



AQUAEXCEL

Aquaculture Infrastructures for Excellence in European Fish Research

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Combination of CP & CSA
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Capacities

Deliverable D2.1

Online interactive system for registration of research infrastructure properties

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Dissemination Level	
PU Public	X
PP Restricted to other programme participants (including the Commission Services)	
RE Restricted to a group specified by the consortium (including the Commission Services)	
CO Confidential, only for members of the consortium (including the Commission Services)	

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Glossary

AQUAEXCEL: Aquaculture Infrastructures for Excellence in European Fish Research.

Research Infrastructure: a site-specific cluster of research groups and tools that provide essential services for basic or applied research.

Operating Institute: the legal entity operating the Research Infrastructure

Facility Unit: specific experimental or analytical laboratory, which is part of the Research Infrastructure

Front end: In software design, the front end is an abstraction, simplifying the underlying component by providing a user-friendly interface. A rule of thumb is that the front (or "client") side is anything you can see when you view the code source of the page (when you are on the client side, i.e. not on the server.)

Back end: in software design the server side / administration side is the back end.

Summary

Objectives: to create an online inventory of European infrastructures dedicated to aquaculture research and development, presenting available facilities, services, analytical laboratories and biological resources within and outside the AQUAEXCEL consortium.

Rationale:

AQUAEXCEL aims to integrate key aquaculture research infrastructures across Europe, in order to promote their coordinated use and development. Through collaboration between 17 partners and 23 facilities, AQUAEXCEL offers top class research infrastructures for both basic and applied research, giving aquaculture research groups the opportunity to utilise AQUAEXCEL's facilities.

WP2 aims to provide an integrated online infobase with all aquaculture research infrastructures in Europe and associated countries, including those provided by non-AQUAEXCEL partners. The infobase will be a viable European aquaculture research infrastructure directory designed to provide an open, sustainable service beyond the life-time of the AQUAEXCEL project. It will also be a powerful tool for identifying European facilities, genetic and human resources, and for promoting mutual collaboration.

The development of the online infobase was subcontracted to a specialised programmer, under supervision of AquaTT who developed the specifications, led the negotiations and managed the supervision and verifications. Due to budget restrictions and time-intensive discussions between several (subcontracting) parties, which resulted in additional programming work being carried out on the site, the online infobase took longer to develop than expected.

Teams involved: AquaTT (P16) developed the system, with input and feedback from NTNU (P10) and IFREMER (P7).

Geographical areas covered: Entire European area.

The structure and content of the developed AQUAEXCEL online interactive system for registration of research infrastructure properties are outlined by use of print screens, shown in the following pages.

Introduction

The aim of the AQUAEXCEL online interactive system for registration of research infrastructure properties was to be (AQUAEXCEL DoW):

- An inventory of European infrastructures dedicated to aquaculture research and development, presenting available facilities, services, analytical laboratories and biological resources within and outside the consortium.
- A viable European aquaculture research infrastructure directory in the long term, and a powerful tool to identify European facilities, genetic and human resources and to promote mutual collaboration. The data system will allow its users to identify infrastructure clusters with complementary properties related to its systems, species, fields of research or environment.
- An open and interactive system for retrieving information on existing Research Infrastructures, their facilities and services, and the type of fish material available for aquaculture research.

Information that was to be registered for each infrastructure:

- General information: location, operating institutions, main scientific objectives, pictures
- Technical description: type, number and size of the rearing units, species and life stages used, technical support
- Environmental description: type of water supply, range of environmental parameters (salinity, temperature, flow rate, density), degree of environmental control
- Experimental data: types of measurements (manual, automated) available on environment parameters and fish
- Laboratory support: laboratory equipment and analytic tools available
- Scientific support: scientific expertises, databases, publications using the infrastructures

For infrastructures working on fish lines, the following additional information had to be collected:

- General information: species, historical data (origin), general characteristics, pictures
- Management data: mode of propagation, effective population size, number of generations, selection trait(s), cryobanking
- Performance data: performance for relevant traits
- Genetic variability: molecular marker data

These features will be updated by the research activities aimed at producing new isogenic lines (WP9) and providing new phenotypic measurements (WP7).

