

Welcome Neoxplorers!



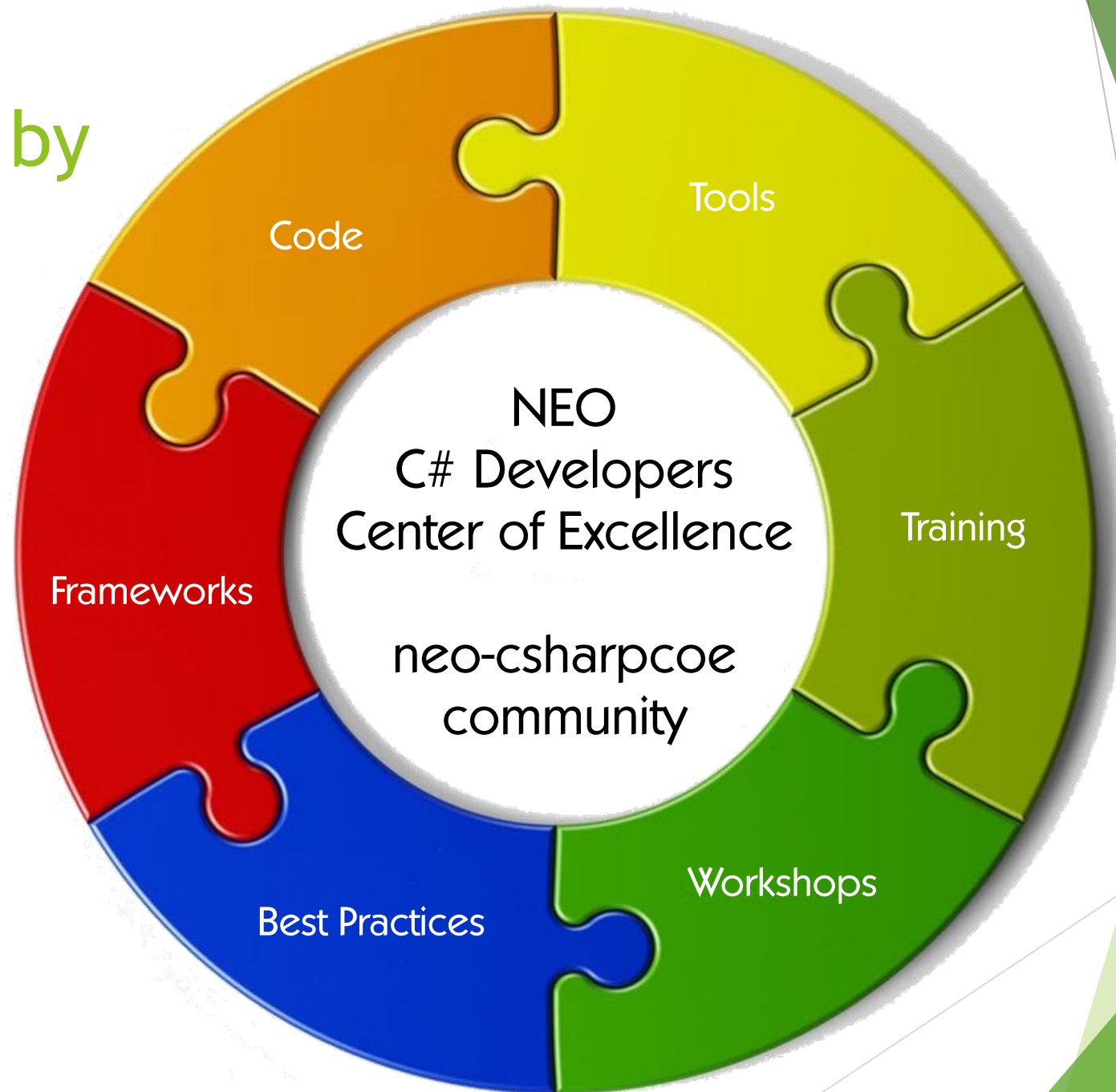
Block 1 Meeting - April 11, 2018

<https://www.meetup.com/NEO-Blockchain-Toronto/>

neotoronto@outlook.com



Sponsored by



NEO Themes You've Asked About - Thank you!

- ▶ **Distributed Application (dApp) Development**
 - ▶ How to start / Start at the beginning / .NET / Python / **Skills required**
 - ▶ **Distributed Applications / Smart Contracts / Practical Guidance**
- ▶ **Technical Details / Architecture / Scalability**
- ▶ **Future of NEO / NEO Adoption / Disrupting the world**
- ▶ **Use cases**
- ▶ **Jobs**
- ▶ **How is NEO different?**
 - ▶ How is it better than the other blockchains / **competitive advantages**
 - ▶ How does it compare with Ethereum, etc. ...
 - ▶ Co-existence with the other blockchains
 - ▶ ETH, Sidechains, Trinity, Interledger, ICON , Qtum, Elastos
- ▶ **NEO ICOs**

Agenda

7-8pm for Everyone:

