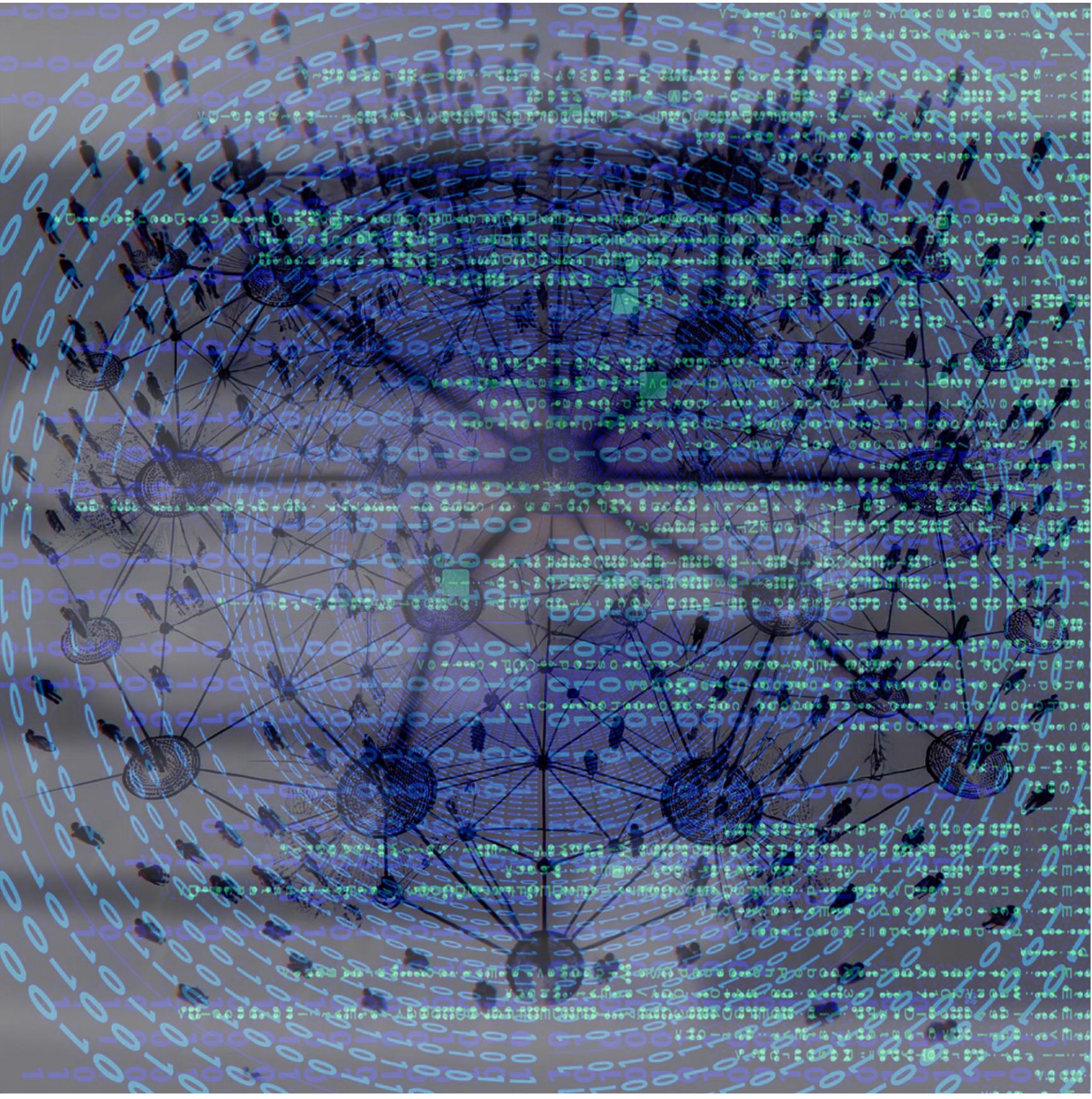

Managing DAOs for collective and distributed architectural design projects: The case of the ArchiDAO Evolo Skyscraper Design Competition

ABSTRACT

The Architecture, Engineering and Construction (AEC) industry, traditionally characterized by hierarchical structures, is undergoing a transformation driven by technological advancements. Despite these innovations, many global companies in the industry have retained their conventional organizational and governance frameworks. This study investigates the potential of Decentralized Autonomous Organizations (DAOs) to introduce a bottom-up management approach in the ACE industry, focusing on their transformative impact on architectural design methodologies.

The research addresses a significant gap in the literature regarding the management and governance frameworks necessary for effective collaboration and distributed architectural design within DAOs. The study employs an extended single case study methodology, utilizing semi-structured interviews, ethnographic observations on Discord and Telegram, and a comprehensive literature review. The case study centers on ArchiDAO, the first architect-founded DAO, and its participation in the Evolo Skyscraper Design Competition 2024.

ArchiDAO's innovative vision and task-based model are examined to understand how DAOs can manage collective and distributed architectural projects. Key findings reveal that DAOs can enhance project management through transparent and decentralized decision-making processes, equitable reward systems, and advanced communication tools. However, challenges such as role ambiguity, inconsistent task completion, and limited blockchain utilization were also identified.

This study's outcomes highlight the effectiveness of DAOs in promoting decentralized leadership and collaboration, reflecting practices observed in young architectural collectives. These collectives, often formed in response to traditional top-down approaches, emphasize multidisciplinary and non-hierarchical structures that align with the principles of DAOs. The research contributes to the adaptability of architecture firms in the evolving AEC industry by providing insights into the integration of decentralized models for more effective and inclusive project management.

Keywords: Decentralized Autonomous Organizations (DAOs), architectural design, blockchain, leadership, collaboration, project management, young collectives

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List of Abbreviations

AEC: Architecture, Engineering and Construction

DAO: Decentralized Autonomous Organization

P2P: peer-to-peer

DAPO: Decentralized Autonomous Project Organization

ECM: extended case method

1.0 INTRODUCTION

Historically, the Architecture, Engineering and Cnstruction (AEC) sector has functioned through a top-down, hierarchical organizational structure. In many multinational corporations, the basic organizational and governance structures have not changed much despite notable technical breakthroughs in recent years. This static approach has prompted the exploration of alternative models such as Decentralized Autonomous Organizations (DAOs), which promise a bottom-up management style that could revolutionize the industry. DAOs, enabled by blockchain technology, present an innovative method for managing collective and distributed architectural design projects.

1.1 Introduction

The ACE industry has always been characterized by its top-down field structure. Despite major technological advancements, particularly in the realm of digital design and construction technologies, the industry's organizational and governance structures have remained resistant to change. DAOs offer a potential shift towards a bottom-up management approach, leveraging blockchain technology to facilitate decentralized decision-making and collaboration. This study aims to explore how DAOs can effectively manage collective and distributed architectural design projects, offering a new perspective on organizational dynamics within the ACE industry.

1.2 Problem statement

The emergence of Web 3.0 technologies, specifically blockchain, holds the potential to completely transform conventional architectural design methodologies. DAOs, which operate independently without centralized authority, represent a significant development in this field. However, there is still a substantial gap in research regarding the management and governance frameworks necessary for effective collaboration and distributed architectural design within the context of DAOs. This unaddressed gap hinders the full realization of DAOs' potential to revolutionize architectural practices.

1.3 Societal and scientific relevance

This study holds paramount scientific significance by delving into the transformative intersection of Web 3.0 technologies, specifically blockchain, and architectural design methodologies. By exploring the emergence of DAOs, the research contributes to the ongoing scientific discourse on the potential paradigm shift in organizational structures. The critical examination of current literature reveals a noteworthy gap: while DAOs have evolved into a

significant organizational type, traditional architectural firms persist in adhering to hierarchical models. The research aims to bridge this gap by addressing the unexplored realms of management and governance frameworks crucial for effective collaboration and distributed architectural design. This investigation offers a comprehensive understanding of the operational dynamics of blockchain in business models, the complexities of project management in a DAO, and the potential benefits and drawbacks of integrating DAOs into architectural projects. This inquiry contributes not only to the specific domain of architectural design but also to the broader scientific exploration of blockchain's transformative potential in diverse professional landscapes.

On a societal level, this study is profoundly relevant as it addresses the evolving nature of the AEC industry and its potential impact on the workforce and collaborative practices. The persistence of a top-down approach in an industry undergoing substantial technological changes raises societally pertinent questions about adaptation and innovation. By proposing the introduction of DAOs as a bottom-up management approach, the research presents a potential transformation in organizational structures that could extend beyond the AEC industry to influence broader societal discussions on corporate governance. Furthermore, the study's exploration of decentralized governance structures and cutting-edge technologies, such as blockchain, highlights their potential societal implications. It offers architects, especially those in their early careers, opportunities to harness the transformative potential of DAOs in cooperative architectural design projects, paving the way for innovation in the rapidly changing landscapes of digital design and decentralized governance. In doing so, the research becomes a catalyst for societal advancement by encouraging the exploration of new routes and methodologies in professional collaboration.

1.4 Research questions

This research aims to answer the following main question:

How can DAOs facilitate the effective management of collective and distributed architectural design projects?

To answer this question, several sub-questions need to be addressed:

1. **What does leadership look like for a DAO?**
    - This question explores the nature of leadership within DAOs, considering how decentralized structures influence leadership roles and responsibilities.

2. What motivates architects to join a DAO?

    - Understanding the motivations behind architects joining DAOs can provide insights into the appeal and potential of DAOs in attracting talent and fostering innovation.

3. How do DAOs influence project outcomes in architectural design?

    - This question investigates the impact of DAOs on the success and quality of architectural projects, assessing how decentralized management practices affect project execution and results.

By addressing these questions, the study aims to provide a comprehensive understanding of the potential of DAOs to transform the AEC industry, offering practical insights and recommendations for implementing decentralized organizational models in architectural practice.

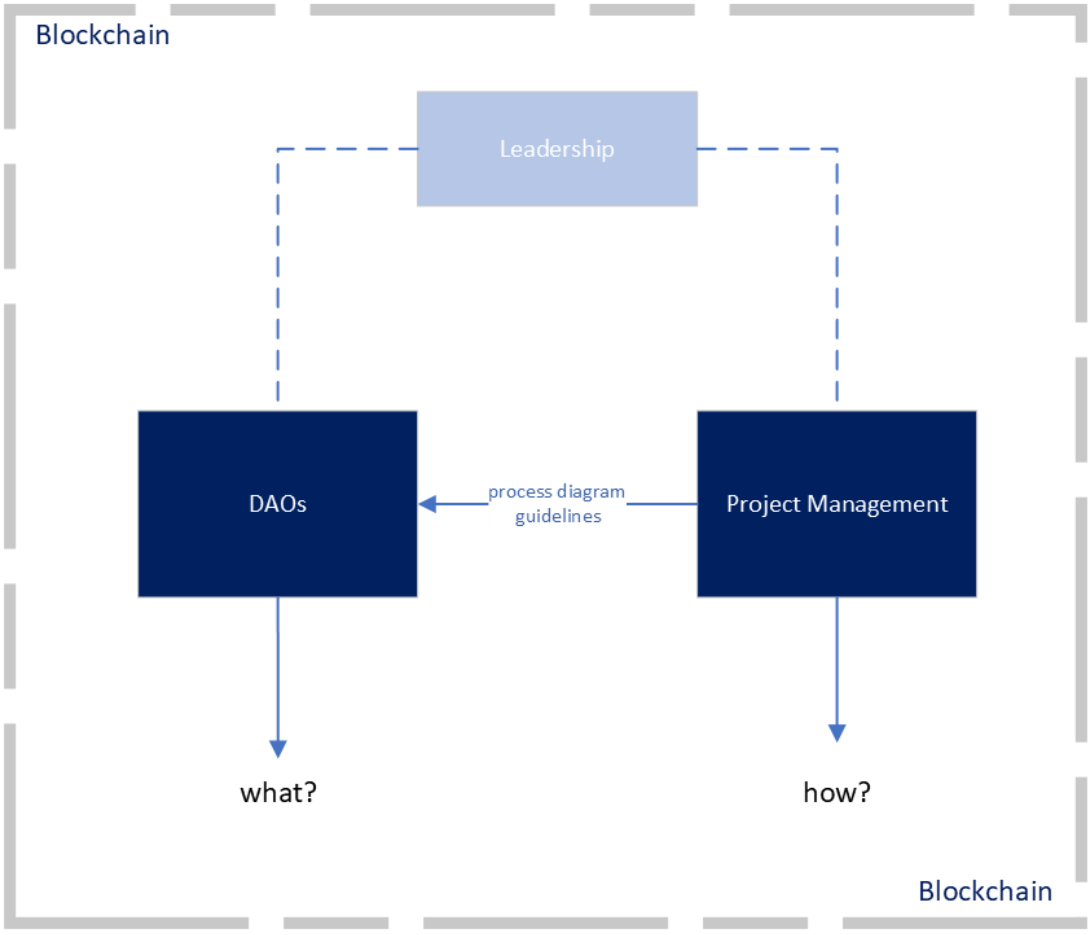

Figure 1: Conceptual framework

This conceptual model illustrates the interaction between Leadership, DAOs and Project Management within a blockchain framework. It shows how these elements collaborate to improve architectural project outcomes.

Leadership plays a crucial role in guiding and bridging DAOs and project management, ensuring effective integration and strategic direction. It connects with both DAOs and project management to foster collaboration and provide oversight. DAOs utilize blockchain for decentralized, automated project management and collective decision-making, enhancing transparency, accountability, and reducing hierarchical barriers. Project Management, on the other hand, is responsible for managing project planning, execution, and monitoring to ensure timely and budgeted completion. It adopts best practices from DAOs to improve transparency, collaboration, and decentralization.

Blockchain integration provides a secure, transparent environment for DAOs and project management. This integration ensures immutable record-keeping, enhancing trust and accountability. The process diagram and guidelines represent the flow of information and best practices between DAOs and project management, streamlining project management processes and maximizing the benefits of decentralized governance.

In summary, the model highlights the synergy between leadership, DAOs, and project management within a blockchain framework to achieve efficient and effective architectural project management.

2.0 THEORETICAL BACKGROUND

This chapter provides a comprehensive analysis of the foundational concepts and theories that underpin this research. It begins with an exploration of Decentralized Autonomous Organizations (DAOs) and blockchain technology, examining their potential to transform traditional organizational structures and project management practices within the Architecture, Engineering and Construction (AEC) industry. The discussion then shifts to different forms of leadership, highlighting how emerging leadership models contrast with traditional hierarchical approaches. Additionally, the chapter dives into the role of young collectives in the AEC industry, illustrating how these groups embody innovative and collaborative practices. By synthesizing these perspectives, this chapter aims to identify the existing gaps in research, paving the way for a deeper understanding of how DAOs can revolutionize architectural design and project management.

2.1 Decentralized Autonomous Organizations (DAOs) | Blockchain

DAOs have yielded a growing body of literature. However, there is still a lot of uncertainty about the organizational design and theoretical conceptualization of DAOs. The pioneers of DAOs set out to create organizations that could function without the need for traditional managers and hierarchical structures. They envisioned a system in which these roles would be replaced by automated tasks governed by smart contracts embedded in blockchain protocols.

According to Wang et al. (2019) blockchain integrates distributed data storage, timestamp, consensus algorithm, asymmetric encryption, has the characteristics of decentralization, immutability, and auditability, and thus can realize information transmission and value transfer safely and effectively. In essence, DAOs are blockchain-based organizations that rely on virtual open networks of contributors, who are frequently cryptocurrency investors. Decentralized governance and management are used by these organizations, which are governed by automated rules embedded in smart contracts stored and executed on blockchains.

DAOs are the result of two overarching transformations: changes in digital platforms and the rise of decentralized organizations, as well as advancements in information technologies that enable new sociomaterial entanglements. All DAO members have the opportunity to participate in collective decision-making and investment decisions. In addition, these organizations operate autonomously, aided by a peer-to-peer (P2P) contributor community, and employ off-chain democratic rules and direct voting processes that prioritize

transparency and token incentives over bureaucratic systems. As a result, DAOs are a hybrid of machine and human governance.

One of the primary goals of DAOs is to reduce opportunism through the implementation of a "complete contracting model." This model automates and enforces agent relationships, lowering transaction costs and removing hierarchical structures. Notably, DAO contributors hold cryptocurrencies and tokens, blurring the lines between ownership and management.

Spychiger et al. (2023) suggests that blockchain-supported project management through a Decentralized Autonomous Project Organization (DAPO) could have significant implications for the future of project management. It provides a fully working blockchain-supported decentralized application for project management, gathers important experimental data on how participants react to a blockchain-supported project management environment, and analyzes the implications of the use of blockchain technology on traditional project management through well-assessed project management principles. The research also suggests that social aspects like team and management factors gain importance, while structural-related aspects like the objective and procedures of projects seem to remain unchanged. Therefore, organizations may need to consider adopting more decentralized and team-oriented approaches to project management in the future.

Based on the literature, the following characteristics of DAOs are being summarized:

1. *Smart contract*: At least some governance aspects (e.g., decision-making, contract executions) of the DAO should be encoded and autonomously executed if triggered (on-chain governance).

2. *Public/Permissionless Blockchain*: A DAO needs to be based on public and permissionless blockchain.

3. *People interaction*: A DAO needs to coordinate some sort of human interaction in a decentralized and autonomous manner. This implies that human interaction should be based on smart contracts on a public blockchain.

4. *Token*: A DAO should have a token that represents a share in the organization and can be used to vote on proposals or to receive rewards.

5. *Decentralized governance*: A DAO should have a decentralized governance structure that allows for democratic decision-making and avoids centralization of power.

6. *Transparency*: A DAO should be transparent in its decision-making and operations, with all transactions and proposals visible on the blockchain.

7. *Autonomy*: A DAO should be autonomous in its decision-making and operations, with minimal human intervention.

8. *Openness*: A DAO should be open to anyone who wants to participate, with no barriers to entry or exit.

Furthermore, DAOs currently lack a specific legal status, raising concerns about how nation-states will incorporate them into their legal and commercial frameworks. Many jurisdictions and countries consider DAOs to be alegal, which means they lack legal responsibilities or obligations, making accountability difficult. Regardless of legal ambiguities, DAOs have the potential to transform labor and incentivize voluntary work within decentralized P2P communities, effectively eliminating traditional managers and hierarchies. Cryptocurrency investments and token-based reward systems motivate contributors.

According to Hassan and De Filippi (2021) the discussion on whether a DAO should be recognized as a legal person has important implications in the legal field, as it can determine the extent to which a DAO can be considered as a separate legal entity from its human actors, and therefore the extent to which these actors can be shielded from the liabilities of the DAO. Scholars in politics and ethics have emphasized how DAOs can have a positive impact on human rights and contribute to organizational transformation, which is often linked to notions of technological utopianism and digital democratization. The public conversation around DAOs has changed from defining DAOs as a technological solution to a governance problem to a discussion on how DAOs may transform the nature of economic and political governance in general.

The main characteristics of DAOs as described in scholars are:

- Distributed and Decentralized
- Autonomous and Automated
- Organized and Ordered

The following table gives an overview of the most important roles in a DAO and demonstrates the goals and tasks that each one of them has:

Role	Goal	Task
Founder	disseminate the idea / attract new investors	whitepaper / define governance and functioning rules
Investor	profit through DAO	active contributors to the DAO governance / collective decision-making
Developer	create, maintain, and enhance the organization's smart contracts and technical infrastructure	creating, deploying, and developing the DAO whitepaper rules in a smart contract
Miner	earn rewards in the form of cryptocurrency for their computational efforts	validate and record DAO members' interactions within the organization

Table 1: Role distribution in DAOs

According to Dounas et al. (2020) "The DAO acts as the stakeholder who sets the design problem" and "any stakeholder can participate through their own Ethereum address and stake tokens towards desirable outcomes". This means that DAOs can be used to facilitate collaboration and decision-making within a decentralized architectural design project. Additionally, they state that DAOs are currently useful for design governance, but they are not yet appropriate for iteratively exploring engineering or design performance issues. . The authors suggest that while DAOs can be useful for setting a general direction for the design project, they may not be as effective for the actual act of designing itself. Additionally, DAOs can enable non-expert participants to participate in the governance of the design project without eroding the knowledge and decision-making capacity of the experts.

The article presents several advantages of using DAOs for architecture projects include:

- Facilitating collaboration within large groups

- Allowing non-expert participants to participate in the governance of the design project
- Providing a decentralized and transparent decision-making process

But also points out disadvantages of using DAOs for architecture projects that include:

- May not be as effective for the actual act of designing itself
- DAOs are still far from being suitable for iterative exploration of issues of engineering or design performance
- The need for technical expertise to participate in DAOs may limit participation to a certain group of people.

In conclusion, it is established that DAOs leverage blockchain technology, smart contracts, and decentralized governance to enhance transparency and reduce hierarchical constraints. However, several critical areas require further investigation. Specifically, the practical effectiveness of these theoretical advantages in real-world applications, particularly within the AEC industry, needs to be examined. Furthermore, research should address the integration of human factors, the impact of decentralized decision-making on project outcomes, and the legal implications of DAOs. This sets the stage for an empirical study on the practical application of DAOs in architectural project management.

