Challenges in Designing a Blockchain Platform

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- ❑ Blockchain
- ❑ Blockchain Platforms
- ❑ Platform Design Challenges
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- ❑ Research Proposal

http://www.emeraldinsight.com/loi/intr

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5 Blockchain Applications That Are Shaping Your Future

By Ameer Rosic

http://www.huffingtonpost.com/ameer-rosic-/5-blockchain-applications_b_13279010.html

Not just Bitcoin anymore

Blockchain for developers: Is it right for your application?

https://techbeacon.com/blockchain-it-right-your-app

The Ugly Truth About Blockchain Applications

https://medium.com/zeppelin-blog/the-ugly-truth-about-blockchain-applications-73e55cad9582

The Blockchain

Blockchain 1.0 	The first virtual currency.
Blockchain 2.0 	Smart Contracts

Cryptocurrencies	
Bitcoin [19]	https://bitcoin.org/
Peercoin	http://peercoin.net/
Colouredcoins	http://coloredcoins.org/
Omni	http://www.omnilayer.org/
Nxt	http://nxt.org/
Smart contract platforms	
Etheruem	https://www.ethereum.org/
Counterparty	http://counterparty.io/
Ledger platforms	
Factom	http://factom.org/
Ripple	https://ripple.com/
Eris	https://erisindustries.com/
MultiChain	http://www.multichain.com/
Enigma	http://enigma.media.mit.edu/

Blockchain Platforms

Public, opensource, support smart contract

Design best for finance industry

A permissioned blockchain

Opensource, under Linux Foundation, driven by a governed board.

Issue in Designing a Blockchain Platform

It is **challenging** as this technology is;

- Not **Matured**
- Not Systematically Explored (Xu et al., 2016)