Actual information recorded for each facility in the system is less detailed than was originally envisaged according to the description, to ensure the accessibility for external Research Infrastructure to contribute. The structure of the different inventory categories (production systems, environments, species, fields of expertise, instruments, fish lines) was defined and clarified based on extensive discussions between all AQUAEXCEL partners. The full information as described above and in the DoW can be found for each AQUAEXCEL Research Infrastructure on the project website – consortium pages.

Methodology

System development

The final information fields have been developed by the WP2 team members, taking the DoW descriptions as a starting point and discussing feasibilities and useful information.

An initial starting point was integration with an existing similar research infrastructure database, managed by EurOcean, to avoid duplication of research infrastructure descriptions. However, extensive discussions made clear the databases were not compatible (e.g. different classifications/categorizations for the same fields) and adjustments to the existing EurOcean system would have been above budget and not feasible. Therefore it was decided to develop a new system, fully compliant to AQUAEXCELs requirements, which at a later stage could possibly be integrated with the existing EurOcean system.

Registration and administration

The AQUAEXCEL Interactive Map has been integrated into the project website and is easily accessible. Interested parties can register then complete and submit data on their aquaculture research infrastructure. A quality control system has been put in place whereby an administrator has to approve newly submitted entries before they appear on the map.

Further features are detailed below.

Overview of the system

- **Front end** – The AQUAEXCEL Research Infrastructure directory homepage (<http://www.aquaexcel.eu/ri/map/>):

The directory is a web-based system, using Google Maps as its foundation. It visualises all aquaculture Research Infrastructures that have been uploaded to the system. In addition to a map legend and a zoom function, users can easily register by clicking on "Login/Register". A comprehensive search option allows the users of the directory to retrieve detailed information about the Research Infrastructures (RIs) that correspond to the chosen categories. This information can also be accessed by clicking on the icon of a particular RI, resulting in the display of an initial pop-up screen (see below).



