ETHERINSURE

DAO Insurance Company on the Ethereum Blockchain

White Paper

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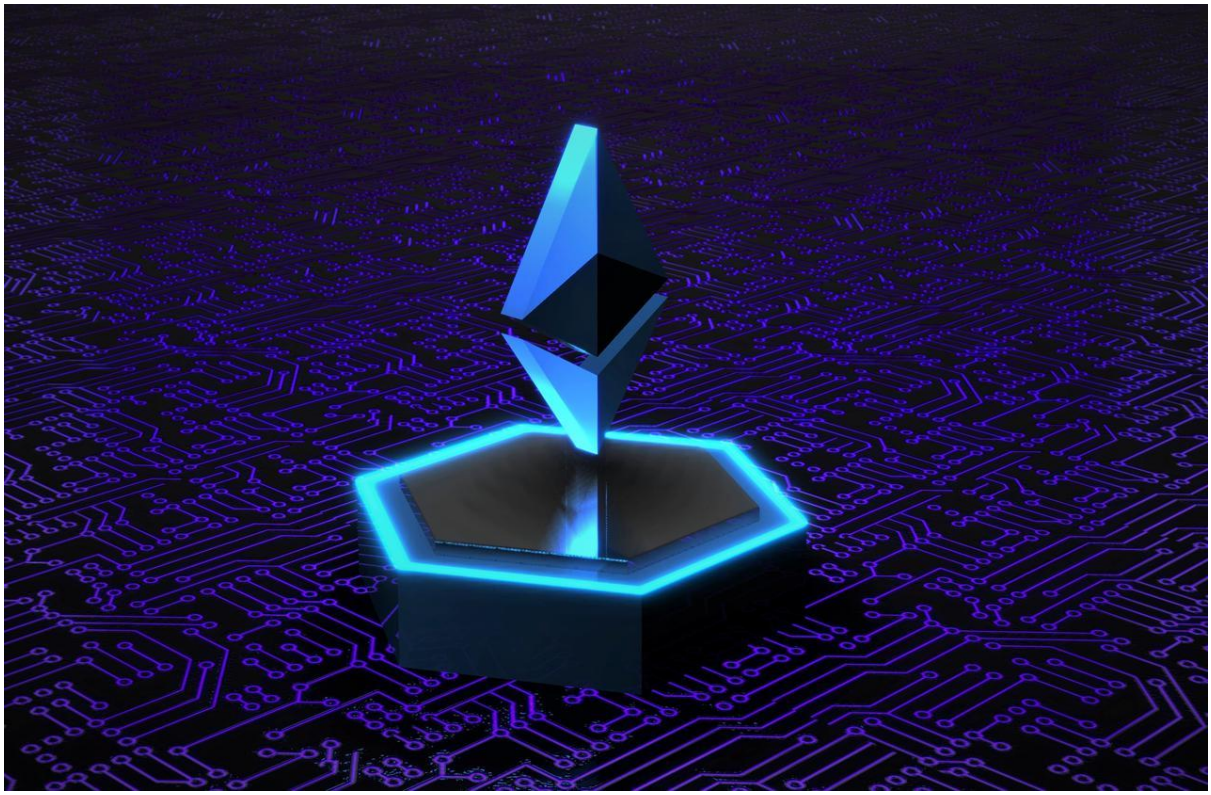

Abstract

This white paper explores the transformative potential of blockchain technology in the pet-insurance industry, focusing on its ability to streamline claims processes, automate policy creation, and enhance overall operational efficiency. By leveraging blockchain's core value propositions of disintermediation, transparency, trustlessness, automation, and smart contracts, insurance companies can revolutionize their operations and create a more secure and customer-centric network. The paper highlights the advantages of implementing blockchain technology, including running the insurance system as a decentralised autonomous organisation (DAO), with automated policy creation, claims settlements, and arbitration. It emphasises the use of the Proof of Stake protocol with the Ethereum blockchain and the secondary scaling solution, Polygon, utilising the Matic token. These innovations offer faster, more accurate claims processing, efficient policy creation, and scalability. Ultimately, blockchain technology provides an opportunity to enhance customer satisfaction, reduce costs, and drive innovation within the insurance industry.