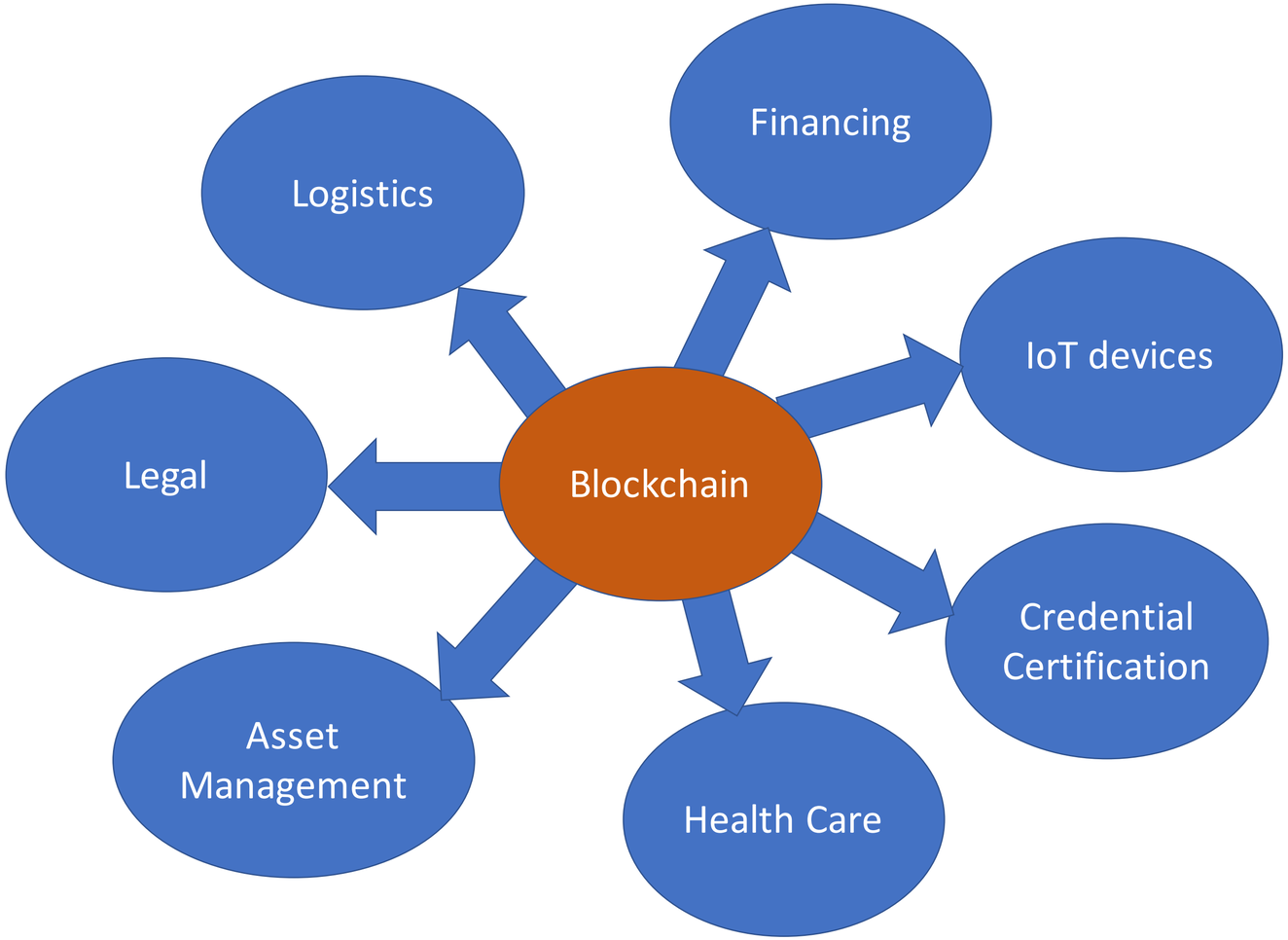
For Business a new technology should be

Interoperable

Secured

Easy to use

Blockchain Applications



Issues and limitations

- Many platforms
- Different types offerings
- Monolithic design
- Lack of testing
- Opensource development

“which platform to choose from many that are available today” (Dinh et al., 2017)

Current research

Mainly focused on the various technical areas;

Security, **performance**, data **integrity**, **privacy** and **scalability**

(Yli-Huumo, Ko, Choi, Park, & Smolander, 2016).

The **usability** of these platforms is an issue (Lindman, Rossi, & Tuunainen).

Current Approaches

- Understand the design goals
- Study the platform structure and the underlying architecture (Natoli & Gramoli, 2016).