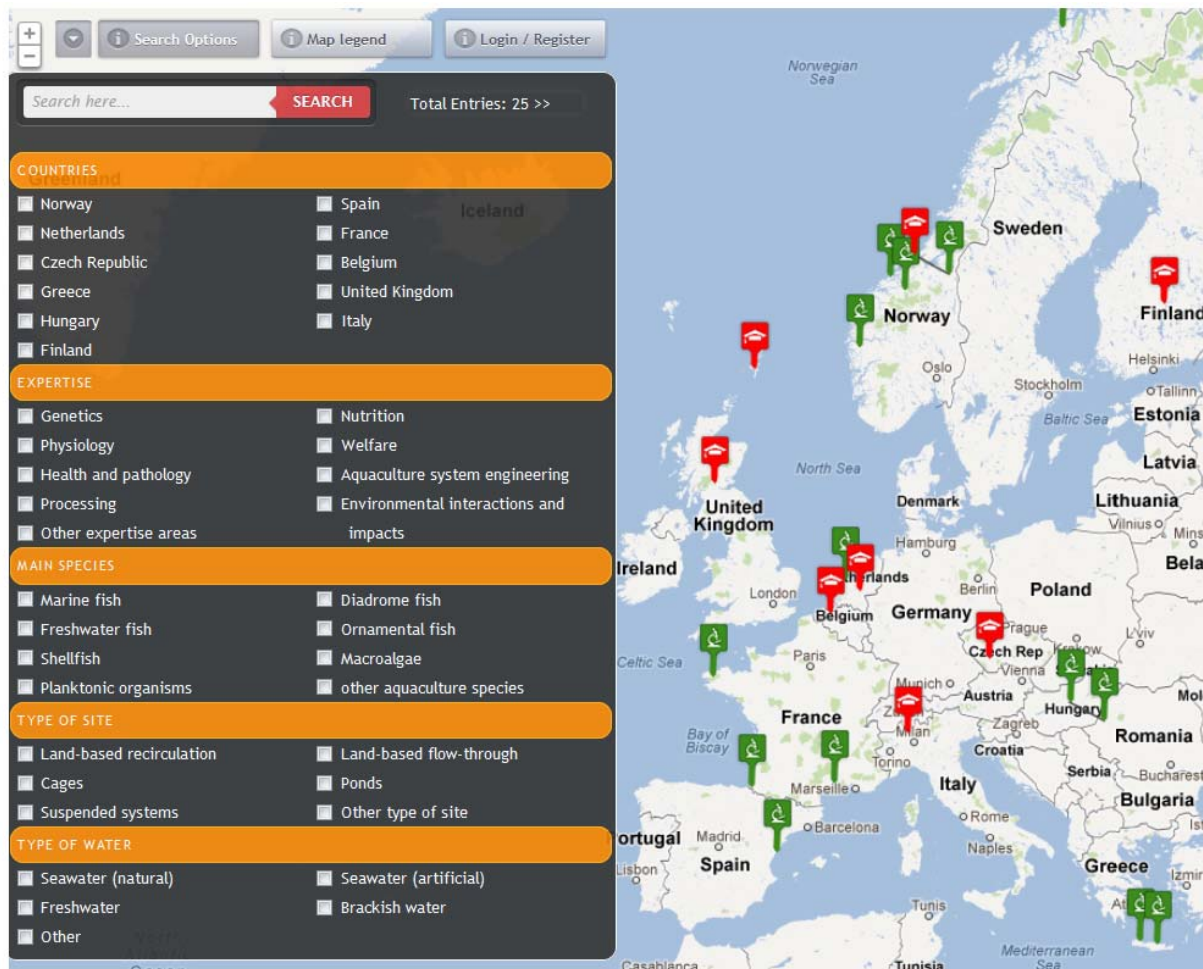
Home > Interactive map

European Aquaculture Research Infrastructures Interactive map



▪ **Front end** – “Search Options”

The system’s search options include the following categories, relevant for aquaculture research: Country, Expertise, Main Species, Type of Site, and Type of Water. There is also a free search option where keywords of one’s own choice can be entered. Combined searching, i.e. a search where multiple options are selected, is also possible. See print screen below, visualising the search options.



- **Front end** – “Register to Map”

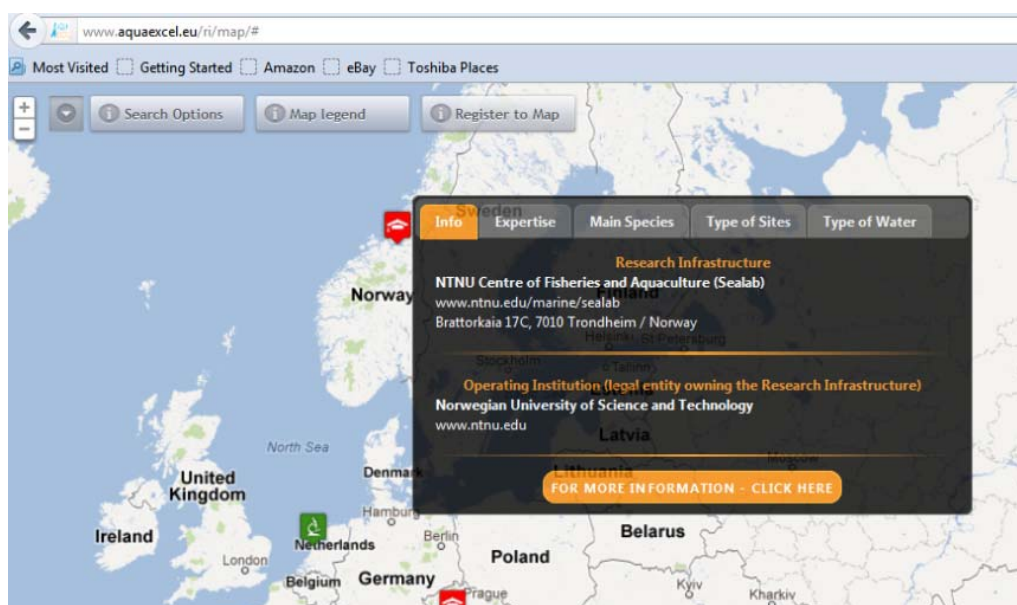
Providers of research facilities in Europe are invited to join the system by different means of communication (web site, e-mail, personal communication, events). When entering the main page of the directory, new users can easily register by clicking on "Register to Map". By doing so, a pop-up screen will appear asking the user to provide a name, username (e-mail address) and password. Once registered, users can start uploading information about their RI into the directory. However, this information will only become visible on the map after being validated by the site administrator (marieke@aquatt.ie).