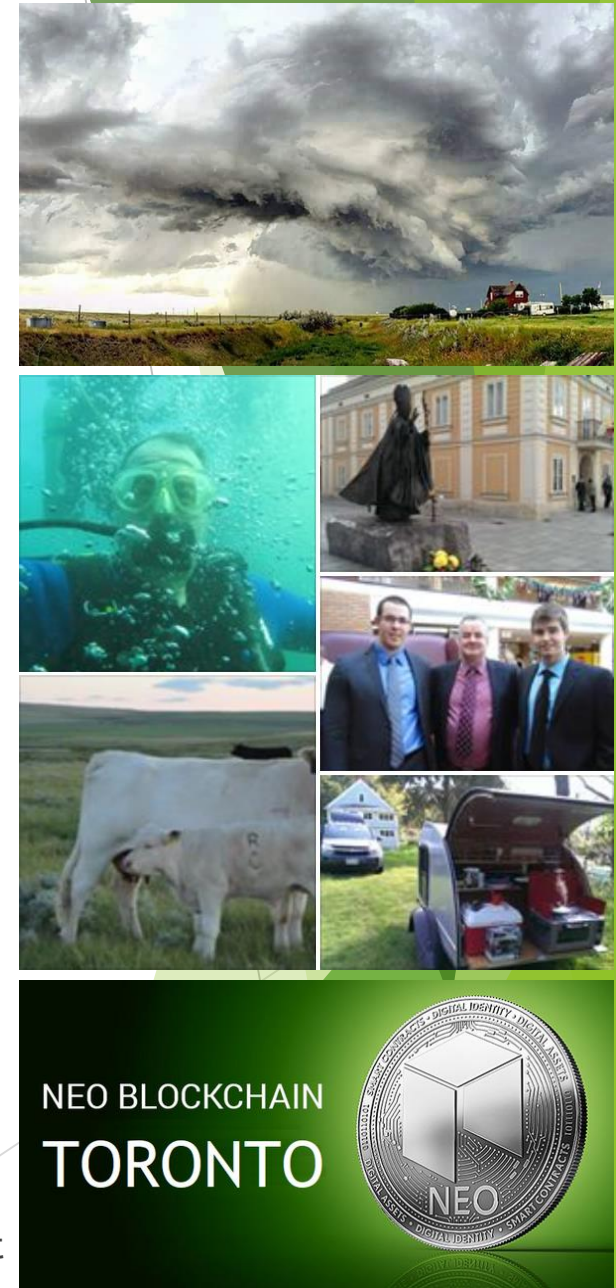
- ▶ Updates, News, Events
- ▶ NEO Certified NEO Enterprise Developer (CND) Announcement
- ▶ Guest speaker: Mathias Leach Glintborg, Global Development Manager, Ontology - "Ontology high-performance public multi-chain project & distributed trust collaboration platform"
- ▶ Guest speaker: Michael Herman - "The NEO Smart Economy, Smart Processes, and Smart Data"

8-9pm NEO Developer Workshop

- ▶ Creating and testing NEO smart contracts with Visual Studio and NEO Debugger
- ▶ Workshop for programming smart contracts with .NET, C# and Visual Studio

Who is Michael Herman?

- ▶ Independent Blockchain Developer
 - ▶ I work 14 hours a day on the NEO Blockchain
 - ▶ Experienced Ethereum Developer
 - ▶ I work for myself (and on behalf of my clients)
- ▶ Decades of software development experience
 - ▶ Developer on every version of Microsoft Windows since the very first
 - ▶ Microsoft, IBM, medium-size companies, small businesses
- ▶ Curator of NEO C# Developers Center of Excellence community (neo-csharp)
 - ▶ Contributes to several NEO community projects
 - ▶ NEO developer tool suite: neo-debugger and neo-gui-developer projects
 - ▶ NEO Persistable Class Framework (NPC) for efficient object-oriented smart contract development using C#.NEO: [mwherman2000/neo-persistibleclasses](#) and [neo-npcc2s](#)
 - ▶ NEO Blockchain Quick Start Guide for .NET Developers: [mwherman2000/dotnetquickstart](#)
 - ▶ Founder of the first Canadian NEO Blockchain Meetup: NEO Blockchain Toronto



Who are you?

- ▶ Software Developer/Achitect?
 - ▶ NEO smart contract developers?
 - ▶ Ethereum smart contract developers?
 - ▶ Other blockchain developers?
 - ▶ Microsoft .NET developers? .NET/C#/Visual Studio
- ▶ Cryptoinvestor/trader?
- ▶ Legal profession?
- ▶ Financial services (conventional)?
- ▶ Government?
- ▶ Banking?
- ▶ Other sectors?
- ▶ Students?

What is NEO Blockchain Toronto?

- ▶ NEO Blockchain Toronto (<https://www.meetup.com/NEO-Blockchain-Toronto/>) is a **non-profit, community-based Meetup group** for blockchain developers and architects interested in designing and creating **Distributed Ledger Technology (DLT)** (aka blockchain) solutions using the NEO Blockchain platform.
- ▶ We call ourselves *Neoxplorers*
- ▶ Meetup second Wednesday evening of each month
 - ▶ May 9, June 13, ...
- ▶ This meetup is a group that it is independent of but supported by the NEO Project (<https://github.com/neo-project>).
- ▶ More importantly, NEO Blockchain Toronto is what we want to make it!

What is NEO?

- ▶ **PROJECT: NEO** (<https://neo.org/>) is a non-profit, community-based blockchain project that utilizes blockchain technology and digital identity to digitize assets, to automate the management of digital assets using smart contracts, and to realize a "smart economy" with a distributed network.
- ▶ **DUAL CRYPTOCURRENCY: \$NEO and \$GAS**
- ▶ **SOFTWARE PLATFORM: 3rd generation distributed applications (dApp) platform**
 - ▶ Multiple languages: C# (reference implementation), Python, Java, Golang, JavaScript
 - ▶ First dApp platform suitable for enterprise application development, deployment, and operations
- ▶ **NEO SMART ECONOMY**
 - ▶ Key differentiator
- ▶ **GLOBAL COMMUNITY**
 - ▶ Discord: <https://discord.gg/gqCYeup> / <https://discord.gg/4TQujHj>
 - ▶ NEO C# Developers Center of Excellence (neo-csharpcoe)
<https://github.com/mwherman2000/neo-csharpcoe/blob/master/README.md>
 - ▶ NEL (NewEcoLab) “Chinese-speaking NEO Community”
<https://github.com/neweconolab>
 - ▶ City of Zion “Home of the Open-source Global NEO Developer Community”
<https://cityofzion.io/>



Our Values as *Neoxplorers*

We operate like the NEO Blockchain

- ▶ Decentralized
- ▶ Community based
- ▶ Consensus driven
- ▶ Creators of value
- ▶ Store of value (knowledge)
- ▶ Transfer of value (training)
- ▶ Multi-disciplinary
- ▶ Multi-application
- ▶ Multi-technology

We behave like the NEO Blockchain

- ▶ Robust
- ▶ Reliable
- ▶ Transparent
- ▶ Smart
- ▶ Open
- ▶ Non-discriminatory
- ▶ Participatory
- ▶ Diversity
- ▶ Committed