2.2 Hierarchy | Leadership

Koyama (2022) describes leadership roles in DAOs and gives further explanation why it is impossible for them to operate with the absence of it. Characteristically it is being mentioned that projects have leaders, and they should. In BanklessDAO, they refer to these leaders as project champions. They are usually the authors of the proposal and must give an account of the progress and expenditures of that project. While it's popular to describe DAOs as leaderless, it does not mean that there are no leaders because there are many. It simply means that no singular leader controls the community. DAOs are networks of nodes, and it's not inappropriate for each node to have a person uniquely accountable for its internal operations. The freedom for participants is that they are free to write their own proposals, start their own teams, or leave an existing group if they find it no longer beneficial. That means that in DAOs leadership does and should exist, but the new era of leadership is yet to be explored and determined.

Decentralized governance structures, unlike traditional ones, are a novel phenomenon lacking established institutions and techniques to fulfill their unique requirements, with their relative lack of regulation potentially benefiting their short-term finances but hindering effective governance. Additionally, in situations with high expropriation risks, decentralized networks are preferred due to the inherent protection they offer to member investors. When facing high heterogeneity, easily adaptable centralized platforms tend to support efficient contracting.

The implementation of "soft" decentralized governance within blockchain platforms can enhance decision-making and coordination among network participants by nudging them towards favorable equilibria, though this effectiveness is limited, as blockchain networks can still split based on community support. Rather than assigning decision rights, soft governance merely distributes nudging rights among participants. Furthermore, current decentralized governance struggles to address incentive problems adequately. Ex post alignment is relatively basic compared to mechanisms such as stock ownership and options in traditional corporations. Coins or tokens, commonly used in decentralized networks, are considered insufficient for aligning incentives, as they can be freely sold, and founders may have incentives to diversify their holdings. (Koyama et al., 2022)

The paper of Tyssen et al. (2013) describes leadership in temporary organization and although temporariness is not a vital characteristic of DAOs, the baseline of his theory could be implemented in the case of decentralized organizations. In temporary organizations, leaders can distribute their power by implementing shared or revolving leadership models, enabling the team to work on tasks without being limited by the formal authority of one person. This approach allows for a more collaborative and inclusive decision-making process. Additionally, leaders can also consider the phenomenon of distributed leadership, where leadership responsibilities are shared among team members, enabling a more decentralized approach to decision-making and problem-solving. However, it's important to note that in most forms of temporary organizations, there is typically one formal leader who is ultimately responsible for the outcome.

Shared leadership is a critical aspect that warrants further study in relation to DAOs. The concept of shared leadership, as opposed to traditional hierarchical leadership, aligns well with the principles of DAOs, which emphasize decentralization and collective decision-making.

"Shared leadership promotes flow in a number of ways, e.g., by reducing competition (within the team), decreasing worry of failure, and even making the task become autotelic" (Hooker and Csikszentmihalyi, 2003). This indicates that shared leadership fosters a collaborative and less stressful work environment, essential for creativity and productivity. By distributing leadership responsibilities, organizations can create a culture of mutual support and shared accountability. In addition, Greenberg and Walt (2001) imply that shared leadership will be the dominant style of leadership in the future since it will be necessary to meet more expectations than any one person can handle on their own. Thus, the increasing complexity of organizational environments necessitates a shift from traditional, hierarchical leadership to more flexible, shared leadership models, allowing for diverse expertise and perspectives in decision-making processes.

Another paper discusses that "Co-leadership celebrates not just the few charismatic leaders that are articulating the vision of the organization but those who do the real work" (Heenan and Bennis, 1999), which highlights the importance of recognizing and valuing the contributions of all team members. Co-leadership helps bridge the gap between top executives and other employees, fostering a more inclusive and collaborative organizational culture. Furthermore, Fletcher and Käufer (2003) mention that "The third shift is leadership as learning, which implies a collective learning process that concerns the whole group". This perspective views leadership as a dynamic and collective process, emphasizing continuous learning and adaptation. It supports the idea that leadership is not a static position but an evolving role shared across the organization.

Another opinion supports that the shift from traditional, hierarchical leadership to more collaborative forms, enhancing decision-making by involving diverse perspectives could be achieved: "The traditional top-down leadership is a leadership style that has dominated the leadership field. However, there are many theories concerning different forms of collective leadership, for example, theories about shared leadership, co-leadership, distributed leadership, team leadership, and small numbers at the top" (Backström, Granberg & Wilhelmson, 2008).

As notably mentioned: "Shared leadership is the future model of leadership because there will be greater demands on the leadership that not one individual can be able to cope with alone. Decision-making is getting more complex, and as Mintzberg (1983) states: 'The more complex the environment, the more decentralized the structure'" (Greenberg and Walt,

2001). This underscores the necessity of shared leadership in complex environments, enabling organizations to respond effectively to change and complexity.

In summary, shared leadership offers a promising model for DAOs by promoting collaboration, reducing stress, and enhancing decision-making processes. The shift from traditional hierarchical leadership to more flexible, distributed models aligns well with the decentralized nature of DAOs. By embracing shared leadership, DAOs can leverage diverse expertise, foster a supportive culture, and adapt more effectively to complex and dynamic environments. This approach not only enhances organizational performance but also supports a more inclusive and engaging work environment for all members.

2.3 Young collectives

Young collectives in the AEC industry utilize a semi-centralized or collective consensus decision-making approach, fostering a democratic and collaborative environment. They embrace innovation and creativity, readily adopting new ideas and technologies, which allow them to push the boundaries of architectural design. Communication within these collectives is informal and leverages modern digital tools, facilitating quick and dynamic interactions. In addition, members typically form project-specific teams based on interest or expertise, promoting adaptability and continuous learning. While maintaining moderate transparency, they balance openness with privacy needs. Accountability is enforced through peer pressure and mutual respect, although this can sometimes challenge consistent commitment and quality.

The #OcupeEstelita movement is a prime example of how grassroots activism can inspire young architects to form collectives. According to Bruno de Albuquerque F. Lima & Fernando Diniz Moreira (2023), "The #OcupeEstelita movement left a significant legacy in Recife, Brazil, including the relatively unnoticed inspiration for young architects to organize themselves into urban collectives. These groups sought to explore new forms of action and new territories through emerging collaborative practices such as tactical urbanism." This movement illustrates how young collectives can challenge traditional top-down approaches by addressing local urban issues collaboratively.

Moreover, architectural collectives often adopt a non-hierarchical, multidisciplinary approach. Lima & Moreira (2023) note, "Collectives stand out for their multidisciplinary and horizontal approach, challenging hierarchical structures and not depending on institutional

representations such as companies, civil organizations, or social movements." This flexibility enables them to address urban challenges innovatively and inclusively, fostering a sense of community and shared responsibility.

The Praias do Capibaribe collective demonstrates the potential of young collectives in promoting environmental awareness and community engagement. Lima & Moreira (2023) describe it as "a collective dedicated to transforming urban space through art and ecocitizenship. Its primary goal is to re-establish the connection between the population and the rivers, as well as their banks, in a city that has historically neglected its water bodies." This focus on reconnecting residents with neglected urban waterways highlights the role of art and ecological initiatives in driving urban revitalization.”

In the face of global challenges, the need for adaptive and responsive design approaches in architecture is more critical than ever. Antonini, Gaspari & Visconti (2021) emphasize, "The current multifaceted crisis has highlighted again the close entanglement of the Earth system with its human inhabitants...This requires an updated responsive capacity in planning, designing, and living in our built environment." Young collectives in the AEC industry are well-positioned to lead this shift, incorporating sustainability and resilience into their projects to address contemporary environmental and societal issues.

Experiential learning models are also crucial for young professionals in the AEC industry. Antonini, Gaspari & Visconti (2021) state, "Experience-based models also allow them to better address the societal and cultural issues involved in decision making." These approaches enable young professionals to engage directly with real-world challenges, fostering a deeper understanding of the societal and cultural dimensions of their work, and encouraging innovative, context-sensitive solutions.

In summary, young collectives represent a novel approach to project management in the AEC industry, situated between traditional corporate structures and the fully decentralized nature of DAOs. Their flexibility, collaborative decision-making, and openness to innovation make them uniquely suited to address the complex and dynamic challenges of modern urban environments.

2.4 Identifying the gap

There are several limitations in the current studies and gaps that have being identified so far. In the paper of Arruñada and Garicano (2018) it is noted that decentralized governance is a new phenomenon and that neither currently available institutions nor organizational techniques suit the demands of decentralized governance. Therefore, it is suggested that we should not be too harsh when judging the current state of decentralized governance in blockchain networks and instead pay more attention to its ability to improve over time and evolve solutions to its current problems.

Moreover, several challenges that DAOs are currently facing can be distinguished, such as security issues, unclear legal status and technical limitations. There is need for further research to be conducted on several case studies to find out and determine new processes that can accommodate these organizations in terms of management and leadership.

When it comes to DAOs and decentralized techniques, the AEC industry today confronts a notable lack of thorough study. This indicates a lack of systematic academic and industry-specific research, impeding the industry's capacity to fully realize the potential of blockchain-based, transparent, and collaborative platforms such as DAOs. The low adoption of decentralized techniques in the AEC industry shows that just a few forward-thinking firms or projects are actively investigating the use of DAOs and other comparable technologies. Nonetheless, the research deficit and underutilization provide an opportunity for future investigation, information distribution, and the creation of novel approaches to improve the AEC area and the project management through these emerging technologies.

3.0 RESEARCH METHODOLOGY

This chapter aims to explain and dive into the methodology of the research. It presents the different methods that are used to answer the research question and explores the data collection and analysis, while presenting the ethical considerations of the study.

3.1 Research design

The research design for this research employs a qualitative, extended single case study approach, integrating mixed methods including literature review, ethnographic observation, and semi-structured interviews. This methodology is chosen to thoroughly investigate the complex phenomena of DAOs in the AEC industry, particularly focusing on collective and distributed project management.

Qualitative research is well-suited for this study due to its emphasis on understanding the meanings, experiences, and social contexts of the participants involved in DAOs. According to Fossey et al. (2002), qualitative research aims to develop an understanding of the meaning and experience dimensions of humans' lives and social worlds. This focus is crucial for illuminating participants' subjective meanings, actions, and social contexts. The methodologies associated with qualitative research, such as ethnography and narrative approaches, are designed to provide deep insights into social phenomena by exploring the meanings attributed to situations and actions by the people involved (Fossey et al., 2002).

The extended case method (ECM), as elaborated by Burawoy (1998), addresses challenges of representativeness and reliability by emphasizing depth and contextual understanding over statistical representativeness. ECM relies on continuous dialogue and reflexivity between the researcher and participants, allowing the research to adapt to emerging insights. This method captures the dynamic nature of social life through a flexible and iterative approach, integrating local social processes with broader social forces. This approach is particularly useful for understanding the complex, evolving nature of DAOs.

Burawoy (1998) notes that "living in the time and space of those one studies makes it difficult to fit the world into a predefined template," highlighting the importance of flexibility in research design. The ECM enhances reliability by grounding findings in lived experiences and reconstructing theory based on field interactions. This iterative and adaptive research design is ideal for capturing the nuances of DAOs in the AEC industry.

3.2 Case selection

ArchiDAO is the first DAO founded by architects for architects. (ArchiDAO, 2024) Their vision is to use blockchain technology and a web 3.0 native approach, to push the boundaries of the AEC industry. The primary goal of ArchiDAO is to provide web3 integrated blockchain and metaverse solutions. Furthermore, they value project first approach which distinguish them from a token-first strategy. At the same time, they prioritize the inherent worth of each project, emphasizing quality work and successful outcomes. In recognizing and rewarding the team members, ArchiDAO operates on a task-based model, appreciating individual contributions to their collaborative and task-oriented work culture. In their journey, ArchiDAO actively explores novel mechanisms and strategies that bridge the gap between the physical and digital realms. This commitment ensures that they remain at the forefront of innovation, seamlessly integrating new approaches to enhance collaboration and connectivity in the work processes.

ArchiDAO has already completed several projects and has recently undergone a major clean-up and redesign of their website and Discord app, simultaneously a new project has begun a few months ago the, as called, *Evolo Skyscraper Design Competition 2024*.

The *Evolo Skyscraper Design Competition 2024* is an on-going project from ArchiDAO that started in October 2023 and to finished in March 2024. The competition is held by *eVolo Magazine* and has invited participants to design a skyscraper and consider technological advancements, explore sustainable systems, and adopt innovative urban and architectural methods. These measures aim to address contemporary urban challenges, such as the scarcity of natural resources, inadequate infrastructure, rapid population growth, pollution, economic disparities, and unplanned urban sprawl.

The timeframe of the project considered to be one of the most important factors for its selection as the case study of the research. An opportunity to monitor people's behavior throughout a process and to also evaluate the outcome is provided because of this timeframe and the fact that an on-going project is being examined and not a completed one. The next chapters then explain how the data from this project were collected and analyzed.

3.3 Data collection

As mentioned, there are different methods used for the study, each which serves a different purpose. First, the extensive literature review aims to explore the concepts of DAOs and

Blockchain. In that way, the theoretical background is being formulated and the research gap is being identified. Furthermore, a case study of a single on-going architecture project by a DAO is selected, as a means to recognize how project management looks like in these organizations. There are three different instruments that the research will use to collect data from this project and analyze them.

To begin with, ethnographic observations in Discord are being recorded, as the first step to dive into the case study. Discord is an online platform, used by ArchiDAO to share voice, video, and text chat within the members of the DAO involved in the project. To further collect data of the project and how people are working on it, it was vital to participate as an observer to meetings of the project team. The process that was followed incudes taking notes during the online meetings, without participating in any other way.

To continue with, contextual semi-interviews were conducted. Semi-structured interviews are particularly beneficial since the loose structure allows the interviewee to elaborate on different concepts, thereby allowing for the aggregation of rich data advantage (Howitt & Cramer, 2011). An interview protocol was formed for this purpose and is presented on the Appendices of this paper. After a first interview with one of the founders of ArchiDAO there were two formal rounds of the interviews conducted with members of the project and the interviews with founders of ArchiDAO. The interviewees are the project team, consisting of five (5) people and two (2) founders / key-persons of the organization. The first round took place during the process of the design competition and the second one after the submission of the project. In this way, the data were collected in two different phases of the process and can be better evaluated.

3.4 Data analysis

An inductive approach was followed for the analysis of the observations and interviews, providing flexibility in the final interpretation (Burnard et al., 2008). The first step in the analysis involved formulating open codes and categorizing them based on the research sub-questions. The following table presents the open codes that were used:

Category	Codes
Leadership	mentor, role, leader, team, member, initiative
Motivation	feelings, behavior, reward, goals

Management	governance, structure, collaboration

Table 2: Open Codes

The interviews, online meetings, and Discord and Telegram discussions were transcribed as the next step. These transcriptions served as the source for the further formulation of closed codes, which were then analyzed using Atlas TI. The analysis involved deriving word clouds, and graphs for each research question based on the main themes that emerged from the observations. Specific quotes that provided rich context were also extracted from the interviews and the data from Discord. By analyzing these data, the research aimed to derive findings and conclusions that could answer the main research question and sub-questions, followed by translating these insights into practical implications and guidelines.

3.4.1 Interview content and questions

The semi-structured interviews were conducted in two rounds, focusing on different aspects of the project and the involvement of the members in ArchiDAO.

The first round aimed to gather background information and initial impressions about the project. Participants were asked to describe their academic background and career so far, their current role in ArchiDAO, and how they started working there. They were also asked how and why they decided to join the Evolo Skyscraper Project and their thoughts on how the project was progressing. Specific tools, methodologies, or platforms used to coordinate and track project progress were discussed, along with any decision-making challenges and their impacts on the project. Insights were sought on how project roles and responsibilities were assigned, how the team adapted to changes or unforeseen challenges, and examples of conflicts and their resolutions. Finally, participants were asked to describe their overall experience of working on this project and in a DAO.

The second round was conducted after the project's completion to reflect on the outcomes and gather deeper insights. Participants were asked to reflect on the overall outcome of the project and whether they felt they fulfilled their wishes and expectations. They were prompted to identify any aspects of the project they would change or approach differently and to discuss their comfort working in an open environment like Discord, as well as the advantages and disadvantages of such an environment. The necessity of moving communication to Telegram and the effectiveness of integrating Blockchain technology into the project were also explored. Participants were asked if they would be interested in

participating in a project using blockchain if they had to train for it first. The potential effectiveness of a voting system based on work completed to resolve conflicts over design decisions was discussed, along with the necessity for the team to have a leader or supervisor. Finally, lessons learned, specific changes or improvements for future projects, and reflections on their contributions were examined to determine whether the project achieved its intended goals and objectives.

The interviews with the founders included questions tailored to their broader perspective. They were asked about the extent of ArchiDAO's involvement in the Evolo Skyscraper Project and their roles or contributions. The progress of the project, aspects that went well, and areas for improvement were discussed. In addition, specific challenges or conflicts and how they were addressed were explored, along with the decision-making mechanisms or processes in place. The effectiveness of project management and coordination, allocation of roles and responsibilities, and the communication channels utilized during the project were also discussed. Founders were asked to identify the project's main strengths and weaknesses and propose changes or adjustments for future projects. Finally, they shared their views on how blockchain could facilitate overall project management and optimize decision-making, as well as what motivates young architects to join a project in ArchiDAO.

3.4.2 Interview coding and analysis

The coding process began with open coding, where initial categories and concepts were identified from the interview transcripts. These codes were then refined and categorized into broader themes relevant to the research questions. Closed coding was subsequently employed to further analyze the data, focusing on specific themes such as leadership, business models, and the advantages and disadvantages of DAOs. The use of Atlas TI allowed for detailed analysis word clouds, and graphs, helping to identify key patterns and insights. Specific quotes were extracted to provide contextual richness and support the findings.

3.4.3 Observations on Discord

Observations on Discord provided insights into the real-time interactions and dynamics within ArchiDAO. These observations highlighted how communication, collaboration, and conflict resolution occurred within the team. The open and accessible nature of Discord facilitated transparent communication but also posed challenges related to managing information flow and ensuring effective collaboration.

3.4.5 Observations on Telegram

The shift to Telegram for certain communications was driven by the need for more private and streamlined interactions. Observations on Telegram focused on how this platform was used to manage critical discussions and decision-making processes. The transition underscored the importance of choosing appropriate communication tools to balance openness with the need for efficient and secure information exchange.

4.0 FINDINGS

The findings chapter presents an in-depth analysis of the Evolo Skyscraper Design Competition as undertaken by ArchiDAO. This chapter describes the case study and provides a detailed exploration of the findings from observations on Discord and Telegram, as well as insights gathered from semi-structured interviews with project participants. Key themes that emerged from the data include leadership dynamics, blockchain integration, and conflict resolution within the decentralized team structure. These findings highlight both the innovative potential and the practical challenges of employing DAOs in the management of collective and distributed architectural design projects.

4.1 Case study

ArchiDAO stands as a pioneering force within the AEC industry, driven by a vision to integrate cutting-edge Web 3.0 and blockchain technologies. Founded with the ethos of being "by architects, for architects," ArchiDAO aims to challenge and redefine the traditional boundaries of architectural practice in both physical and digital spheres.

ArchiDAO's mission is to harness the potential of Web 3.0 technologies to foster a transformative impact on the architectural landscape. Their objectives are multi-faceted, focusing on:

- *Innovative Integration*: Demonstrating novel ways to integrate blockchain technology with established architectural practices.
- *Community Building*: Creating a vibrant, engaged community of architects and technologists who collaborate and exchange ideas within a decentralized framework.
- *Practical Application*: Translating theoretical research into real-world applications that demonstrate the practical benefits of blockchain in architectural design.

ArchiDAO operates with a clear focus on project-first initiatives, avoiding token-centric models in favor of substantive architectural contributions. This approach ensures that every project under their banner not only pushes the envelope in terms of design and technology but also adheres to their foundational principles of innovation and utility. They promote a task-based reward system, which incentivizes members to produce high-quality work collaboratively. The team at ArchiDAO is composed of forward-thinking design technologists who share a deep passion for both architecture and urban development. Their diverse expertise allows ArchiDAO to drive significant innovations, merging architectural design with

digital technologies to create immersive, integrated experiences. The members of the team involved in the Evolo Skyscraper Competition were predominantly from Iran, with one member from India, highlighting the international and collaborative nature of the DAO.

The 2024 Evolo Skyscraper Competition, hosted by eVolo Magazine, is a prestigious global contest that invites architects, students, engineers, designers, and artists to redefine skyscraper design. This annual event encourages the exploration of novel technologies, materials, and organizational strategies to address critical issues like urban sprawl, pollution, and resource scarcity. Participants are challenged to conceptualize skyscrapers that not only enhance the urban fabric but also adapt responsively to the environment and community.

As participants in the 2024 competition, ArchiDAO embraced a multidisciplinary approach, leveraging its unique structure of decentralized guilds. The team, consisting of architects collaborated intensively to explore innovative solutions. Despite challenges such as time constraints and technical issues during virtual meetings, the team maintained a high level of motivation and commitment throughout the project's lifecycle. Team meetings were scheduled weekly primarily held over Zoom, where members discussed progress, brainstormed ideas, and resolved challenges. These meetings were crucial for ensuring all voices were heard, facilitating a democratic approach to decision-making. This inclusive strategy was evident in the design process, which involved collective voting and allowed every member to express their opinions freely.

From the beginning of their participation in October 2023, the team's communication took place on platforms like Discord and later expanded to include Telegram. This multi-platform engagement helped accommodate the growing team and the intensifying pace of work as the project progressed. The main design phase kicked off in November, culminating in the team's official registration for the competition in mid-December. Despite the enthusiastic start, the team faced some internal tensions and coordination issues as the project deadline approached. Some members were less responsive or unable to complete their tasks, which necessitated reallocation of responsibilities to keep the project on track. Participating in the Evolo Skyscraper Competition provided ArchiDAO with a valuable platform to apply and showcase its innovative blockchain-integrated architectural solutions. The experience highlighted the potential and challenges of working within a decentralized organizational structure like a DAO in high-stakes, creative competitions. Despite the hurdles, the team's ability to adapt and reorganize effectively was a testament to its resilience and commitment to pushing the boundaries of architectural design.

