Delivering Usable Blockchain Based Services in the Nordics

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Production case 1: We.trade

we.trade – Nordea co-developed blockchain platform has performed its first trades

Today, the blockchain based platform we.trade was launched with pilot customers making live trades. Nordea is a key player in the design and implementation of this cutting-edge solution.

Developed by Nordea in a European-wide collaboration with eight other banks, the vision for we.trade is to create a common platform which allows companies, from SMEs to large corporates, to trade in a fast, easy and transparent way. The aim is to fully automate the trading process and seamlessly connect the entire trade ecosystem. The launch of we.trade has seen the completion of the first ever bank guaranteed trade transaction on a multi-party blockchain network in Europe.
Production case 2: Finnish Digial Housing Trade

Pian ei tarvitse enää mennä pankkiin - Suomessa tehtiin ensimmäinen digitaalinen asuntokauppa

Blockchain as Service, 1 vendor does work for all 14 banks, same source code

Blockchain as a service is the game changer here.

The we.trade business concept is very similar to SWIFT BPO. BPO did not take off, why we.trade has potential? It is because of blockchain as service. From SWIFT BPO, we can learn. Only defining the standard, and expect different vendors to implement them correctly is not enough. Since trading messages are very complex, even with best efforts in defining, can still results to different interpretation. Blockchain as service approach solve above problem. It not just define standard (We.trade Rule Book), but also one vendor does it all. Every bank node has exactly same data model, runs the same code. So different interpretation will not happen! Other enabling technology is cloud, public cloud is developing rapidly, today’s public cloud is way more advanced then BPO time. Public cloud today is mature enough to do banking. Three key features.

1. Advanced cryptography key management. Enable banks to put its customer data to public cloud, yet still have full control and privacy.

2. Advanced access & secrete management, enable IBM to admin 14 banks together, yet still have enough separation, so no single admin can have full control of two bank nodes at the same time.

3. DevOps tools. IBM use it to make deploying, upgrading 9 banks software at the same time. These tools are now standard at all the major cloud. AWS, Azure …

So I believe in, Blockchain as service on public cloud. If everything goes fine, We.trade will take care of all the trading logic, include sanction screening. We will not need Accuity anymore, We.trade can do screening for us.

Banks only need to do three things, 1) collateral management for BPU, 2) cash management for receivable Finance, and 3) KYC.
What is blockchain?

1. Hash pointer. Chained SWIFT like message

2. Public cloud, Dock container, Key management, Privacy management, DevOps tools

One vendor does work for all banks, all bank runs same source code create smartness.
How to pass bank’s security review?

1. Is it safe to run bank service on public cloud?

2. Is it safe to let 1 operator runs service for all the banks?
Execution Strategy

1. Start with all manual approach, no IT work is required to go live.

2. Link to an established product, offer new service as an alternative.
Nordea Approach

• Understanding the scientific facts
  background knowledge in computer science + original academic paper

• Follow and support the Fintech
  EU Fintech sandbox

• Join R3, EBF

• ICC/SWIFT
Computer Science behind Bitcoin

the basics to start

the researchers to follow

the original paper

Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto

Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing all that came before. The longest chain wins.

The Byzantine Generals Problem

LESLIE LAMPORT, ROBERT SHOSTAK, and MARSHALL PEASE

SRI International

Reliable computer systems must handle malfunctioning components that give conflicting information to different parts of the system. This situation can be expressed abstractly in terms of a group of generals of the Byzantine army camped with their troops around an enemy city. Communicating only by messenger, the generals must agree upon a common battle plan. However, one or more of them may be traitors who will try to confuse the others. The problem is to find an algorithm to ensure that the loyal generals will reach agreement. It is shown that, using only oral messages, this problem is solvable if and only if more than two-thirds of the generals are loyal, or a single traitor can confound two loyal generals. With unforgeable written messages, the problem is solvable for any number of generals and possible traitors. Applications of the solutions to reliable computer systems are then
What is money in modern society?
Cryptocurrency is not money!

The overall value exchange solution, based on **fractional reserve banking**.

1. Central bank: Create money according to the total value exists in the society.

2. Retail bank: Create more money through lending.


Modern money is not based on gold, no fixed limits. Quality of the money depends on **the accountability of the government, and the effectiveness of law enforcement**.

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**European Banking Federation**
The EBF is the voice of the European banking sector, uniting 32 national banking associations that together represent some **3,500 banks**, employing about two million people.
Central Bank Digital Cash

Fully agree with Riksbank. Crypto is cash like thing, and cash will play less and less role in future. Mobile pay is future!
Heatwave the Nordic KYC project, joint developed by Nordea, OP, Danske, SEB and DNB

KYC, GDPR two contradicting regulatory requirement? Solution → Cryptography