GUDDA HASSAN MOHAMED

TECHNOLOGY

The Truth About Blockchain

by Marco Iansiti and Karim R. Lakhani

FROM THE JANUARY-FEBRUARY 2017 ISSUE

 SUMMARY
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Contracts, transactions, and the records of them are among the defining structures in our economic, legal, and political systems. They protect assets and set organizational boundaries. They establish and verify identities and chronicle events. They govern interactions among nations, organizations, communities, and individuals. They guide managerial

WHAT TO READ NEXT



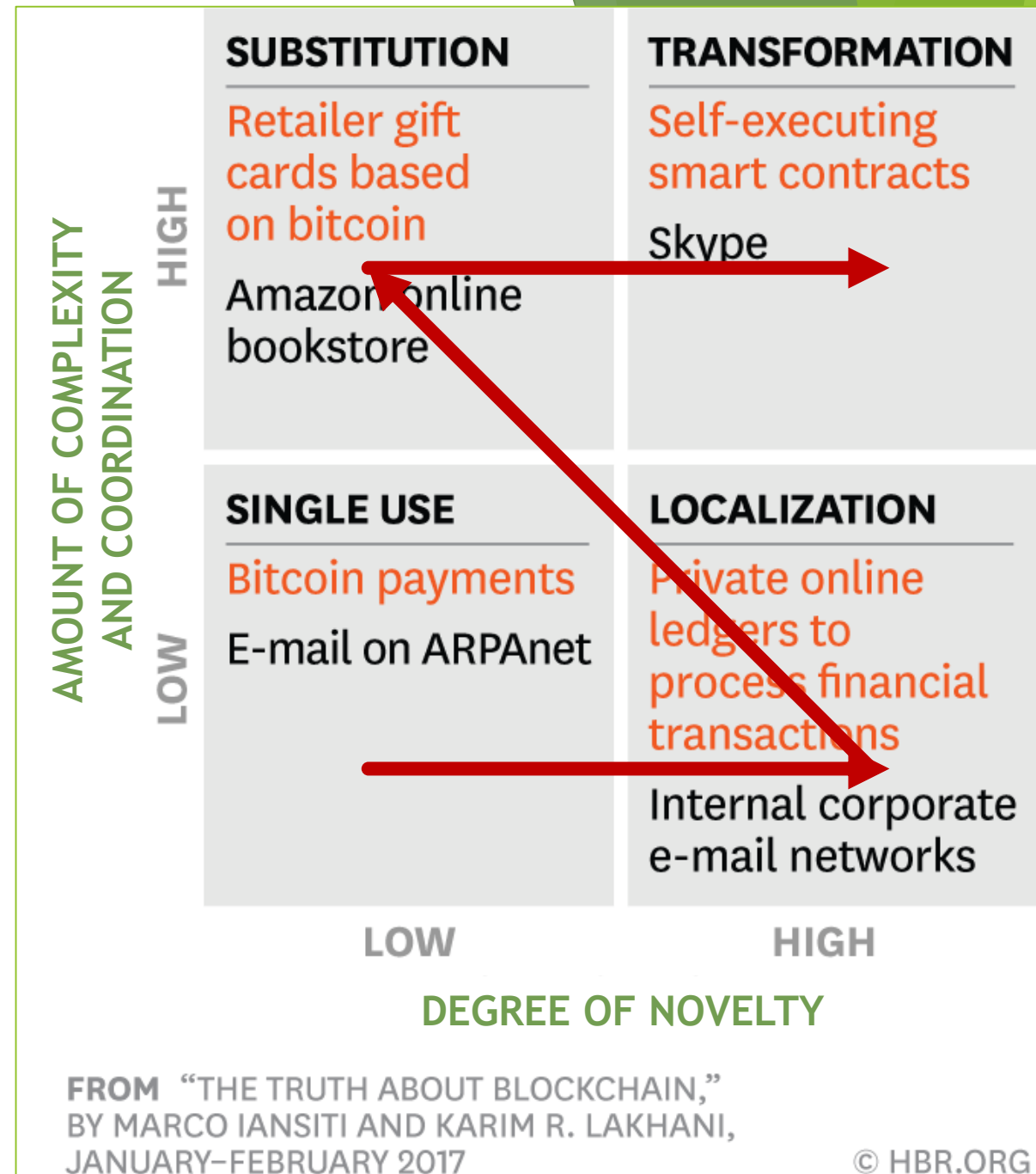
The Blockchain Will Do to the Financial System What the Internet Did to Media

VIEW MORE FROM THE
January–February 2017 Issue



Blockchain is a Foundational Technology

- ▶ *Blockchain is not a disruptive technology*
- ▶ *Blockchain is a foundational technology*
- ▶ *Doesn't attack a traditional business model with a lower-cost solution and overtake incumbent firms quickly*
- ▶ *Lays new foundations for new economic and social systems*
- ▶ *Foundational technologies (likes TCP/IP) take decades to seep into and integrate with our economic and social infrastructure*
- ▶ *The process of adoption is gradual and steady*



2. NEO Whitepaper

“NEO is the use of blockchain technology and digital identity to digitize assets, the use of smart contracts for digital assets to be self-managed, to achieve [a] “smart economy” with a distributed network.”

