Initial Plan: An Analysis of Blockchain Technology and its Commercial Exploitation

Author: Timothy Fisher
Student ID: c1309127

Supervisor: David W Walker
Moderator: Yukun Lai

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Project Description

In a world filled with emerging technologies, 'Blockchain technology' (often colloquially referred to as 'Blockchain') is arguably one of the most exciting, being labelled as 'disruptive' and 'innovative' by many. Influential individuals such as Richard Branson (Founder, Virgin Group), as well as world renowned companies (including IBM, Deloitte and Microsoft) are backing the technology and its possible uses[1].

It wasn't long ago when only technology enthusiasts had heard of cryptocurrencies such as 'Bitcoin' and 'Litecoin', however, cryptocurrencies have now entered into the limelight, and the underlying technology – the digitally distributed public ledger – 'Blockchain' has received attention from a variety of industries. The concept of recording transactions in a secure, stable and scalable way, has led to possible applications in areas including: smart contracts, elections management, digital asset management, and identity management. Moreover, Blockchain technology has the potential to be pivotal in industries such as real estate, automotive, healthcare and even the diamond industry[2].

The aim of the report is to inform a hypothetical group of venture capitalists on the commercial exploitation of Blockchain technology. The report will focus on how a Blockchain works from a technical viewpoint, with emphasis on how it achieves distributed consensus. Furthermore, the report will provide a detailed explanation on how Blockchain technology ensures a secure and trustable record of transactions.

The report will look at already established uses of Blockchain technology, as well as any interesting and profitable areas of emerging/potential uses. The advantages, disadvantages and risks of using Blockchain will also be evaluated. Although Blockchain is receiving a lot of attention, it is still unclear whether it can be profitable, therefore the commercial exploitation element will be at the forefront of the report.

Using a mixture of sources such as: online journals, articles, eBooks, and potentially discussion with experts in the field, I hope to conduct enough research to provide a detailed report on Blockchain technology. The project report's main purpose will be to provide a recommendation that details areas (possibly a specific application or a company) that venture capitalists should invest their money into.

Project Aims and Objectives

The following project aims and objectives describe what I wish to achieve at the end of the project. Although there is no current 'weighting' on the aims, the following points will be used to measure the project's success:

1) Gain an understanding of how Blockchain technology works from a technical viewpoint

- Understand the fundamentals of Blockchain and how transactions are processed
- Understand the parameters that need to be fulfilled for a consensus mechanism to be applied, as well as the different types (e.g. Proof of work, Proof of stake, Federated Byzantine Agreement).

2) Highlight current Blockchain uses, as well as promising areas of interest for Blockchain

- Research and explain popular uses of Blockchain (e.g. Bitcoin, Smart Contracts)
- Identify areas that Blockchain technology has been proposed for, and undertake further research on the potential profitability from these applications
- Focus on two or three specific areas to research further, and justify why

3) Produce a summary for a group of venture capitalists, highlighting potential Blockchain related areas that they can invest their money into (e.g. propose a 'solution' to their 'problem')

- Understand the risks/rewards from using Blockchain in the specified applications, and justify why these applications have been investigated in-depth
- Evaluate and rank investment options, providing justifications

4) Create a final report, outlining the full project, with the project background, a conclusion and a self-reflection included

- Produce a report which covers the project background, the approach taken, any findings, the recommendations to venture capitalists, and a conclusion. The project report should include an abstract

Ethical Considerations

Having read and reviewed the ethical guidelines set out by Cardiff University School of Computer Science and Informatics, I believe that the planned report does not require review by the relevant Ethical Committee.

If individuals (for example, experts in industry) are interviewed, I will ensure the individual's preferences are considered. I will also ensure Cardiff University's guidelines will be adhered to at all times. If at any time I am unsure on whether something needs ethical consideration, I will contact either my supervisor or the relevant personnel with regards to the Ethical Committee.

Work Plan

The following work plan includes 5 milestones, and 7 deliverables. I have ensured adequate time has been given to the research and writing of my report, factoring in other commitments and dates. Throughout the project I will: have regular meetings (fortnightly) with my supervisor, keep a list of relevant references/sources, and maintain a reflective diary.