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1. Introduction

1.1 Background

The insurance industry has traditionally been centralised, leading to inefficiencies, lack of transparency, and limited accessibility. Insurance fraud in Australia alone costs the economy $2bn per year[1], the cost of which is a significant component of today's insurance premiums paid by individual honest policyholders. However, with the emergence of blockchain technology and Decentralised Autonomous Organisations (DAOs), a new paradigm is being established. Blockchain provides a secure and immutable ledger that can revolutionise the insurance sector by enabling trust, transparency, and automation. By leveraging the power of blockchain and operating as a DAO, a new insurance ecosystem can be created, transforming the way insurance services are delivered and experienced.

1.2 Objectives

The primary objectives of this white paper are to

- Introduce a blockchain-based insurance company operating as a Decentralised Autonomous Organisation (DAO). This white paper aims to present an innovative model for a pet insurance company built on the Ethereum blockchain, powered by smart contracts. By utilising the blockchain and DAO principles, the company seeks to eliminate intermediaries, enhance transparency, and provide an efficient and inclusive insurance platform.

- Showcase the potential benefits of creating a Decentralised Application (DApp) with blockchain technology and adopting a DAO structure, the insurance company aims to offer numerous advantages. These include increased security, streamlined processes, lower operational costs, faster claim settlements, enhanced customer control over policies, and the potential for decentralised decision-making.

- Harness the power of smart contracts for automation using self-executing digital agreements, which will be utilised to automate and individualise policy creation, claims settlements, and the arbitration of claims. By leveraging the programmability of smart contracts, the insurance company aims to streamline policy issuance by tailoring coverage based on specific customer requirements. Claims settlements will be automated, eliminating the need for time-consuming manual processes and enabling faster and more efficient reimbursements. Additionally, the use of smart contracts will facilitate transparent and automated arbitration of claims, ensuring fair and unbiased resolution.

- Address key challenges and risks – creating a blockchain-based insurance system and operating as a DAO presents unique challenges. This white paper will highlight these challenges, such as standardisation, data interoperability, compliance, security, and talent acquisition. Additionally, it will outline the risk management strategies employed to mitigate these challenges and ensure a smooth and secure transition.

- An implementation plan will be presented, outlining the sequential stages, activities, and resource allocation. The plan will encompass crucial aspects such as planning, implementation, communication, training, measurement, and optimisation. By following this plan, the insurance company aims to achieve a seamless and effective adoption of the blockchain-based system.

By exploring the background and objectives of the blockchain DAO for insurance, this white paper aims to provide a comprehensive understanding of the innovative solution and its potential to revolutionise the insurance industry. Through this exploration, readers will gain insights into the transformative power of blockchain and DAOs in reshaping traditional insurance practices, automating policy creation and claims settlements, and unlocking new opportunities for improved customer experiences and operational efficiency.

2. Blockchain Technology and its Benefits for Insurance

Blockchain technology offers several key benefits for the insurance industry. Extensive market research and analysis have shown that customers value streamlined platforms, decreased insurance fraud, cheaper and faster insurance quotes and claims, high security, individualised and customisable policies, real-life information with immutable history, user-friendly interfaces, and a new experience in the insurance industry. By leveraging blockchain's core value propositions and addressing these customer needs, insurers can streamline their operations and deliver a more seamless and customer-centric insurance experience. The use of the Proof of Stake protocol with the Ethereum blockchain and Polygon as a secondary scaling solution using the Matic token further enhances scalability and transaction speed, ensuring efficient operations even during periods of high network demand.

3. Technical Feasibility

Through thorough technical feasibility analysis, it has been determined that implementing a blockchain-based pet insurance platform is technically feasible and advantageous. The chosen blockchain infrastructure, which includes the Ethereum blockchain as the primary blockchain and the Polygon secondary scaling solution, provides the necessary security, scalability, and efficiency for the platform. The use of the Proof of Stake (PoS) protocol ensures the integrity and trustworthiness of the network, while the secondary scaling solution facilitates high transaction throughput and low fees. The platform's technical resources, including smart contracts, decentralized applications (DApps), and secure payment systems, enable seamless interaction between users and the blockchain network, ensuring a robust and user-friendly experience.