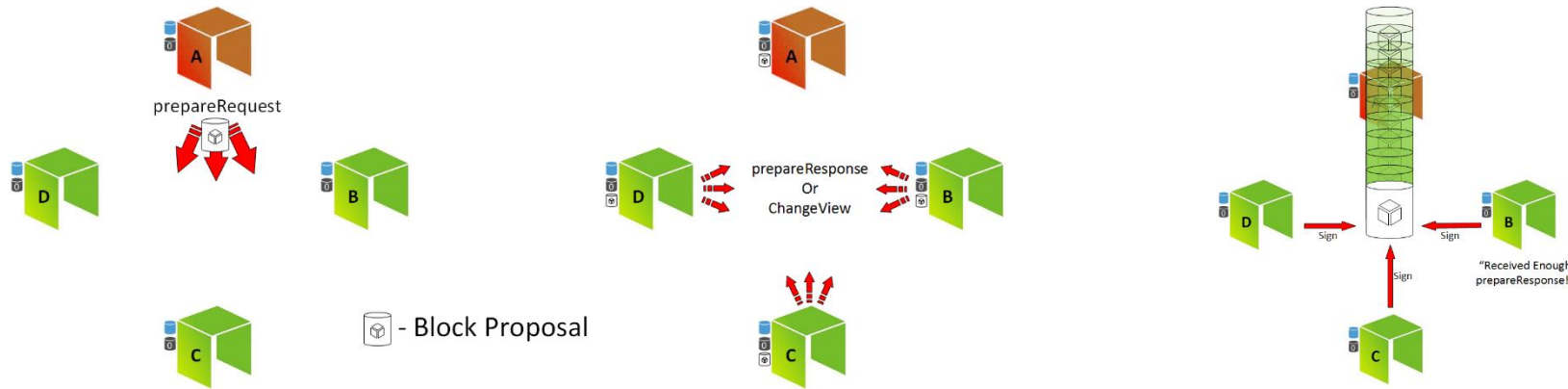
NEO Technology/Implementation: Consensus Mechanism

Delegated Byzantine Fault Tolerance (dBFT)

- ▶ “In the NEO dBFT consensus mechanism, taking about 15 to 20 seconds to generate a block, the transaction throughput is measured up to about 1,000TPS, which is excellent performance among the public chains.”
- ▶ “Through appropriate optimization, there is potential to reach 10,000TPS, allowing it to support large-scale commercial applications.”
- ▶ “The dBFT combines digital identity technology, meaning the bookkeepers can be a real name of the individual or institution.”
- ▶ “Thus, it is possible to freeze, revoke, inherit, retrieve, and ownership transfer due to judicial decisions on them.”
- ▶ “This facilitates the registration of compliant financial assets in the NEO network. The NEO network plans to support such operations when necessary.”

Delegated Byzantine Fault Tolerance (dBFT)

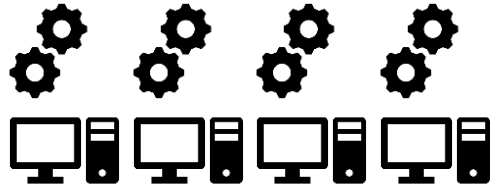
NEO Consensus Mechanism



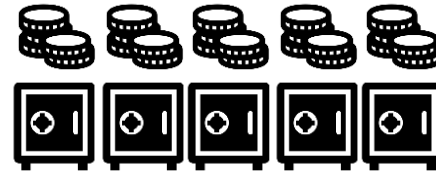
- ▶ NEO: There is no competition to create the next block (e.g. no miners, no PoW)
- ▶ NEO: There is no betting or staking to choose the next block (e.g. no PoS)
- ▶ NEO: Consensus nodes are voted in as representatives to choose the next block
- ▶ NEO: No reward for your own node to be selected

