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DesignDAO – Concept of a Decentralized Autonomous Organization for Managing Human-Centered Design

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ABSTRACT

The DesignDAO is a concept of planning, conducting and auditing Human-Centered Design (HCD) through a Decentralized Autonomous Organization (DAO). Human-Centered Design is commonly executed by multidisciplinary teams of skilled experts in the fields of psychology, design and IT amongst others. The activities of HCD – process planning, context analysis, requirements engineering, prototyping and evaluation – result in several defined work packages for each project. Each work package requires a certain mix of skills, found in different individuals. A DAO distributes decision-making, management, and entity ownership amongst the organization's community. The concept of the DesignDAO describes how HCD work packages can get organized, managed and controlled in a decentralized, autonomous fashion.

Keywords: Design thinking, Web3, Blockchain, DAO, Metaverse, Smart contracts, Human-centered design

INTRODUCTION

Human-Centered Design (HCD) is a design approach that puts the human and their needs, their specific context and tasks at the center of the design process (ISO 9241-210:2019). In most cases, HCD is managed and primarily executed either by specialized service providers or by internal corporate teams and can lead to game-changing results. Like any design methodology, HCD has its limitations. Besides common time and budget constraints, the primary limitations include (van Velsen et al. 2022):

- Agency problem: In most cases, HCD is led, performed or at least supported by an external party (usually a specialized agency) with its own business interests. Therefore, the agency is primarily interested in ongoing and growing business relationships and inherently continuous project execution with their clients. Everything else, even the quality level of HCD execution, comes secondary.
- Low maturity: The Nielsen Norman Group describes 6 stages of user experience (UX) maturity (Pernice, 2021), from stage 1 (absent) to stage 6 (user-driven). Even in cases, where HCD is performed internally, just 17% of organizations rate themselves higher than stage 4 (Sauro et al. 2017).

It may well be assumed that these organizations have their key competencies in other areas and see HCD as interchangeable way amongst many for innovation and product creation.

- Limited user representation: HCD relies on user research to inform design decisions, but it is hard to institutionalize mandatory user involvement in the design process and it can be difficult to gather representative samples of users, especially for marginalized or underrepresented groups (Sauro et al. 2017).
- Bias: HCD assumes that researchers can accurately identify user needs, but the researchers themselves may bring their own biases and assumptions to the process (Thomas, 2020).
- Ethical considerations: HCD can lead to unintended consequences or negative impacts on users, particularly when designing technology with the potential to be used in ways the designer did not anticipate (van Velsen et al. 2022).

A DAO, or Decentralized Autonomous Organization, is a way to organize people and processes that is run by a set of rules encoded into smart contracts on a blockchain network. It is designed to operate without the need for a central authority or intermediary and is instead governed by its members through a set of pre-defined rules. These rules can include conditions like how decisions are made, how funds are managed, and how new members are added (Faqir-Rhazoui et al. 2021).

The question is, how a DAO might help to address these limitations of HCD. In order to answer this question, the methodology of lean experiments is used. A lean experiment aims to validate concepts in real-life settings to iteratively improve or pivot its realization (Ries, 2011). In preparation of the lean experiment, the basic concept of a Human-Centered Design DAO, introduced as "DesignDAO", is outlined. The objective here is to provide an initial framework of the DesignDAO for actual application.

CHARACTERISTICS OF THE DESIGNDAO

The concept of the DesignDAO describes how the process and tasks of HCD get organized, managed and controlled in a DAO. It aims to provide a decentralized and transparent way for an organically growing group of individuals and systems to come together and make decisions about how to allocate resources for planning and executing Human-Centered Design. The key characteristics of the DesignDAO to improve HCD include decentralization, transparency, flexibility and autonomy.

Decentralization

As any DAO, the DesignDAO operates through a decentralized governance model, meaning that decisions are made by its members rather than a central authority (Chohan, 2017). This could lead to a more inclusive and diverse design process, as more voices and perspectives are represented in decision-making. In a traditional centralized organization, decisions are made by a

small group of individuals or a single authority. However, in a DAO, decision-making power is distributed among all members, who are able to vote on proposals and make changes to the organization's rules and operations. It can also enable the participation of a wider range of stakeholders, such as users and community members, in the design process.

Transparency

DAOs operate on a blockchain, which provides a transparent and immutable record of all transactions and decisions (Morrison et al. 2020). This could make it easier for designers and stakeholders to track the design process, gather feedback from users and make changes to the design based on actual user needs. Transparency can also provide more accountability in the design process, as all members have access to the organization's records and can track the progress of proposals and decisions. It allows for better understanding and communication between all the stakeholders involved in the design process and can also enable more effective collaboration and feedback-gathering. Additionally, transparency can also lead to more trust and confidence in the design process, as users can see the steps being taken to address their needs. This can help increase user engagement and participation in the design process, leading to more human-centered solutions.