This case study not only illustrates the capabilities of ArchiDAO in navigating complex design challenges but also serves as a reflective lens on of decentralized models in managing ambitious architectural projects.

4.2 Project timeline

This chapter presents a detailed timeline of ArchiDAO's participation in the Evolo Skyscraper Competition, underlining key milestones and events that defined the team's journey. It also delves into the team dynamics, decision-making processes, and challenges encountered, providing a thorough understanding of the project's development phases and internal operations.

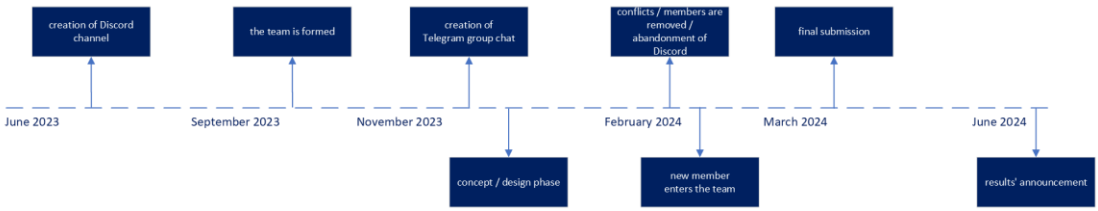

Figure 2: Project timeline

June 2023: Creation of Discord Channel

The project initiation was marked by the creation of a Discord channel on June 24, 2023, which facilitated initial communications and the gathering of team members.

September 2023: Team Formation and Project Kick-off

By September, the team was formally assembled, and structured project activities began. This period was crucial for aligning goals and setting the project's direction.

November 2023: Concept and Design Phase

Intensive design sessions led to the creation of the Telegram group chat, enhancing communication as the concept phase reached its peak. This phase was critical for consolidating the design ideas and preparing for the final submission.

February 2024: Introduction of a New Team Member and Resolution of Conflicts

A new member joined the team on February 10, bringing fresh perspectives amidst ongoing conflicts and the resolution of internal disagreements. During this time, significant shifts in team communication occurred, including the abandonment of the Discord channel due to conflicts and the move to alternative communication methods.

March 2024: Final Submission

The team submitted their final project on March 12, 2024, culminating months of hard work and collaboration.

June 2024: Announcement of Results

The competition results were announced on June 11, 2024, marking the end of the project timeline.

4.3 Significant incidents

This chapter describes the pivotal incidents that shaped the trajectory of ArchiDAO's participation in the 2024 Evolo Skyscraper Competition. By examining these significant events and their implications, we gain a deeper understanding of the challenges and milestones that characterized the project. Quotes from Discord, Telegram, and interviews are integrated to provide firsthand insights into the team's experiences.

1. Conflict with Inactive Member: One of the most significant incidents involved a team member who stopped contributing to the project, creating tension and additional workload for the remaining members. As one member expressed, “He has to do it and he has to do it right. If not, I would have it removed. It's taking our time. We just need to figure out why we say 'removal.'” This situation not only delayed the project but also caused frustration and stress among team members, who had to redistribute tasks and ensure the project's continuity.

2. Challenges with Scheduling and Communication: The team faced ongoing challenges in scheduling meetings and ensuring consistent communication. Despite plans for weekly Zoom meetings, issues such as internet connectivity and differing time zones often disrupted these sessions. One member noted, “It seems we are having unnecessary unwanted issues in setting up meetings. We will set the calendar beforehand from now onwards.” This highlighted the need for more robust scheduling tools and clear communication protocols to facilitate smoother coordination.

3. Technological Barriers in Iran: The use of Discord as a primary communication platform posed problems for members based in Iran, where accessing the VPN was necessary but difficult. A member commented, “The application Discord is not good for us in Iran because sometimes it’s winter and we’re trying to access the VPN, and it’s difficult for us.” This led the team to switch to Telegram, which was more accessible and reliable for Iranian members, ensuring better participation and information sharing.

4. Shifts in Team Dynamics and Role Adaptation: Throughout the project, there were shifts in team dynamics, especially as members had to adapt to changing roles. This flexibility was crucial when certain tasks were not completed as expected. One member shared, "I had to stay up until 3am in the morning and worked on it." This adaptive approach, while effective in meeting deadlines, also underscored the need for more precise role definitions and reliable task completion from all members.

5. Decision-Making and Consensus Challenges: Decision-making within the DAO often required balancing diverse opinions and reaching consensus. This was particularly evident during the design phase, where different viewpoints had to be reconciled. A member stated, "At first, we had different opinions… I tried to logically convince them that this model is better." Such discussions were critical in ensuring that the final design was a product of collective input, though they also sometimes led to conflicts and delays.

4.5 Main findings

4.5.1 Codes

The use of Atlas.ti software to analyze the qualitative data gathered from ArchiDAO's communications and interviews has produced a rich set of codes, each representing key themes and insights that emerged during the research. This section will describe the significance of these codes and how they relate to the broader dynamics of the project.

Figure 3: Code cloud from Atlas TI

Accountability: Refers to the responsibility of individuals or teams to complete their tasks and duties as agreed upon, ensuring that all actions are tracked and verifiable. In the context of DAOs, accountability is crucial for maintaining trust and ensuring that all members contribute fairly to the project.

Blockchain: This code reflects discussions and references to the use of blockchain technology within the project. It highlights both the potential and the challenges of integrating this technology in architectural design and project management.

Traditional: This contrasts with modern or innovative practices, indicating moments where traditional methods or approaches were discussed, either as a point of comparison or a challenge to overcome.

Challenge: Captures instances where team members or the project faced obstacles. This code is crucial for understanding the barriers to DAO implementation in complex projects.

Collaboration: Signifies the efforts to work cooperatively within the team, highlighting how team dynamics played out in practice and the importance of teamwork in achieving project goals.

Communication: A critical theme, pointing to discussions about how team members exchanged information, the effectiveness of these communications, and the problems encountered.

Community: This code refers to the sense of community within the team or the broader community's involvement or impact on the project.

Conflict: Identifies points of disagreement or discord among team members, crucial for understanding interpersonal dynamics and decision-making processes.

Deadline: Related to specific time constraints that the project had to meet, reflecting the pressure on the team to deliver outputs on time.

Decision: Captures moments of decision-making, illustrating who made decisions, how they were made, and their impact on the project.

Delay: Refers to any postponements in the project timeline or tasks, highlighting issues in project management and scheduling.

Differences: Notes the diversity within the team, including differing opinions, backgrounds, and approaches to work, which influenced project outcomes.

Different People: Focuses on the individual contributions and roles within the team, underscoring the diverse human resources involved in the project.

Effective: Marks discussions about what strategies or methods were effective or successful, offering insights into best practices.

Feelings: This personal code captures the emotional aspects of team interactions, providing a deeper understanding of team morale and personal experiences.

Freedom: Often related to the autonomy individuals had within the project, reflecting on the decentralized nature of DAOs and its impact on team dynamics.

Great Quotes: Highlights particularly insightful or impactful statements made by team members, which encapsulate significant themes or lessons.

Help: This code captures instances where team members sought or offered assistance, underscoring the collaborative spirit and mutual support that are crucial in decentralized teams.

Honest: Highlights moments of transparency and openness within team communications, which are essential for building trust and integrity in decentralized operations.

Improvements: Refer to the suggestions and changes proposed or implemented to enhance the efficiency, effectiveness, and overall functioning of the DAO. These improvements can relate to processes, tools, governance, communication, and member engagement.

International: Reflects the global nature of the team, noting the challenges and benefits of working across different time zones and cultural contexts.

Leadership: Identifies leadership actions and styles within the team, crucial for understanding how leadership functions in a DAO and its impact on project outcomes.

Management: Focuses on the management practices and challenges faced by the team, providing insights into the effectiveness of various management approaches in a decentralized setting.

Meetings: Captures details about regular team meetings, including their frequency, effectiveness, and the issues discussed, highlighting their role in coordinating a complex project.

Metaverse: Relates to discussions or plans involving virtual environments, emphasizing the innovative aspects of the project and the team's forward-thinking approach.

Mistake: Marks acknowledgments of errors or missteps within the project, providing learning points and reflections on the project management process.

Motivation: Concerns the factors that drove team members to contribute to the project, vital for understanding engagement and commitment in a volunteer-based or decentralized structure.

Pressure: Reflects the stress and urgency often felt by team members, especially as deadlines approached, impacting their performance and well-being.

Problems: Identifies specific issues encountered during the project, from technical challenges to interpersonal conflicts, crucial for diagnosing areas for improvement.

Process: Refers to the methodologies and procedures followed by the team, offering a look at the operational framework of the project.

Progress: Tracks advancements and milestones within the project timeline, helping gauge the pace and direction of project development.

Relationship: Captures the dynamics between team members, critical for assessing the social and professional bonds that influence project success.

Roles: Focuses on the specific functions and responsibilities assigned to team members, shedding light on role distribution and its effectiveness.

Rules: Relates to the guidelines or protocols established by the team, indicating how rules facilitate or hinder project execution in a decentralized framework.

Skills: Highlights the competencies and expertise brought by various team members, underlining the importance of skill diversity in tackling complex projects.

Stress: Marks the tension and strain experienced by team members, often related to project pressures, deadlines, and personal expectations.

Time: Concerns the management of time resources, reflecting on the efficiency of the project scheduling and time allocation practices.

Together: Emphasizes the collective efforts and unity of the team, crucial for understanding the collaborative ethos of the DAO.

Tools: Focuses on the technological and methodological tools utilized by the team, highlighting their role in facilitating project tasks and communication.

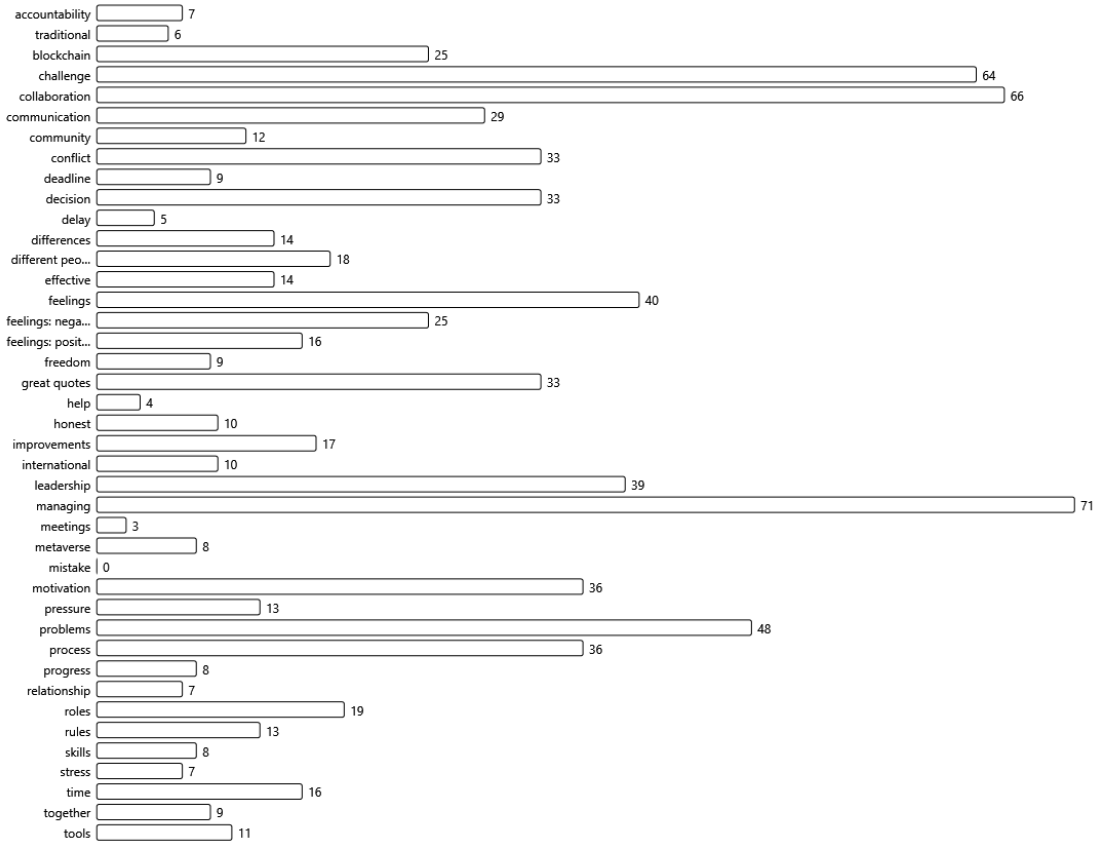

Figure 4: Bar chart of codes' frequency from Atlas TI

4.5.2 Summary table of findings

The following table serves as a qualitative snapshot that captures the essence of each theme through impactful quotes. The addition of quotes brings the data to life, providing context and depth that help in understanding the dynamic interactions and experiences within the ArchiDAO project. This enhanced table offers a more comprehensive summary that can be useful for discussions, presentations, and further analysis. The chapter will then go into detail regarding the findings from the interviews and the observations.

Category	Codes	Quotes
Collaboration	help, teamwork, collaboration	“We had a lot of our programs in this project and we try we really try to help each other and I think that we did it good” “And it was a great opportunity for me. So I just joined happily.”
Communication	communication, meetings, effective, international	“Are we going to create a new board at Miro for brainstorming and discussion? Last time, I find it very useful.” “We all are busy working within our own careers and projects so this is why we are starting it six months earlier.”
Conflict	conflict, differences, stress, relationship	“I felt so angry from other people and I was like, is that so hard for you to do this or to do that?” “Although we might think different about each other because some of us were so relaxed. Some of us were hard working like me, some of us were like, … is a hard worker and he also had stress as well.”
Decision-making	decision, leadership, rules	“And please stop working or sharing in the very last moments. We are a team and we have to talk about the process during the week not just last day before our sessions or during the session itself.”
Management	managing, process, progress, deadline, delay	“So, in this project, I decided to divide all the responsibilities.” “At first, we had different opinions… I tried to logically convince them that this model is better.”
	conflict, stress, relationship	“Everyone is trying to be the boss, the one who is leading and just taking everything.”
	leadership, freedom, roles	“There shouldn't be difference between founders and regular members, because then it would dictate some kind of hierarchy.” “Everything must be shared here. No private sharing.”
Motivation	motivation, pressure, feelings	“Guys, I do not know if you all can feel the thrill that I am feeling. It is going to be a mountain of work to achieve.” “I like to be active. I like to see different people, different cultures, different countries. That's

		what I really love about projects and about working with different people."
Tools	tools, metaverse	"We used more, we pretty much like to upload the files, we used Google Drive and Miro board and certain kind of usual means." "For example, about blockchain and NFT, we can make the projects and the FFT and use it. And there is a good point that about the blockchain is that the information will not never die."
Community	community	"I think that ArchiDAO is a kind of community where a lot of people from different countries are working together." "For example, India, Bangladesh. I think they had a collaboration with Hong Kong. It was a professor at Hong Kong. And the head of the workshop was really different from different places."
Skill Development	skills, mistake	"I think that ArchiDAO is a kind of community where a lot of people from different countries are working together." "For example, India, Bangladesh. I think they had a collaboration with Hong Kong. It was a professor at Hong Kong. And the head of the workshop was really different from different places."

Table 3: Summarized findings

4.5.3 Observations on Discord and Telegram

This section presents the findings from observations on Discord and Telegram, started in November 2023 and completed after the project's submission in March 2024.

From the onset, it was clear that certain leadership roles were established to manage scheduling and processes. At the same time, motivation and enthusiasm were evident among the members, especially at the beginning of the project. As one participant mentioned, "*And we will make it a perfect experience. Like what I had with most of you. But this time with a bigger team.*" Such motivational statements played a crucial role in maintaining team spirit

and engagement, particularly during the initial phases. Another member expressed, "It is alright we all are facing different issues and living situations. And it felt weird for us too when we began to think about doing something for EVOLO. Happy to have you here and we also need some hands for writing scenarios and telling stories and theories about our concept," indicating a collaborative and supportive environment.

Despite the enthusiasm, the team faced significant challenges related to time management and coordination. *"We all are busy working within our own careers and projects, so this is why we are starting it six months earlier,"* one member stated, highlighting the need to start early due to their busy schedules. The issues with time management were further compounded by technical difficulties, such as internet connectivity problems and accent barriers during meetings. *"The application Discord is good not for us in Iran because sometimes it's winter and we're trying to access the VPN and it's difficult for us. But I think Telegram maybe in Iran is very better because the application working on their computer and we can upload any files by any volume upload and everybody in the group access to the document,"* explained another participant, emphasizing the need for reliable communication tools.

The design process within ArchiDAO was characterized by a democratic approach, involving voting and open discussions. One member commented*, "Based on our voting on Miro we will concentrate on two topics as main and one as side target,"* indicating that decisions were made collectively. This inclusive process allowed everyone to express their opinions, contributing to a more well-rounded and thoughtful decision-making process. However, the commitment to shared goals varied among members. "If we are aiming for a win, we have to be more connected and by that I don't mean to work too much, Let's work smart together," suggested one member, pointing to the need for better coordination and alignment of efforts.

As the project progressed, issues of participation and engagement became more pronounced. *"Why no one is showing any reaction here? Guys, will you attend tomorrow?"* highlighted the struggle to maintain active involvement from all members. Trust and reliability were also critical concerns. *"He has to do it and he has to do it right. If not, I would have it removed,"* one member stated, indicating frustration with unmet responsibilities and the need for accountability.

The creation of a group chat on Telegram in late November aimed to enhance communication, yet some members continued to struggle with consistency. *"I'm not saying*

'my model'. I'm saying our agreement for 3 weeks. It's not about one person," expressed a member, emphasizing the importance of collective responsibility and shared goals. Despite these challenges, the team managed to adapt and continue their work. *"Whenever you have time, I would really appreciate that,"* a member urged, underscoring the need for flexibility and understanding among team members.

The end phase of the project saw increased tension as deadlines approached. *"I swear to God, I'm boiling up,"* and *"I've been under a lot of pressure, actually,"* were sentiments reflecting the stress and frustration experienced by members. The need for more structured management became evident. *"And just at some point, I just not an ArchiDAO team and I just noticed that we need someone to manage the process and just gather the information and set the timing and everything,"* highlighted the necessity for clearer leadership and better coordination.

4.5.4 Interviews with team members

The findings from the interviews with ArchiDAO members reveal a complex interplay of collaboration, communication, and conflict management within the decentralized team. Members expressed a range of experiences, from the excitement of participating in an innovative project to the challenges of coordinating across different time zones and cultural backgrounds. The interviews highlighted the importance of effective communication and clear role definitions in maintaining team cohesion and productivity. Despite facing significant obstacles, including technical difficulties and varying levels of commitment, the members' collective effort and adaptability were pivotal in advancing the project's goals. These insights provide a nuanced understanding of the operational dynamics within a DAO, shedding light on both the strengths and areas for improvement in managing decentralized architectural projects.

Participants expressed a keen interest in exploring new collaborative environments. One member shared, *"I wanted to try a different project, I mean collaboration with different people and so on,"* highlighting the appeal of DAOs as platforms for innovative and diverse teamwork. This desire for new experiences and professional growth was a common sentiment, underscoring the potential of DAOs to attract talent looking for non-traditional work settings. Another participant stated, *"This can be a new experience, I mean another experience with like collaboration with other people so that also really suits my situation,"* emphasizing the flexibility and adaptability that DAOs offer, which can be particularly appealing to young professionals.

The flexibility and openness of DAOs were frequently mentioned as significant benefits. *"You are free to talk about your ideas. Yes, you can have this freedom in the team,"* one participant noted. This freedom to contribute and express opinions was contrasted with the more rigid structures of traditional firms, which often stifle creativity and participation. Another member added, *"But no one stopped you to talk about new ideas... it didn't have any rules,"* emphasizing the liberating and innovative environment fostered by ArchiDAO. This openness encourages a culture of continuous learning and experimentation, which is essential for fostering innovation in architectural design.

However, the findings also highlighted challenges in maintaining consistent participation and managing decentralized teams. One member recounted, *"I felt so angry from other people and I was like, is that so hard for you to do this or to do that?"* This frustration points to issues of accountability and the difficulty of ensuring all members fulfill their roles effectively. The need for clear communication and role delineation was evident, as another participant stated, *"In this project, I decided to divide all the responsibilities... this is the way that we decided to work."* This approach of dividing responsibilities is crucial in managing large projects but requires a high level of coordination and commitment from all team members.

The collaborative ethos of DAOs was praised, but it also required significant patience and adaptability. *"Although we might think different about each other... we have to at first accept our differences, and then try to help each other,"* a member reflected. This acceptance of diverse perspectives and the willingness to work through conflicts were crucial for the project's success. The sentiment that *"teamwork is just collaborating"* and does not need a boss was a recurring theme, emphasizing the non-hierarchical nature of DAOs. Another participant mentioned, *"We had a lot of our programs in this project, and we try we really try to help each other and I think that we did it good,"* illustrating the importance of mutual support in overcoming challenges.

