

# A permissioned blockchain prototype facilitating banking record interoperability

University of Essex



Anrich Potgieter

October 11, 2022

# Declaration

Test text

# **Abstract**

# **Acknowledgements**

# Contents

<b>1</b>	<b>Introduction</b>	<b>5</b>
<b>2</b>	<b>Background Literature</b>	<b>6</b>
2.1	Defining Blockchain Technology . . . . .	6
2.1.1	Background . . . . .	6
2.1.2	Types of Blockchains . . . . .	7
2.1.3	Blockchain Components . . . . .	7
2.1.4	Consensus . . . . .	7
2.1.5	Smart Contracts . . . . .	7
2.2	Organisational Interoperability . . . . .	7
2.3	Facilitating Interoperability using Blockchain Technology . . . . .	7
2.4	Blockchain Technology in Banking Organisations . . . . .	7
2.4.1	Permissioned Blockchain Networks . . . . .	7
2.5	Blockchain Data Storage and Retrieval . . . . .	7
<b>3</b>	<b>Ethical and Professional Considerations</b>	<b>8</b>
<b>4</b>	<b>Evaluation</b>	<b>9</b>
<b>5</b>	<b>Learning</b>	<b>10</b>
<b>6</b>	<b>Conclusion</b>	<b>11</b>
<b>A</b>	<b>Appendices</b>	<b>13</b>

# **Chapter 1**

## **Introduction**

# Chapter 2

## Background Literature

### 2.1 Defining Blockchain Technology

#### 2.1.1 Background

Blockchain technology reaches back far further than the inception of Bitcoin, and we can see some of the first implementations stretching back as far as 1998. In a 1998 white paper titled bmoney, we see some of the earliest building blocks of cryptocurrencies and the adoption of blockchain technologies (Dai 1998). Wei Dai outlines some cornerstone concepts that would later inspire Satoshi Nakamoto to create Bitcoin. Wei begins to outline a form of Zero Knowledge proof where two parties involved in an exchange or transaction use pseudonyms in the form of public keys to identify themselves within the context of a transaction (*Zero-Knowledge Proofs* — *Ethereum.Org* 2022).

## **2.1.2 Types of Blockchains**

**Permissionless**

**Permissioned**

**Consortium**

## **2.1.3 Blockchain Components**

**Cryptographic Hash Functions**

**Transactions**

**Asymmetric-Key Cryptography**

**Addresses**

**Ledgers**

**Blocks**

**Chaining Blocks**

## **2.1.4 Consensus**

**Proof of Work (PoW)**

**Proof of Stake (PoS)**

**Delegated Proof of Stake (DPoS)**

**Proof of Elapsed Time (PoET)**

**Practical Byzantine Fault Tolerance (PBFT)**

## **2.1.5 Smart Contracts**

## **2.2 Organisational Interoperability**

## **2.3 Facilitating Interoperability using Blockchain Technology**

## **2.4 Blockchain Technology in Banking Organisations**



## **Chapter 3**

# **Ethical and Professional Considerations**

## **Chapter 4**

### **Evaluation**

# **Chapter 5**

## **Learning**

## **Chapter 6**

## **Conclusion**

# Bibliography

Dai, Wei (1998). *Bmoney*. URL: <http://www.weidai.com/bmoney.txt> (visited on 08/18/2022).

*Zero-Knowledge Proofs* — *Ethereum.Org* (2022). URL: <https://ethereum.org/en/zero-knowledge-proofs/> (visited on 10/11/2022).

## **Appendix A**

## **Appendices**