The Open Initiative

Be part of the Solution.

TABLE OF CONTENTS

The Open Initiative

The Open Initiative

INTRODUCTION

The COVID 19 pandemic and its consequences are a challenge for the people, businesses and governments across the globe. Lykke open sources its technology and launches the Open Initiative for the development and rollout of innovative technology to serve the needs of the global economy.

The Open Initiative aims to enhance the financial system with new tools and services to unlock resources at the service of the people and their governments. We invite people and organizations to join us with their ideas and resources from around the world to contribute.

Lykke is a Swiss-based fintech company that has been on the market since 2015 gaining its reputation as a transparent blockchain business committed to regulation compliance. It is one of the founding members of the OpenVASP initiative, and its purpose is to bring sophisticated financial services within the reach of the man from the street by leveraging blockchain technology and the expertise of its Financial Engineering Team.

The proposed initiatives:

SUPPLY CHAIN PLATFORM
Leveraging the efficiency of financial market mechanisms to solve supply chain bottlenecks

DIGITAL VOUCHERS PLATFORM
Digitizing Government initiatives for SMEs, Labour Force and more.

REAL-TIME INFORMATION SYSTEM
Aggregating, verifying and forecasting of information necessary for decision making on a personal, business and government level

RESEARCH INITIATIVES
New approaches and ideas that contribute to the management of the current crisis and to the development of responsive solutions.

Supply Chain Platform:

Leveraging the efficiency of financial market mechanisms to solve supply chain bottlenecks.

THE MOTIVATION

The Coronavirus is disrupting the supply chain. In the past, we have taken for granted that all shelves in the shops are filled with goods and that we do not have to worry about supplies. Just- in- time delivery and production were the catch word. This has changed and the supply of products and services are no longer certain across businesses and retail.

Would it not be great to be able to reserve the product of your choice without this uncertainty? To request delivery and not be worried about it being in stock or not?

The supply chain platform is a slick and simple reservation system. You buy a voucher for your favourite food basket and can request delivery at any time. If eventually you do not want to use the voucher, you sell the voucher in the market. You have full flexibility. For merchants the system is great; they can better plan for what their customers want and last but not least get upfront funding.

THE PROBLEM (Hoarding - negative feedback loop)

As soon as supplies get scarce the first response of consumers is hoarding. People start to hoard all types of goods - this increases the shortage of these products in the short-term putting more strain on the supply chain. In the longer run hoarding reduces the demand for these products over time, as people have to run down their supplies again. This makes planning for the supplier even more difficult and adds to the production cost. Hoarding is a negative feedback loop that is a cost to the economy. There is hoarding in the everyday lives of people and hoarding in the more complex supply chain of the many products that we rely on. Many pharmaceutical companies rely on highly specialized ingredients for their products. If just one component cannot be bought, then the product cannot be produced. Computers, cars, healthcare and communications rely on highly sophisticated products that have to be available at the right place at the right time. If companies have to hoard all these products the situation becomes unmanageable. Is there a good way out?

THE PROPOSED SOLUTION (Why is the supply chain platform so important?)

Businesses struggle to get funding to produce their products. Bank credit is extremely difficult to come by and raising equity is even more difficult. The creation of a supply chain solves this problem. Suppliers can get their customers to provide funding in a way that serves the needs of the customer who is certain to receive the supply. There is a positive feedback loop, because the supplier gets upfront funding and can plan production. It is a win-win situation.

In the current economic environment, there is another advantage as well. Investors are in search of a safe haven, where they are certain not to lose their money. If the spectre of inflation comes true, then money will lose its value. Supply tokens are denominated in terms of the good to be delivered, so they are a safe haven. In the same way as investors buy gold to protect their assets, they will buy supply tokens.

THE SUPPLY CHAIN PLATFORM CONCEPT

Suppliers issue tokens for products and services. A token specifies the good and service for sale and exact time of delivery - for example in 24 hours from time of order.

Example: *Food basket with 1 kg white rice, 1 kg carrots, 1 l milk, 200 gr Cheddar cheese. Delivery time: 24 hours from order.*

Users of the platform are able to buy the food basket token. As holders of such a token they can keep the token for as long as they like. Whenever they need actual delivery, they send a request for delivery and then within 24 hours the food basket is delivered.

When a consumer buys a food basket token, the supplier receives the money upfront. He can use this money to secure his supply for food order. He does not have to do immediate delivery; he can make plans. He has secure funding for the good and the consumer knows for certain that he can go to the supplier and request delivery within 24 hours.