4. Use Cases

4.1 Streamlined Claims Processing (Alice's case)

Alice wants to make a claim for her pet insurance and desires a faster and more efficient claims process. The blockchain platform's smart contract applies predefined rules to automate the claims process. Here's how the DAO (Decentralized Autonomous Organization) of the blockchain system automatically applies the rules:

- When Alice submits a claim, the smart contract progresses the claim if she is a valid customer.
- The smart contract checks if the claim is covered by verifying if the same claim was made by the registered vet. It compares the details provided by Alice with the corresponding claim from the vet.
- If the claim is not covered, the smart contract advises Alice that her claim has been denied.
- If all documents and information match up, including the claim details from the vet, the smart contract authorizes the payment for reimbursement.
- Once authorized, the payment is made, and the transaction is appended to the blockchain, ensuring transparency and immutability.
- The use of smart contracts and the DAO streamlines the claims process for Alice. The if-then logic of the transaction map is automatically applied by the smart contract, eliminating the need for manual intervention, and reducing processing time. The blockchain system ensures accuracy, transparency, and trust in the claims process.
- If a dispute arises and not all parties sign the multisig, the smart contract automatically triggers the use of an algorithmic arbitration system to impartially assess the claim and autonomously resolve the dispute.

4.2 Automated Policy Creation (Charlie's case)

Charlie is seeking a cheaper and faster insurance quote, as well as an individualized and customizable policy. The blockchain platform utilises smart contracts to automate policy creation, and the DAO applies predefined rules. Here's how the automated policy creation process works:

- Charlie agrees to the terms and conditions of the insurance company, including the smart contract terms and conditions, which define coverage limits, deductibles, and exclusions, as well as the rules for processing claims and resolving disputes.
- The smart contract applies these predefined rules to automatically generate a policy tailored to Charlie's specific requirements and inputs.
- The policy is created accurately, without the need for manual intervention, ensuring efficiency and accuracy in the policy creation process.
- The automated policy creation significantly reduces the time and resources required to process policy applications, enhancing Charlie's overall customer experience and speeding up the insurance purchasing process.

- The DAO of the blockchain system ensures that the smart contract applies the predefined rules consistently and accurately, resulting in an individualised and customisable policy for Charlie.

4.3 Secure Transactions and Fraud Protection (Emily's case)

Emily values high security and token rewards for no claim's bonus. The blockchain platform ensures secure transactions and mitigates fraud risks using smart contracts and the DAO. Here's how the system works:

- The smart contract utilises cryptographic techniques, digital signatures, and decentralised consensus to ensure the integrity and immutability of transaction records.
- Token rewards are provided to incentivise Emily to maintain a good claims history. The smart contract automatically verifies the claims history and allocates token rewards accordingly.
- The secure transactions and fraud protection measures of the blockchain system, enforced through the smart contracts and the DAO, provide Emily with increased security and trust in her insurance transactions.

4.4 Real-Time Access to Policy Information (Gabriel's case)

Gabriel values real-time access to his policy information. The blockchain-based platform provides Gabriel with the ability to access his policy details, including coverage information, premium payments, and claims history, in real-time. Here's how the system works:

- Gabriel can access his policy information through the blockchain platform's interface, which displays the details of his insurance policy.
- The information is updated in real-time, ensuring that Gabriel has the latest and most accurate information about his coverage, premium payments, and claims history.
- The transparency and accountability provided by the blockchain ensure that Gabriel has greater control and visibility over his insurance, allowing him to make informed decisions and manage his policy effectively.
- The DAO of the blockchain system ensures that Gabriel's policy information is securely stored and updated in real-time, providing him with convenient access and peace of mind.

