Live Plankton Analysis System

OTAQ's Live Plankton Analysis System (LPAS) automatically identifies phytoplankton around marine aquaculture sites that could potentially result in Harmful Algae Blooms (HABs) and impact on fish health. By providing critical and timely information, LPAS enables operators to make early and informed decisions on site-specific mitigation strategies and actions.

LPAS employs deep-learning AI technology developed with Blue Lion Labs to analyse images of the water samples for species of phytoplankton that are known to be of concern. It immediately sends the results to OTAQ's local analysis software program and user interface.

Using the data from the AI engine, the local analysis software program and user interface generates on-site alerts for staff based on user-defined parameters, alerting on the presence of specific species that are of concern in a particular area as well as alerting when acceptable levels of concentration of any species of interest are exceeded. A clear traffic light system lets site operators know if there is an issue or not and they can they review more detailed data if required.

Results data collected by LPAS can be automatically stored locally and in the OTAQ Cloud for presentation and analysis. Site or Company specific Application Programming Interface (API) can also be set up for direct connection into customer databases if desired.

KEY BENEFITS

- Phytoplankton species and quantity automatically identified
- On site system enables increased testing frequency and consistency
- HAB alerts automatically generated as soon as species of concern detected or user-defined allowable concentration thresholds are exceeded
- All data is metadata tagged and stored securely in Cloud for long-term analysis
- Direct information feed to customer database if preferred
- Integration with OTAQ's water quality monitoring system available
- System versions available with or without internet connection

APPLICATION

Components	Application
AI Engine	Aquaculture
Imaging System / Hardware	Regional water quality monitoring programmes
Analysis Software	Lakes and waterways
Local User Interface	
Cloud Database	
Biology and AI Support Services	

AI ENGINE

The AI Engine detects specified phytoplankton organisms with a confidence level greater than 80% and provides cell concentration of each. Working with industry-based microbiologists and academia, lists of phytoplankton organisms of most concern have been identified per region.
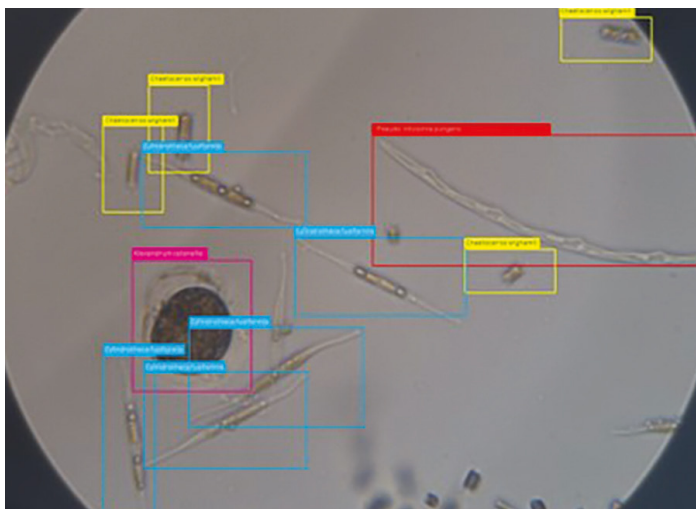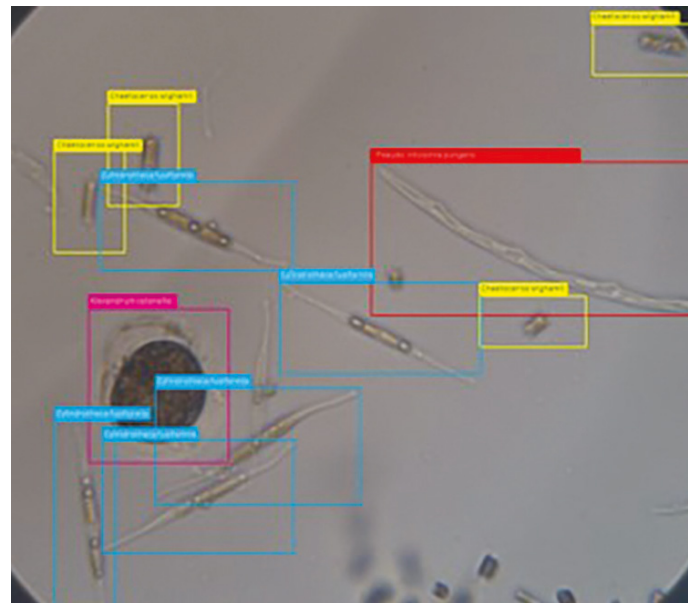

IMAGING SYSTEM

COMPONENT	SPECIFICATION
Microscope	x10 optics
Camera	20 Mega-Pixel Digital Camera
LPAS Computer	Bespoke specification installed with AI Engine, Analysis Software and User Interface

