

Use Cases and Design of Decentralized Financial Web Applications

Johannes Hüsters



BACHELORARBEIT

eingereicht am
Fachhochschul-Bachelorstudiengang

Software Engineering

in Hagenberg

im Februar 2021

Advisor:

DI Martin Harrer

© Copyright 2021 Johannes Hüsters

This work is published under the conditions of the Creative Commons License *Attribution-NonCommercial-NoDerivatives 4.0 International* (CC BY-NC-ND 4.0)—see <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

Declaration

I hereby declare and confirm that this thesis is entirely the result of my own original work. Where other sources of information have been used, they have been indicated as such and properly acknowledged. I further declare that this or similar work has not been submitted for credit elsewhere. This printed copy is identical to the submitted electronic version.

Hagenberg, February 1, 2021

Johannes Hüsers

Abstract

TODO: 0.5 - 1 page

Kurzfassung

TODO: 0,5 bis 1 Seite

Contents

Declaration	iv
Abstract	v
Kurzfassung	vi
1 Introduction	1
1.1 Motivation	1
1.2 Goals	1
1.3 Structure of the Thesis	1
2 Fundamentals	2
2.1 Cryptography	2
2.2 The Ethereum Blockchain	2
2.3 Smart Contracts	2
2.4 Decentralized Finance	2
2.5 State of the Art	2
3 Use Cases of Decentralized Finance	3
3.1 Store of Value	3
3.2 Payments	3
3.3 Lending	3
3.4 Exchanging	3
3.5 Investing	3
4 Design and Architecture	4
4.1 (Bitcoin)	4
4.2 (Stable Coins)	4
4.3 Lending and Borrowing Application	4
4.4 Token Exchange	4
4.5 Asset Management Platform	4
5 Closing Remarks	5
5.1 Criticism	5
5.2 Risks	5
5.3 Prospective Impact	5

Contents

viii

References

6

Chapter 1

Introduction

1.1 Motivation

1.2 Goals

1.3 Structure of the Thesis

Chapter 2

Fundamentals

* definition of technical terms (e.g. DeFi, Blockchain, Smart Contracts, Security Tokens, ...)
* explanation of fundamental concepts (e.g. Decentralization, Ethereum Network, Gas Price, Proof of Stake, Proof of Work...)

2.1 Cryptography

2.2 The Ethereum Blockchain

2.3 Smart Contracts

2.4 Decentralized Finance

2.5 State of the Art

current applications, relevance on the market, technologies, ...

Chapter 3

Use Cases of Decentralized Finance

3.1 Store of Value

3.2 Payments

3.3 Lending

3.4 Exchanging

3.5 Investing

Chapter 4

Design and Architecture

- 4.1 (Bitcoin)
- 4.2 (Stable Coins)
- 4.3 Lending and Borrowing Application
- 4.4 Token Exchange
- 4.5 Asset Management Platform

Chapter 5

Closing Remarks

5.1 Criticism

5.2 Risks

5.3 Prospective Impact

References

* Literature * Online Sources

Check Final Print Size

— Check final print size! —



— Remove this page after printing! —