

# FishEye on Blockchain

**Vision document**

**Version 3.0**

**This document is based on vision document from NTNU. Revision, customizations and adaptations to use at IDER, DATA-INF done by Carsten Gunnar Helgesen, Svein-Ivar Lillehaug and Per Christian Engdal. The document is also available in Norwegian.**

## REVISION HISTORY

Date	Version	Description	Author
27.01.2022	1.0	Problem formulation	Arsenii Dmitriev, Karl Gjølshjøl, Adrian Eidsnes Phillips
25.01.2022	2.0	Developing problem formulation further, elaborating initial thought, and reflecting on the received feedback.	Arsenii Dmitriev, Karl Gjølshjøl, Adrian Eidsnes Phillips
20.04.2022	3.0	Elaborating some aspects.	Arsenii Dmitriev, Karl Gjølshjøl, Adrian Eidsnes Phillips

## **TABLE OF CONTENTS**

<b>FISHEYE ON BLOCKCHAIN .....</b>	<b>1</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 SUMMARY OF PROBLEM AND PRODUCT .....</b>	<b>2</b>
2.1 PROBLEM SUMMARY .....	2
2.2 PRODUCT SUMMARY .....	3
<b>3 DESCRIPTION OF STAKEHOLDERS AND USERS.....</b>	<b>3</b>
3.1 SUMMARY OF STAKEHOLDERS .....	3
3.2 SUMMARY OF USERS.....	4
3.3 USERS' ENVIRONMENT .....	4
3.4 SUMMARY OF USER'S REQUIREMENTS.....	4
3.5 ALTERNATIVES TO OUR PRODUCT .....	5
<b>4 PRODUCT OVERVIEW .....</b>	<b>6</b>
4.1 THE PRODUCTS' ROLE IN THE USERS' ENVIRONMENT .....	6
4.2 PREREQUISITES AND DEPENDENCIES .....	6
<b>5 PRODUCT FEATURES/FUNCTIONAL REQUIREMENTS.....</b>	<b>6</b>
<b>6 NON-FUNCTIONAL REQUIREMENTS.....</b>	<b>6</b>
<b>7 REFERENCES.....</b>	<b>6</b>

# **1 INTRODUCTION**

The vision document is a collection of our thoughts on the project. Here, we reflect on our ideas for the project as well as develop the problem. It helps us to keep the focus on the main aspects. Furthermore, the purpose is to define the problem correctly, which is crucial for delivering a quality product.

## 2 SUMMARY OF PROBLEM AND PRODUCT

### 2.1 Problem summary

Problem formulation	<p>We would love to start with the research question that will help us stay focused on the problem and main details of the project: “To what extent the challenges in the current fish supply chain be mitigated by using blockchain?”. This question addresses two main things in the project – problems related to data integrity in the fish farm production industry and how/to what extent blockchain may mitigate the challenges.</p> <p>The fish industry in Norway requires an automated supply chain solution that prevents fraud and cheating that are possible in the fish production industry. Not only data integrity and product authentication are crucial, but a track of supply chain issues and a trustful relationship with end customers.</p>
Affects	<p>The product will affect Ørn Software, a company is planning to utilize the API we develop. Ørn Software intends to integrate the API into a supply chain solution for the Fish production companies in Norway.</p> <p>Next, the end-costumers that consume fish products are affected so that they can examine the origin of fish products and be sure that the data presented is legitimate.</p> <p>Transportation companies are affected indirectly. Milestones in the logistic scheme will end up in blockchain.</p>
Consequences/result	<p>As a result, an autonomous system will be produced and utilized by the fish production companies in Norway. The logic is that each fish cage would have its RFID tag with information. The system will extract information and forward it to the API we develop when one is scanned. The API is responsible for interacting with blockchain and completing a task respective to the requirements.</p> <p>Such a system ensures data transparency and integrity. The end customers will be able to check the</p>

	<p>product's origin. Thus, customer attitude towards farm fish may improve.</p> <p>Cheating by either party in the fish production process will be minimized.</p> <p>Moreover, any issues in the supply chain may be defined faster.</p>
A successful solution will	<p>A successful solution will be a thorough report, answering the research question and presenting facts. Yet, a beta version of a functional API is responsible for getting various requests and performing the desired task in the blockchain.</p>