4.5 Enhanced Customer Experience (Olivia's case)

Olivia values user-friendly interfaces and simplified processes. She does not want to have to talk to customer representatives each time she wants to make changes to her policy, nor does she enjoy the wait time to be talk to someone. The blockchain platform delivers an enhanced customer experience by offering intuitive interfaces and streamlined interactions between Olivia and insurers. Here's how the system improves Olivia's experience:

- The platform's user-friendly interfaces simplify the claims process and policy creation for Olivia, making it easier for her to navigate and complete necessary tasks.

- By leveraging blockchain technology and automation, the platform reduces the need for manual intervention and streamlines interactions between Olivia and insurers, saving her time and effort.
- The DAO of the blockchain system ensures that the predefined rules and processes are consistently applied, resulting in a smoother and more efficient experience for Olivia.
- The enhanced customer experience provided by the blockchain platform improves Olivia's satisfaction and engagement with the insurance process.

5. Description of the Business Model Blocks

5.1 Value Propositions

The blockchain-based pet insurance platform offers several value propositions. These include a streamlined platform with decreased insurance fraud, cheaper and faster insurance quotes and claims, high security through tokenomics, individualized and customizable policies, token rewards for no claim's bonus, real-life information with immutable history, user-friendly interfaces, and a new experience in the insurance industry. By leveraging the benefits of blockchain technology and running as a DAO, the platform ensures automatic and secure payments through tokenomics while providing enhanced value to customers.

5.2 Customer Segments

The platform targets various customer segments, including pet owners, veterinarians, pet care providers, new customers, and insurance companies. By utilising a decentralised autonomous organization (DAO) model, the platform eliminates the need for appendage workers and operates entirely automatically. This allows the platform to cater to the needs and preferences of its diverse customer segments through tokenized interactions and streamlined processes.

5.3 Channels

To reach and engage the target customer segments, the blockchain-based pet insurance platform utilizes various channels. These include a user-friendly website and decentralised applications (DApps) that provide direct access to the platform's features. Additionally, the platform leverages existing client lists and communication channels to promote the benefits of blockchain-based insurance. Offline channels, such as collaborations with veterinarians and pet care providers, are also utilised to expand the platform's reach. By leveraging multiple channels, the platform ensures widespread accessibility and adoption of its services.

5.4 Customer Relationships

The platform prioritizes personalised support, proactive communication, and ongoing relationships with its customers. Through the use of tokenomics and the automated operations of the DAO, the platform fosters positive customer relationships by implementing a rating system, feedback forms, loyalty programs, and personalised support through chatbots and help desk services. Proactive communication strategies are employed to address customer needs and concerns automatically. By leveraging the power of tokenomics and automated processes, the platform enhances customer satisfaction and loyalty.

5.5 Key Activities

The key activities of the blockchain-based pet insurance platform revolve around the automation and tokenization of various processes. These activities include developing a dynamic and actuarially sound premium setting model that operates autonomously through the DAO. The platform advertises to attract new customers and collaborates with pet-related influencers to promote its unique value propositions. The maintenance of a help desk, continuous development and maintenance of the platform, and provision of excellent customer support are all automated and run seamlessly through the DAO.

5.6 Key Partners

Establishing key partnerships is crucial for the success of the blockchain-based pet insurance platform. These partnerships include collaborations with established insurance companies to leverage networks, data, and expertise. Additionally, partnerships with reinsurers, technology partners, smart contract developers, and platform developers provide the necessary resources and expertise to develop and maintain the blockchain infrastructure, smart contracts, and interactive platform. Through these partnerships, the platform ensures the continuous improvement and reliable operation of its automated and tokenized pet insurance solution.

5.7 Key Resources

The key resources of the blockchain-based pet insurance platform revolve around the automation and tokenization of its operations. These resources include smart contracts for automated policy creation and claims processing, an interactive platform that operates autonomously through the DAO, a robust technology infrastructure to support blockchain utilisation, a decentralised application (DApp) for seamless user interactions, and a secure payment platform driven by tokenomics. Additionally, the platform requires the necessary hardware resources, such as computers, hosting, and internet connectivity, to ensure reliable service. The platform's team of talented employees with expertise in blockchain and smart contract development also play a vital role in maintaining and improving the platform's offerings. The Proof of Stake protocol is used to enable decision making and governance.