Pharmaceutical companies that produce components for other pharmaceuticals can also issue tokens for delivery of their products specifying the exact delivery time. The same is true for suppliers of components for mobile phones or any other products. The users of those products can buy the tokens up front and ensure that they receive delivery in a timely manner.

SCOPE & SPECIFICATION

The supply chain platform is an open source platform that makes it easy for small and big companies to tokenize their offering. The tokens specify exactly what the product and service is and the time for delivery. Users can easily buy tokens and manage their token holdings. There is a marketplace, where tokens can be bought and sold. There are peer reviews and crowd intelligence that rank the quality and reliability of the suppliers at an ongoing basis. If suppliers do not fulfil their obligations in the time specified this impacts their rating and affects the pricing of their tokens.

The minimum components and features required for the Supply Chain platform are described below.

LISTING PLATFORM
The listing platform is an online shopping platform where it is easy to upload the product specifications of products and services. Additional features are the specifications of the delivery times. The same product might be available through different tokens offering delivery in different intervals: immediate delivery on call, delivery in 24 hours, delivery in 1 week, 1 month or longer. The delivery terms specify, where the goods and services are delivered and who bears the cost of transportation.

PRICING OF SUPPLY TOKENS
Spot tokens offering immediate delivery are priced at exactly the same price as goods are on offer today. Tokens for delivery in 24 hours will be priced at a discount, because the supplier gets funding up front and knows that he has to deliver within a time window of 24 hours giving him a degree of flexibility. A token for delivery in 48 hours has an even bigger discount and one for 1-week delivery even more so. The discount of a token with longer delivery times depends on a number of factors, including the credit rating and reputation of the supplier.

MARKETPLACE OF SUPPLY TOKENS
Tokens can be bought and sold in the market. The price of the tokens will increase and decline in accordance with demand and supply for the underlying goods and the reputation of the supplier. If a supplier is seen to underperform, then the price of his tokens will start to decline. An early warning signal of a deterioration of the quality of a supplier is an increase in the discount of tokens with longer delivery times. It indicates that there are increasing questions about the longer-term reliability of the supplier.

USER WALLET
Simple and user-friendly wallets for supply tokens are essential. The user interface needs to be super simple and smooth. For professional users it is a bigger more complex user interface that is required to manage a large number of different supply tokens and manage exposure.

CROWD INTELLIGENCE

Continuous screening of the quality of products and services is a key factor of success of the platform. It is important to collect information on the actual delivery of the products and assess the customer satisfaction. The rating of suppliers is key to the overall performance of the tokens sold in the market and determines how much money can be raised by the supplier to fund his supply chain.

SUSTAINABILITY

The supply platform has another advantage as well. It solves the problem of tracking the place of origin of the goods and services - it is a natural way to record, exactly who has delivered what and from where. This will make it easier to implement requirements of sustainability. This is a big plus!

EARLY WARNING SIGNAL

The supply chain marketplace will be an important source of information to identify immediate and potential threats to the supply chain and be an early warning system for governments that have to anticipate shortfalls in the supply chain.

If prices start to increase unexpectedly for certain types of goods, then this is an indicator that a supply chain is under stress and that action might be necessary. The same is true for consumers of those products, they can then consider switching to other types of supply to ready themselves for a potential shortfall.

Digital Vouchers Platform:

Digitizing government initiatives for SMEs, labour forces and more.

THE MOTIVATION

The emergency measures required for halting the spread of Coronavirus have brought the economies around the world to a standstill. Governments have rolled out emergency funding to salvage the real economy. They have launched a broad range of initiatives from social help to guarantees to loans, a wide range of dramatic measures.

The initiatives have one thing in common, they require a lot of paperwork and are hard to manage and supervise. It is difficult to launch targeted initiatives. There is a bias to hand out the money to the big operations in the hope that it will eventually trickle down to the organizations and people at the lower end of the pyramid. Already many governments are admitting that there is a level of waste or error that has to be accepted in the face of this weakness given the urgency of the situation

In order to ensure dedicated programs are created efficiently and to give the same opportunities to local government entities, existing processes would need to be automated with Blockchain and Token Mechanism.

THE PROBLEM

Government initiatives to mitigate crisis impact.

PROBLEMS
- Paper-based
- Explosion of administrative work
- Inefficient and difficult to manage
- Not scalable from an operational point of view
- Lack a secondary market

THE PROPOSED SOLUTION

We propose to develop and implement an open source voucher platform for the government. The platform will have a simple interface to design and upload the programs and then process the distribution of the vouchers. The platform would track the dissemination of the vouchers and how they are utilized.