technology model

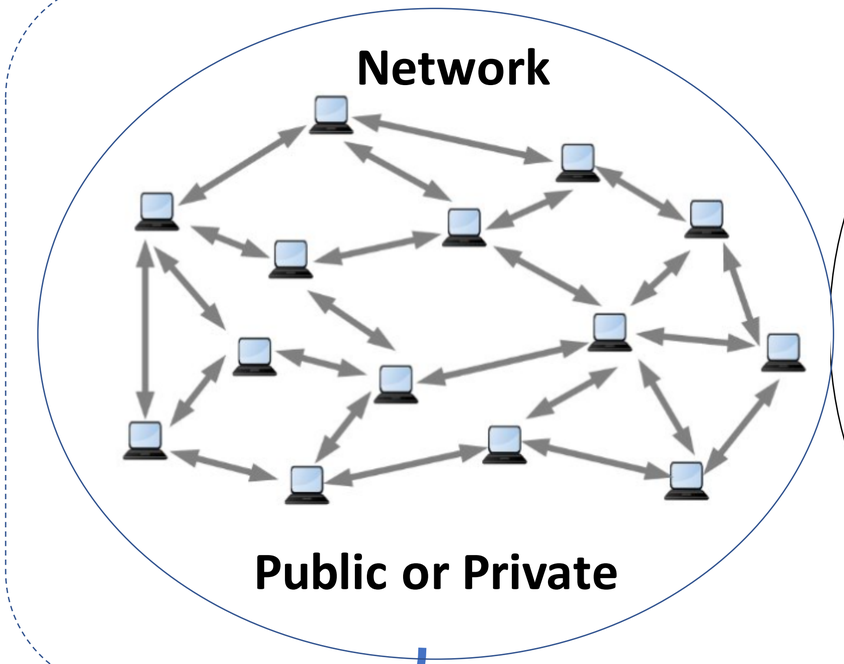
IoT devices

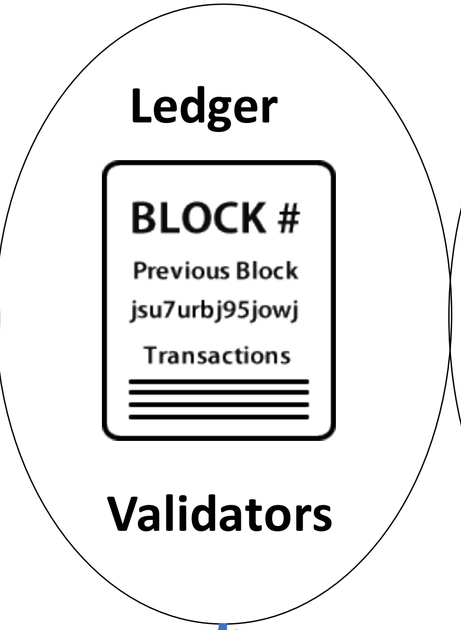
Applications

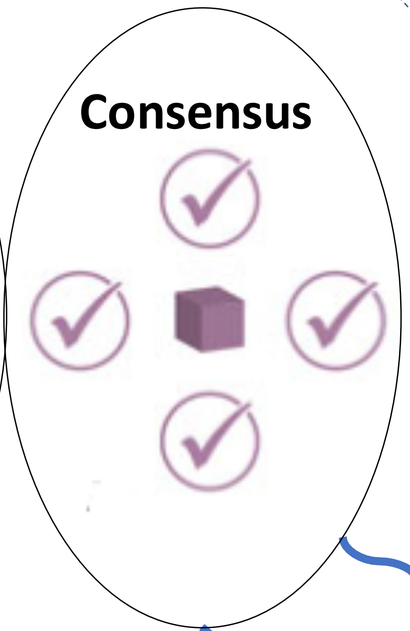
Business logics

API & Interfaces

The Components







Security

Privacy

Scalability

Speed

Block Size

PoW/PoS

Incentives

Current approaches

	Public	**Private**	**Hybrid**
Permission	open	Permissioned	Permissioned
Speed	Slow	fast	fast
Consensus	Proof-of-work	proof-of-stake/ Pre-approved participations	Pre-approved participations
Identity	Not known	known	known
Trust	Trustless	trusted	trusted
decentralised	Fully	no	Partly

Current approaches

- The Consensus mechanisms
  - Proof-of-work
  - Proof of Stake
- Usability and Scalability of the platform

Our Research

Identifies and describes,

the challenges that are considered when

designing a platform and to ensure **security**, **reliability** and **usability**.

We aim to investigate

- Interoperability between different platforms
- integration with existing systems (e.g. IoT)

References

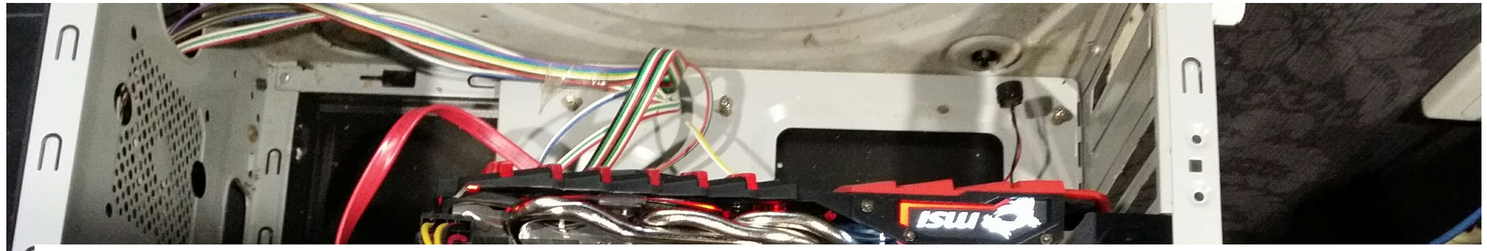
Dinh, T. T. A., Wang, J., Chen, G., Liu, R., Ooi, B. C., & Tan, K.-L. (2017). BLOCKBENCH: A Framework for Analyzing Private Blockchains. doi: arXiv:1703.04057

Lindman, J., Rossi, M., & Tuunainen, V. (2017). *Opportunities and risks of Blockchain Technologies in payments – a research agenda*.

Natoli, C., & Gramoli, V. (2016, Oct. 31 2016-Nov. 2 2016). *The Blockchain Anomaly.* Paper presented at the 2016 IEEE 15th International Symposium on Network Computing and Applications (NCA).

Xu, X., Pautasso, C., Zhu, L., Gramoli, V., Ponomarev, A., Tran, A. B., & Chen, S. (2016). *The Blockchain as a Software Connector*.