5.8 Cost Structure

The cost structure of the blockchain-based pet insurance platform encompasses various elements. These include technology expenses related to the development and maintenance of the blockchain infrastructure, smart contracts, and the interactive platform. Additionally, marketing costs, programming expenses, customer support costs, and staff salaries contribute to the overall cost structure. By leveraging the automated operations of the DAO and the efficiency of tokenomics, the platform strives to optimise and manage these costs effectively to maintain a sustainable and cost-effective business model.

5.9 Revenue Streams

The blockchain-based pet insurance platform generates revenue through multiple streams. These streams include premiums from pet insurance clients, commissions or fees paid by veterinarians or pet care providers for handling claims, subscription fees, and fees from new customers. By diversifying its revenue streams, the platform ensures a stable and profitable business model while utilising tokenomics for automatic and transparent payment processing.

6. Market Research and Analysis

Through comprehensive market research and analysis, it is evident that a blockchain-based pet insurance platform has significant potential to transform the insurance industry. By leveraging blockchain technology, implementing the Proof of Stake protocol, and utilising the Polygon secondary scaling solution with the Matic token, the platform can streamline claims processes, automate policy creation, and enhance overall operational efficiency. The identified value propositions, customer segments, channels, customer relationships, key activities, key partners, key resources, cost structure, and revenue streams form the foundation of a robust and customer-centric business model. With a strong focus on customer needs and leveraging the power of blockchain technology, the platform aims to deliver a superior pet insurance experience that is secure, efficient, and transparent.

Development on the blockchain provides an opportunity to compare metrics and key performance indicators against the traditional insurance model. Additionally, diversification of products beyond pet insurance and the exploration of a decentralised platform with cryptocurrency options align with the tenets of blockchain and present further growth opportunities.

Furthermore, opportunities for cost efficiencies compared to the traditional insurance companies are numerous. The DAO takes away costs associated with employees such as customer service representatives, hierarchical management salaries, the typical 6 story building to house 2000 employees, car parks, hardware and software for employees. These costs are passed onto customers, largely unknowingly to the customer, and with ever increasing premiums due to natural disasters and pooling of the claims expenses across geographical areas, the demand for lower insurance is the most pressing concern of customers.

Continuous monitoring and adaptation to changing market conditions will be crucial to maintaining a competitive edge and driving long-term success in the evolving landscape of insurance and blockchain technology.

7. Implementation Plan

To ensure a successful creation of the blockchain-based pet insurance system and to maximise the benefits of operating on the Ethereum blockchain and as a DAO with Polygon as the secondary scaling blockchain, a well-structured and comprehensive implementation plan will be followed. This plan will encompass the following stages, each with specific activities and corresponding timelines. Continuous communication, training sessions, and monitoring of key performance indicators (KPIs) will be conducted throughout the transition to ensure effectiveness and make necessary adjustments.

7.1 Timeline

Stages	Objective	Activities	Time (weeks)
Planning phase	Lay the foundation for a robust and compliant blockchain-based insurance system.	Conduct a comprehensive analysis of the Ethereum blockchain and Polygon's capabilities to ensure alignment with the insurance company's requirements. Evaluate their suitability for handling insurance policies, claims, and DAO governance	2
		Define the objectives and goals for the transition, considering the advantages of transparency, immutability, and streamlined processes offered by the blockchain-based system.	1
		Develop a detailed plan, including timeline, resource allocation, and risk management strategies, while incorporating legal and regulatory considerations related to operating as a DAO	2