The vouchers are set up as digital tokens and distributed with wallets that are held on regular smartphones. The wallet connectivity would allow easy communication between government representative and recipient. Benefits of the platform are that different government offices would have their own platform and controlling would be able to fulfil its supervisory role.

DIGITAL VOUCHERS INITIATIVE CONCEPT

Network effect: the 'Voucher System' ensures scalability, increases efficiency and reduces cost. By fully automating all processes using blockchain and token mechanism government initiatives for SMEs, Labour Force, etc become fully digital and as such faster, more transparent and more targeted to the specific needs of the organization.

Digital Voucher Tokens Examples:

- Payment of 6 months of unemployment benefits - digital token.
- Guarantee of bank loan: digital token with exact terms & conditions.
- Payment for loss of revenues due to shut down: payment token.
- Non-transferable token for Coronavirus test.
- Transferable token for Taxi ride to hospital.

SCOPE & SPECIFICATION

The platform would have unique features. It would be possible to have personalized and non-transferable vouchers for example for l health examinations or transferable vouchers for bank loans. Some companies might be entitled to bank loans, but have no need. They would be able to cash in their voucher and sell the voucher to another recipient at a fixed price or the going market price depending on the specifics of the voucher making more efficient use of the money.

An example for a transferable voucher is a taxi voucher for an ill person, who has to live at home but has to go to the hospital for a check-up. He might have a family member ready to take him to the hospital and pay him with the voucher.

Some of the benefits this initiative could offer are:

- Speed.
- Simplicity.
- Transparency during the full life cycle of the token.
- Flexibility: big and small programs.
- Precise targeting of benefit programs.
- Detailed insights about how tokens are used, etc.
- Optionality: non-transferable and transferable payment tokens.
- Network benefits & efficiency gains of payment tokens.
- Leveraging benefits of market mechanisms.
- Scalable platform: available for federal, local government & other agencies.

Components of the Digital Voucher Initiative Platform:

- Wallets with tokens
- Issuance of tokens for government initiatives
- Payment interface
- Exchange mechanism
- Marketplace for tokens
- Reporting interfaces
- Management tools

Digital Voucher Initiative Platform Development

- **Lykke** platform can be leveraged for this project
- Specific components need added functionality
- Good user interface
- KYC of users
- Security measures

Real-time information system:

Aggregating, verifying and forecasting of information necessary for decision making on a personal, business and government level.

THE MOTIVATION

Life is about making decisions from the commonplace of how to plan our day and what to eat, through to the more long-term concerns of how to plan savings and what to investment in. In business it is the same. What products should my business offer and how much stock should I buy? What price should I sell my products at? In government the same process is followed. There is an ongoing flow of decisions to make. Should an expansion of the train station be approved or is it better to build reserves for future economic shocks?

If the weather forecast predicts beautiful weather over the weekend, we know that we can plan a barbecue and shop accordingly. This results in better outcomes for all involved from the hosts, the guests, the supermarket and the farmer that produces the food. The weather forecast was instrumental: the better the forecasting service, the easier the decision making.

To make better decisions about everything, we need an information system that collects, filters and aggregates the information in a meaningful way and extracts predictive information. Every decision maker whatever his position, needs easy access to all relevant information in a clear, aggregated manner.

THE PROBLEM

Today we do not have access to ubiquitous forecasts for everything from health data on the spreading of the Coronavirus to the economic data on shopping, mobility patterns, market trends, etc. We need the forecasts on a macro level and also a granular level the more detailed and precise the forecasts the better. What is necessary to build a forecasting service for everything, in an easily accessible and intuitive location.

THE PROPOSED SOLUTION

A global information system brings together all information from around the world in an impartial and transparent way so that private individuals, companies and governments can make informed decisions. A global information system can bring together information of all domains of human activity and earth's environment to provide a holistic top down view of the world and be a great decision support tool for literally everyone and the management of companies and governments.

Wikipedia is our inspiration. Wikipedia is huge - it includes over 52 mio articles in 309 languages. The English version of Wikipedia has 3.5 billion words and is 85 times bigger than the Encyclopaedia Britannica, the gold standard of encyclopaedias. The remarkable achievement of Wikipedia is the speed of its growth and how well the bottom up and self-organizing approach has worked. Wikipedia was launched January 2001; this was when the .com bubble burst and the opportunity to rethink how technology could be refined in the face of crisis presented itself.

THE REAL-TIME INFORMATION SYSTEM CONCEPT

The global information system will be like any other service on the web with a simple interface and a mobile app with animations. You type in a keyword like the US economy and then get the real time forecast for the next hour, twenty-four hours, week, month or longer. You can drill deeper and get more specific information for specific states and towns. The service covers all types of data from the real economy to company information and also other data, such as pollution, etc.