Moreover, technical challenges, particularly related to the integration of blockchain technology, were noted. One participant suggested, *"We could have used certain AI applications to track the project,"* indicating a gap in the effective use of available technologies. The need for better tools and platforms to support the DAO's operations was clear, as evidenced by the quote, *"Maybe using platforms like Miro or anything else that can be helpful."* Another member elaborated, *"Because if not, then how they can be just gathered? Even if we know we have a Google Drive, we have Miro, we have everything. But in*

the end, just someone has to do that finalizing process," underscoring the importance of having reliable tools to manage and streamline project workflows.

The decentralized nature of DAOs also presented unique challenges. One member noted, *"I felt so angry from other people and I was like, is that so hard for you to do this or to do that?"* This sentiment was echoed by others who faced difficulties in maintaining consistent engagement and meeting deadlines. *"It was a time that, for example, some of us, based on his priorities, he couldn't manage to just follow the process,"* a participant explained, highlighting the issue of varying commitment levels among team members.

Despite these challenges, the experience of working in a DAO was generally positive. *"The overall experience was good,"* one participant concluded, reflecting a common sentiment. Another added, *"And it was a great opportunity for me. So I just joined happily,"* underscoring the satisfaction derived from participating in such innovative projects. The ability to work with international teams was particularly valued. *"Um, you know, uh, it was very challenging for me. Um, I had other experiences with work with other people and other teams, but, um, working with, uh, international teams, something like that, if I should say, uh, people with different countries, it was very challenging,"* one member remarked, highlighting the global nature of DAO projects.

The need for better role definition and responsibility allocation was also emphasized. *"In this project, I decided to divide all the responsibilities. For example, we had a 3D modeling team, we had a diagram and graphics team, and we had a rendering and presentation team. At the same time. And also, we had a research team that was working,"* a participant detailed. This structured approach helped in managing the project's complexities but also revealed the need for more streamlined processes. "*And we just gathered and said, okay, right now, what should we do? For example, this person is not able to do whatever he said, or the other person, he wasn't able to continue working with us,"* another member added, pointing out the difficulties in ensuring that all team members can consistently contribute.

The flexibility to adapt roles and responsibilities based on project needs was a notable advantage of the DAO model. *"So as compared to architecture firms, we have somewhat more freedom on decision making,"* a participant noted. This flexibility, however, requires robust communication and coordination mechanisms to be effective. *"The only thing was we communicated like through various channels which we were connected and every week we*

met in the meetings and showed the work," another member mentioned, illustrating the importance of regular and effective communication in maintaining project momentum.

The second round of interviews, conducted after the submission, provided a more reflective perspective on the project's overall process and outcomes. Members shared their thoughts on the intense pressure and time constraints they faced, offering critical insights into what worked well and what could be improved in future projects. The reflections emphasized the need for better scheduling, more reliable tools for communication and collaboration, and the importance of maintaining motivation and engagement throughout the project. These reflective insights are invaluable for understanding the practical challenges and for developing more effective strategies for managing future DAO-based projects.

The interviews revealed a strong desire for better scheduling and time management. A participant suggested, *"I think we can try to have a better schedule and better save time to finish the project shorter and better,"* reflecting on the intense pressure and tight deadlines that were experienced. This feedback indicates the necessity for improved planning and project management strategies in future endeavors.

Reflecting on the project's goals, members appreciated the opportunity it provided for enhancing their portfolios and career prospects. One member stated, *"The goals of projects for me to add the project in my portfolio for the working in the other countries or go to the university in the other countries. And this competition is very perfect for this,"* underscoring the personal and professional value of participating in such high-profile competitions.

The interviews also addressed the emotional and psychological aspects of the project. One member noted, *"Every day that I pass after submission and I think that's we had so many problems in the final project, so this is good that after days you know maybe it's months now and it would be better that we can just talk with you talk with each other and understand the flaws and problems,"* highlighting the need for post-project debriefing sessions to analyze what worked well and what didn’t.

The effectiveness of different project components was also discussed. While the 3D modeling was praised, there were concerns about the scenarios and diagrams. A member reflected, *"The 3D modeling was awesome, but I think the scenario and the diagrams which is the most part you know when we are attending a competition was somehow weak. And that's was the part that I was trying to and trust the team,"* indicating areas for improvement in future projects.

Trust and reliability emerged as significant themes, with participants stressing the importance of honesty and accountability. One member expressed frustration over unmet expectations, stating, *"We had someone who said, for example, he's good in doing rendering in lumion and something like that, but it wasn't, and he just killed three weeks of ours.*" This quote underlines the critical need for accurate skill assessment and commitment verification at the project's outset.

Furthermore, the interviews revealed a consensus on the need for a more serious and structured approach to project management. One participant remarked, "*I think being more serious and the seriousness from the one who is trying to manage the whole process is the most important part,*" emphasizing the importance of strong leadership and clear communication to maintain project momentum.

The importance of rewarding contributions fairly was highlighted as a key motivational factor. *"Because rewarding is something that will inspire everyone. And if you finish this project, the either you either you win or lose, you will gain this because, for example, you just contributed and just you spend your time the time that you could spend other on other projects,*" one member noted. This sentiment underscores the need for effective incentive mechanisms to maintain motivation and engagement among team members.

Finally, the second round of interviews underscored the importance of patience and teamwork. As one member noted, *"I learned to be more patient. And yeah, because in a group work, everybody has his own idea and everybody wants to say about his perspective and I think I learned to be more patient and accept their perspective,*" highlighting personal growth and the value of collaborative effort.

4.5.5 Interviews with founders

The final part of the findings chapter draws on insights from interviews with two founders of ArchiDAO, highlighting their perspectives on various challenges and potential improvements within the DAO structure. These insights provide a deeper understanding of the operational dynamics and offer practical recommendations for enhancing future projects.

One of the founders noted, *"Well, honestly, as I've already wrote in the email, I wasn't part of this Evolo project, so my contribution is 0 and also ArchiDAO operates as like a group of interested people."* This highlights the decentralized and volunteer-based nature of ArchiDAO, where involvement is driven by individual interest rather than a top-down directive. This

approach has its strengths in fostering a sense of ownership and engagement among members but also poses challenges in terms of consistent participation and project continuity.

The absence of hierarchical structures was emphasized as a core principle: "*There shouldn't be difference between founders and regular members, because then it would dictate some kind of hierarchy, and that's something that shouldn't be done or practiced in DAOs as far as I see."* This reflects the DAO's commitment to maintaining an egalitarian structure. However, this also led to practical difficulties in project management, as one founder admitted, *"So yeah, there is no hierarchy. There is no person that's saying, OK, now let's do this. Let's do that. It's up to anybody to actually propose and do some stuff."* The lack of clear leadership can lead to issues in coordination and execution, especially for complex projects.

The founders acknowledged the limitations of a purely volunteer-based model, particularly in sustaining long-term engagement and ensuring quality outcomes. One founder mentioned, *"So I think it can be improved in a case if some competition or some work we do get awarded or get some funding and then we could afford to really pay people for their work, which would be amazing and would be great."* This suggests that financial incentives could play a crucial role in enhancing commitment and performance within DAOs.

Despite being a DAO, blockchain technology was underutilized in ArchiDAO. One founder admitted, "*We are currently not using blockchain as we were supposed to, but we want to use the funding we have now to improve that*". The importance of a voting system was recognized, but it was not implemented effectively due to the small size of ArchiDAO. *"This voting actually never happened ever. Even though we have this forum and capability to vote, we always discussed and agreed on things directly in meetings or group chats".*

Blockchain technology was highlighted as a fundamental tool for transparency and accountability, though its integration is not without challenges. "*It's hard for architects to understand architecture and blockchain and you need a lot of time to understand the basics and much more time to get really into it and code it."* This underscores the learning curve associated with blockchain technology and the need for ongoing education and support to effectively integrate these tools into architectural projects.

The issue of participation and engagement was also discussed, with one founder pointing out, *"And if several people find something interesting, they create their own group and work*

together." This spontaneous and interest-driven grouping can foster innovation but also requires effective communication and coordination mechanisms to ensure that all contributions are aligned with the overall project goals.

Another issue was the lack of experience among team members, which hindered effective project execution. One founder mentioned, *"They tried to include everyone's idea, which actually did not work, and another problem was the lack of experience of members as they had not participated in other competitions"*. This inexperience led to inefficiencies and difficulties in managing the project's complex tasks.

A potential solution to enhance motivation and accountability is the implementation of a reward system using NFTs. *"While creating ArchiDAO, we assumed that we would create an NFT that would store the information of what you did for ArchiDAO. It would be a system where you would get rewards for finishing projects and also start to lose these rewards if you do not complete your tasks".* Such a system could motivate members to contribute more consistently and responsibly, as their performance would directly impact their reputation and rewards within the DAO.

Lastly, the potential for future expansion of DAOs is linked to decisions by governments and financial institutions. How and when DAOs will be able to expand has to do with decisions from governments and banks. Regulatory and economic factors will play a significant role in the broader adoption and success of DAOs in the AEC industry.

In conclusion, the founders' insights underscore the need for balanced leadership, financial incentives, and effective use of blockchain technology to address the inherent challenges in managing DAOs. By leveraging these strategies, DAOs like ArchiDAO can enhance their operational efficiency and achieve their goals in the AEC industry.

5.0 DISCUSSION

The research into ArchiDAO's operational dynamics during the Evolo Skyscraper Competition has highlighted a number of important areas for improvement, aimed to enhance management efficiency and project outcomes within the AEC industry. This chapter dives into potential guidelines for improving project management and collaboration within DAOs in the AEC industry, while also examining the contributions of these findings to existing literature. Key areas of focus include the implementation of effective management tools, clear role distinctions, a fair reward system, and an upgraded, transparent voting mechanism. These improvements are essential for optimizing the functionality and success of DAOs, ensuring they can leverage blockchain technology to its fullest potential in collaborative architectural design projects.

5.1 Guidelines for ArchiDAO

An examination of ArchiDAO's operational challenges in the Evolo Skyscraper Competition identified a number of crucial areas that needed to be improved in order to raise the efficacy and efficiency of DAO-based project management. Through detailed interviews with the founders and a thorough review of the project's dynamics, significant issues such as accountability, role definition, communication, and motivation were identified. Addressing these challenges involves implementing blockchain-based solutions and adopting innovative management practices tailored to the unique structure of DAOs. This section outlines the specific problems encountered and proposes actionable solutions to mitigate these issues, thereby improving the overall functionality and success of future projects within ArchiDAO.

Table 4 summarizes critical challenges identified during the Evolo Skyscraper Design Competition by ArchiDAO with proposed solutions aimed at improving efficiency and effectiveness in future DAO deployments.

Challenge Identified	Description	Proposed Solution	Expected Outcome
Lack of Accountability	Inconsistent task completion and responsibility tracking	Implement blockchain for transparent task management	Enhances responsibility and task completion
Undefined Roles	Role confusion affecting operational efficiency	Define clear roles and utilize blockchain	Improves organizational

		for identity management	structure and individual clarity
Inefficient Communication	Miscommunications leading to project delays	Adopt advanced communication tools and protocols	Streamlines interactions and reduces misunderstandings
Poor Reward System	Inequitable and unclear reward distribution	Introduce NFTs to represent contributions and achievements	Motivates participation and fairly recognizes efforts

Table 4: Identified Problems and Proposed Solutions

This table highlights the specific challenges encountered by ArchiDAO during their project and provides targeted solutions to address these issues. By implementing blockchain technology and advanced communication tools, ArchiDAO can significantly improve their accountability, role clarity, communication efficiency, and reward systems. These improvements not only enhance project outcomes but also contribute to a more motivated and cohesive team environment. This structured approach to problem-solving ensures that DAOs in the AEC industry can operate more effectively and achieve their project goals more reliably.

Undoubtedly, one major issue was the lack of accountability, which resulted in inconsistent task completion and inadequate tracking of responsibilities. This undermined team efficiency and project outcomes. To address this, implementing blockchain technology for transparent task management is proposed. Blockchain can provide an immutable record of task assignments and completions, ensuring that all actions are verifiable and transparent. This solution is expected to enhance responsibility and task completion by providing a clear and unchangeable record of who is responsible for each task and whether it has been satisfactorily completed. Such transparency motivates team members to adhere to their commitments, thereby improving overall project reliability.

Another significant challenge was undefined roles, leading to role confusion that affected operational efficiency. Team members were often unclear about their responsibilities and expectations. The proposed solution is to define clear roles within the DAO and utilize blockchain for identity management. By assigning specific roles and maintaining a transparent ledger of these roles and their associated responsibilities, team members will have a clear understanding of their duties. This approach is expected to improve the organizational

structure and individual clarity, ensuring that all team members know their specific roles and responsibilities, which in turn enhances overall project efficiency.

Inefficient communication was also a critical issue, leading to project delays due to miscommunications and misunderstandings among team members. To mitigate this, the adoption of advanced communication tools and protocols is recommended. These tools should include features that support clear, concise, and documented exchanges, reducing the risk of misunderstandings. By streamlining interactions and ensuring that all communications are clear, recorded, and accessible to all relevant team members, this solution is expected to lead to more efficient project progress and fewer delays.

Lastly, the project suffered from a poor reward system, which was perceived as inequitable and unclear, leading to dissatisfaction among team members. To address this, the introduction of NFTs to represent contributions and achievements is proposed. These digital tokens can transparently and fairly recognize the efforts of each team member, based on their verified contributions. This solution is expected to motivate participation and fairly recognize efforts by providing a transparent and verifiable reward system that aligns with each member's contributions. This enhances morale and encourages greater effort and innovation within the team.

In summary, addressing these challenges through the proposed solutions can significantly improve the management and operation of DAOs in the AEC industry. By leveraging blockchain technology and advanced communication tools, DAOs can enhance accountability, role clarity, communication efficiency, and reward systems, leading to better project outcomes and a more motivated, cohesive team.

5.2 Contribution to theoretical knowledge

The research contributes significantly to the existing literature by providing empirical evidence from a real-world case study. Additionally, this study fills several notable gaps in current research, particularly in the application of DAOs within the AEC industry, and offers practical recommendations for improving their operations.

5.2.1 Managing DAOs

Firstly, by detailing the operational dynamics within a DAO during a competitive architectural project, this study provides a thorough examination into the management of decentralized teams. The findings highlight the intricacies of project management in decentralized settings,

which are often overlooked in existing literature. This contribution is crucial as it illuminates how DAOs function in practice, offering insights into their strengths and weaknesses. Secondly, the study reveals significant challenges related to maintaining accountability without traditional hierarchical structures. This aspect of DAOs has been relatively underexplored in AEC research. By highlighting these issues and proposing solutions, such as the implementation of blockchain for transparent task management, the research advances understanding in this critical area. Another aspect that this study explored was the empirical evidence on managing cultural diversity in international and decentralized teams. It offers a new perspective that is valuable for global project management literature, demonstrating how DAOs can effectively handle diverse cultural backgrounds through collaborative practices.

Blockchain Application in AEC and more specifically the lack of it was a surprising finding of this study. While the potential of blockchain technology in the AEC industry has been discussed theoretically, this study offers practical insights into its application and the associated challenges. It advances the understanding of how blockchain can improve operational efficiencies in architectural projects by providing immutable record-keeping and enhancing transparency. Furthermore, one of the practical contributions of this research is the development of specific guidelines for implementing DAO concepts effectively in the AEC industry. These guidelines, based on empirical data, provide a roadmap for AEC professionals to enhance their project management and collaborative efforts.

5.2.2 Young collectives

Young collectives in AEC industry were another important aspect. The AEC industry is experiencing a transformative shift with the emergence of young collectives. These groups are redefining traditional project management practices through innovative and collaborative approaches. Insights from recent research highlight several characteristics of these young collectives: Table 5 at the end of the chapter compares tradition methods with young collectives and DAOs and is explained later with more detail. Young collectives operate with a fluid structure where roles can change depending on the project's needs. This flexibility allows members to take on different responsibilities and explore various aspects of a project, fostering a dynamic and adaptive work environment (Lima & Moreira, 2023).

Regarding collaborative decision-making, these collectives use a semi-centralized or collective consensus approach to decision-making. While there may be leaders or more experienced members guiding decisions, input is sought from all members, making the process more

democratic and inclusive (Lima & Moreira, 2023). Moreover, with a generally younger demographic, these groups embrace new ideas and technologies more readily than established firms. This openness to experimentation is crucial for pushing the boundaries of architectural design and urban planning (Antonini, Gaspari & Visconti, 2021).

Communication within young collectives is often informal and leverages modern digital tools and platforms. This network-based approach facilitates quick and easy sharing of ideas and information, maintaining the group's fluidity and dynamism (Lima & Moreira, 2023). Additionally, members of young collectives may come together for specific projects based on their interest or expertise and then disband or reconfigure for other projects. This project-specific team formation allows for a highly adaptive approach to tackling diverse challenges (Antonini, Gaspari & Visconti, 2021). Furthermore, while not as open as DAOs, young collectives maintain a moderate level of transparency within their network. This approach balances openness with the need for some privacy and intellectual property protection (Lima & Moreira, 2023). Moreover, accountability in young collectives is maintained through peer pressure and mutual respect among members, rather than formal managerial oversight. This can sometimes lead to challenges in ensuring consistent commitment and quality across projects (Antonini, Gaspari & Visconti, 2021). Overall, the dynamic and flexible nature of young collectives enables them to effectively address various project needs while fostering a collaborative and innovative environment.

Table 5 contrasts traditional project management approaches with young collectives and DAO-based methods in the AEC industry, highlighting key differences in decision-making, communication, and other operational aspects to illustrate the distinct advantages and challenges of each approach.

Features	Traditional Methods	Young Collectives	DAOs
Decision-making	Centralized decision authority	Semi-centralized, collective consensus	Decentralized, often via voting
Communication	Formal, hierarchical	Informal, network-based	Open, flat communication layers
Role Distribution	Fixed roles	Flexible, defined per project	Flexible, evolving roles
Accountability	Clear, based on hierarchy	Moderately defined, peer-based	Often unclear without robust systems
Transparency	Limited to	Moderate, within	High, often public

	organization internals	collective	
Innovation	Often slow, risk-averse	High, driven by collective creativity	High innovation due to flexibility

Table 5: Comparison of Project Management Approaches in AEC

This table provides a detailed look at how different organizational structures within the AEC industry manage projects, with a particular focus on the unique attributes of DAOs and young collectives compared to traditional firms. Each column reflects the inherent trade-offs in decision-making styles, communication methods, role distribution, accountability measures, transparency levels, and innovation capacity. This comparative analysis not only enriches the research by providing a broader context but also aids in understanding the evolutionary trajectory of project management in the AEC sector.

Understanding the unique dynamics of DAOs in the AEC industry requires a comparative analysis with traditional project management methods and young collectives. Traditional methods often emphasize hierarchical structures and centralized decision-making, which, while stable, can stifle innovation and flexibility. Young collectives, on the other hand, offer a more fluid and collaborative approach but may lack formal accountability and consistency. DAOs present a novel hybrid, combining the flexibility and innovation of young collectives with the transparency and accountability facilitated by blockchain technology. This section explores how DAOs can potentially bridge the gaps identified in traditional methods and young collectives, thereby contributing to the existing body of knowledge on project management in the AEC industry.

DAOs compared to traditional practices and young collectives, utilize decentralized voting systems, often enabled by blockchain technology, which allows for a more democratic and inclusive decision-making process. This method ensures that all members have a voice, potentially leading to more balanced and well-considered outcomes compared to traditional top-down approaches. The open and flat communication layers in DAOs facilitate transparency and ensure that all members are well-informed about project developments. This openness reduces the likelihood of information bottlenecks and miscommunications that can occur in more hierarchical structures. In addition, role distribution within DAOs allows for flexible and evolving roles, which can be adjusted based on the project's needs. This adaptability supports innovation and efficiency, as team members can take on different responsibilities and respond to changing project requirements dynamically. DAOs can

leverage blockchain technology for transparent and immutable record-keeping of tasks and contributions. This system enhances accountability by providing a verifiable trail of actions and decisions, ensuring that all members are held responsible for their contributions.

High transparency levels are a hallmark of DAOs, with activities and decisions often publicly verifiable on the blockchain. This transparency builds trust among team members and external stakeholders, as the project's progress and decisions are open to examination. The flexible and decentralized nature of DAOs fosters a culture of rapid innovation. By not being bound by rigid hierarchical structures, DAOs can quickly adapt to new ideas and technologies, making them more likely to implement innovative solutions effectively.

By addressing common challenges in traditional and young collective approaches, DAOs present a balanced and forward-thinking model that leverages modern technology to enhance collaboration, accountability, and innovation in the AEC industry.

5.2.3 Leadership

The AEC industry is witnessing a shift from traditional hierarchical structures to more collaborative and distributed forms of leadership. This chapter explores the implications of these new leadership forms and how they can enhance organizational performance, particularly in the context of DAOs.

Shared leadership promotes a collaborative and less stressful work environment by distributing leadership responsibilities. This approach creates a culture of mutual support and shared accountability, essential for creativity and productivity (Hooker & Csikszentmihalyi, 2003). As Greenberg and Walt (2001) state, shared leadership is becoming necessary due to the increasing complexity of organizational environments, allowing for diverse expertise to guide decision-making processes.

To continue with, co-leadership emphasizes the importance of recognizing the contributions of all team members, fostering an inclusive and collaborative organizational culture (Heenan & Bennis, 1999). This approach can bridge the gap between top executives and other employees, enhancing overall project effectiveness. Viewing leadership as a dynamic and collective process supports the idea that leadership roles can be shared and developed across the organization (Fletcher & Käufer, 2003).