Problems with Proof of Work and Proof of Stake

1. Proof of Work (PoW)

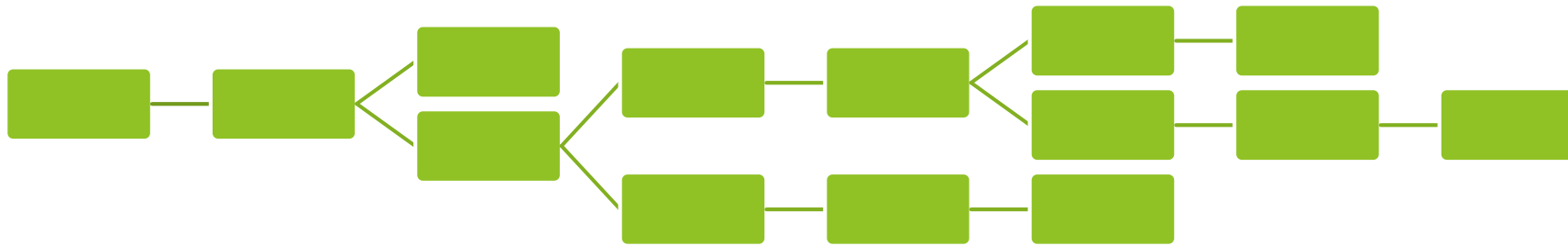


2. Proof of Stake (PoS)



PoW and PoS compared to dBFT

- Consensus algorithm: PoW and PoS

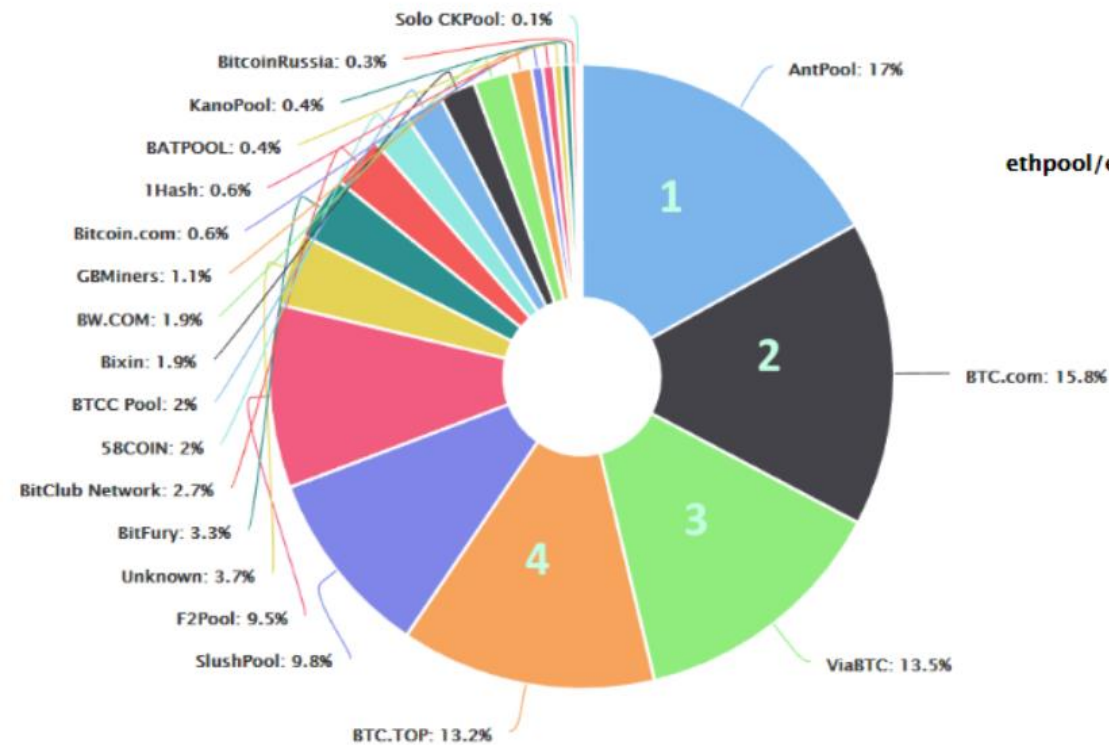


- Consensus algorithm: dBFT

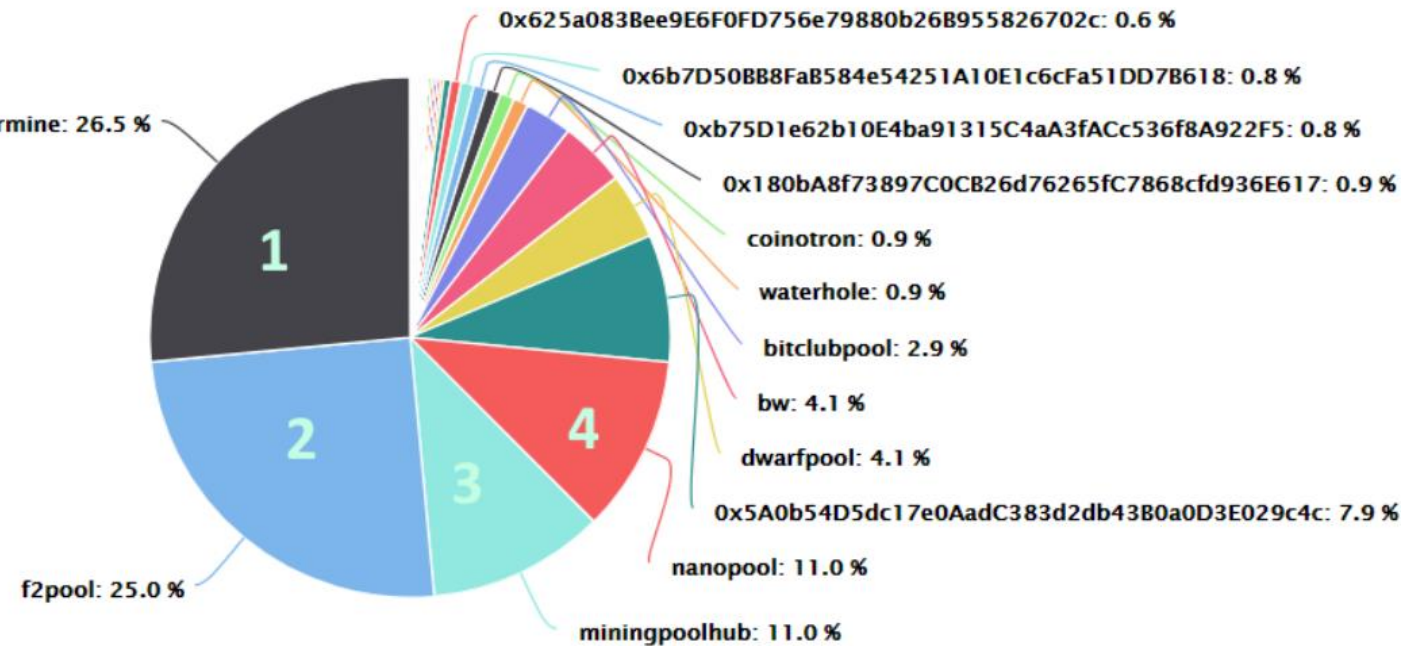


- One and only one branch

How decentralized are the BTC and ETH networks?



Bitcoin (left) and Ethereum (right) hashrates distribution, 12/04/2017.



4. Why NEO?

NEO was created for Large Scale dApps*

No transaction fees
Initial 10 GAS fee is for free. Simple Smart Contracts can be run for free.

Mainchain speeds

NEO 1000 - 10,000 TPS (single core)
BTC 3 - 4 TPS
ETH 10 - 20 TPS

Confirmations needed
NEO 1 and only 1
BTC 6+
ETH 20+

More freedom for
application developers to choose the business model that most suits to their business. Service and usage fees can be charged in any way off-chain.

*dApps - Distributed Apps

NEO Persistable Classes make Enterprise App Development real

6. NEO Events

NEO BLOCKCHAIN ENTERPRISE DEVELOPER (CNED) CERTIFICATION PROGRAM

PROGRAM OVERVIEW

This program will guide the participants through the basics of the NEO Blockchain and the principles of the NEO Smart Economy, while mastering the best practices for NEO Blockchain enterprise application development.

By completing the program, participants will be able to create and test their own distributed applications (dApps); while also learning about the best tools and reusable code libraries, frameworks, how-to examples, and best practices for enterprise application development using .NET/C#, C#.NEO, and the NEO Blockchain platform.

PROGRAM DETAILS

Program Length

**3 days
plus capstone project**

Date and Time

TODO-TODO

9:00 a.m. - 5:00 a.m.

Location

**Bergeron Centre for Engineering
Excellence, York University**

NEO Events - Past



Second Wednesday evening of each month



Second Thursday evening of each month

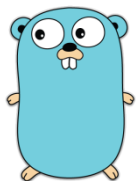


NEO Events - Past



100+ women (and men)

NEO dApp Competitions USD\$490K in prizes



1st NEO Dev Competition

Nov. 20, 2017 - Mar. 31, 2018



CITY OF ZION IS LAUNCHING ITS SECOND DAPPS COMPETITION

And we want you to get involved

The City of Zion council is promoting a decentralised apps (dApps) competition to further elevate the NEO developer community.