The weeks in the report below are from the start of this project, rather than the University teaching weeks:

Week 1 *(23/01/2017 – 29/01/2017):*

- Initial research on Blockchain technology, including a brief investigation into the possible scope
- Initial meeting with Supervisor (David W Walker), clarifying and agreeing on projects aims, as well as discussing the potential areas the project could focus on

Deliverable: Initial Plan Report
Milestone: Submission of Initial Plan Report

Week 2 (30/01/2017 – 05/02/2017):

- Research how a Blockchain works from a non-technical viewpoint
- Read the eBook: "Blockchain: The Essential Quick & Easy Blueprint…" by Victor Finch
- Conduct research for the report's 'Background'/'Related Work' section

Week 3 (06/02/2017 – 12/02/2017):

- Briefly research current and future Blockchain technology uses
- Conduct further research on the Blockchain technology, focusing on how it achieves distributed consensus

- Meeting with Supervisor to finalise project scope

Milestone: Scoping complete

Week 4 (13/02/2017 – 19/02/2017):

- Further exploration of how Blockchain works (from a technical point of view), focusing on protocols, cryptography, digital signatures, and more
- Initial 'document' for personal use, listing suitable sources, and notes on how a Blockchain operates, as well as it's uses

Week 5 (20/02/2017 – 26/02/2017):

- Create brief 'outline' of Final report
- Start writing an initial section on how Blockchain technology works

Milestone: Start of Final Report

Week 6 (27/02/2017 – 05/03/2017):

- Complete the initial section of the report (including 'background'/'related work')
- Conduct any necessary further research on how Blockchain technology works

Deliverable: 'How Blockchain works'* section complete

** Report headings will inevitably change as the project progresses*

Week 7 (06/03/2017 – 12/03/2017):

Note: Coursework deadline for University Module 'Project and Change Management'

- Research Bitcoin/cryptocurrencies, and Ethereum/smart contracts
- Research other current (mainstream) uses of the technology, focusing on profitability as a key factor

Week 8 (13/03/2017 – 19/03/2017):

- Conduct further research on already established Blockchain uses
- Start writing the project report's section on Blockchain current uses

Week 9 (20/03/2017 – 26/03/2017):

- Finish 'Current Blockchain applications' write-up (focusing on mainstream uses)
- Research other potential/emerging Blockchain applications
- Contact several industry experts for interview/possible discussion

Deliverable: 'Current Blockchain applications' section complete

Week 10 (27/03/2017 – 02/04/2017):

Note: This week will also be used to catch up with any outstanding project-related work

- Conduct interviews
- Write up results of interviews/discussion

Week 11 (03/04/2017 – 09/04/2017):

- Further research on future applications, investment strategies, and the role of a venture capitalist
- Justify focusing on two or three future applications to write about in the report/venture capitalist summary

Week 12 (10/04/2017 – 16/04/2017):

Note: Start of Easter Recess (Ends 30/04/2017)

- Continue research on the chosen Blockchain applications, focusing specifically on profitability
- Start writing the summary for the venture capitalists (commercial exploitation section)

Week 13 (17/04/2017 – 23/04/2017):

- Complete the main body of the report (commercial exploitation)
- Write report conclusion

Deliverable: 'Commercial Exploitation' section complete
Deliverable: Conclusion complete

Week 14 (24/04/2017 – 30/04/2017):

- Write the introduction, abstract, future work, and reflection sections
- Finalise any outstanding sections (potentially table of abbreviations, glossary, acknowledgements and appendices)
- Finalise referencing
- Complete first draft

Deliverable: First draft of Report

Week 15 (01/05/2017 – 07/04/2017):

- Finalise report contents and structure, seeking feedback where appropriate

Deliverable: Final Report
Milestone: Project submission

Week 15+ (08/04/2017 – 09/05/2017):

- Project Viva preparation (Date: TBA)

Milestone: Project completion

Supervisor Meetings

Regular (fortnightly) meetings will be held with my project Supervisor, ensuring my workload is appropriate, and that my work is heading in a correct and meaningful direction. Email will be used for communication in between the face-to-face meetings.

Provisional dates*:

- 10/02/2017
- 24/02/2017
- 10/03/2017
- 24/03/2017
- 07/04/2017
- 21/04/2017

**Meetings may occur weekly if necessary. Dates closer to the deadline may also be added, for example, after the Easter break.*

References

[1] J. Redman, "Richard Branson: Blockchain is an ‘economic revolution’ - Bitcoin news," in *Bitcoin.com*, Bitcoin News, 2016. [Online]. Available: https://news.bitcoin.com/richard-branson-blockchain-revolution/. Accessed: Jan. 27, 2017.

[2] "The great chain of being sure about things," in *The Economist*, The Economist, 2015. [Online]. Available: http://www.economist.com/news/briefing/21677228-technology-behind-bitcoin-lets-people-who-do-not-know-or-trust-each-other-build-dependable. Accessed: Jan. 27, 2017.

Tim Fisher