DAOs inherently promote and contribute to the advancement of these progressive leadership models through their decentralized and democratic structures. By facilitating shared leadership, DAOs ensure that decision-making power is distributed among all members,

thereby fostering a culture of mutual support and accountability. This decentralized approach not only harnesses diverse expertise for more informed decision-making but also encourages active participation and engagement from all members. Co-leadership within DAOs further emphasizes the value of every member's contribution, bridging gaps between various levels of experience and authority, and enhancing overall organizational effectiveness. Additionally, DAOs' dynamic and flexible nature aligns seamlessly with the concept of leadership as a collective and evolving process, allowing for continuous development and adaptation of leadership roles across the organization. Consequently, DAOs not only embody these innovative leadership forms but also provide a robust framework for their implementation, ultimately driving enhanced organizational performance and fostering a collaborative, inclusive, and innovative work environment.

In conclusion, it would be essential to emphasized on how leadership in DAOs was described in the literature, which sums up the philosophy of these organizations. While it's popular to describe DAOs as leaderless, it does not mean that there are no leaders because there are many. It simply means that no singular leader controls the community" (Koyama, 2022)

5.3 Guidelines for best practice for DAOs in AEC industry

To address the technical problems faced by DAOs, several strategic solutions can be implemented, as shown in Table 6. First, enhancing blockchain integration is crucial. By prioritizing projects with higher degrees of blockchain implementation, DAOs can utilize blockchain for transparent task management and immutable record-keeping, ensuring that all contributions are verifiable and trackable. Furthermore, adopting advanced task management tools tailored to DAO operations can streamline task assignments and monitor progress efficiently. These tools should facilitate collaboration and allow for real-time updates on project status. Another essential solution is the development of effective reward systems. Creating a transparent and fair reward mechanism using NFTs or blockchain tokens can incentivize participation. This system should link rewards directly to measurable contributions and task completions, ensuring fairness and motivating team members. Additionally, integrating anonymized voting systems can enhance decision-making processes. Blockchain-based voting systems that ensure anonymity and fairness can build trust and accountability, fostering a more democratic decision-making environment within the DAO.

Technical Guidelines	Management and Organizational Guidelines
Enhance Blockchain integration	Clear definition of roles and responsibilities
Implement comprehensive tools for task management	Ensure consistent participation and engagement
Implementing anonymized voting	Improve coordination in decentralized teams
Establish effective reward systems	Enhance transparency and accountability

Table 6: Guidelines for best practice for DAOs

In terms of management and organizational problems, defining clear roles and responsibilities is imperative. Establishing distinct roles within the DAO can reduce confusion and improve efficiency. Utilizing blockchain for identity management can assist in assigning and tracking roles, ensuring that every team member understands their responsibilities. To ensure consistent participation and engagement, DAOs can implement regular check-ins and use incentives to maintain active involvement. Encouraging a culture of accountability and mutual respect can also help sustain engagement levels. Moreover, improving coordination within decentralized teams is essential. Employing digital tools that support seamless communication and coordination, such as platforms integrating messaging, project management, and file sharing, can enhance the effectiveness of decentralized teams.

Additionally, exploring how governance structures proposed for decentralized project delivery can be adapted within DAOs can enhance transparency and accountability. Implementing smart contracts to automate workflows, manage payments, and ensure compliance with project requirements can streamline communication and project tasks. Tokenization and cryptoeconomic mechanisms can encourage participation, rewarding contributions and aligning stakeholders' interests with project goals. As addressed by Hunhevicz et. Al (2024) a system of reputation tokens may represent the value of contributions in blockchain applications can be an additional measure of accountability. Another possible strategy to encourage truthful participation in decentralized project delivery is the concept of exchanging reputation tokens for credentials or special privileges. Addressing regulatory compliance is also critical; ensuring that decentralized models comply with legal frameworks, building codes, and industry standards will foster data privacy and security. Conducting case studies and pilot projects can demonstrate the feasibility and benefits of these concepts in real-world scenarios. Encouraging interdisciplinary collaboration

among project management experts, blockchain developers, AEC professionals, and legal advisors can drive innovation in project governance (Hunhevicz et al., 2024).

By addressing both technical and organizational challenges and integrating decentralized project delivery concepts, DAOs in the AEC industry can significantly improve their efficiency, collaboration, and project outcomes. This holistic approach ensures that DAOs can manage complex architectural design projects effectively, leveraging the strengths of their collective and distributed nature.

5.4 Final thoughts

5.4.1 Hierarchy structure

A question that arose after the discussion section was whether there is a new hierarchy structure observed in DAOs. The traditional hierarchical structures prevalent in most organizations are notably absent in DAOs, replaced by a more fluid and decentralized form of hierarchy. Leadership in DAOs tends to be distributed, allowing multiple members to take on leadership roles based on their expertise and contributions rather than formal titles. This shift promotes a more democratic and collaborative environment, where decisions are made collectively, and leadership is shared. As observed in the case of ArchiDAO, leadership roles emerged organically, with individuals stepping up to lead specific tasks or projects as needed, reflecting a dynamic and adaptive approach to leadership.

In this decentralized model, the concept of leadership extends beyond the traditional top-down approach. Leaders in DAOs often function more as facilitators or coordinators rather than authoritative figures. They guide the process, ensure that goals are met, and help resolve conflicts, but do not hold unilateral decision-making power. This form of shared leadership can reduce internal competition and foster a supportive team culture, as indicated by the quote, "Shared leadership promotes flow in a number of ways, e.g., by reducing competition (within the team), decreasing worry of failure, and even making the task become autotelic" (Hooker and Csikszentmihalyi, 2003:229-230).

However, the success of this leadership model depends heavily on the willingness and ability of members to engage and take on responsibilities. It requires a high level of transparency, communication, and trust among members. The ability to distribute leadership effectively also hinges on having clear role definitions and accountability mechanisms, which can be facilitated by technologies like blockchain to ensure that contributions are tracked and recognized fairly.

5.4.2 Autonomy in DAOs

While DAOs are designed to operate autonomously, in practice, this autonomy is often limited by various factors, especially in the AEC industry. For instance, ArchiDAO faced challenges in maintaining complete autonomy due to the need for specialized skills, regulatory compliance, and the complexity of coordinating large-scale architectural projects. Despite their aim for autonomous operations, many DAOs currently operate within the constraints of existing legal frameworks and regulatory environments, limiting their full autonomy as they must comply with external regulations and often require human intervention to ensure legal compliance (Hunhevicz et al., 2024).

Furthermore, the DAO relied on a mix of decentralized decision-making and traditional management practices to navigate these challenges, indicating that full autonomy is not yet achievable. Despite the autonomous nature of DAOs, human involvement is frequently necessary for decision-making, strategic planning, and resolving complex issues that may arise. This reliance on human input for governance decisions and operational management underscores the hybrid nature of DAOs in the AEC sector (Hunhevicz et al., 2024).

Currently, DAOs in the AEC sector function more as hybrid organizations, blending decentralized governance with elements of conventional project management. This hybrid model allows them to leverage the strengths of both approaches—benefiting from the innovation and flexibility of a decentralized structure while ensuring that critical tasks are managed effectively. The integration of blockchain technology helps in maintaining transparency and accountability, but the actual execution of projects often requires centralized oversight to some extent. DAOs are also susceptible to vulnerabilities and security risks, such as smart contract bugs, hacking attacks, and governance flaws. These vulnerabilities can undermine the autonomy of DAOs and require proactive measures to mitigate risks and ensure the integrity of the organization (Hunhevicz et al., 2024).

The transition to fully autonomous operations remains a goal, but it is clear that more advancements in technology and organizational practices are needed. Improved smart contract functionality, better integration of blockchain with existing project management tools, and a deeper understanding of how to manage decentralized teams effectively are essential steps towards achieving greater autonomy. Additionally, DAO technology is still evolving, and current implementations may not fully realize the concept of complete autonomy. As the technology matures and governance mechanisms improve, DAOs may achieve higher levels of autonomy in the future (Hunhevicz et al., 2024). Furthermore, the

legal and ethical implications of autonomous DAOs are complex and require careful consideration. Questions around liability, accountability, and decision-making authority in autonomous entities raise challenges that need to be addressed to ensure responsible governance. Until these issues are resolved, DAOs will continue to operate in this hybrid state, balancing their decentralized ideals with the practical necessities of project execution.

5.4.3 DAOs and Young Collectives

DAOs present a unique opportunity to support and enhance the operations of young collectives in the AEC industry. By providing a decentralized platform, DAOs can offer young architects and designers the freedom to explore innovative ideas without the constraints of traditional hierarchical structures. This can foster a more inclusive and collaborative environment where emerging talents can thrive. The flexibility of DAOs allows for dynamic team formations, enabling young professionals to engage in projects that align with their interests and skills.

Furthermore, the use of blockchain technology within DAOs ensures transparent and fair recognition of contributions, which is particularly motivating for young professionals who are often looking for platforms that value their input and creativity. Tokenization and reward systems can be used to incentivize participation and ensure that efforts are duly acknowledged. This not only boosts morale but also encourages continuous engagement and innovation. For instance, the introduction of NFTs to represent skills and contributions can create a meritocratic system where rewards are directly linked to verifiable outputs.

DAOs also provide an excellent learning environment, offering young professionals exposure to cutting-edge technologies and decentralized project management practices. This experience can be invaluable, equipping them with the skills and knowledge needed to navigate the evolving landscape of the AEC industry. By fostering a community of practice, DAOs can help young collectives build networks, share resources, and collaborate on ambitious projects, ultimately contributing to their professional growth and development.

5.4.4 Integration of Blockchain

The integration of blockchain technology within DAOs offers significant advantages, including enhanced transparency, security, and accountability. Blockchain's immutable ledger ensures that all transactions and decisions are recorded transparently, making it clear who is responsible for specific tasks and decisions. Smart contracts can automate project workflows, ensuring fair distribution of rewards based on contributions, which fosters a trustworthy environment. Moreover, decentralized voting mechanisms facilitated by blockchain can

ensure democratic decision-making processes, enhancing member engagement and reducing conflicts.

However, while blockchain addresses many technical and operational challenges, it is not a comprehensive solution for all issues faced by DAOs. Human factors such as effective leadership, clear communication, and strong team dynamics are crucial for the success of DAOs and cannot be fully managed by technology alone. The complexity of decentralized organizations requires adaptive leadership styles that balance autonomy with coordinated efforts. DAOs are still far from being suitable for iterative exploration of issues of engineering or design performance, while the need for technical expertise to participate in DAOs may limit participation to a certain group of people (Dounas et al., 2020) Additionally, blockchain technology faces scalability issues, and integrating it into existing systems can be resource-intensive. Furthermore, compliance with local and international laws, such as data protection and intellectual property rights, necessitates continuous adaptation and legal expertise beyond technological solutions.

In conclusion, while blockchain technology significantly enhances the operational capabilities of DAOs, it does not address all the inherent challenges. Effective management practices, robust organizational culture, and adherence to regulatory frameworks are equally important for the successful operation of DAOs. This raises important questions for the future: How can DAOs balance technological advancements with human-centered leadership? What strategies can ensure consistent engagement and coordination among members? How will evolving legal landscapes impact the operation of DAOs? Addressing these questions will be critical for optimizing the potential of DAOs in various industries.

5.4.5 The promise of Democracy

DAOs inherently embody democratic principles through their decentralized governance structures. Unlike traditional organizations where decision-making power is concentrated at the top, DAOs distribute this power among their members, allowing for more equitable participation. This decentralized approach ensures that all members have a voice in the decision-making process, promoting a more inclusive and participatory environment.

The use of blockchain technology further enhances this democratic process by ensuring transparency and immutability of records. Voting mechanisms can be implemented on the blockchain, allowing for anonymous and fair voting on key decisions. This not only ensures that the process is transparent but also that the results are tamper-proof. Such mechanisms encourage active participation and trust among members, as they can be confident that their

votes and contributions are fairly recorded and considered. Additionally, every transaction on the blockchain is traceable and verifiable, providing a clear audit trail of activities within the DAO. This transparency helps prevent fraud, corruption, and unauthorized actions, as all transactions can be traced back to their origin (Rikken, O. 2024).

Moreover, DAOs have the potential to transform democracy by enhancing citizen participation and increasing transparency. By providing a platform for increased engagement and enabling direct voting power to all participants, DAOs empower individuals to have a more active role in governance. This aligns with the principles of user democracy, majority rule, and citizen involvement, as DAOs can embody these public values through transparency and openness (Rikken, O. 2024). The collaborative nature of DAOs promotes a culture of consensus-building and mutual respect. By valuing diverse perspectives and encouraging dialogue, DAOs can lead to more well-rounded and thoughtful decision-making. This approach contrasts sharply with the often rigid and top-down decision-making processes of traditional organizations.

Furthermore, DAOs can facilitate participative budgeting initiatives, allowing citizens to have a direct say in how public funds are allocated. This can lead to more inclusive and community-driven decision-making processes (Rikken, O. 2024). By leveraging the decentralized and autonomous nature of DAOs, democracy can be transformed into a more participatory, transparent, and efficient system that empowers individuals and promotes collective decision-making. Scholars in politics and ethics have emphasized how DAOs can have a positive impact on human rights and contribute to organizational transformation, which is often linked to notions of technological utopianism and digital democratization (Hassan and De Filippi (2021). As DAOs continue to evolve, their ability to foster democratic engagement and collective decision-making will likely serve as a model for more inclusive and transparent organizational practices in various sectors, including the AEC industry.

Democracy remains a cornerstone of societal governance, embodying the principles of equality, participation, and transparency. In a world where the concentration of power can lead to disenfranchisement and corruption, the democratic ethos ensures that every voice is heard and every vote counts. DAOs, with their decentralized and transparent nature, hold the promise of reinforcing and even revitalizing democratic practices. Ultimately, DAOs present a unique opportunity to strengthen democratic processes and foster a more engaged and empowered populace, but their success will hinge on our collective ability to navigate the complexities of this innovative organizational form.

6.0 CONCLUSION

This thesis aimed to explore how collective and distributed architectural design projects can be managed within Decentralized Autonomous Organizations (DAOs). The following conclusions address the sub-questions that were integral to answering the main research question.

6.1 SQ1: What does leadership look like for a DAO?

Leadership in DAOs deviates significantly from traditional hierarchical models, embracing shared and distributed leadership practices. This form of leadership reduces internal competition, fosters collaboration, and enhances overall team dynamics. By distributing leadership responsibilities among members, DAOs cultivate a culture of mutual support and collective accountability. As highlighted in the study, "Shared leadership promotes flow in a number of ways, e.g., by reducing competition (within the team), decreasing worry of failure, and even making the task become autotelic" (Hooker and Csikszentmihalyi, 2003). The transition to shared leadership models allows for more inclusive decision-making processes and leverages diverse expertise within the organization. This approach aligns well with the principles of DAOs, where leadership is decentralized and fluid, enabling teams to adapt quickly to changing circumstances and project needs.

6.2 SQ2: What motivates architects to join a DAO?

Architects are motivated to join DAOs by a combination of professional growth opportunities, collaborative work environments, and the potential for innovation. DAOs offer a unique platform for architects to engage in experimental and cutting-edge projects that might not be feasible within traditional firm structures. The collective approach of DAOs also provides architects with a sense of community and shared purpose. Additionally, the transparent and equitable reward systems in DAOs, often facilitated by blockchain technology, ensure that contributions are recognized fairly, further motivating architects to participate and contribute their skills and expertise.

6.3 SQ3: How do DAOs influence project outcomes in architectural design?

DAOs have a profound impact on project outcomes by fostering a collaborative environment that leverages the collective intelligence of its members. The distributed nature of DAOs allows for more flexible and adaptive project management, which is particularly beneficial in the dynamic field of architectural design. The use of blockchain technology in DAOs enhances transparency and accountability, ensuring that all actions are verifiable and that project

milestones are met efficiently. By integrating diverse perspectives and expertise, DAOs can deliver innovative and context-sensitive design solutions that traditional hierarchical organizations might overlook.

6.4 MRQ: How can DAOs facilitate the effective management of collective and distributed architectural design projects?

DAOs facilitate the effective management of collective and distributed architectural design projects through several key mechanisms. First, the implementation of blockchain technology ensures transparent task management and immutable record-keeping, enhancing accountability and task completion. Second, the clear definition of roles and responsibilities within the DAO, supported by blockchain for identity management, improves organizational structure and clarity. Third, advanced communication tools and protocols reduce misunderstandings and streamline interactions, essential for managing distributed teams. Finally, equitable and transparent reward systems, often using NFTs, motivate participation and recognize contributions fairly. These practices ensure that DAOs can manage complex architectural design projects effectively, leveraging the strengths of their collective and distributed nature.

The findings of this research underscore the potential of DAOs to transform the management of collective and distributed architectural design projects. By embracing shared leadership, fostering collaborative environments, and leveraging blockchain technology, DAOs offer a viable alternative to traditional hierarchical models in the AEC industry. This study contributes to the existing literature by highlighting the unique advantages of DAOs in promoting innovation, accountability, and efficiency in architectural design, offering valuable insights for both practitioners and researchers in the field.

7.0 LIMITATIONS AND RECOMMENDATIONS

Every research project has its limitations, and this study is no exception. Recognizing limitations is crucial for contextualizing the findings and identifying areas for further investigation. The primary limitations of this research are as follows:

Single Case Study Focus: This research focused on a single case study, ArchiDAO, which provided an in-depth understanding of DAOs in the ACE industry. However, the findings may not be generalizable to all DAOs or other industries. Future research should consider multiple case studies to enhance the generalizability of the results.

Participant Engagement: Although efforts were made to engage participants consistently, some interviews and observations faced challenges such as inconsistent participation and varying levels of engagement. This might have influenced the richness and depth of the data collected. Ensuring consistent engagement in future studies is essential for comprehensive data collection.

Technological Integration: The integration and usage of blockchain technology within ArchiDAO were limited. This constraint affected the ability to fully explore the potential impacts of blockchain on project management and decision-making processes. Future research should focus on projects with a higher degree of blockchain integration to provide a more detailed analysis of its benefits and challenges.

Temporal Constraints: The study was conducted over a limited timeframe, which restricted the ability to observe long-term impacts and outcomes of the DAO's operations. Longitudinal studies are recommended to examine the long-term effects and sustainability of DAOs in the ACE industry.

Geographical and Cultural Context: The study was primarily situated within a specific geographical and cultural context. The findings may not fully account for the variations in organizational behavior and technology adoption in different cultural or regional settings. Future research should include diverse geographical and cultural contexts to broaden the understanding of DAOs.

Based on the identified limitations and the findings of this study, the following recommendations for future research are proposed:

Multiple Case Studies: Conducting research across multiple DAOs within and outside the ACE industry would provide comparative insights and enhance the generalizability of the findings.

This approach can help identify common patterns and unique challenges across different contexts.

In-Depth Technological Exploration: Investigating DAOs with advanced blockchain integration can provide a deeper understanding of how blockchain technology impacts organizational processes, decision-making, and project management. This includes examining the use of smart contracts, token-based rewards, and decentralized voting systems.

Cross-Cultural Research: Expanding research to include diverse geographical and cultural contexts can reveal how cultural differences influence the implementation and functioning of DAOs. This would help in developing culturally sensitive models and strategies for DAO adoption.

Exploring Young Collectives: Further research on young collectives in the AEC industry can provide valuable insights into how these groups operate, their organizational structures, and their contributions to innovation and collaboration. Comparing young collectives with traditional organizations and DAOs can highlight unique strengths and areas for improvement.

Impact on Stakeholders: Investigating the impact of DAOs on different stakeholders, including employees, clients, and the broader community, can provide a holistic understanding of their benefits and challenges. This includes examining the social, economic, and environmental implications of DAO adoption.

By addressing these recommendations, future research can build on the findings of this study, contributing to a more comprehensive and nuanced understanding of DAOs in the ACE industry and beyond. This will help in developing robust models and strategies for implementing decentralized and collaborative organizational structures that are effective, sustainable, and ethically sound.

REFLECTION

This reflection provides a substantiated explanation of the preliminary results of the research and design in the graduation phase, focusing on the topic of Decentralized Autonomous Organizations (DAOs) in the architectural, engineering, and construction (AEC) industry. It discusses the chosen methodology, the process, the received feedback, and how these elements have shaped the research outcomes. Additionally, it addresses the academic and societal value, scope, and implications of the graduation project.

The research followed an extended single case study methodology, incorporating semi-structured interviews, observations on Discord and Telegram, and a comprehensive literature review. This approach was chosen for its ability to provide in-depth insights into the dynamic nature of DAOs within the AEC industry. By focusing on a single case study, the research could delve deeply into the specific challenges and opportunities presented by the Evolo Skyscraper Project managed by ArchiDAO.

The methodology proved effective as it allowed for a detailed exploration of the complexities of DAO management in a real-world setting. The use of semi-structured interviews provided rich qualitative data that captured the nuanced experiences and perspectives of the participants. Observations on communication platforms offered a unique view into the daily interactions and decision-making processes within the DAO.

Throughout the research process, valuable feedback was received from mentors. One key piece of feedback emphasized the need for a more structured approach to data analysis. In response, the research design was refined to include a more systematic coding process using Atlas TI, which enhanced the rigor and reliability of the findings.

Another significant feedback highlighted the importance of linking the findings more explicitly to existing literature on DAOs and young collectives. This led to a deeper engagement with relevant scholarly work, enriching the theoretical framework and providing a stronger foundation for the research conclusions.