Events - Upcoming



Wednesday - June 13



Next Week - April 17-23

7. Resources

NEO Blockchain C# Developers Center of Excellence

<https://github.com/mwherman2000/neo-csharpcoe>

- ▶ Founder: Michael Herman (neotoronto@outlook.com)
- ▶ NEO Blockchain end-to-end, detailed guidance for .NET developers
- ▶ Content purposely designed to help .NET developers ramp up and become productive more quickly
- ▶ Repository for content presented at the NEO Blockchain Toronto meetup group
- ▶ Contents
 - ▶ NEO Blockchain Quick Start Guide for .NET Developers
<https://github.com/mwherman2000/neo-dotnetquickstart>
 - ▶ NEO Blockchain Architecture Reference Model (ARM) for .NET Developers (neo-charm)
<https://github.com/mwherman2000/neo-charm>
 - ▶ NEO Blockchain Toronto
<https://github.com/mwherman2000/neo-windocs/tree/master/events/2018-neo-blockchain-toronto>

NEO Blockchain Quick Start Guide for .NET Developers

<https://github.com/mwherman2000/neo-dotnetquickstart/blob/master/README.md>

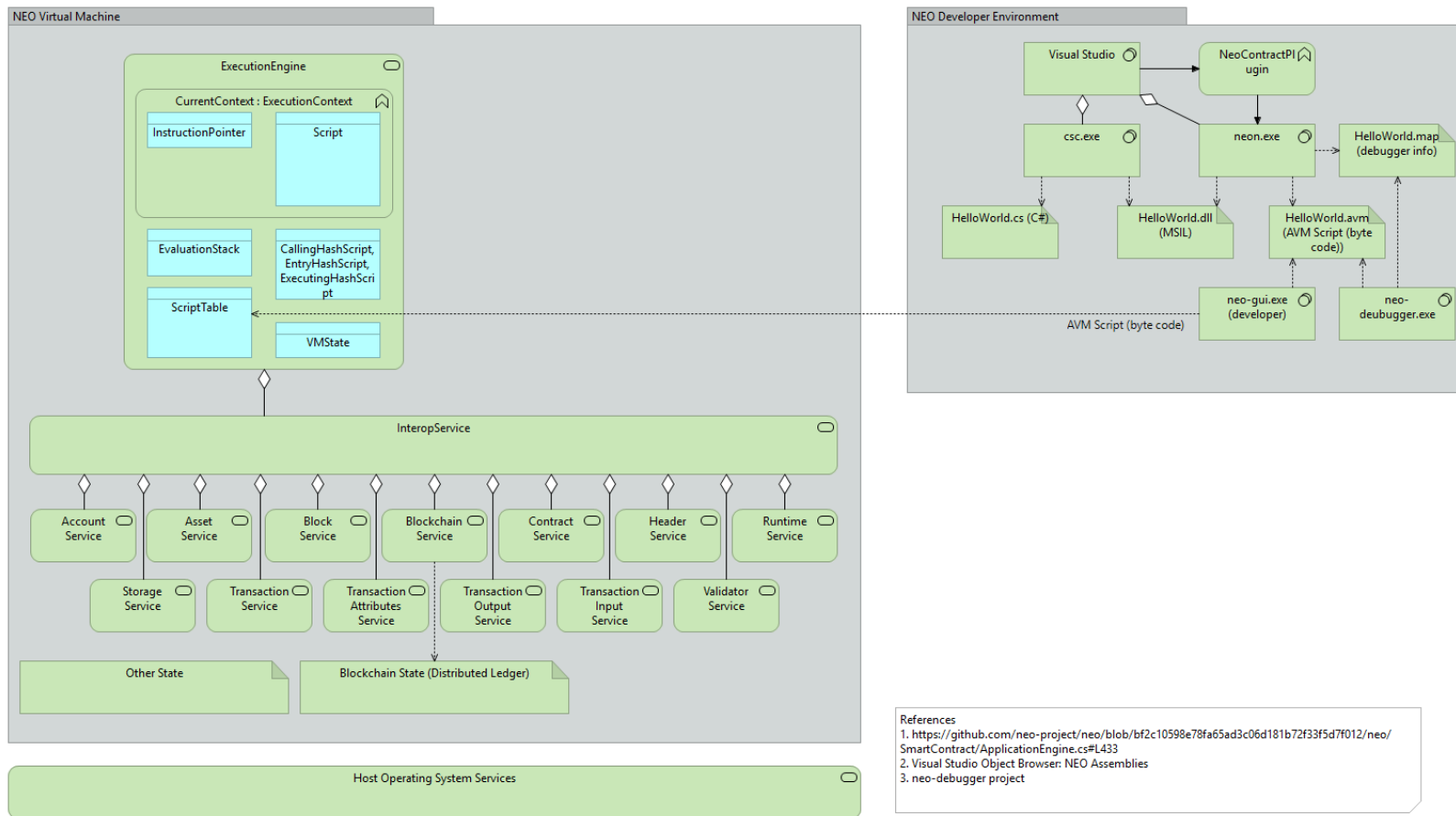
1. Pre-requisites and Recommendations
 2. Download and install Visual Studio 2017 Community Edition integrated development environment (IDE)
 3. Download and unpack NEO developer tool projects (source)
 4. Coffee time: Wait for previous activities to complete
 5. Install NeoContractPlugin Visual Studio extension
 6. Build and test NEO developer tool projects (from source)
 7. Download, install, and test Docker platform
 8. Download and test NEO privatenet Docker container
 9. Create and compile HelloWorld smart contract sample
 10. Deploy and test the HelloWorld smart contract
 11. Celebrate
- ▶ Appendix A - Checklist
 - ▶ Appendix B - Roadmap
 - ▶ Appendix C - Reset NEO privatenet Environment: Container, Wallets, and Clients

Statistics

- ▶ 10 activities comprising 130 documented tasks (approximately)
- ▶ 140 screen shots (approximately)
- ▶ 7 batch files
- ▶ 2 JSON configuration files
- ▶ 1 C# code snippet