SOFTWARE + CLOUD

COMPONENT	SPECIFICATION
Analysis Software	Connects with camera, AI Engine and Cloud to obtain, identify, and store data with unique identification and time stamp on the PC and in the Cloud
User Interface	Enables project data input and displays phytoplankton species identified and concentration levels per sample and site history. Alert thresholds can be set and alerts displayed in the user interface
Cloud	Secure, customer specific and site specific cloud data storage. Enables download of latest software and AI Engine versions

SERVICES

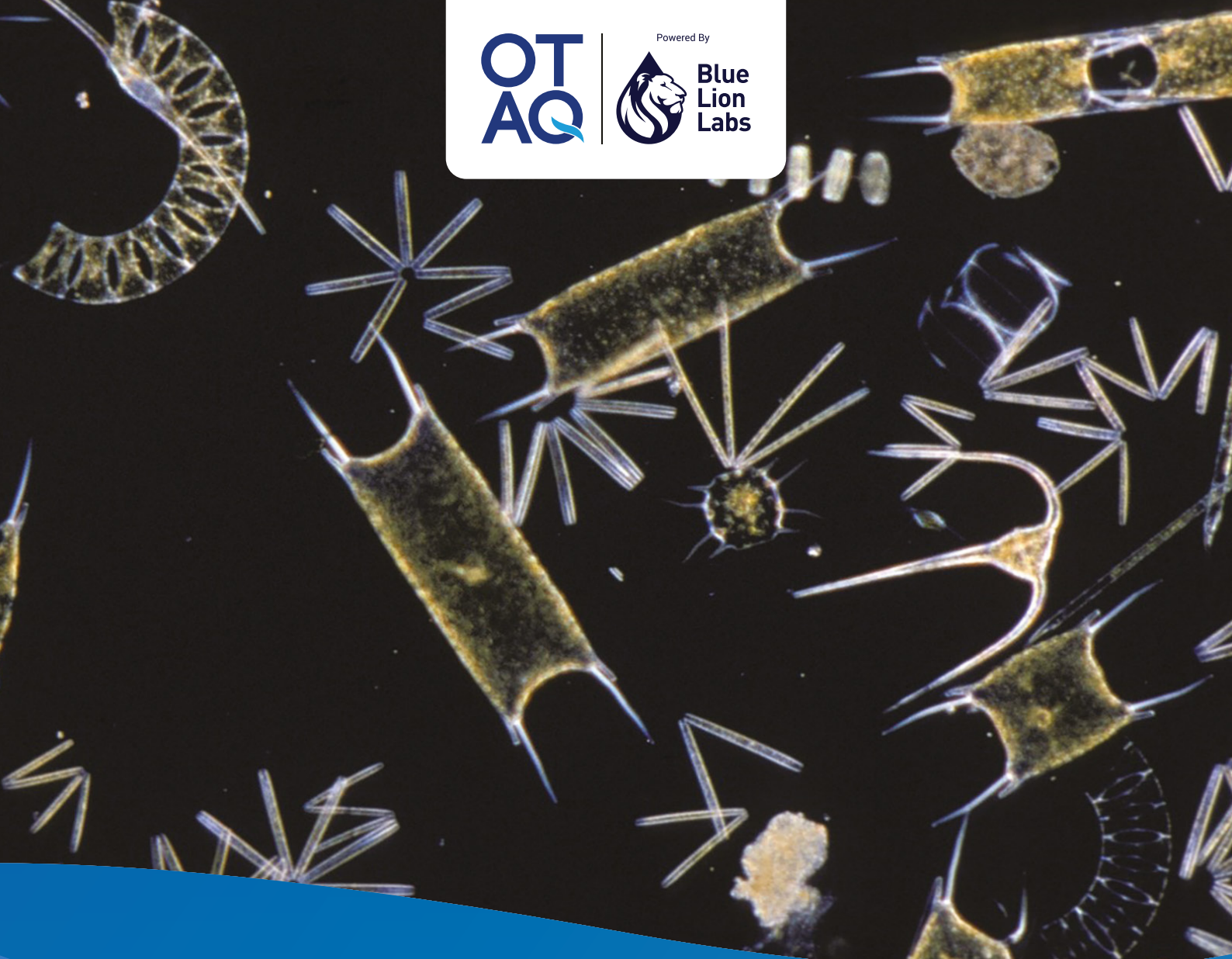| INSTALLATION AND TRAINING	TRAINING AND USER MANUALS PROVIDED
AI Engine and Software updates	Automatic updates to latest versions via Cloud or USB transfer
Biology support team	Regular quality reviews of uploaded images and support with customer specific queries