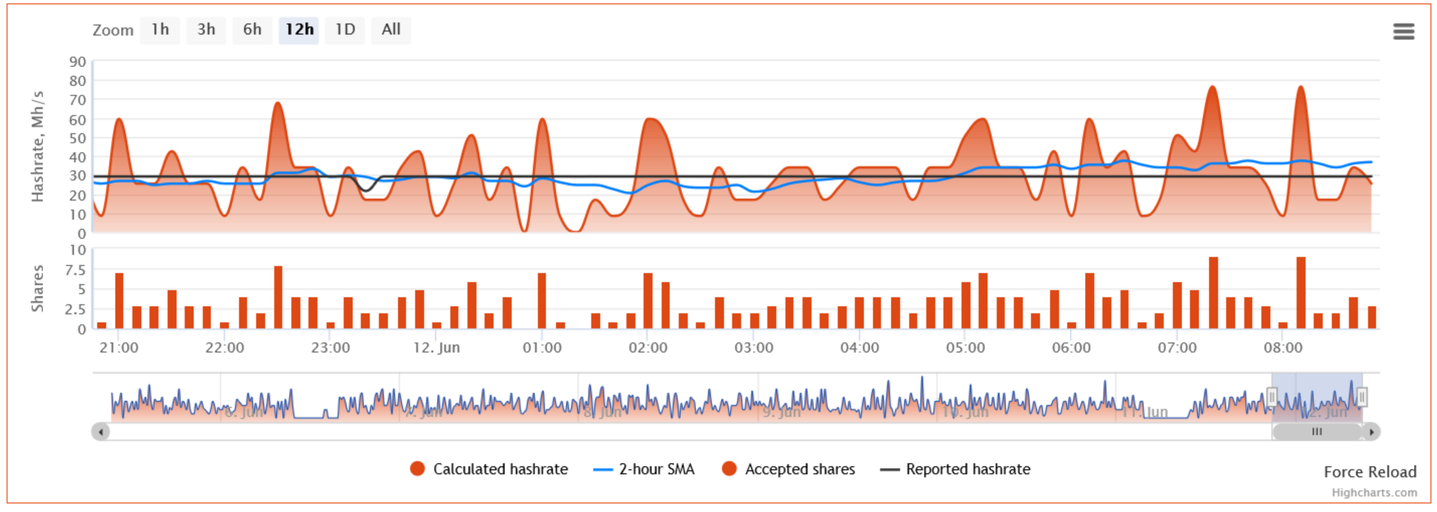
Yli-Huumo, J., Ko, D., Choi, S., Park, S., & Smolander, K. (2016). Where Is Current Research on Blockchain Technology?—A Systematic Review. *PLOS ONE, 11*(10), e0163477. doi:10.1371/journal.pone.0163477

