Database system for the aquaculture industry of an African country

Overview of specifications for the system

EXECUTIVE SUMMARY

The fisheries authority (FA) of a certain African country would like to implement a sophisticated database system to facilitate the effective regulation and management of the participants in the aquaculture industry.

The FA is responsible for issuing licences to participants in the aquaculture industry. The FA will be the administrative user of the system and the licensees will be secondary/portal users of the system. It is expected there will be more than 100 licensees after 5 years. Licensees need to submit data to the system on a regular basis so that the FA can maintain a comprehensive profile on all participants in the aquaculture industry. The FA will then use the data in the system to monitor the activity of the licensees and the status of the aquaculture industry as a whole. The system should be able to generate custom reports for the FA. The FA must be able to distribute digital resources via the system to the licence holders. And the system should help facilitate the licence application process.

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INTRODUCTION

Scope of this document

In this document an overview of the key functional and technical requirements of the system will be given, and the main use cases/workflows will be outlined. This is not a final specification of the system and should only serve as a broad guide for assessing the suitability of a proposed system.

Background

The government of a certain African country has been working to develop its aquaculture industry for several years. The government is committed to protecting its natural ocean ecosystems and so is taking significant steps to effectively regulate the aquaculture industry. The government would like to implement a modern database system to help the FA to effectively monitor and regulate the participants in the industry.

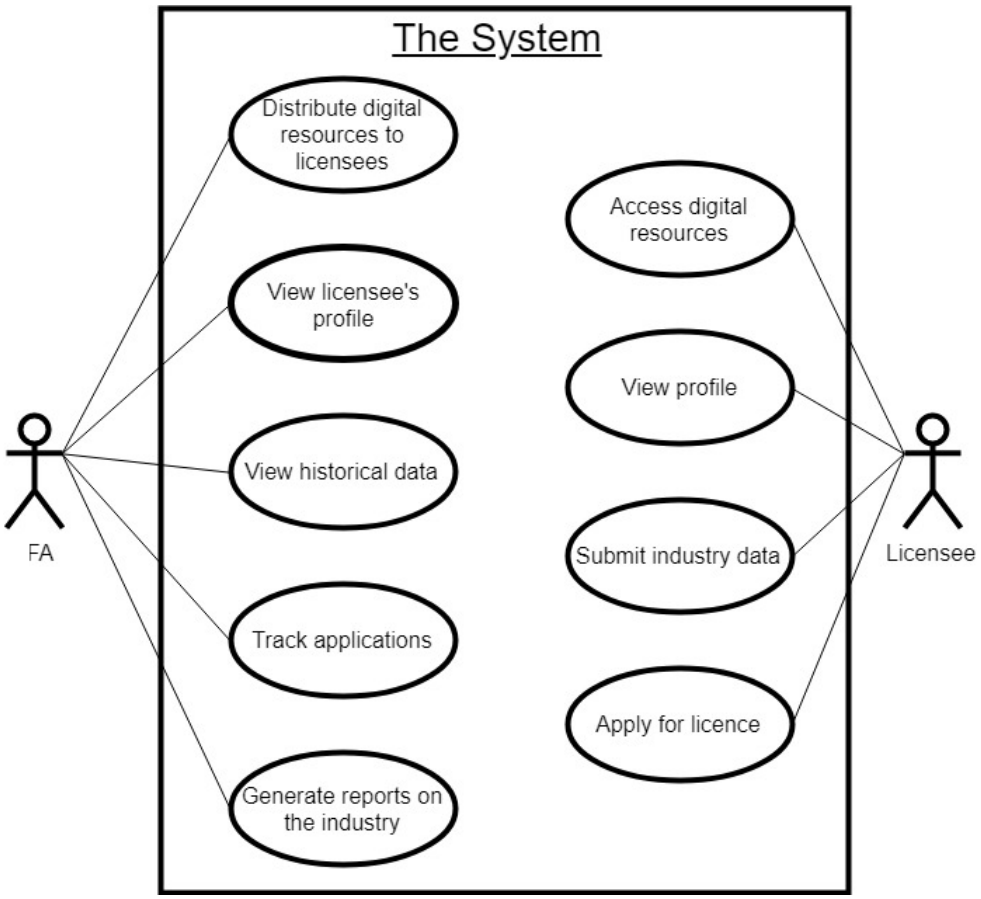
The FA is responsible for issuing various licences that permit the licence holders to participate in the aquaculture industry, for example a licence holder might establish a new fish farm or hatchery. But