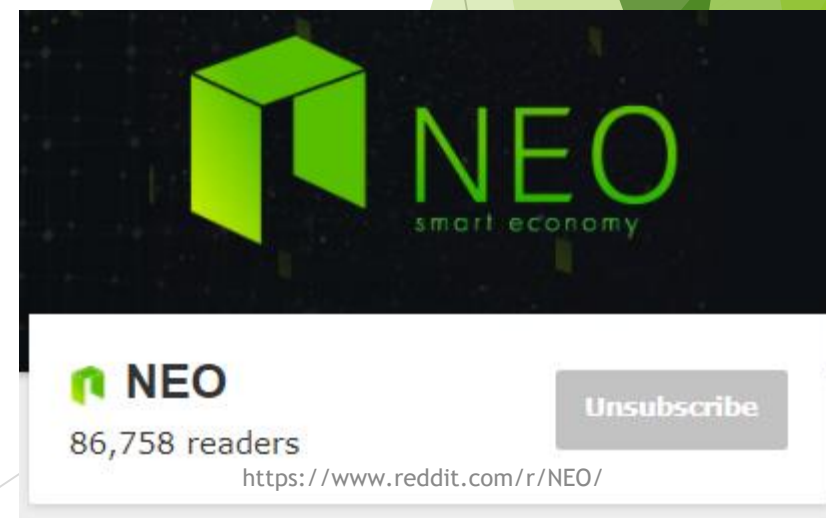
NEO Blockchain Architecture Reference Model (ARM) for .NET Developers (neo-charm)

<https://github.com/mwherman2000/neo-charm/blob/master/README.md>



NEO Resources: Videos and Webcasts

- ▶ The New Vision - Da Hongfei
<https://www.youtube.com/watch?v=th7jZlmoZBc>
- ▶ Malcolm Lerider: Clarification on NEO, GAS and Consensus Nodes
<https://www.youtube.com/watch?v=iV4WREWtCiI>
- ▶ A Deep Dive into NeoVM & NeoContract [English Subtitles]
<https://www.youtube.com/watch?v=fLppte-guYE>
- ▶ NEO Persistable Classes (NPC) e-dApp Smart Contract Platform 2.0: Deep Dive
<https://www.youtube.com/watch?v=Nj4-m2o94VE>
- ▶ NEO - Reddit
<https://www.reddit.com/r/NEO/>



NEO Resources: NEO DevCon 1, January 2018

- ▶ The New Vision - Da Hongfei | NEO DevCon 1
<https://www.youtube.com/watch?v=th7jZlmoZBc>
- ▶ Opening Address - Scott Hunter, Microsoft | NEO DevCon 1
<https://www.youtube.com/watch?v=ZFsU5HPU2xM>
- ▶ Ontology, The Technical Vision of Distributed Trust Networks | NEO DevCon 1
<https://www.youtube.com/watch?v=QyaZz0vtONs>
- ▶ Imusify, Decentralized Platform for Music Related Digital Content | NEO DevCon 1
<https://www.youtube.com/watch?v=dgmfO8nKJkE>
- ▶ NeoAuth, Login Using the NEO Blockchain | NEO DevCon 1
<https://www.youtube.com/watch?v=F7teukbcblg>
- ▶ Phantasma, User-Owned Content | NEO DevCon 1
<https://www.youtube.com/watch?v=cinexz6gjsU>
- ▶ NEO•ONE, Development Framework | NEO DevCon 1
<https://www.youtube.com/watch?v=yWzjNhiZFmA>
- ▶ THEKEY, A Decentralized Ecosystem of An Identity Verification Tool | NEO DevCon 1
<https://www.youtube.com/watch?v=St-UW0lPB7o>
- ▶ NEO's Global Vision and the Evolving Regulatory Environment - Miles Graham | NEO DevCon 1
<https://www.youtube.com/watch?v=FidRGNeab3I>
- ▶ NEX, Decentralized Exchanges | NEO DevCon 1
<https://www.youtube.com/watch?v=1005ed20e0Q>

NEO Resources

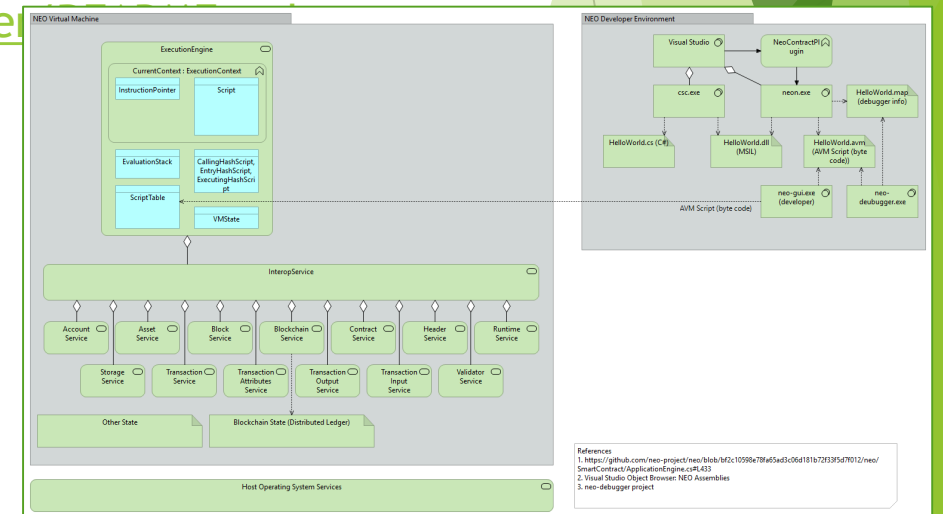
General

- ▶ NEO.org
<http://neo.org>
- ▶ NEO Tutorials (C#, Java, Python), API docs
<http://docs.neo.org>
- ▶ NEO DevCon “The New Vision” Keynote by NEO Founder
https://www.youtube.com/watch?time_continue=3&v=th7jZlmoZBc



Developers

- ▶ N NEO C# Developers Center of Excellence (neo-csharpcoe)
<https://github.com/mwherman2000/neo-csharpcoe/blob/master>
- ▶ Discord NEO Community (like Slack)
<https://discord.gg/gqCYeup>
- ▶ The NEO Project
<https://github.com/neo-project>
- ▶ City of Zion **awesome-neo** project: Developer Docs
<https://github.com/CityOfZion/awesome-neo/#developer-documentation>





Global Blockchain Compliance Hub

[Legal Disclaimer](#)

ABOUT

BELGIUM

GERMANY

GIBRALTAR

HONG KONG

JAPAN

LUXEMBOURG

NETHERLANDS

SINGAPORE

SOUTH KOREA

SWITZERLAND

THE ISLE OF MAN

Welcome!