Flexibility

Flexibility in the DesignDAO can help improve HCD by allowing for customization of the design process and governance structure to suit the specific needs of a project, such as the user demographics, the design goals and the business objectives. The DesignDAO's smart contracts can be programmed to adapt to different scenarios and conditions and allow for more experimentation and iteration in the design process, as changes can be made quickly and easily, without the need for a central decision-making authority. This can lead to more innovative and human-centered solutions, as designers can test different options and gather feedback from users in real-time. Additionally, flexibility can also provide more scalability and adaptability in the design process, as the governance structure and design process can evolve over time as the project or organization grows and evolves.

Autonomy

The DesignDAO operates through smart contracts, that automate certain tasks and processes. This frees up designers to focus on more creative and strategic work, rather than administrative tasks. Autonomy in the DesignDAO can help improve HCD by giving users and stakeholders more control over the design process and decisions. The DAO's voting and decision-making mechanisms can ensure that the design process is truly human-centered, as the needs of users are reflected directly in the design decisions. Autonomy can also help to ensure that the design process is inclusive and equitable, as all stakeholders have an equal say in the design process. This can help to ensure that the design process is accessible to marginalized and underrepresented groups and that their needs are considered equally. Additionally, autonomy

can also provide more accountability and transparency in the design process, as all members have access to the organization's records and can track the progress of proposals and decisions and can also enable more effective collaboration and feedback-gathering.

FRAMEWORK OF THE DESIGNDAO

The characteristics of the DesignDAO are general and conceptual. In the following, its framework is described in more detail, focusing on its workflow, the roles of the community, their incentive model and the distinction of the DesignDAO to existing centralized solutions.

Workflow

Anyone can become a member of the DesignDAO with the initial role of a visitor. The role allows access to the public community channels. With this role, a member can go for another role, for example provider and/or principal. A client (principal role) offers a project that requires one or more HCD activities to the DesignDAO community and sets the project budget. Individuals or groups, skilled in one or more areas of HCD (provider role) apply to the task and the principal reviews their profiles and references. Having agreed on conditions, briefings and acceptance criteria, the parties sign the project's smart contract, the project budget is locked in a separate digital wallet of the DAO and the project is about to start. Acceptance criteria address quality standards for the execution of HCD activities but also refer to overarching principles such as Circular Design, highlighting possible unintended consequences or potential negative impacts on users. HCD has a certain scope of activities and accordingly defined methods and work packages. For many work packages, the involvement of users (members with the role user) is mandatory and part of all DesignDAO's smart contracts to ensure correctly planned HCD.

The project starts and the service providers commence their work. After each milestone as well as at the end of the project, the work gets reviewed by a combination of client and independent jury (other DAO members with the juror role) and if the delivery is satisfactory, payment is released from the wallet. If rework is needed, the client provides a list of necessary improvements. In case of disagreements, community members with the mediator role take over the communication and review the situation. Once a milestone or project is successfully delivered, all involved parties receive a defined split of DesignDAO tokens (ĐDT). The primary purpose of these tokens is for governance of the DAO but may also be used as a means of transaction and store of value.

Distinction from centralized services

Today, a common way to hire people via the internet happens through online marketplaces for freelance services, like Fiverr or Upwork, on the one hand. These marketplaces are centralized and function as a matchmaker between service provider and client. The marketplace charges fees for connecting the parties and has the interest to constantly grow its own business. In contrast,

the DesignDAO does not require a central authority for managing this connection. Here, the community members, who are involved in a project that is handled through the DesignDAO, earn ĐDT for successful transactions.

On the other hand, traditional headhunters or recruitment agencies earn money by bringing together clients and service providers. Their broker role is in most cases highly renumerated through one-time provisions or constant commissions e.g. as percentage on top of a day rate of a service. The client usually pays the commission and the service provider earns less than what the client is agreeing to pay as sum total. In the DesignDAO, this matchmaking is not compensated as it's an underlying function of a community network. Here, client and service provider agree on a price for a service where payment equals the value received.

Community roles

The DesignDAO is also not to be mistaken with a design agency or other third-party service provider. Instead, it is a community that includes all stakeholders that are needed to create a human-centered solution. Besides the roles visitor (anyone), provider (highly skilled individuals or groups, specialized in certain HCD activities, like user research or prototyping or requirements engineering) and principal (representative of the client) there are further key roles to be mentioned:

The role "user" is a collection of very diverse individuals with certain demographic profiles that are available, e.g. for contextual inquiries, observations or evaluations. Each project has a different set of "target user groups" and can benefit from suitable existing community members with the role user or recruit and add individuals to the DAO community.

Another key role is that of the expert. Just like with the user, this role is a collection of specialists from very different fields of expertise. Dependent on a project, an expert can be similar to an actual user or function as advisor for technical specificalities. For example, a very technical project context like gene editing, orbital aircrafts or cybersecurity usually requires domain specialists to gain understanding and these experts should be consulted by the providers for knowledge gathering, in addition to actual user involvement.