There are also real time forecasts for the stock market, individual companies and commodities.

Users of this platform will be everyday people like you and me and professionals in companies, government or asset managers, who are investing assets. The forecasts are accessible as attractive graphs, with some of them animated to better understand the dynamics of the changing circumstances. An example to visualize the dynamics of the onset of the Corona Crisis and how it is spreading around the globe. The platform would also facilitate API services so that professional users can automatically process the information. The creation of one single platform is a tremendous benefit, because a consistent methodology is feasible. Forecasting is all about getting the details right and creating consistency.

SCOPE & SPECIFICATION

The information system will bring together all types of information / everything that affects the daily life of individuals and society as a whole. This includes environmental data to economic, political and social data - everything. Similar to Wikipedia, which covers all types of keywords, the information service will cover all types of data series and will provide predictive information for the series individually and also in their bigger context.

The entire data information service will be available for free. Asset managers, who use the services for their actual decision making are charged a performance-based fee based on the actual performance achieved with the help of the predictive service. The revenues generated by the professional services will provide funding for the project and continuous expansion of the services. Different to the Wikipedia project, which has to rely on sponsoring, this project will also have its own revenue stream. The revenue stream will not impact the free access of the services and can be charged in a non-intrusive way, because it is levied on outperformance in asset management.

The minimum components and features required for the real time global information system are described below.

THE PLATFORM
The platform is an online software environment for data collection, sharing and analytics. In the same way as contributors populate the content of Wikipedia, analysts from around will link data and implement forecasting models to produce quality predictive information. The platform includes all the necessary tools for the filtering and cleaning of the data and develops the predictive models. Similar to the contributors of Wikipedia, who write the content that is published online, analysts can run simulations and share the models with their colleagues. Users can link data series with each other to build macro models, such as a forecasting model for the national GDP.

INCLUSION OF FINANCIAL MARKET DATA AND THE TOKEN ECONOMY
Financial markets are a key source of information of what is happening in the economy and its related data will likely comprise the biggest component of the global forecasting platform. This is a key resource. The token economy and information system will positively reinforce each other. Tokenizing assets and other rights make it possible to use market mechanisms to identify and transmit information. At the same time, the information system will contribute towards transparency and facilitate ongoing pricing of tokens and improve price discovery.

CROWD INTELLIGENCE
Integral component of the project is to leverage crowd intelligence by including news services and collective intelligence to collect and verify data and achieve comprehensive coverage.

DATA SERIES
Data series need to be made accessible - ideally at the highest frequency possible. The data series need to include all information relating to their source and other information about their detailed specification, pre-processing, post processing, etc. Appropriate data language tools need to be integrated.

BLOCKCHAIN
Blockchain is used as a tool to record the original data. The blockchain technology is also used to store the predictive models and the model configurations. We are agnostic vis/a/vis blockchains.

DATA COLLECTION

Data collections happen through API and also by incentivizing people in the field to collect data manually. The objective is to make the information system the ultimate data source. Example of data to be collected: all financial tick-by-tick data, mobility data, trade flow data, financial markets, mobility data, news feeds, environmental data, etc.

MODELING ENVIRONMENT

The service includes a modelling environment, where researchers can develop their analytical models to analyse the data and develop predictive models. The models can be just a component and/or a big model covering a large number of data series.

GRAPHICAL PRESENTATION AND USER

All services are available in graphical format and easy to use for the everyday person and available in real time including animations. API data feeds are available to decision makers, etc. and for input in investment strategies. There is a performance-based fee computed on the basis of factor attribution for the performance achieved.

SIMULATION ENVIRONMENT

The service includes a simulation environment, where researchers and developers can analyse the data and develop models and model components. The models and model parameters are stored on the blockchain. The simulation code is identical to the real time code so that the models can run in real time without alterations. Models and model configurations can be shared across models. The model configurations are stored and to the extent that the data services for portfolio management generate revenues, revenues are shared with the developers of the model components.

MODELING LANGUAGES AND TOOLS

The infrastructure includes modelling languages and tools making it possible to analyse the data and develop the models. The modelling language is an event-based programming language.

INTRINSIC TIME

Integral to the modelling tools is the concept of intrinsic time, where raw data is pre-processed by the event operator of intrinsic time. The research methodology developed on the basis of intrinsic time and scaling laws is expanded and made accessible.

The Open Initiative | ⅄ Lykke

Research Initiatives:

A new paradigm requires new research.