You've come to NEO's Global Blockchain Compliance Hub, an ongoing project aimed at compiling a public Github database that includes legal details related to blockchain and cryptocurrency for as many jurisdictions as possible worldwide. We're hoping this can become a community-driven community resource that will help folks interested in starting their own NEO-based blockchain projects think about regulation as they move towards the point where they'd need to actually seek counsel. We're undertaking this project because NEO is committed to compliant and sustainable growth, and we believe this sort of resource is currently lacking.

If you're interested in contributing (by either updating a country page or creating a new one), please let us know - we're always looking for new partners. You can reach out to milesgraham@neo.org.

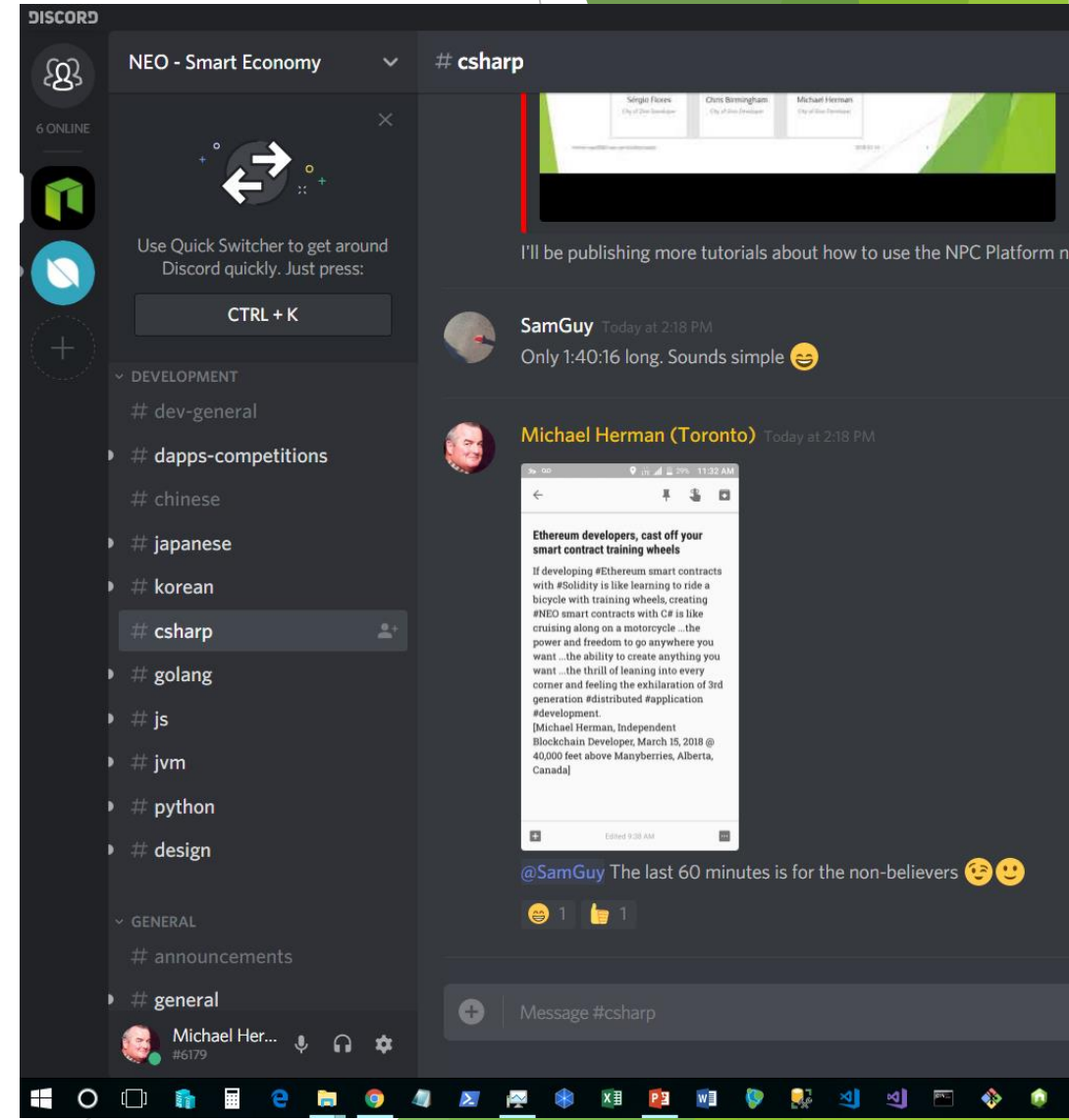
For each jurisdiction, we aim to answer the following information:

1. Non-profit/for-profit company registry requirements
2. Team member nationality requirements
3. Tax & auditing requirements
4. Governing laws/bylaw requirements
5. Laws related to token sales, blockchain, and digital proof
6. Securities-related laws
7. Privacy & data protection-related laws
8. Who bears final responsibility/liability in case something goes wrong?
9. What is a smart contract and is it legally binding?
10. How is dispute resolution integrated?
11. Can smart contracts be nullified?
12. Suggested readings

8. Next Steps

Next Steps

1. Join Discord
<https://discord.gg/gqCYeup> /
<https://discord.gg/4TQujHj>
2. Read through and contribute to **NEO C# Developers Center of Excellence (neo-csharpcoe)**
<https://github.com/mwherman2000/neo-csharpcoe/blob/master/README.md>
3. Start with **NEO Blockchain Quick Start Guide for .NET Developers**
<https://github.com/mwherman2000/neo-dotnetquickstart/blob/master/README.md>



Questions?

Thank you for coming out this evening



Backup Slides