaborate between each others. It extends beyond the design and prototyping process and helps teams to transfer a design.

All needed annotations are automatically added to projects (sizes, colors, fields, and even CSS-instructions for certain elements). It creates an online space, and the entire team can use it for their work. Zeplin allows UI / UX designers to download their own wireframes or visual design projects directly from Sketch / Figma / Adobe Illustrator and add them to their own project folders.

When an IT company starts working on a project, before starting the product development and implementation phase, there is a complex processes of researching the target audience, determining the required functionality, building information architecture, developing an ideological concept, designing the interface, prototypes of the finished product, testing them. etc [6].

The design-thinking process structures the initial work on an IT project and consists the following steps [3-4]:

1. Empathize (research, empathy) - communicating with potential audiences or the market for better understanding user`s needs and desires. For an IT project, it is very important to consider this project from the business point of view of (Stakeholder Interview), analyze competitors' on the market, build a business model and think about how will users find out about your product (the first stages of Userflow).

2. Define - approximation of clarity based on the previous stage in order to create meaningful and precise formulation of the existing problem in order to determine who the product is being developed for and which features and capabilities should it have.

This is a step in deeper analytics: creating a POV (point of view) - a main message that describes user needs. It is necessary to find patterns, to eliminate obvious deviations, to identify contradictions. So at this stage personas should be created - detailed, realistic, generalized character of the target audience of the project, the creation of Empathy Map and User Journey Map (UJM) - a tool for visualizing user interaction with the product using the model "AS IS".

3. Ideate (idea formulation) is a mode of design process in which everything should be concentrated on the ideas generation. This phase exists in order to move from identifying problems to creating solutions for users by using the method of brainstorming. At this stage, the sketch of the future product and the User Journey Map model ("TO BE") are also being developed.

4. Prototype (prototype creation). For the high quality prototype, its development should include the following steps: 1) wireframe - a low-detailed design representation that roughly visualizes the user interface and includes an information architecture; 2) mock-up is a medium or highly detailed static representation of the design that visualizes the content and demonstrates the functionality; 3) an interactive, clickable prototype - an interactive model of a product, created by using wireframes or mock-ups. In the early stages, you should create such prototypes, which can be done quickly and cheaply, but at the same time fror which you can get helpful feedback from users and colleagues, and use this feedback to improve the product.

5. Test. This stage provides feedback from the target audience about prototypes created in the project and about what their next iterations should be. Unlike the empathy stage, the problem is specified by the user's POV.

Conclusion. Design Thinking is a design methodology that involves a decision-based approach to problem solving. The value of design thinking approaches for modern business in IT is that the design research allows you to identify, interpret, and visualize information in a form that is accessible for further communication to all stakeholders.

The design-thinking methodology was used in the design of the House Save project. This is an innovative IT project about creation of an online service and mobile application to improve communication between ACMB residents and their administration. The main functions of this service are: administrative panel for the head ACMH, built-in messenger, online voting, utilities payment, payment history, the latest news feed and more. In the future, it is planned to add the function of video conferences with the aim of facilitating the process of attending the assembly by ACMB members.

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