## 2.2 Product summary

For	Ørn-Software.
That	Will receive research on the way blockchain technologies may be integrated and why it is functional.
Name of the product	FishEye On Blockchain
That	It provides details on economy estimations and technical aspects of the solution.
And opposed to	Lower the cheating factor in the production or transportation phases. Increase companies' openness and improve the end-customer relationship.
Our product ensures	An overview of the timespan from the moment fish are bred till consumed

## 3 DESCRIPTION OF STAKEHOLDERS AND USERS

### 3.1 Summary of stakeholders

Name	In-depth description	Role under the development
Ørn Software	The company delivers Software as a Service products for various businesses. Ørn Software desires to secure marine ecosystems and thus sees	A company's representative helps us define the indeed problem as well as sends insider information if needed.

	potential in a Blockchain as a Service product utilized by the fish production companies.	
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### 3.2 Summary of users

Name	In-depth description	Role under the development	Represented by
Fish farms	No particular user. The API will be integrated into an autonomous logistic solution available for fish farms.	Share data fragments	Ørn Technologies

### 3.3 Users' environment

A team of software developers will further use our API to pack it all into an automated system. Individual units will be used by scanning an RFID tag containing data during the production process to capture all the stages.

### 3.4 Summary of user's requirements

Requirement	Priority	Affects	Existing solution	Suggested new solution
Data transparency	6/10	End-customer, Fish farms.	The company may choose which internal data to share with customers, but the origin of such data cannot be considered legitimate.	Creation of an API that proceeds and uploads data to a blockchain to make the data public and verified.
Data integrity	10/10	Fish Farms, logistic companies, end-customer.	There is a traditional way of storing data via a centralized	Blockchain ensures data integrity. Thus it's being used to achieve the goal.

			DBMS which is considered secure to a low extent.	
Data facilitation	4/10	Fish Farms, Retail business	There are no alternatives to our product on the market.	All the data that wasn't used previously will get a chance to be facilitated with our product. Data on fish transportation, breeding, feeding, vaccination, etc., are represented to the end customer.

### 3.5 Alternatives to our product

- Det Norske Veritas (DNV) - Norway[1]
- Norway in a Box - Norway[2]
- Amazon blockchain for supply chain - USA[3]

The list is not complete. Although, there is no public solution on the market developed specifically for the fish industry in Norway.

Det Norske Veritas offers a product called My Story. My Story is a BaaS providing a product for data management of packaged goods. My Story Veritas uses VeChain as their blockchain. My Story must be elaborated to suit the farm fish industry in Norway.

Norway in a Box utilized VeChain for fish products export. They built the so-called Nibchain, but the technology is private and cannot be used by other companies without developing a new system.

Amazon Managed Blockchain is a service used to set up and manage scalable blockchain networks. This allows for creating private blockchains that are easily managed and highly scalable. Companies can use this service to build supply chain solutions. Using private blockchain results in a more centralized solution compared to a public blockchain



## **4 PRODUCT OVERVIEW**

### **4.1 The products' role in the users' environment**

Ørn Software may bring the project further and make it to life.

The product allows the end customers to investigate the entire lifespan of fish, including the transportation and preparation. Thus, the brand-loyalty increases as end customers may view validated and trusted data.

### **4.2 Prerequisites and dependencies**

The project mainly depends on research and valuable data sources. Moreover, the project should define the best suiting blockchain to utilize.

## **5 PRODUCT FEATURES/FUNCTIONAL REQUIREMENTS**

1. The product must include research that covers the requirements.
2. A functional API must be presented to prove the solution.
3. The API must proceed with requests further and interact with a blockchain.
  - 3.1. The API must be able to send requests to a blockchain to post data.
  - 3.2. The API must be able to send requests to a blockchain to receive data.
  - 3.3. The API must respond to the request with either the demanded data or the status code of the request.
4. The solution must guarantee data integrity.

## **6 NON-FUNCTIONAL REQUIREMENTS**

The API must be easy to use as it will be integrated into larger systems further.

The API must be secured by an authentication service to counter third-person penetration attacks.

Quality of performance is an essential aspect of such a system.

## **7 REFERENCES**

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