From this research, I have learned the importance of flexibility and adaptability in research design. The iterative process of refining the research questions, methods, and analysis based on emerging data and feedback was crucial in achieving robust and meaningful results. Additionally, this experience underscored the value of clear and transparent communication, both in the research process and within the DAO environment.

The final part of the graduation period will involve a deeper analysis of the interview findings in combination with the conclusions drawn from the literature review. This phase will focus on synthesizing the insights gained into practical guidelines and recommendations for improving DAO management in the AEC industry.

The graduation project aligns closely with the Management in the Built Environment (MBE) track and the broader MSc Architecture, Urbanism, and Building Sciences (AUBS) programme. The project addresses critical management challenges in the AEC industry, particularly in the context of emerging technologies and innovative organizational structures. By exploring the potential of DAOs, the research contributes to the ongoing discourse on how to effectively manage and govern architectural projects in a decentralized and collaborative manner.

In addition, the research findings have significantly influenced the design and recommendations proposed in the study. For instance, the identified need for clear role distinctions and a robust reward system directly informed the proposed solutions. Conversely, the process of developing these recommendations prompted further exploration into specific aspects of DAO operations, such as the integration of blockchain for transparency and accountability.

The chosen approach and methods have proven valuable in uncovering deep insights into DAO operations. The combination of qualitative interviews, ethnographic observations, and literature review provided a comprehensive understanding of the subject matter. This methodological rigor ensured that the findings are both reliable and relevant to the broader field of AEC management.

The research makes a significant academic contribution by bridging the gap between DAO theory and practical application in the AEC industry. It provides empirical evidence on how DAOs can be effectively managed, offering new insights into decentralized governance structures. On a societal level, the study highlights the potential of DAOs to transform traditional hierarchies and foster more inclusive and collaborative project management practices. By proposing innovative solutions, the research offers a pathway for the AEC industry to embrace new technologies and organizational models that can lead to more efficient and equitable outcomes.

The project results hold substantial value for transferability, particularly in the AEC industry. The insights gained from this study can be applied to other architectural and construction projects seeking to implement DAO principles. The proposed guidelines and

recommendations provide a practical framework for adopting decentralized management practices, making the findings highly relevant to industry practitioners and scholars alike.

Reflection Questions

How can the implementation of blockchain-based tools enhance transparency and accountability in DAOs within the AEC industry?

What are the potential challenges and opportunities of integrating young collectives into traditional AEC firms?

By reflecting on these aspects, the research not only advances the understanding of DAOs in the AEC industry but also provides a foundation for future studies and practical implementations in the field.

BIBLIOGRAPHY

Admin. (2023). Registration – 2024 Skyscraper Competition- eVOLO | Architecture Magazine. https://www.evolo.us/registration-2024-skyscraper-competition/

Aerdts, R. J., & Davé, H. (2023). Composable architecture and the creator economy. https://www.linkedin.com/pulse/composable-architecture-creator-economy-ren%C3%A9-j-aerdts-ph-d-/

Antonini, E., Gaspari, J., & Visconti, C. (2021). Collaborative learning experiences in a changing environment: innovative educational approaches in architecture. Sustainability, 13(16), 8895. https://doi.org/10.3390/su131688

ArchiDAO. (2024). Home - Archidao First Dao by Architects for Architects. Archidao First Dao by Architects for Architects. https://archidao.io/

Arruñada, B., & Garicano, L. (2018). Blockchain: the birth of decentralized governance. Social Science Research Network. https://doi.org/10.2139/ssrn.3160070

Aufegger, L., Alabi, M., Darzi, A., & Bicknell, C. (2020). Sharing leadership: current attitudes, barriers and needs of clinical and non-clinical managers in UK's integrated care system. BMJ Leader, 4(3), 128–134. https://doi.org/10.1136/leader-2020-000228

Åteg, M., Wilhelmson, L., Backstrom, T., & Åberg, M. M. (2009). Tasks in the generative leadership; creating conditions for autonomy and integration. ResearchGate. https://www.researchgate.net/publication/255670593_Tasks_in_the_generative_leadership_creating_conditions_for_autonomy_and_integration

Burawoy, M. (1998). The extended case method. Sociological Theory, 16(1), 4–33. https://doi.org/10.1111/0735-2751.00040

Burawoy, M. & University of California, Berkeley. (1998). The extended case method. In Sociological Theory (pp. 1–22). American Sociological Association. http://burawoy.berkeley.edu/Methodology/ECM.ST.pdf

Burnard, P., Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Analysing and presenting qualitative data. British dental journal, 204(8), 429-432.

Chernikova, A. (2022). How DAOS are changing leadership. *Entrepreneur*. https://www.entrepreneur.com/leadership/how-daos-are-changing-leadership/416016

De Albuquerque Ferreira Lima, B., & Moreira, F. D. (2024). The emergence of collectives of architects. Joelho, 15, 137–153. https://doi.org/10.14195/1647-8681_15_8

Dounas, T., Lombardi, D., & Jabi, W. (2020). Framework for decentralised architectural design BIM and Blockchain integration. International Journal of Architectural Computing, 19(2), 157–173. https://doi.org/10.1177/1478077120963376

Fletcher, J. K., & Käufer, K. (2003). Shared Leadership: paradox and possibility. In SAGE Publications, Inc. eBooks (pp. 21–47). https://doi.org/10.4135/9781452229539.n2

Fossey, E., Harvey, C., McDermott, F., & Davidson, L. (2002). Understanding and evaluating qualitative research. Australian and New Zealand Journal of Psychiatry, 36(6), 717–732. https://doi.org/10.1046/j.1440-1614.2002.01

Greenberg, J., & Walt, C. (2001). Mind and social structure: the contextual basis of behavior. Oxford University Press.

Hassan, S., & De Filippi, P. (2021). Decentralized Autonomous organization. Internet Policy Review, 10(2). https://doi.org/10.14763/2021.2.1556

Hassan, S., & De Filippi, P. (2021). *Decentralized Autonomous organization*. Internet Policy Review. https://policyreview.info/glossary/DAO

Hooker, C., & Csikszentmihalyi, M. (2003). Flow, Creativity, and Shared Leadership: Rethinking the Motivation and Structuring of Knowledge Work. SAGE Publications, Inc. eBooks, 217–234. https://doi.org/10.4135/9781452229539.n10

Howitt, D., & Cramer, D. (2011). Introduction to research methods in psychology. Pearson Education (third edition)

Hunhevicz, J. J., Hall, D. M., Brasey, P., Bonanomi, M. M., & Fischer, M. (2024). Decentralized Project delivery on the Crypto Commons: conceptualization, governance mechanisms, and future research directions. *Project Leadership and Society*, 100132. https://doi.org/10.1016/j.plas.2024.100132

Jackson, M., Esq. (2023, August 4). *Redefining Leadership: The Game-Changing Traits of a Successful DAO Administrator*. https://www.linkedin.com/pulse/redefining-leadership-game-changing-traits-successful-jackson-esq-/

Koyama, A. (2022) The value of DAO project managers. https://operator.mirror.xyz/Y-c2E2eMcab95R_cE3-COhqZAZqE0EEYEJ8DdLMjC70

Pal, A., Tiwari, C. K., & Haldar, N. (2021). Blockchain for business management: Applications, challenges and potentials. *Journal of High Technology Management Research*, *32*(2), 100414. https://doi.org/10.1016/j.hitech.2021.100414

Peterson, J. S. (2019). Presenting a Qualitative Study: A Reviewer's perspective. Gifted Child Quarterly, 63(3), 147–158. https://doi.org/10.1177/0016986219844789

Santana, C., & Albareda, L. (2022). Blockchain and the emergence of Decentralized Autonomous Organizations (DAOs): An integrative model and research agenda. Technological Forecasting and Social Change, 182, 121806. https://doi.org/10.1016/j.techfore.2022.121806

Siggelkow, N. (2007). Persuasion with case studies. Academy of Management Journal/ the Academy of Management Journal, 50(1), 20–24. https://doi.org/10.5465/amj.2007.24160882

Spychiger, F., Lustenberger, M., Martignoni, J., Schädler, L., & Lehner, P. (2023). Organizing projects with blockchain through a decentralized autonomous organization (DAO). Project Leadership and Society, 4, 100102. https://doi.org/10.1016/j.plas.2023.100102

Tyssen, A. K., Wald, A., & Spieth, P. (2013). Leadership in Temporary Organizations: A review of leadership theories and a research agenda. Project Management Journal, 44(6), 52–67. https://doi.org/10.1002/pmj.21380

Rikken, O. (2024). Governance of Decentralized Autonomous Organizations: How business objectives, internal governance and external infrastructural elements influence the long-term viability of DAOs. *repository.tudelft.nl*. https://doi.org/10.4233/uuid:c4eadda9-84ef-4430-9129-4bc7c8f50ee6

Rethinking the DAO contributor funnel. (2022). https://operator.mirror.xyz/iWSuHkhJt2M9W0rAzBwfUoyrYRtcJ6v7QI3SnHBlVvc

Wang, S., Ding, W., Li, J., Yuan, Y., Ouyang, L., & Wang, F.-Y. (2019). Decentralized Autonomous Organizations: Concept, Model, and Applications. IEEE Transactions on Computational Social Systems, 6(5), 870-878. https://doi.org/10.1109/TCSS.2019.2938190

Zhu, J., Liao, Z., Yam, K. C., & Johnson, R. E. (2018). Shared leadership: A state-of-the-art review and future research agenda. Journal of Organizational Behavior, 39(7), 834–852. https://doi.org/10.1002/job.2296

APPENDICES

Appendix A: Data Management Plan (DPM)

Plan Overview

A Data Management Plan created using DMPonline

Title: Graduation thesis on project management in DAOs

Creator: Stella Papathanasiou

Principal Investigator: Stella Papathanasiou

Data Manager: Stella Papathanasiou

Project Administrator: Stella Papathanasiou

Contributor: Wang Hongyang, Ranjith K. Soman, Daniel M. Hall

Affiliation: Delft University of Technology

ORCID iD: 0009-0005-7414-5645

Template: TU Delft Data Management Plan template (2021)

Project abstract:

The Architecture, Construction, and Engineering (ACE) industry, traditionally characterized by a top-down structure, has witnessed substantial technological advancements. Despite these innovations, global companies within the industry have maintained largely unchanged organizational and governance structures. To address this, the introduction of Decentralized

Autonomous Organizations (DAOs) presents an opportunity to implement a bottom-up management approach

The problem lies in the potential transformative impact of Web 3.0 technologies, particularly blockchain, on conventional architectural design methodologies. The emergence of DAOs, which operate on blockchain and function without a centralized authority, represents a captivating development in the ACE industry. However, there exists a considerable gap in research concerning the management and governance frameworks essential for effective collaboration and distributed architectural design within this context. This unaddressed research gap hinders the realization of the full potential of DAOs in revolutionizing architectural practices.

Methodologically, the study employs a qualitative, extended single case study approach, incorporating literature review, ethnographic observations on Discord, and semi-structured interviews. The case study focuses on ArchiDAO, the first architect-founded DAO, exploring their innovative vision and task-based model. The ongoing Evolo Skyscraper Design Competition 2024 serves as a case study, offering insights into project management within DAOs. The research aims to develop a comprehensive process diagram and guidelines to enhance operational efficiency within DAOs. The expected outcomes include a visual representation facilitating informed decision-making and guidelines for standardized processes, contributing to the adaptability of architecture firms in the evolving ACE industry.

ID: 144384

Start date: 01-03-2024

End date: 24-05-2024

Last modified: 19-04-2024

Graduation thesis on project management in DAOs

0. Administrative questions

1. Name of data management support staff consulted during the preparation of this plan.

My faculty data steward, Janine Strandberg, has reviewed this DMP on 04/04/2024.

2. Date of consultation with support staff.

2024-04-04

I. Data description and collection or re-use of existing data

3. Provide a general description of the type of data you will be working with, including any re-used data:

Type of data	File format(s)	How will data be collected (for re-used data: source and terms of use)?	Purpose of processing	Storage location	Who will have access to the data
Interview transcripts	.docx	Interviews are being conducted online through MS Teams meetings and trancripts are being generated by AI-trancription tool; deleted after anonymization	Storing expert interviews temporarily, which may contain Personally Identifiable Information (PII) of interviewees, to facilitate processing and analysis before anonymizing transcripts and removing	OneDrive	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall and Ranjith Soman)

			transcripts containing PII.		
Anonymised interview transcripts	.docx & .pdf	Anonymisation of all Personally Identifiable Information (PII) in original transcript for permanent documentation of data	Privacy-preserving data to identify the challenges and map the process of project management in DAOs.	OneDrive	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall and Ranjith Soman)
ATLAS.ti Project File with coded interview transcripts	.atlproj24	Import of transcripts of semi-structured interview recordings	Coding of interview transcripts to identify the challenges and map the process of project management in DAOs.	OneDrive	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall and Ranjith Soman)
Personally Identifiable Research Data (PIRD) participants' name, email, age, nationality	.pdf & .xlsx	Contact information for participants taking part in semi-structured interviews. These data are being collected for ethnographic analysis of the members of the project team.	Administrative and ethnographic purposes. The data are being stated in the informed consents of the participants.	Project Stoorage at TU Delft	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall and Ranjith Soman)

Dirscord channel transcription	.docx & .pdf	Export of Discord group discussion. The channel is public for everyone and data are being proccessed after consent of the participants. The members of the channel are the people involved in the research as interviewees and the data of the chat are being processed after the written consent of the subjects in order to comply with the GDPR's requirements to ensure the lawful and fair processing of personal data and respect individuals' rights to privacy and data protection.	Temporary storage of evidence that follow the project life-cycle.	OneDrive	Project team (Student: Stella Papathanasiou , Supervisors: Daniel Hall and Ranjith Soman)
ATLAS.ti Project File with coded Discord	.atlproj24	Import of Discord transcription	Coding of discord transcripts to identify the challenges and map the process of project management in DAOs.	OneDrive	Project team (Student: Stella Papathanasiou , Supervisors: Daniel Hall and Ranjith Soman)

transcripts					
Telegram group chat transcription	.docx & .pdf	Export of Telegram group discussioon. The access to the group chat is being obtained after consent of the participants. The members of the group chat are the people involved in the research as interviewees and the data of the chat are being processed after the written consent of the subjects in order to comply with the GDPR's requirements to ensure the lawful and fair processing of personal data and respect individuals' rights to privacy and data protection.	Temporary storage of evidence that follow the project life-cycle.	OneDrive	Project team (Student: Stella Papathanasiou , Supervisors: Daniel Hall and Ranjith Soman)
ATLAS.ti Project File with coded	.atlproj24	Import of Telegram transcription	Coding of telegram transcripts to identify the challenges and map the process of	OneDrive	Project team (Student: Stella Papathanasiou , Supervisors: Daniel Hall and Ranjith Soman)

Telegram transcripts			project management in DAOs.		
Exported Miro boards	.pdf	Obtained through access of the members of the DAO project who own the boards	Documentation of evidence and findings that follow the project life-cycle.	OneDrive	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall, Ranjith Soman and Hongyang Wang)
Screenshots of Google Drive files of the team	.jpg	Obtained through access of the membersof the DAO project who own the files	Documentation of evidence and findings that follow the project life-cycle.	OneDrive	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall, Ranjith Soman and Hongyang Wang)
Thesis	.pdf	Record of research process as well as documentation and presentation of findings	Long-term documentation	OneDrive	Project team (Student: Stella Papathanasiou, Supervisors: Daniel Hall, Ranjith Soman and Hongyang Wang)

4. How much data storage will you require during the project lifetime?

- < 250 GB

II. Documentation and data quality

5. What documentation will accompany data?

- Methodology of data collection

III. Storage and backup during research process

6. Where will the data (and code, if applicable) be stored and backed-up during the project lifetime?

- Project Storage at TU Delft
- OneDrive

IV. Legal and ethical requirements, codes of conduct

7. Does your research involve human subjects or 3rd party datasets collected from human participants?

- Yes

8A. Will you work with personal data? (information about an identified or identifiable natural person)

If you are not sure which option to select, first ask your Faculty Data Steward *for advice. You*

can also check with the privacy website *. If you would like to contact the privacy team: privacy-tud@tudelft.nl, please bring your DMP.*

- Yes

8B. Will you work with any other types of confidential or classified data or code as listed below? (tick all that apply)

If you are not sure which option to select, ask your Faculty Data Steward *for advice.*

- Yes, confidential data received from commercial, or other external partners

The research will collect confidential commercial data from the members of ArchiDAO and the process of their project. This could be in interest of competitors. However, the data will only be shared after the completion of their project.

9. How will ownership of the data and intellectual property rights to the data be managed?

For projects involving commercially-sensitive research or research involving third parties, seek advice of your Faculty Contract Manager *when answering this question. If this is not the case, you can use the example below.*

As a student, I will take ownership of the data. I will be responsible for ensuring that any intellectual property rights associated with the data are respected, whether it's through proper attribution, obtaining necessary permissions, or adhering to any relevant regulations or agreements.

10. Which personal data will you process? Tick all that apply

- Other types of personal data - please explain below
- Special categories of personal data (specify which): race, ethnicity, criminal offence data, political beliefs, union membership, religion, sex life, health data, biometric or genetic data
- Gender, date of birth and/or age
- Names and addresses
- Email addresses and/or other addresses for digital communication
- Data collected in Informed Consent form (names and email addresses)
- Signed consent forms

As for special categories I will process the ethnicity of the interviwees for ethnographic research. Other types of personal data are the personal and professional opinions of the interviewees.

11. Please list the categories of data subjects

- Architects - members of ArchiDAO, also members of the Discord channel and the Telegram group chat
- Founders of ArchiDAO

12. Will you be sharing personal data with individuals/organisations outside of the EEA (European Economic Area)?

- No

15. What is the legal ground for personal data processing?

- Informed consent

The informed consents are used for the interviews but also for obtaining data from Discord and Telegram.

16. Please describe the informed consent procedure you will follow:

All study participants will be asked for their written consent for taking part in the study and for data processing from Discord and Telegram and before the start of the interview

17. Where will you store the signed consent forms?

- Same storage solutions as explained in question 6

18. Does the processing of the personal data result in a high risk to the data subjects?

If the processing of the personal data results in a high risk to the data subjects, it is required to perform a Data Protection Impact Assessment (DPIA). In order to determine if there is a high risk for the data subjects, please check if any of the options below that are applicable to the processing of the personal data during your research (check all that apply).

If two or more of the options listed below apply, you will have to complete the DPIA. Please get in touch with the privacy team: privacy-tud@tudelft.nl to receive support with DPIA.

If you have any additional comments, please add them in the box below.

- None of the above applies

19. Did the privacy team advise you to perform a DPIA?

- No

22. What will happen with personal research data after the end of the research project?

- Personal research data will be destroyed after the end of the research project

The data will be shared anonymized and only as a part of the thesis, which will be shared in the TU Delft repository.

V. Data sharing and long-term preservation

26. What data will be publicly shared?

- All data (and code) produced in the project

The question is not applicable.

27. Apart from personal data mentioned in question 22, will any other data be publicly shared?

- I do not work with any data other than personal data

28. How will you share your research data (and code)?

- My data will be shared in a different way - please explain below

The question is not applicable.

29. How will you share research data (and code), including the one mentioned in question 22?

- I will upload the data to another data repository (please provide details below)

Data only shared in MSc thesis.

31. When will the data (or code) be shared?

- At the end of the research project

VI. Data management responsibilities and resources

33. Is TU Delft the lead institution for this project?

- Yes, leading the collaboration - please provide details of the type of collaboration and the involved parties below

My third supervisor, Hongyang Wang, is a Phd student from ETH Zurich. She will not have access to any personal data of the research.

34. If you leave TU Delft (or are unavailable), who is going to be responsible for the data resulting from this project?

35. What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

There will be no additional costs for data management.

Appendix B: Interview protocol

Research title: Project Management in DAOs -the case of Evolo Skyscraper Competition 2024 by ArchiDAO

Before the interview:

- *Set up interview setting incl. online meeting, distribution of interview protocol, consent forms etc.*
- *Set up recorders*
- *Welcome & thank interviewee for taking the time*
- *Introduction of the interviewer, background and role in interview, introduction of the master thesis and its purpose*
- *Repeat general topic of research, mention 'rules of the game' (expected duration, no obligation & possibility of withdrawal, ethical issues ex. patient information etc.) & provide opportunity for any follow up questions*
- *Ask for permission to record audio for transcription purposes*
- *Assure confidentiality of the participant's responses.*
- *Explain how data will be anonymized and stored securely.*
- *Interviewers ask interviewee to sign consent form*

Institutios: _____

Interviewee (Title and Name): _____

Interviewer: _____

Post Interview Comments or Leads:

_____

_____

_____

> ***Introduction****: Good morning. Thank you for joining me today. Before we proceed, would it be okay to record this interview for documentation and transcription purposes? For your information, only researchers on the project will be privy to the tapes which will be eventually destroyed after they are transcribed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Please let me know if you have any objections.*

- *Await interviewee response -*
- *Start recording after approval granted-*

Thank you. To briefly introduce myself- I am a masters student currently doing my second year of the Management in the Built Environment track at the Faculty of Architecture at TU Delft.

***Purpose of interview**: This interview is being conducted as part of my master thesis. The main goal in conducting this interview is to learn more about project management practices in an organization in the form of a DAO. Factors that are most important are the leadership and its form in a decentralized organization, ways with problems and conflicts are being resolved and personal motivation for participating in the project.*

This interview, as part of the research, is aiming to answer the following research question:

How can collective and distributed architectural design projects be managed in Decentralized Autonomous Organizations (DAOs)?