		Engage key stakeholders, including legal experts and regulatory bodies, to obtain their buy-in and ensure compliance with laws and regulations	1
Implementation phase	Execute the transition to a blockchain-based insurance system, leveraging the capabilities of the Ethereum blockchain and Polygon	Start a pilot project to test the feasibility and effectiveness of the blockchain-based system, emphasizing smart contract functionality and automated policies and claims	4
		Implement a streamlined platform for automated policies and claims, incorporating robust smart contracts on the Ethereum blockchain, and ensuring seamless integration with Polygon as the secondary scaling blockchain.	8
		Develop a Unique Furry Identifier (UFI) as a decentralized identity solution to enhance data privacy and secure identification of insured pets	8
		Integrate existing systems with the blockchain platform, establishing interoperability and real-time data synchronisation mechanisms	8
Communication and training phase	Educate stakeholders and employees about the benefits and operations of the blockchain-based insurance system and	Develop a comprehensive communication plan and materials that effectively convey the advantages of transparency, efficiency, and security	2

	facilitate a smooth transition.	offered by the blockchain-based system.	
		Conduct training sessions and workshops for employees, focusing on the nuances of operating within a DAO structure, utilizing smart contracts, and understanding the Ethereum blockchain and Polygon.	4
		Regularly communicate progress and updates to stakeholders, addressing their concerns and ensuring transparency throughout the transition process.	Ongoing throughout.
Measurement and optimisation phase	Continuously measure and optimise the performance and efficiency of the blockchain-based insurance system.	Define key performance indicators (KPIs) that specifically measure the performance of the blockchain-based system, such as claims processing speed and policy execution accuracy.	1
		Monitor and analyse the defined KPIs to assess the effectiveness of the system and identify areas for optimisation and improvement.	Ongoing throughout.
		Incorporate user feedback and measured outcomes to make necessary adjustments, ensuring continuous improvement and alignment with user needs.	Ongoing throughout.
Handover and review	Ensure a smooth handover of responsibilities and evaluate the overall success of the platform.	Conduct knowledge transfer sessions with relevant stakeholders	2
		Ensure support and maintenance processes	4

		for the new system architecture, including security audits and compliance protocols, are in place to address any technical issues or user concerns.	
		Hand over remaining tasks or responsibilities to appropriate teams or individuals	1
		Conduct review to assess overall success	2
Total Time			**50 weeks**

7.2 Key roles

- Technical Lead: Responsible for the technical aspects, including Ethereum blockchain and Polygon integration, smart contract development, and implementation of the Unique Furry Identifier (UFI).
- Project Manager: Assisting the Technical Lead, overseeing the project's progress and timeline, and coordinating resource allocation.
- Stakeholder Engagement Lead: Facilitating communication, obtaining buy-in from key stakeholders, and addressing their concerns throughout the transition process.
- Training and Communication Specialist: Developing comprehensive communication materials, conducting training sessions, and ensuring effective stakeholder and employee engagement.
- Additional resources, such as technical experts, developers, and trainers, will be allocated on a part-time or as-needed basis to support specific activities.

Throughout the implementation plan, progress will be tracked using a Gantt chart, providing a visual representation of the project's timeline, milestones, and dependencies, ensuring transparency and effective management of the transition process.

8. Risk Management

During the creation of a blockchain-based pet insurance system running on the Ethereum blockchain and operating as a DAO with Polygon as its secondary scaling blockchain, several constraints and challenges may arise. The following are the key risks and risk management strategies associated with the implementation:

8.1 Constraints

- Standardisation and data format challenges for the differences in on chain and off chain services accessed by the blockchain pet insurance company. To address this, interoperability solutions and well-defined Application Programming Interfaces (APIs) will be employed. These measures will facilitate seamless data exchange and integration between the platforms.

- Ensuring real-time data synchronisation and smooth interaction between systems is critical. Robust APIs, along with data mapping and transformation mechanisms, will be implemented to enable efficient data exchange. This will ensure seamless integration and enhance the overall operational efficiency of the blockchain-based pet insurance system.

- Regulatory frameworks and legal boundaries may present compliance challenges during the set up. To navigate these challenges, collaboration with legal experts will be sought. Their expertise will help ensure adherence to relevant laws and regulations, providing a secure and compliant environment for the blockchain-based insurance operations.