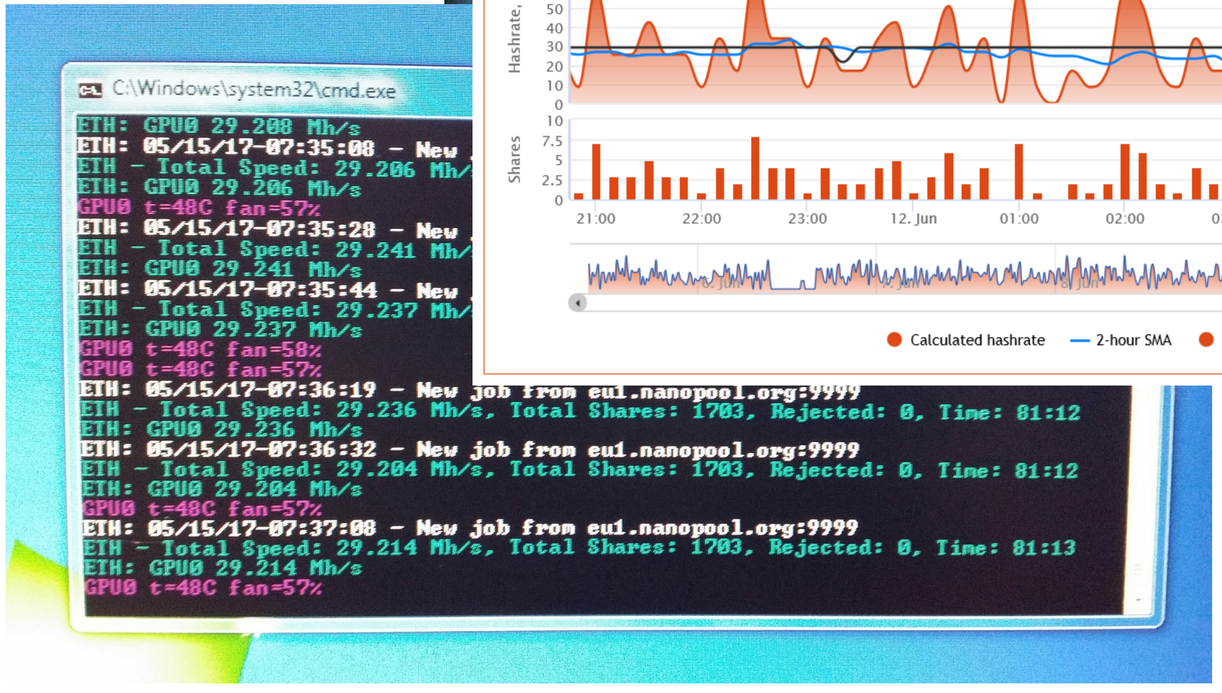


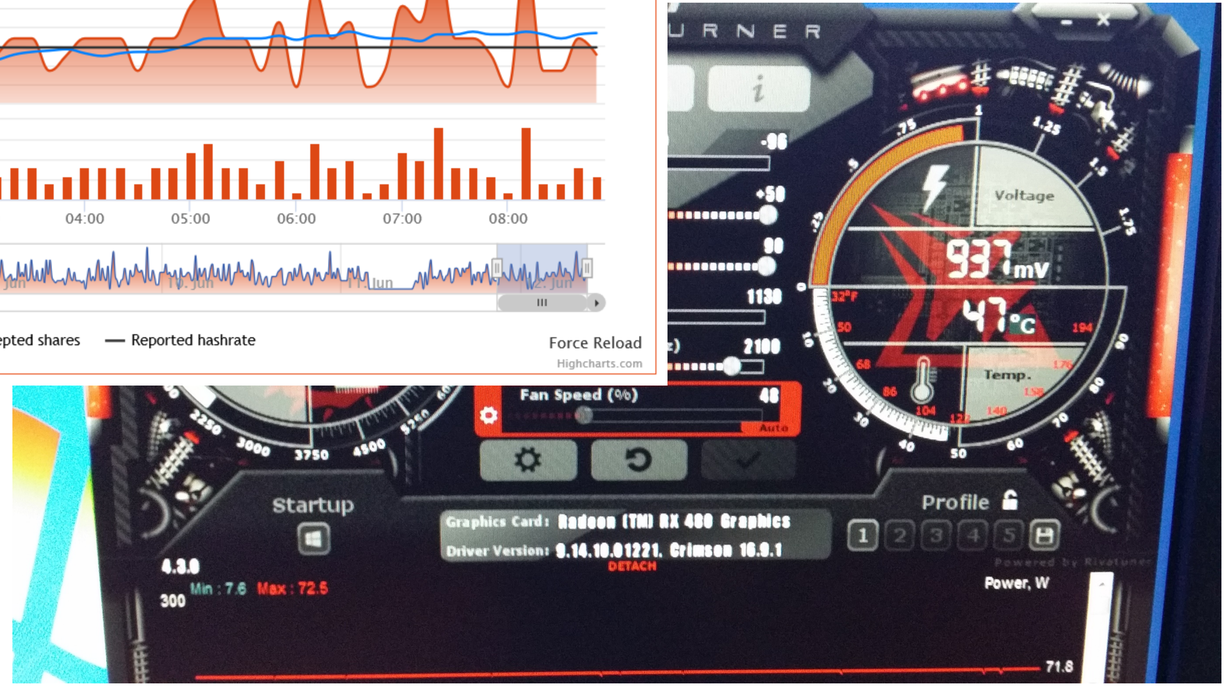
Minimum payout is 0.2 ETH

Account: 0x546a1010f3b212de8a7cb146c5038f45598c2de4 JSON Data Settings

Current Calculated Hashrate	Average Hashrate for last 6 hours	Last Reported Hashrate	Balance
34.0 Mh/s	33.0 Mh/s	29.2 Mh/s	0.12120600 ETH







Thanks..


I THINK WE SHOULD BUILD A BLOCKCHAIN
UH-OH
S. Adams E-mail: SCOTTADAMS@AOL.COM
DOES HE UNDERSTAND WHAT HE SAID OR IS IT SOMETHING HE SAW IN A TRADE MAGAZINE AD?
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WHAT COLOR DO YOU WANT THAT BLOCKCHAIN?
I THINK MAUVE HAS THE MOST RAM.