Further roles are the ones of the juror, auditor and the mediator. The juror is similar to a peer reviewing party in an academic publishing process, deciding on the acceptance of a delivery together with the client – usually in a voting power weight split of 74.9% jurors to 25.1% principal. This role reduces the dependency of a provider towards the goodwill of a single principal. The auditor's task is to oversee the adherence of planning and executing activities to the HCD standard. Despite being written as fixed parts of the smart contract and being a prerequisite for accepting a delivery through the client and juror, the auditor ensures no deviation from the HCD standard. Although all conditions are set in the smart contract, disagreements may appear between parties, in which case the role mediator gets involved as neutral third party who facilitates communication and negotiation between the disputing parties. The aim of this role is to reach a mutually acceptable resolution to the conflict or disagreement.

Any member can have multiple roles. For example, a member can be provider for one project and principal for another project. There is no account split between the "vendor" and "client" sides. For example, an individual may have a principal role (offering projects), an expert role (due to his or her technical background) and juror (for other projects due to technical background or experience).

Incentive model

Before the launch of the DesignDAO, a token sale of ĐDT takes place to cater for the initial budget of the DAO. These tokens are used to represent ownership and voting rights within the DAO. ĐDT holders can use their tokens to vote on proposals and make decisions that shape the direction of the DAO. They will be able to propose and vote on changes to the token issuance, usage, incentives, and other aspects of the token economics. They can also use their tokens to access certain features or services within the DAO's ecosystem. Token holders are incentivized to hold and use their tokens by receiving rewards for participating in the DAO's decision-making process and contributing to the growth of the ecosystem. These rewards can be in the form of new tokens, discounts on services, or other incentives. The DAO may buy back tokens from the market and "burn" (delete) them, reducing the overall supply of tokens. This can be used to increase the value of remaining tokens and reward early adopters.

All members get incentivized for doing business via the DesignDAO: The monetary flow of the project's payment is separate from the token issuance. For example, a service as requested by the principal is successfully delivered by the provider and the previously agreed sum of 1.0 ETH is transacted without DAO fees from the locked DAO wallet to the provider. In addition, however, both parties earn ĐDT in relation to the transaction amount of 1% each of the market value. Assuming the asset pair ĐDT:ETH exchange rate is currently 1000, each party get issued 10 ĐDT from the DAO. Other involved roles, like users, jurors, auditors or eventually mediators get tokens issued as defined in the smart contract of the specific project.

CONCLUSION

The DesignDAO might help to address the limitations of HCD at the following aspects:

The DesignDAO is not to be mistaken as substitute for a third party service provider but is an integral entity connecting all stakeholders that the HCD standard refers to: Domain experts, users, researchers, designers, developers and business people. The relationship between community members is based on proven professional respect. The decentral structure can lead to a more inclusive design process and decision-making. It is a multi-stakeholder organization blending the distinction between client and service provider and therefore does not lead to the agency problem.

Ensured by its smart contracts, the juror setup and HCD auditor roles, the DesignDAO facilitates everything that is necessary to realize the highest level of UX maturity (level 6): "User-driven" (Pernice, 2021). As this organization

is built for managing HCD, the development of a design solution – whether internally or externally commissioned – fulfils the requirements of that level and reduces the need for other organizations to raise their own HCD maturity.

Users are a part of the DesignDAO community. Thus, the "user" is not a third party to get analyzed but integral part of the endeavor itself. Users with very different backgrounds and characteristics are part of the DesignDAO with the incentivized self-interest to participate in the product creation. The flexibility in the DesignDAO comes in handy for identifying suitable user demographics for each project. Gathering representative samples of users is made easier.

Critical paths in HCD, such as building a point-of-view based on contextual analysis, is dependent on human interpretation of data. A peer review approach of research results is part of DesignDAO's juror-based acceptance of deliveries. The transparent nature of a DAO also caters for a higher level of accountability of contributors, as all community members can track the progress of proposals and decisions. In addition, avoiding unintended consequences or negative impacts on users is a fixed part of the acceptance criteria of a project. Biased opinions of researchers and other individuals are therefore mitigated.

Besides the location-agnostic global nature of the DesignDAO, another aspect needs to be mentioned when improving the scalability of HCD: Some activities, such as text content creation, aesthetics and visual design exploration are already effectively performed by artificial intelligence (AI) tools. In preparation for further improvements in the field of AI, a growing number of HCD tasks can be automated. Therefore, AI tools can be an executing party of the DesignDAO and function as community member soon.

As mentioned above, the DesignDAO framework is subject to get thoroughly tested through lean experiments. During this phase and afterwards, it is important to continuously evaluate and improve the DesignDAO, its smart contracts, and the decision-making process. This can be done through regular audits, community feedback, and by updating the smart contracts as needed.

It is worth noting that while a DAO could potentially offer the mentioned benefits for HCD, it is still a relatively new and untested type of organization in that field. More research and experimentation are needed to understand how DAOs can be effectively used to support the design process.

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