- Robust security measures and encryption techniques are essential to mitigate security risks associated with the blockchain system. Strong encryption, secure authentication protocols, and regular security audits will be implemented to safeguard sensitive data and protect against potential cyber-attacks. Additionally, appropriate data sharing agreements will be established to maintain confidentiality and ensure data protection.

- Building and fostering collaborative partnerships with a relational approach is crucial. Ongoing effort and open communication will be key to establishing and nurturing mutually beneficial relationships with external partners, including technology vendors, training providers, and maintenance and support providers. These partnerships will ensure timely access to necessary resources and expertise throughout the setup.

8.2 Assumptions

- The availability of external partners, such as technology vendors, training providers, and maintenance and support providers, could be crucial for a successful creation. Ensuring timely access to these partners will facilitate smooth execution of the transition plan and enable efficient resource allocation.

- Obtaining stakeholder buy-in and support is essential to foster cooperation and ensure a collaborative process. Engaging stakeholders and addressing their concerns from the outset will help create a conducive environment for a successful implementation.

8.3 Risks - External

- The security of the blockchain system and the potential for cyber-attacks are significant technical risks. To mitigate these risks, robust security measures will be implemented. This includes strong encryption techniques, secure authentication protocols, and regular security audits to identify and address vulnerabilities proactively. By prioritising security, the blockchain-based pet insurance system will ensure the integrity and confidentiality of user data.

- Changes in demand for pet insurance, evolving pet ownership trends, and competition are inherent market risks. To address these risks, continuous monitoring and market analysis will

be conducted. This will allow the platform to adapt its offerings, policies, and marketing strategies to meet evolving customer needs and maintain a competitive edge.

- Evolving laws and regulations surrounding blockchain technology and pet insurance present regulatory risks. Collaboration with regulatory bodies and proactive compliance measures will be undertaken to ensure adherence to legal requirements. Engagement with legal experts will help navigate any regulatory complexities and ensure compliance with applicable regulations.

8.4 Risks - Internal

- Inadequate funding poses a financial risk. To mitigate this risk, the blockchain pet insurance company will leverage its funding with venture capitalists. This collaboration will help mitigate financial risks and provide access to valuable resources and expertise. If additional funding is required, the exploration of outside alternative financing methods, will be considered.

- Scarcity of talent in the blockchain field presents a risk to the successful implementation. To address this, the established company's standard operating procedures and ongoing training programs will be utilised. Identifying and nurturing talented employees within the organization will ensure a competent and knowledgeable team capable of handling the complexities of the blockchain-based pet insurance system.

9. Conclusion

The blockchain insurance DApp operating as a DAO presents a transformative solution for the insurance industry. By harnessing the power of blockchain technology and the advantages of running as a DAO, the platform offers streamlined operations, decreased fraud, faster and cheaper quotes and claims, high security, individualized policies, real-time information, user-friendly interfaces, and an enhanced customer experience. Leveraging the Ethereum blockchain as the primary blockchain and Polygon as a secondary scaling solution ensures scalability and efficiency even during periods of high network demand.

The use cases provided in this white paper demonstrate the practical implementation and benefits of the platform. Streamlined claims processing, automated policy creation, secure transactions and fraud protection, real-time access to policy information, and enhanced customer experience showcase the versatility and customer-centric nature of the platform. Through smart contracts and the DAO, the platform eliminates manual intervention, reduces processing time, ensures accuracy, transparency, and trust, and autonomously resolves disputes using an algorithmic arbitration system.

The business model blocks highlight the value propositions, customer segments, channels, customer relationships, key activities, key partners, key resources, cost structure, and revenue streams of the platform. The value propositions cater to customer needs and preferences, while the business model blocks ensure efficient operations, widespread accessibility, personalized support, and proactive communication.

In conclusion, the blockchain insurance DApp operating as a DAO revolutionizes the insurance industry by leveraging blockchain technology and running as a decentralized autonomous

organization. It delivers enhanced efficiency, transparency, trust, and customer experience while addressing customer needs and providing a secure and innovative insurance solution.

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