The interview is planned to last no longer than one hour. During this time, I have several questions that I would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete this line of questioning.

***Interviewee Background:** Before we start, could you please state your name, age and country of origin?*

1. Could you describe your academic background and career so far?

2. Can you describe your current role in ArchiDAO and how did you start working there?

3. How and why did you decide to join the Evolo Skyscraper Project?

4. How do you think the project is going?

5. Are there specific tools, methodologies, or platforms used to coordinate and track project progress?

6. Have there been times that you didn't know how to make a decision? What was the impact on the project?

7. Can you provide insights into how project roles and responsibilities are assigned within the project?

8. In your experience, how does the team adapt to changes or unforeseen challenges during the project? What was a challenge that you had to face?

9. Can you share an example of a conflict that arose during the project, and how was it resolved within the team?

10. Overall, how would you describe the experience of working in this project and in a DAO?

Closing

- *Ask if there's anything else the participant would like to share.*
- *Thank the participant for their time and contributions.*
- *Reiterate the confidentiality of the information provided.*

Follow up:

- *If applicable, inform participants about the next steps in the research process.*
- *Provide contact information for further questions or clarifications.*

Questions round 2:

1. Reflecting on the completion of the project, how do you feel about the overall outcome?
2. Do you feel that you fulfilled your wishes and expectation of this project and this team?
3. Looking back, are there any aspects of the project you would change or approach differently?
4. Do you feel comfortable working in an open environment like Discord, accessible by everyone? What are the advantages / disadvantages?
5. Do you feel it was necessary to move the communication to Telegram and if yes, for what reason?
6. Do you think Blockchain technology could have been integrated more effectively into the project?
7. And would you be interested in participating in a project that uses Blockchain, if you have to train for it first?
8. Could implementing a voting system based on work completed resolve conflicts over design decisions? How might this system operate effectively?
9. Do you think that it is necessary for the team to have a leader or a supervisor?

10. Considering the project's completion, what lessons have you learned that could inform future participants in similar projects?
11. If given the opportunity, what specific changes or improvements would you implement in a similar project moving forward?
12. Reflecting on your role in the project, are there any areas where you felt your contributions could have been enhanced?
13. Looking back, do you believe the project achieved its intended goals and objectives?
14. In retrospect, how do you think the project could have benefited from a different approach or strategy?

Interview with founders:

1. What was the extent of ArchiDAO's involvement and yourself in the Evolo Skyscraper Project? Can you describe the role or contribution ArchiDAO made to the project?

2. From your perspective, how do you believe the project progressed throughout its duration? What aspects do you think went well, and where do you see room for improvement?

3. Were there any specific challenges or conflicts occurred during the project that you are aware of? How were these challenges addressed, and what lessons were learned from them?

4. In terms of decision-making within ArchiDAO regarding the project, what mechanisms or processes were in place to resolve disagreements or conflicts among members?

5. Reflecting on the project management and coordination, what aspects do you believe were successful, and where do you think improvements could have been made to enhance efficiency and effectiveness?

6. Considering the allocation of roles and responsibilities within ArchiDAO for this project, how were tasks delegated, and were there any instances where roles needed to be reassigned or adjusted?

7. What is your opinion on the communication channels utilized during the project? Do you believe they were effective in facilitating collaboration and information sharing among team members?

8. Looking back, what would you identify as the project's main strengths and weaknesses? How do you think these factors influenced the overall outcome of the project?

9. In terms of future projects of ArchiDAO what changes or adjustments would you propose to optimize the team's performance and project success?

10. How do you think Blochchain could facilitate the overall management of the project and optimize decision making?

11. Lastly, what do you think motivates a young architect to join a project in ArchiDAO?

Appendix C: Informed Consent forms – Team members

Informed Consent

Research Title: Project Management in Decentralized Autonomous organizations (DAOs)

Principal Investigator: Stella Papathanasiou

Study Description: This research study aims to investigate project management in DAOs. The ongoing Evolo Skyscraper Design Competition 2024 by ArchiDAO serves as a case study, offering insights into project management within DAOs. The expected outcomes include guidelines for standardized processes, contributing to the adaptability of architecture firms in the evolving ACE industry.

Study Duration: 01-03-2024 to 24-05-2024

Participant Information

1. Purpose of the Study: You are being invited to participate in a research study titled "Design Management in Decentralized Autonomous Organizations (DAOs)." This study is being conducted by Stella Papathanasiou from Tu Delft. The purpose of this study is to explore the innovative vision and task-based model of ArchiDAO and more specifically the ongoing Evolo Skyscraper Design Competition 2024.
2. Your Role: Your participation in this study involves taking part in an interview where you will be asked questions regarding ArchiDAO's involvement in the project.
3. Confidentiality: We will ensure that all information provided by you remains confidential. Any personally identifiable information collected during the study will be kept confidential and anonymized.
4. Risks and Benefits: Participating in this study involves minimal risks. The benefits include contributing to research aimed at understanding collaborative processes in DAOs.
5. Contact Information: If you have any questions about the study or your participation, you can contact Stella Papathanasiou at S.Papathanasiou@student.tudelft.nl . If you have any concerns about your rights as a research participant, you can contact the Human Research Ethics Committee of TU Delft at hrec@tuDelft.nl .

PLEASE TICK THE APPROPRIATE BOXES	**Yes**	**No**
1. I have read and understood the study information dated [ ], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	☐	☐
2. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.	☐	☐
3. I understand that participating in the interview may involve minimal risks, and I am willing to proceed.	☐	☐

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
4. I consent to the processing of my personal data, including any discussions, messages, or personal opinions shared on Discord and Telegram, for the purpose of this research study.	☐	☐
5. I understand that my confidentiality will be protected, and any personally identifiable information collected will be kept confidential and anonymized.	☐	☐
6. I understand that personal information collected about me that can identify me, such as my name, will not be shared beyond the study team.	☐	☐
7. I understand that the (identifiable) personal data I provide will be destroyed after the endof the research.	☐	☐
8. I understand that after the research study the de-identified information I provide will be used for the report of the Masters' thesis.	☐	☐
9. I agree that my responses, views or other input can be quoted anonymously in research outputs	☐	☐
10. I understand that the information provided during the interview, including discussions on Discord and Telegram, may be used for research publications and dissemination purposes.	☐	☐

Participant Consent

I have read and understood the information provided in this Informed Consent Form. By signing below, I agree to participate in this research study voluntarily.

Participant Name : _____

Participant Signature: _____

Date: _____

Researcher Confirmation

I, Stella Papathanasiou, have accurately explained the details of this study to the participant. I confirm that the participant has provided informed consent to participate in this research.

Researcher Name: _____

Researcher Signature: _____

Date: _____

Appendix D: Informed Consent forms – Founders

Informed Consent

Research Title: Project Management in Decentralized Autonomous organizations (DAOs)

Principal Investigator: Stella Papathanasiou

Study Description: This research study aims to investigate project management in DAOs. The ongoing Evolo Skyscraper Design Competition 2024 by ArchiDAO serves as a case study, offering insights into project management within DAOs. The expected outcomes include guidelines for standardized processes, contributing to the adaptability of architecture firms in the evolving ACE industry.

Study Duration: 01-03-2024 to 24-05-2024

Participant Information

1. Purpose of the Study: You are being invited to participate in a research study titled "Design Management in Decentralized Autonomous Organizations (DAOs)." This study is being conducted by Stella Papathanasiou from Tu Delft. The purpose of this study is to explore the innovative vision and task-based model of ArchiDAO and more specifically the ongoing Evolo Skyscraper Design Competition 2024.
2. Your Role: Your participation in this study involves taking part in an interview where you will be asked questions regarding ArchiDAO's involvement in the project.
3. Confidentiality: We will ensure that all information provided by you remains confidential. Any personally identifiable information collected during the study will be kept confidential and anonymized.
4. Risks and Benefits: Participating in this study involves minimal risks. The benefits include contributing to research aimed at understanding collaborative processes in DAOs.
5. Contact Information: If you have any questions about the study or your participation, you can contact Stella Papathanasiou at S.Papathanasiou@student.tudelft.nl . If you have any concerns about your rights as a research participant, you can contact the Human Research Ethics Committee of TU Delft at hrec@tuDelft.nl .

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
1. I have read and understood the study information dated [ ], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.	☐	☐
2. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason.	☐	☐
3. I understand that participating in the interview may involve minimal risks, and I am willing to proceed.	☐	☐

PLEASE TICK THE APPROPRIATE BOXES	Yes	No
4. I consent to the processing of my personal data for the purpose of this research study.	☐	☐
5. I understand that my confidentiality will be protected, and any personally identifiable information collected will be kept confidential and anonymized.	☐	☐
6. I understand that personal information collected about me that can identify me, such as my name, will not be shared beyond the study team.	☐	☐
7. I understand that the (identifiable) personal data I provide will be destroyed after the endof the research.	☐	☐
8. I understand that after the research study the de-identified information I provide will be used for the report of the Masters' thesis.	☐	☐
9. I agree that my responses, views or other input can be quoted anonymously in research outputs	☐	☐
10. I understand that the information provided during the interview may be used for research publications and dissemination purposes.	☐	☐

Participant Consent

I have read and understood the information provided in this Informed Consent Form. By signing below, I agree to participate in this research study voluntarily.

Participant Name : _____

Participant Signature: _____

Date: _____

Researcher Confirmation

I, Stella Papathanasiou, have accurately explained the details of this study to the participant. I confirm that the participant has provided informed consent to participate in this research.

Researcher Name: _____

Researcher Signature: _____

Date: _____

Appendix E: Quotes selection

“I wanted to try a different project, I mean collaboration with different people and so on”

“and this is exactly how I like it, how I like the architecture forms and the, you know, architecture world in the future, okay. Although, honestly, I like the history of architecture as well, but this is so interesting and there's no limitation. You can choose what you want and besides it was like I was like this can be a new experience I mean another experience with like collaboration with other people so that also really suits my situation”

“We had a lot of our programs in this project and we try we really try to help each other and I think that we did it good”

“according to all the problems and ups and downs that we had, we really tried to, you know, give ourselves together and collaborate with each other. Sometimes we got angry, sometimes we got happy. But I believe that according to all of them, our project is special. It's something really different”

“I'm a young person, and it is interesting for me to collaborate with different people to understand how they treat in different situations in the projects, to know them.”

“I felt so angry from other people and I was like, is that so hard for you to do this or to do that? sometimes this happens but the point is that you have to control yourself and doesn't matter if you fight in a group with each other you have to keep your relationship with everyone and I think it's a really special you know um politics that you need to have, how to, you know, treat everyone and just the way that you could talk with them and tell them that, talk about what they did. And you think that, for example, they made a mistake, you need to talk to them, you need to fix it.”

“You need to keep the balance. Yeah, this is hard and this is what exactly I'd like to get experience. That's why I collaborate with different people, different projects, not just here in my own country with different people.”

“You are free to talk about your ideas. Yes, you can have this freedom in the team. No one's going to stop you. They might have positive or negative comments about that, but you can talk.”

“But no one stopped you to talk about new ideas. But other freedom about this project was, you know, everything. It didn't have any rules like again it didn't have any it's just a futuristic city and there's no other routes and this is something that if you can manage it in a good way you can get to a good result.”

“So I think the real winner of this project is myself”

“Because we have a lot of challenges about the skills, about, for example, At first we divided things and some of us believed that they can, for example, do something, for example, do with the renders on this project, but they couldn't render it in a good way. So I had to do it. Again, that was another challenge for me because I had to stay up until 3am in the morning and I worked on it. But there's one thing that I believe Ola really wanted this project to be the best”

“And it was, you know, challenging for me because that was the first project that when we divided all the skills with each other, there was some, that happened a lot. For example, some of us couldn't do the work. They couldn't, for example, I don't know, their skills weren’t enough, or their time couldn't allow them. So we had to again, because we didn't want to lose it, so we had to again divide the skills together and it was like extra pressure. For example, on me or on my son, yes. And that was the time as we got angry, we got a little bit like upset, like, oh no, again, you know, that's happened a lot, but we could keep ourselves together.”

“At first, we had different opinions. But, for example, at the first, I present a model and then, you know, I think I was the one that annoyed others about the model a lot because it's like, but with reason, you know, I don't like their snow. And I was like, we have to make these changes because I think it makes it better. And I tried to logically convince them that, for example, this model is better and this model has its own problems. And so here we might face some conflict.”

“It wasn't like we fight with each other, no. But while we were working on this project, we were friendly and acceptable. We accepted our own comments in the group. And but you know anytime I face for example problems sometimes I wanted to talk about something but I feel like if I say that for example uh to one of my members if I if I for example say to him that you did here wrong I feel like this might be a little bit bad or I don't know even rude”

“And of course we got stressed for us because we believe that for example we have to do this and we have to do that and then for example let's one day we can do what he wanted from

us you feel like stress or something so we had these challenges and built up you know standard I mean this is something that we haven't seen with each other and I mean I haven't seen before And yeah, we could manage all the confliction and all the problems that we had until here."

"Although we might think different about each other because some of us were so relaxed. Some of us were hard working like me, some of us were like, … is a hard worker and he also had stress as well. And so I think that's what the team is about. I mean, you have to, we have to at first accept our differences, and then try to help each other because we are not, any of us are a complete person. I'm not a complete person. I have some problems, I have some, you know, maybe wrong perspectives, but others have some other skills, some other, you know, better perspective, better, I don't know, rules in their minds about working on different projects."

"I was always allowed to make comments, make mistakes. And, you know, I had this freedom to talk and, you know, Even though it may be a little bit harsh. But yeah, I was comfortable."

"I like to be active. I like to see different people, different cultures, different countries. That's what I really love about projects and about working with different people. And from the first, I was like, especially, you know, I talk with myself a lot about my future, about everything. And it's like, I'm like, I don't want to be a person who's like a sculpture. I want to work with different people in different countries. I want to be an international worker. I want to be free to go to different countries, for example, even Asia, Japan, South Korea, or even, for example, in Europe."

"That's why I, for example, I always like to work with ArchiDAO, because ArchiDAO is a kind of community where a lot of people from different countries are working with them. For example, India, Bangladesh. I think they had They had a collaboration with Hong Kong. It was a professor at Hong Kong. And the head of the workshop was really different from different places"

"For example, in my country, most of the offices are like, you're not allowed to make that changes, you have to be like an operator. They will give you, for example, the plan and you have to work from, for example, to 8 hours 12 a day. For example, for a person like me, I'm not going to understand what is life. What is it about architecture that I love? And I cannot join different classes. I cannot live my life. Yeah. So this is something important."

“you can connect yourselves with international projects.”

“Yes, I mean if I can, yeah, of course, because that's a really good experience. And you know the fact that everything got online, so I think the in the future, honestly, because in Europe or in, for example, America, and I really don't know that, but I do like working with them.”

Because it's like a nomadic life. Travel all around the world and she also works so she doesn't have money issues and she gets to work with different people

“I really like to participate in competition projects and also especially Evolo. It was my dream. Always was my dream. Yes. It's a great, it's a big competition in architecture. I think every students in architecture like to participate in this competition.”

“And I thought that I have to just work on post-production, but then I realized that no, it's, you know, I thought that every single people have just exact, you know, tasks or roles. And then I realized that no, it's okay to participate in different sections and say about our opinion and this stuff. And yes, it was so nice to join this group. It was a hard time for me because I had to work on my project and I was in the middle of my exams, so it was really hard for me to do all this stuff together, but it was great, yeah.

“In the process, I could say that no, but at the end, yes. You know, because the process We have different opinions, so we have to manage these opinions and then decide to, I don't know, decide one thing. You know, we have a lot of things, a lot of opinions, a lot of ideas, but we have to decide one of them. And so I think in all projects it's the same, that in the process we are not really agree with all this stuff. But after a while, we can accept all of the opinion and ideas that we decided.”

“So it was, I had the deadline for myself, but it doesn't work. So yeah, it was the worst part of this experience”

“Honestly speaking, In some parts, I prefer that it could be better to, I don't know, be a little patient, all the group members, a little patient. And I don't like some bossy people in a group teamwork. Teamwork is just collaborating. We don't need a boss. It just collaborates. Because I was so new in this group, you know, and I didn't know other people. And it was a little hard for me in this part, but I tried to be more patient because I was new. I didn't know them. I wanted to just help and, I don't know, Doing my role in the best way.”

“I think it happens in every group, in my opinion, because different people with different ideas are working on the same project. So I think it's normal. This group wasn't an exception. So yes, there was something, but it needs patience, I told you”

“the overall experience was good.”

And working with ArchiDAO and with my friends, we are in the same age and, you know, it's a little friendly.”

“And it was a great opportunity for me. So I just joined happily”

“Um, you know, uh, it was very challenging for me. Um, I had other experiences with work with other people and other teams, but, um, working with, uh, international teams, something like that, if I should say, uh, people with different countries, it was very challenging”

“trying to just manage everything, not as a manager, but someone who's trying to just gather all the documents and all the information and for example finding someone who's good in 3d modeling or doing landscape design and things like that it was very challenging for me and the team and you know we had many difficult times for just in case of timing but this is the experience you know we just try to manage everything.”

“And just at some point, I just not an ArchiDAO team and I just just noticed that we need someone to manage the process and just gather the information and set the timing and everything. So Since then, I had the chance to have this position to lead the team or manage the time, manage the documents and everything that had to be done as someone who is trying to just leading and managing everything.”

“Because if not, then how they can be just gathered? Even if we know we have a Google Drive, we have Miro, we have everything. But in the end, just someone has to do that finalizing process.”

“It can be a good idea to have a customized one for each organization or maybe for each DAO itself. But until then, maybe using platforms like Miro or anything else that can be helpful, for example Lucid or other websites. All of them can be helpful and useful in this process. But yes, we also were thinking about having a platform or not a platform, a tool to just help us manage the process, you know, as like a cloud or something like that, that everyone should just upload everything that they're doing in a single space, single location, and then

everything just gathers. Yeah, I think it can resolve many problems that you might have in the past in terms of communicating and having access to everything."

"if we are a single entity, then we can just again go back to other type of, you know, the previous version of working teamwork as someone who is a leader and like normal firms and normal offices. But even if not, you know, in design and metaverse guild, as we are trying to just imagine everything, Maybe it's good to divide roles as well."

"in this project, I decided to divide all the responsibilities. For example, we have a 3D modeling team, we had a diagram and graphics team, and we had a rendering and presentation team. At the same time. And also, we had a research team that was working. It was on the ArchiDAO's memory. I was trying to work on it and…, at the same time, I just tried to help all the team. For example, when a 3D modeling team had lack of time, I just tried to push and cover something, or maybe some members of graphic team, if they, for example, know how to work with Rhino, then they can just push and cover the gap of time gap that time limit that, for example, 3d modeling team had."

"this is the way that we decided to work. Dividing different responsibilities. And also, in each team, we had two members"

"so we all decided to divide it and also try to help each other in each section"

"Yes. It was a time that, for example, some of us, based on his priorities, he couldn't manage to just follow the process. He was good at one point, but he couldn't follow the process. So, it was very challenging for me and all of us to find a way to just fill the gap of the absence of someone who was doing well, but we just couldn't manage that, you know, by thinking as a team, to what should we do?"

"And we just gathered and said, okay, right now, what should we do? For example, this person is not able to do whatever he said, or the other person, he wasn't able to continue working with us, working with us. So what should we do now? How should we fill the gap? And both of them were also very skilled in rendering. And that was a very challenging situation for us, because the modeling and the diagrams and everything were just done and we just needed someone to do the rendering. And at that point, someone just take the responsibility of rendering. But again, because we are not very skilled in rendering, for example, in renders, you need people, you need something to add to the image. So we decided to add someone else. To the team, we just shared it with ArchiDAO and we just asked

for the permission. We had the acknowledgement and they agreed. And we added someone who is very well able and skilled in that. And at that point, we could manage and go forward. Even we didn't have lots of time, it was just three weeks something like that but it went well”

“there was only one thing that was similar for me with other project, and it was the timing process, timing problem, sorry, timing problem. Because, you know, everyone were also having their own carriers or their own problems, for example, exams or other workshops. The only ... Problem which was similar to other process, or traditional way of working, team working, was the timing that, because maybe, members were not ... Understood, or informed about their situation, I don't know.”

“It ... Was a problem like that. Yes, but, you know, in other team works, team projects that I had ... You know, everyone is trying to be the boss, the one who is leading and just taking everything. Even in this project, everyone ... Thought that, okay, someone is the leader, someone is the one who is taking this role, and have to manage everything. I was trying to tell them that, okay, ... In this process, don't say that, okay, I'm the leader, or I'm the one who's ... Managing everything. 23:54 - Unidentified Speaker We are trying to do our responsibilities, work on our responsibilities, and bring the project forward. I'm the... Okay, I'm the one who's trying to managing the time, the project and everything. ... But, I was trying to tell them that ... This is something that we have to do independently, at the same time as a team”

“Otherwise, we could also call ourselves one part, as a one member of a DAO, you know, the whole team as one member. At that point, yes, I didn't really know that how should we consider ourselves. A team as one member or different members and different teams in a DAO. It was very challenging and it was obviously because they didn't know too much about the situation of DAOs and working in DAOs”

“Maybe you have to take a step back so the team can move forward and have the best result possible. I just decided, I just thought maybe it's better to do something like that, you know, just go as you said, step one step, go one step back and try to help them feel the way they're happy with the process. If they want to have someone as a leader or manager, then okay, let's do this, just finish this project.”