THE MOTIVATION

Governments are adopting emergency measures to mitigate the immediate impact and gain time for manoeuvre. We need to utilize the time to kick off the projects that are critical paths for long term mitigation of the crisis and building a resilient and sustainable economy. The launch of targeted research initiatives is the critical path for medium and longer-term success. Pharmaceutical research labs are racing to discover vaccines and other medical remedies for the Coronavirus. Under normal circumstances these research projects would take years to come to market; now people involved hope to bring them to market much faster.

There are other research projects that need to be kicked off fast. Decision makers in government have to scrape together information from different experts on how the virus spreads; they are flying blind. They need a hand on decision support tool weighing the different forms of social distancing and its economic impact. Today, the economic models do not exist. They have to be developed and integrated with live data of how the Coronavirus spreads and the actual economic data of what is happening on the ground.

Flying blind is not an option - successful crisis management is about closing the knowledge gap as fast as possible. We look for out of the box answers that shortcut the normally long path of research innovation. Crisis is the mother of discovery and innovation.

THE PROBLEM

The problem today is joint health and economic crisis of unprecedented proportions in recent history. Science-driven solutions are a necessity to address any crisis and this is no different. A lot of questions remain to be answered to ensure the proposed solutions have a sustainable and meaningful impact on crisis management and our economy.

THE PROPOSED SOLUTION

Research into key topics will ensure the crisis solutions and new economic infrastructure provide the desired results while improving their impact, scope and go to market speed.

THE GOAL OF THE RESEARCH INITIATIVE

We wish to promote innovative thinking and interdisciplinary quantitative research at the frontiers of finance, economics, mathematics and computer science. Although our research is applied, we put a very strong emphasis on rigour and we want to promote the highest mathematical standard in the research we support. Our main goal is to support teams of international leading experts from different fields with the ambition to address some of the most challenging problems our societies face and to advance knowledge.

SCOPE & SPECIFICATIONS

Support the research community to provide science driven inputs for the design and implementation of ground-breaking initiatives.

Some (non-exclusive) examples of research directions are:

- Applications of data science, deep learning and artificial intelligence in finance and economics;
- A strong emphasis shall be put on the development of high-level quantitative methods and algorithms for problems related to climate change and sustainable finance.
- Developing new ideas and methods to model the complexity and interdependencies in large financial systems (e.g. modelling the propagation and impact of stress in large complex systems);
- Understanding time scales in financial markets

SUPPORT THE INITIATIVE / FUNDING

We are seeking funding from individuals and organisations, including governments. We are grateful for donations now and in the future.

SPONSOR **THE INITIATIVE**	**CONTRIBUTE** **TO THE** **INITIATIVE**	**ENDORSE** **THE INITIATIVE**

THE COMPETITION

We invite individuals and teams to come forward with concrete proposals for the whole project and/or specific components. We are sourcing people from around the world to successfully launch the project. For further information on how to participate in **The Open Initiative**, please contact:
openinitiative@lykke.com

Prize Committee

The submissions will be evaluated by the community and specialists. We will source the specialists from this call to action. There is a prize committee that supervises the process and includes the following people:

- Richard Olsen

- Christopher Giancarlo

- Ashkan Nikeghbali

OPEN KNOWLEDGE & OPEN SOURCE

 Open knowledge and open source are core to the DNA of the Open Initiative. Financial markets have been hamstrung by secrecy and lack of knowledge transfer; this has hindered innovation and has its costs in the current crisis. The Open initiative has the objective to unlock the full potential of financial markets for the benefit of society by launching ambitious projects with a meaningful impact. Lykke is firmly committed to this path and commits to open knowledge transfer.

BUSINESS MODEL

The Open Initiative aims to build up a community of supporters and get donations from private individuals, businesses, foundations and government organizations to kickstart the development work. The supply chain and voucher platforms will earn a haircut from tokens issued on the platforms. The global information system will charge professional investment managers a fee based on the performance of the decision support tools.

ORGANIZATION

The project is launched by Lykke Corp, which hosts the project and provides open access to all its infrastructure. We embrace the practice of soliciting contributions to the project through competitions to open up to contributors from around the world.

About Lykke:

EMPOWERMENT, ACCESSIBILITY & OPENNESS.

Lykke is a Swiss-based blockchain company and financial product provider.

Lykke is addressing critical failure points of the economy by leveraging blockchain technology. Democratizing finance by eliminating market barriers, Lykke provides and promotes equal easy access to the digitization and trade of virtually any asset of value from anywhere in the world.

Pioneer in the blockchain space, **Lykke** has several years of international operational experience with a sophisticated financial engineering team, scalable blockchain infrastructure and in-depth know-how in the tokenization of assets of all types.

Lykke