ADVANCED ANALYTICS IN AQUACULTURE

STRUCTURING A SEA OF DATA TO FEED DECISIONS
Advanced analytics in aquaculture
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THE WORLD NEEDS MORE FOOD

To feed a population that may reach 9.7 billion people in 2050, we expect an increase in food demand anywhere between 60% to 98%.

Due to expanding urbanization, we will need to produce this food on a decreasing amount of land suitable for agriculture and crop production. Consequently, a large portion of this food must come from farmed protein sources, which requires extensive growth in the aquaculture industry.
Global seafood will lose its status as the only remaining food sector supplied chiefly by nature, as businesses pour investments into fish farming.

Farmed fish production is expanding 4 to 5 per cent a year, putting it on course to eclipse the output of wild fishing as soon as 2019, according to the UN Food and Agricultural Organization.

The Norwegian seafood industry alone has been estimated to have a growth potential of six-fold within 2050. This will require an increase both in the quantity and size of fish farms, as well as improved production efficiency.
To realize this potential, the industry must address a set of barriers that are currently preventing the ability for such a substantial growth. Whether we talk about acreage limitations, fish health and welfare, feed efficiency, diseases, medicine and treatment, or high mortality rate, an exponential growth will increase these challenges in strength and number.

The need to reduce the negative effects of challenges is further emphasized when politicians and governmental agencies increasingly demand improvements as prerequisites for increasing the number of concessions.

In short, tackling such barriers will be fundamental to expand and promote a production of more fish and key to an efficient and sustainable aquaculture growth.
Fish health and welfare
Healthy, thriving fish give the best economic growth and return for fish farmers. Healthy fish are also increasingly important to consumers and other stakeholders, such as governmental agencies and NGOs.

Feed efficiency
Feed is the single most important expense for fish farmers. With an increasingly high cost, feed efficiency is crucial to economic growth and environmental concerns.

Mortality
The farmed fish mortality rate in Norway can be as high as 20%. This is due to a combination of a range of factors, such as diseases, methods and effects of treatment, water temperature, weather, salinity, sea currents, and oxygen levels.
DATA TO ADDRESS CHALLENGES

As real-time sensor data increasingly becomes mainstream, some of the growth barriers can be analyzed in completely new ways. Advanced data analytics can help us unravel and understand how a broad set of variables and indicators influence the farmed fish from smolt to consumption:

- Diseases
- Method and effect of treatment
- Feed volumes
- Appetite
- Feed factor
- Growth figures
- Mortality
- Temperature
- Salinity
- Currents
- Oxygen
“Advanced data analytics can help us unravel and understand…”

The exploration and use of digital technologies to gather and analyze large sets of data will be crucial to increase operational efficiency and growth.

Increased focus and knowledge of data-supported analyses can lead to a shift in focus from “what did happen” to “what might happen”, enhancing the operators’ ability to take proactive measures.

The industry has until recently largely been driven by highly qualified and experience-based intuition, with less effort spent on using data to gain insights. Data that is not used will generally have a lower quality than desired. In addition, it is often unclear whether the information in the collected data includes all relevant information.
UNLOCK THE VALUE OF DATA

DNV GL can help address these data issues. We ensure that processes are structured in a way that harvest data fit for purpose. Managing data as an asset gives the fish farmer a better understanding of:

- Which data they have and the condition of those data
- Which data they would like to have

Through our role as a trusted and independent partner, DNV GL seeks to enable sharing of data and analytical insights between companies to the benefit of the industry. To accelerate this process, we promote additional access to prequalified public and commercial data that further enhance opportunities for advanced analytics.

We facilitate this through the Veracity open data platform with an industry wide data lake. This is DNV GL’s integrated ecosystem of services that can help the industry gather, quality assure, structure and present complex sets of both historical and real-time data.

In turn, this will lay the foundation for predictive analyses, decision support, indication warning, and simulation capabilities.

All the while, we make sure fish farmers and other data providers retains ownership and control of their data.
Veracity - The open data platform by DNV GL

The platform ecosystem gathers, structures and presents data for reliable decision-making.
Appetite for fish in both developed and emerging markets is rising as more consumers choose it for health benefits. The trend has prompted a range of companies to muscle in to the farmed fish industry. In addition to being a source for sustenance, seafood production is also an important source of employment, and a vital component of national economies.

It is also a global industry. In Norway, the fishing industry remains one of our major export industries.

But the Norwegian production of approximately 3.7 million tons of seafood annually (wild and farmed) is dwarfed by China’s estimated 65 million tons. With this, China accounts for one-third of the world’s reported fish production and the industry employs 14 million people.

A range of stakeholders – from fish farmers, investors, and authorities - all express the need to explore and utilize digital technologies to gather, analyze, and unlock the potential of big data in aquaculture. The challenges hampering growth in one part of the world frequently mirrors similar situations in other parts of the world.

They also agree that new digital technologies offer a wide range of opportunities, but that efficient operation of these technologies will be a challenge and that the global aquaculture industry needs someone to help them with the digital transformation ahead of them.
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NORWAY
3.7 MILLION TONNES

CHINA
65 MILLION TONNES
INDUSTRY KNOWLEDGE - WHY DNV GL?

DNV GL is already an integrated part of the aquaculture value chain. We provide certification and technical services, we assist in identifying the right sensors, we analyze operations and examine food safety. We know the industry and build trust from below the water all the way to the consumer.

With our experience from digital transformation in industries like maritime and oil & gas, we also know what data fit for purpose looks like, how to gather and how to manage access.

The Veracity ecosystem collect, structure and present actionable information that can unlock a substantial growth potential in the global aquaculture industry and empower advanced analytics that help create the trust necessary for our future’s sustainable aquaculture growth.
DNV GL

DNV GL is a global quality assurance and risk management company. Driven by our purpose of safeguarding life, property and the environment, we enable our customers to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas, power and renewables industries. We also provide certification, supply chain and data management services to customers across a wide range of industries. With origins stretching back to 1864 and operations in more than 100 countries, our experts are dedicated to helping customers make the world safer, smarter and greener.

As one of the world’s leading certification bodies, we help businesses assure the performance of their organizations, products, people, facilities and supply chains through certification, verification, assessment and training services. Partnering with our customers, we build sustainable business performance and create stakeholder trust across all types of industries.

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