“I was happy to see that in this last week, everyone just tried to do, everyone tried to do everything they could in their power. And I didn't expect them much more at this point, because I understand everyone”

“Whatever you do, just if you feel like it's yours, you feel that passion in yourself about the project, then it doesn't matter that when time of the year you are, you just want to do it the best way you can.”

“it's just a teamwork just experience but not being honest about the abilities the abilities of each person is very bad it makes very difficult situation for everyone you know when someone says that okay I'm able to do this part this section for example rendering or doing landscape design Even if he was able to do that, but he didn't manage the time, it just killed one month and a half of our time. Also, another member of us, both of them, they almost wasted a month and a half. 30:28 - Stella Papathanasiou So, if it wasn't for this situation, timing, and not being honest about the ability and skills, we didn't have any other problem.”

“But you know, even when working with strangers, the honesty about time and skills is the most important thing. If you're not honest about these two facts, you will ruin the whole process.”

“Because, you know, being part of a DAO, based on the process of DAOs, it's not easy in Iran yet. Maybe it's applicable in other countries, in European countries and the United States or other. But in Iran, people are not familiar with this kind of stuff too much. Maybe a little number of them”

“So, in the Design and MetaverseGuild, we needed some start of an activity. So, it was my idea to join certain competitions and me with Mehrzad, we researched on various competitions and we selected Evolo. And so then we convinced the other co-members. And then we just started, but we just started preparing for it and participated.”

“I think in the design part there could be much more effective way of coordinating and communicating. Some things we went somewhat late to some members. And the concept also could be Like I'm very much like pretty much satisfied with the concept, but if we got some much more effective way of coordination and communication, that could be much more greater, like good concept”

“And what happened one or two members like says that he like, uh, He became inactive suddenly. And so there was like only one way of communication we have on discord and telegram and these kinds of channels. So this is one of the problems I think where blockchain could play a more effective role.”

“We used more, we pretty much like to upload the files, we used Google Drive and Miro board and certain kind of usual means very much general softwares. And in the discord channel, we communicated, communicated and put the images like the works and yeah. And to tag the project, actually, we didn't use much sophisticated tools right now in this particular project.”

“I think we could have used certain AI applications to track the project.”

“The only thing was we communicated like through various channels which we were connected and every week we met in the meetings and showed the work”

“… would also join as a mentor and checked the progress every week, means certain weeks, not every week, but yeah, every two or three weeks”

“Sudden. Leave off a team member like, He was active in the starting, but I think some problem came, I don't know, from his side. He couldn't do or what I don't know but yeah that was not predicted and what happened with the team then did you all decide collectively that someone has to leave yeah because the contribution and the name was important like in the competition so If one member is not actually contributing, it is not justifiable to give his name.”

“on the design concept there was no voting but there was decision making collective simple like If we were ready on a particular decision, we all were ready. So we would say yes or no during the meetings, during the normal conversation that we had.”

“So this competition would have been much more effective and fair if it was, if those technologies or infrastructure existed right now, that is in works right now, that is not final yet”

“to track the projects and to properly reward the contributors, to effectively and fairly reward the contributors and through a decision-making mechanisms like voting and all those things”

“So, through NFT skills that we are developing. You can track the particular skills of each member. Each member will get an NFT and through which their skills will be recorded on blockchain. And so if we have to start a project, so how we will select the members according to their skill level, the skills needed in the project. And also there will be some educational workshops within our kilo in which if we participate, we will get the upgradation of the NFT skills. And it will create a cyclic mechanism of continuity.”

“So as compared to architecture firms, we have somewhat more freedom on decision making.”

“So there is not very much issue of legal aspects Yes, there can be problems if we want to reward somebody or make payments. If we are doing in crypto wallets, then it may create some minor issues in developing countries where there are strict regulations if they want to withdraw.”

“I know when I was a student about the Evolo competition, and I think this competition is very interesting and So I accepted this competition”

“I try to arrange that and because I work in the other project and I'm freelancer. This is difficult for me to arrange time by present with group or conversation with group, but I try to join with us.”

“Okay, the behavior of members is very different from and the culture is very different. But we are trying to fix them and arrange with others and we are trying to accept the ideas from others in the group and then go working the forward project.”

“This is very interesting and different from other projects because the process of the project is very long and very difficult for me. So, on the other hand, many people with behavior different, it's very difficult for me to arrange them and accept any ideas or behavior from the other members”

“May I say to and he that for delay and and he suggests about another schedule and then we trying to get the schedule and when someone not working uh in this process uh me or mona or method uh working uh um working uh another member okay another time uh so there were people that had to go because of it uh yes in the process, not working about one month and another member working with them.”

“Are we going to create a new board at Miro for brainstorming and discussion? Last time, I find it very useful. since we all live in different time and place, it could put things together.”

“And we will make it a perfect experience. Like what I had with most of you. But this time with a bigger team.”

“It is alright we all are facing different issues and living situations. And it felt weird for us too when we began to think about doing something for EVOLO. Happy to have you here and we

also need some hands for writing scenarios and telling stories and theories about our concept."

"We all are busy working within our own careers and projects so this is why we are starting it six months earlier. We may have weekly sessions as they can be on meet or even calls here on discord to update each other or maybe even in some cases we can even share our process through texts"

"For next week, Let's do some research about different concepts and share with others. For now we're in good timing but finalizing the concept can be very helpful for weeks ahead."

"Hey guys im sorry for the delay got stuck was unable to login"

"The good things is we got the necessary calculation and references but I am upset to see what i thought is already done. so, what we can do is, doing things from different angle & perspective and going a bit more deeper to justify our design & concept. one positive aspect, no one did this in EVOLO (I assume)."

"Guys, I do not know if you all can feel the thrill that i am feeling. It is going to be a mountain of work to achieve. we all have to give our best. I hope will be able to break down everything in tomorrow's meeting."

"Hi everyone. Unfortunately, I did not have access to the Internet yesterday. I would appreciate it if you could tell me the information and the result of yesterday's meeting and how I can help"

"Based on our voting on Miro we will concentrate on two topic as main and one as side target."

"If we are aiming for a win, we have to be more connected and by that I don't mean to work too much, Let's work smart together. I don't really want to have anyone under pressure. So let's win it like a piece of cake."

"Share your reactions, please. If you support single family house react with ...If you support Skyscraper react with .... (I will vote the last to avoid any leading the opinions.)"

"It seems we are having unnecessary unwanted issues in setting up meeting. We will set the calendar before hand from now onwards"

"Whenever you have time I would really appreciate that"

“Because some of you are not interested in checking Miro”

“We don't think about it at all, and I thank you personally for the time everyone spends. Especially you who collect information from everyone.”

“We must remember that “honorable mention” is an achievement not a victory!”

“I will appreciate your collaboration, so that we can move forward.”

“I'm not saying "my model" . I'm saying our agreement for 3 weeks. It's not about one person”

“It seems we are having unnecessary unwanted issues in setting up meeting. We will set the calendar before hand from now onwards”

“Guys, please check your private messages on different platforms we are in contact with. Theo kindly shared a link with us.”

“And please stop working or sharing in the very last moments. We are a team and we have to talk about the process during the week not just last day before our sessions or during the session itself”

“Why no one is showing any reaction here? Guys, will you attend tomorrow?”

“Everything must be shared here. No private sharing”

“Do you have any friends who knows how to photoshop renders?”

“I think from now on we should not share our presentation and render files in this channel because it is semi-public place and our files should be confidential based on the recommendations of eVolo. Therefore, I'm sharing some image files in our drive --> Folder address: Evolo Design Competition --> Test for final presentation. Files are not filled with diagrams but you can get the total idea behind it and share your opinions. Inform others in here whenever we uploaded anything. Do not upload other files in "Test for final presentation" folder. Keep sharing your files in your own folders! Thanks.”

“He has to do it and he has to do it right. If not، I would have it removed. It's taking our time، we just need to figure out why we say "removal." He's got the landscape and the diagram and the rendering، he kept saying I'd do it، he hasn't done any of it yet. 08:59 Me

and Sand Meeting to talk to him on the Landscape, he didn't do anything, then he threw the file on me... Then he went for the language. He hasn't done one thing yet."

"I swear to God, I'm boiling up."

"I've been under a lot of pressure، actually."

"I was arguing with everyone because you left me with a deadline. All this stress, what did you do after the end? I did what he said، I had to work on everything، split up، push the slow ones! I've given up my life to find this and that... Otherwise I would have modeled and goodbye!"

"I apologize for a couple of days I haven't been working properly and I have a lot of work to do now، I hope I can make it up to you."

"I'm patiently taking the job، and I'm doing my best if you feel like I'm talking fast، go read your messages higher. I try to be online all the time and edit everything you say."

"The application Discord is good not for us in Iran because sometimes it's winter and we're trying to access the VPN and it's difficult for us. But I think Telegram maybe in Iran is very better because the application working on their computer and we can upload any files by any volume upload and everybody in the group access to the document"

"I think we can try to have a better schedule and better save time to finish the project is shorter and better."

"The goals of projects for me to add the project in my portfolio for the working in the other countries or go to the university in the other countries. And this competition is very perfect for this"

"Every day that I pass after submission and I think that's we had so many problems in the final project, so this is good that after days you know maybe it's months now and it would be better that we can just talk with you talk with each other and understand the flaws and problems and but you know it was so intense and the pressure was so much that we just wanted to have some free time and just understand what happened. But I think we it's better that we have some session to understand the situation and the problems that we had for the final project that we submitted."

“The 3D modeling was awesome, but I think the scenario and and the diagrams which is the most part you know when we are attending a competition was somehow weak. And that's was the part that I was trying to and trust the team”

“But you know, because the issues that we had, the problems that we had during the during those months and we just lost some people and therefore the weakness showed up more and more and you know that was a big problem for us.”

“And I would just try to have an eye on everyone's work, you know, because sometimes when you just trust someone when they're working, they when they say that, OK, I'm working on the on my responsibilities and the part that I have to work on and I just trust that some, some of them.”

“And I think being more serious and the seriousness from the one who is trying to manage the whole process is the most important part.”

“At many points you know because somehow when you think that you know someone, uh, and you know that they will do whatever they have to do and it's not enough, you know, trust issues are the only problem. But I've been more strong and specific and and serious and straight about the job that everyone have has to do is the biggest think that the manager or someone who's managing the team have to do.”

“Actually I love working with this code, but we know the problem with this competition was exactly the openness of this work. Everyone has access to everything that we were trying to do. Therefore, for the nature of this competition that it should be, uh, you know, hidden and somehow we shouldn't just show anything that we are doing.”

“It was a good experience working with this code, but at some points we had to just move to some private.”

“And it was, I think like one the last month, last two months that we spoke with Theo and Caviar and we just tried to and practice the voting process and and this the way that but you know it wasn't possible didn't work at some cases. I don't know why and I tried. I am happy we tried, but we I didn't know how it would go further.”

“Umm, I would definitely ask for documents like sivian portfolios and umm, I would definitely ask them if they really want to continue to the end or not and I'm not sure how we can just guarantee that you know because it's normal that some people will drop the process and

leave. But in the future, projects and future competitions, if we start another one, we have to just find, find someone to so that they can guarantee that they will stay till the end. They will not drop because that will just kill the spirit of other participants."

"And also be honest about the skills, you know, because because we had someone who said, for example, he's good in doing rendering in lumion and something like that, but it wasn't and he just killed three weeks of ours. So it was very big time and therefore we just had to asking to drop."

"Because rewarding is something that will inspire everyone. And if you finish this project, the either you either you win or lose, you will gain this because, for example, you just contributed and just you spend your time the time that you could spend other on other projects."

"In in case of Iranian members, Iranian participants and working with international teams is always a motivation."

"Yes, I think so and. Umm, I believe in some students team. It's not necessary as much as in a professional work, but I think and there is, uh, there should be a little leader. For some, I don't know how to explain, but I think it's not as necessary as the professional work, but I I think it's it needs a leader, yea"

"I learned to be more patient. And and yeah, because in a group work, everybody has a. His own idea and everybody wants to say about his perspective and I think umm, I learned to be more patient and. Accept their perspective and and uh, explain my idea to. I want to reach a point that everybody. Accept it and it was really it was a hard for me the first time, but I learned to how to manage this ohm challenges"

"everybody wanted to say, uh, what I'm saying is correct and you're wrong, you know, and managing this part and this challenges was a little difficult and I think it was the weak part of the school."

"Uh, well, when the project got over, we were so happy. And then you know soon that happiness. Like it's over because everything is like became normal, everything became normal and. That project is so hard. We had a lot of challenging with their team members. So we were happy that uh. We don't have those challenges right now. We are expecting the results and but you know All in all the project. Good. I mean, it was. It became something

acceptable for at least me according to the challenges we had together, I'd really didn't think that this project could be, you know, could become something good”

“I know there are positive and they're negative points and right now if I wanna work with the same people and the second project, I know how to handle it because I have more experience with those people. And know how they react and I know how I should react and how I should criticize what they did in the project.”

“Ohm, you know at the middle of the project, we stopped discussing, discussing about the project in the discord. So we went to the telegram because, well, we wanted to keep that idea safe like that.”

“Uh, because this card is such a really open social media, you know, I mean, it's like, uh, it's such a really, really social app. It's so open. There's no privacy in the score. For example, there's something good for ArchiDAO though, but when the project it's about to finish and the whole concept is finalized, it's not good to, you know, again, put it on the score that that's how I think.”

“For example, about uh, blockchain and NFT, we can make the projects and the FFT and use it. And there is a good points that about the about the plot blockchain is that the information will not never die. They information that for example you. Created a for example in the blockchain will never die and no one can hide it or I don't know. Race it. Their formation will stay until the end that that's a good point. For example, we can. I mean, we could make all of this the information that we had like as an NFT or amazing block time. But uh, so that this information and the people who worked on it would stay like forever. Uh, but about the financial part, is the NFT thing that we can work on it?”

“But in the real projects, especially big size, when there are a lot of people who are working on the project, for example there, there is a for example, a team with twenty members. They need to have a vote about what they're doing, and this is a good system because it will get you to the results and to their positive or negative points as soon as possible. Yeah, but if we could, I think that, if we could get a lot of comments on discord about the project, I mean, whoever could see the project on this score, the idea or whatever people would make comments if we could receive a lot of comments. Again, voting could work.”

“I loved the challenge and every moment that I worked on the project, even if it was hard and even if we kinda a little bit a little harsh discussions and but it was lovely to me. I liked it, but

there's no guarantee. It depends on you how much you are hungry for learning and for experiencing. I'm really hungry for that."

"I mean about the hungry people, people who like to learn, and they're hungry for they want to experience how we can actually find them. You know, it's not really easy to find someone who is who take responsible from UH0 to the hundred part of the project. I mean like from start to the end I mean. And recognizing these people could be so helpful because when you want something, when you really want something, you do whatever you can to make it, you know, perfect to have the perfect results. That is, when an you know. Besides that, you can push other people. You can push other member with your motivation and if you know we could, you know, find these people. It will be so great otherwise. Uh, we it will. It can be so challenging because some people like to attend to like to be part of the project at fast and at the middle they feel like they can't."

"I only feel that some more work on the design part could happen. I had some other ideas also that were not implemented in the design that could be implemented"

"I think it could happen in much more organized manner and we could implement some other knees to make it more organized and timely."

"But we didn't give that kind of role to anybody or ourselves. Also it was because ArchiDAO is decentralized, so I don't think that there was any leader or anyone's decision. One person decisions overshadowed others. In the overall project. We we had that by … mainly, but we I don't think that it is a necessity. Yeah, it's my personal opinion, but according to the particular situation, we might have to change this criteria or mindset, but it depends on the situation. I think that it should be decentralized as ArchiDAO motto is decentralization."

"It gives them the chance. To do a project that is gonna build in another country. Sitting there on their own country. With respect to an architecture though. And also. It's always lots of other problems which young architects like they it can provide a platform to showcase their skills and also increase their network. From that they can get more opportunities. For young architects, I think that it good play a very important role, because if we if they go locally on their uh countries. When they get the degree, they don't have much opportunity. There is some sort of struggle in the beginning. That and in that ArchiDAO can help in certain ways in getting knowledge and getting network or in doing projects. There could be many possibilities with ArchiDAO"

“Well, honestly, as I've already wrote in the email, I wasn't part of this Evolo project, so my contribution is 0 and also archival operates as like a group of interested people.”

“And if several people find something interesting, they create their own group and work together. So I didn't even like. I knew that there is some competition going on, but I didn't take part nor I didn't get any messages or on or information about it.”

“There shouldn't be difference between founders and regular members, because then it would dictate some kind of hierarchy, and that's something that shouldn't be the done or shouldn't be practiced in in DAO as far as I see.”

“So it's like a volunteer based approach rather. And of course, this approach has its limits and so you can't spend much time with it. And so yeah, sometimes when we start doing some projects, it ends up in a way that everybody has their own tasks or working. Things to do so some projects didn't even finish and.”

“So I think it can be improved in a case if some competition or some work we do get awarded or get some funding and then we could afford to really pay people for their work, which would be amazing and would be great.”

“So yeah, there is no hierarchy. There is no person that's saying, OK, now let's do this. Let's do that. It's up to anybody a who to actually propose and and do some stuff.”

“We have some basic, very small amount of money in treasury and we are staking it and a the the blockchain is used for multi sake which is not currently active or much active.”

“So this voting actually never happened ever. Even though we have this forum and capability to to vote, we always discussed and agreed on on things directly on, on a meetings or or in a in a group chat.”

“It's it's hard for architects to understand architecture and blockchain and you need a lot of time to. Understand the basics and much more time to to get really into it and code it.”

“So if you want to approach some architects to to collaborate, you have to really go deeply into the blockchain and how the decentralization work, and it's hard to present it in an easy form to to somebody who knows nothing about blockchain. So that's I think the second issue big one.”

“I think maybe there are similar to us, so the architects that are excited into the new technologies and looking for some kind of interesting because research options or research topics where they can. So yeah, you know, combine different hobbies of their own. So that's, that's what I think. What attracts people to join our kiddo and not only architects? Our joining there are some other there are people from other fields as well here so.”

“It's just when we talk or when we want to talk more or stay closer to to somebody, we just invite them into the group, which is called Architel core group, which kind of uh, symbolize this or works as a leadership.”

“While uh, when we were creating architel, we were a assuming that we will create an NFT which will store the information of what you did for architel. So it would be like a. A system where you would be getting rewards for finishing projects and on the other hand you could also, uh, start to lose these rewards. Or these, uh, trust points or or I don't know how to to call it? I don't want to call it social system because it's too much, too much like China like but. Stella Papathanasiou 36:45 Umm. Vele, Jiri 36:51 Uh, like this? These points could, uh, could be enough to motivate people to work more on on projects. And could the scare them or somehow force them to not missing their assignments if they said that they're gonna do it and then not doing it, it's pretty bad.”

"But here we had several problems. First of all I have to say that I don't think their organization went well and for many different reasons. One reason, basic and fundamental for me is that half the price was in Iran with direct they had problems. This clearly has to do with where they are and has nothing to do with the individuals. It has to do with that. And some countries like China, Iran and so on are extremely difficult to work with individuals who are off property in the country because their governments put limits on how they communicate."

"So one problem, this second problem that I think we had was that here again it has to do with the lack of experience."

"I'm so unhappy with the result and the process that I wouldn't want to keep it. I'd pieces of the portfolio or I wouldn't promote it anyway."

"If you have a rather clearly defined brief and you know exactly what everyone has to do, then one factor can help, because you can break it down into smaller pieces and say Oh well I'm leaving this out Stella's got it out Well we see that … has done her stage. And we know

that I wanted, can she perform it how much of them? But the initial piece in how you brief it and the initial direction. Always trying to get to a pretty good resolution of the design at a pretty good level."

"Come on let's go philosophically first by what most DAOS. I think he calls it. Raarchy request you can't avoid it. There will always be hierarchy. It's a matter of how. Daw for you. How do you decide this hierarchy and the nature of it has after it is. Rigid and inflexible and totally let's say concrete and it doesn't change in any way. It has been decided by all the members."

"brings an extraordinary momentum and an extraordinary and willingness to work to change the world and so on"

"we manage for example who does not have access to our signal, where we manage the finances. That's a security issue, right? And you don't have access to some other records. That's the process in the sense that we would like to trust the people who have in which a stranger who is first of all because the other problem with completely pamphlet is that you don't know."

"Yeah, I think a case of basically getting people's attention is. The idea of being involved in knowledge generation and now it's also researching that. In something bigger than you, meaning you could never have the same outcome if you didn't have people collaborating. And that's something I learned and the national but I learned it from research itself. Well the second is to be involved in projects and toxins that count as technology where they wouldn't have been able to expose that ratio otherwise. Jon for. And here now one of the projects we're trying to do will have that dimension. But now the formation, so it's a little early to talk about that. And the third one is doing essentially in the cutting edge planning. And really innovative. And the process and there's the incentive essentially to do let's say competitions in the as loyal I hear in such situation essentially. Now one the pieces that we can look at is working with basis. The people's criminals in technologies in some smart projects essentially where there now, yes, it's a bit of silk architectural technology and cutting edge architectural design and the. The use of technology within the whole project."

"But perhaps the most direct form of democracy is not voting on everything. Maybe it happens with having consensuses on everything, which is again a bit in very anarchic situations, where the other guy that I just want to have seen Power, but it doesn't mean I have to make the decision."

"it's about whether banks and central governments will allow an economy to run on the block, it's essential"