the licence agreement comes with several terms and requirements that must be adhered to by the licence holder or else the licence may be revoked. To ensure compliance with their licence agreements, the FA requires all licence holders to regularly submit to the FA various data related to the industry. The FA needs an effective way to facilitate the collection of such data from its licence holders as well as a sophisticated system to aggregate the data in a database so that the data can be used to effectively monitor the aquaculture industry as a whole.

PRIMARY AND SECONDARY USERS OF THE SYSTEM

The FA will be the administrative/primary user of the system. The FA should have access to all the data submitted to the system by the various licence holders. The licence holders are secondary users of the system and should be granted restricted access to the system via a portal. It is projected that within the next 5 years the FA will issue approximately 100 licences, that equates to about 100 portal users. Within another 5 to 20 years the FA will probably issue a further 100 licences.

PRIMARY USE CASES OF THE SYSTEM



1. **The FA must be able to view a comprehensive profile of each licensee**

The database should maintain a comprehensive profile on each licence holder so that the FA can monitor the licensee's compliance with their licence agreement. The profile should contain general information regarding the company as well as the industry specific data that the licence agreement requires.

2. **Licence holders must be able to submit industry data to the system via a portal**

Licence holders are required to submit different data indicators, at different frequencies, to the system. Data may be submitted on a daily, weekly, monthly or annual basis depending on the terms in the licence agreement.

3. **The FA should be able to view historical data**

After the system has been in use for several years, the FA will have collected substantial volumes of data relating to the aquaculture industry. The FA would like to access this data to analyse it and potentially make predictions for the future.

4. **The FA will use the system to generate several custom reports**

The system should generate performance reports on each of its licensees as well as reports on the aquaculture industry as a whole.

5. **The FA will use the system to facilitate and track the licence application process**

Applicants should be able to submit their licence applications online. The system should store any documents relevant to the application as well as track the progress of the application.

6. **Licence holders should have access to important resources via the portal**

The FA should be able to distribute important digital resources to the licensees via the new system. These include manuals and documents on the regulations and standards of the aquaculture industry. These standards change over time and so the FA needs an efficient way of distributing these changes to the licence holders.

CATAGORIES AND EXAMPLES OF DATA TO BE CAPTURED

- **Bio-physical environment** (water quality, benthic environment, water temperature, salinity, sediment sampling results, environmental audit reports, etc.)
- **Social** (work force (nationality, race, gender, religion, qualifications, training/upskilling), HR plan, impacts on social infrastructure, etc.)
- **Farming/aquaculture** (biomass in water, fingerling supply, product form, grow-out timeline, feed quantities, feeding behaviour, mortalities, interactions with predators, fish health, vaccinations/antibiotics, food-conversion-ratio, etc.)
- **Operational** (fuel consumption, electricity, boat schedule & routes, noise pollution complaints, light pollution complaints, traffic complaints, sales, maintenance reports)

TECHNICAL REQUIREMENTS OF THE SYSTEM

1. **The system needs to be hosted off premises / in the cloud.**

   The FA does not have the infrastructure in place to host the system on site or the resources required to maintain the system. As the such the system should be hosted and maintained offsite.

2. **The system needs to be secure and regularly backed up.**

   The system stores a lot of important and sensitive information and as such must be very secure. Furthermore, the data in the system will be stored for many years and historical data will regularly be used to make predictions for the future and so the data must be backed up regularly because losing the data could be catastrophic.