- **Front end** – Information examples

In order to illustrate the system in a comprehensive way, the RIs of NTNU and VURH are used as examples. The paragraphs below describe the content of the pop-up screens that appear when the respective icons are selected.

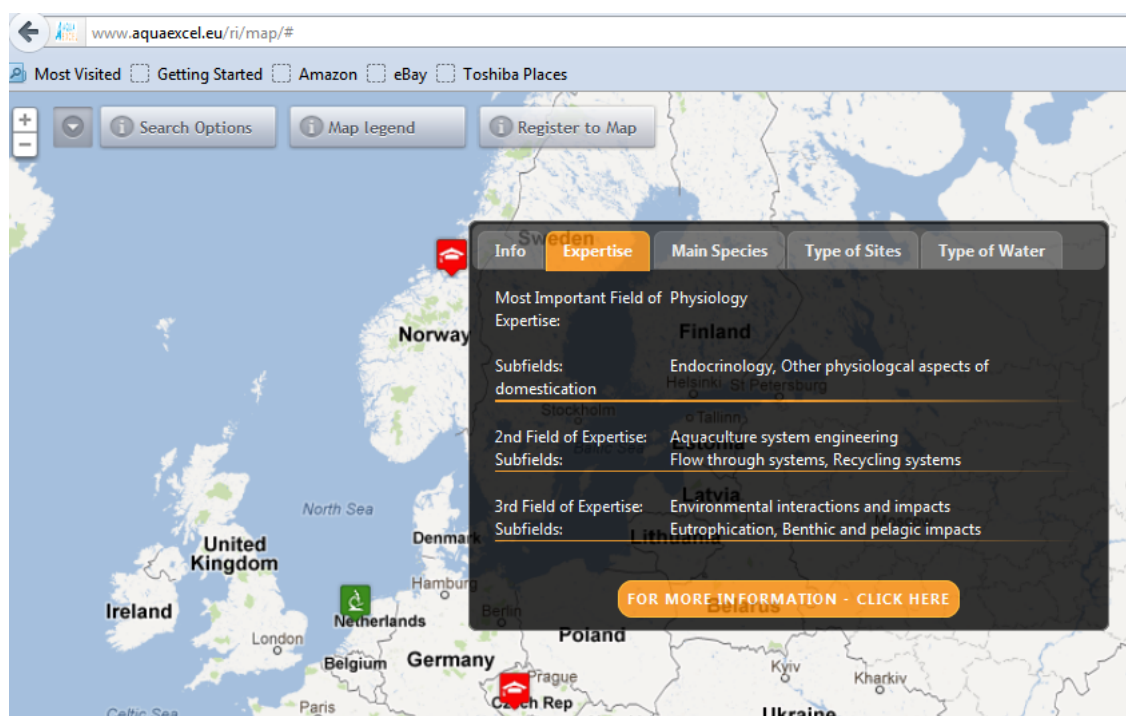
- 1) Initial pop-up screen, page 1 (Info) – NTNU

The default screen is "Info". It provides (contact) information on the Research Infrastructure and its Operating Institution.



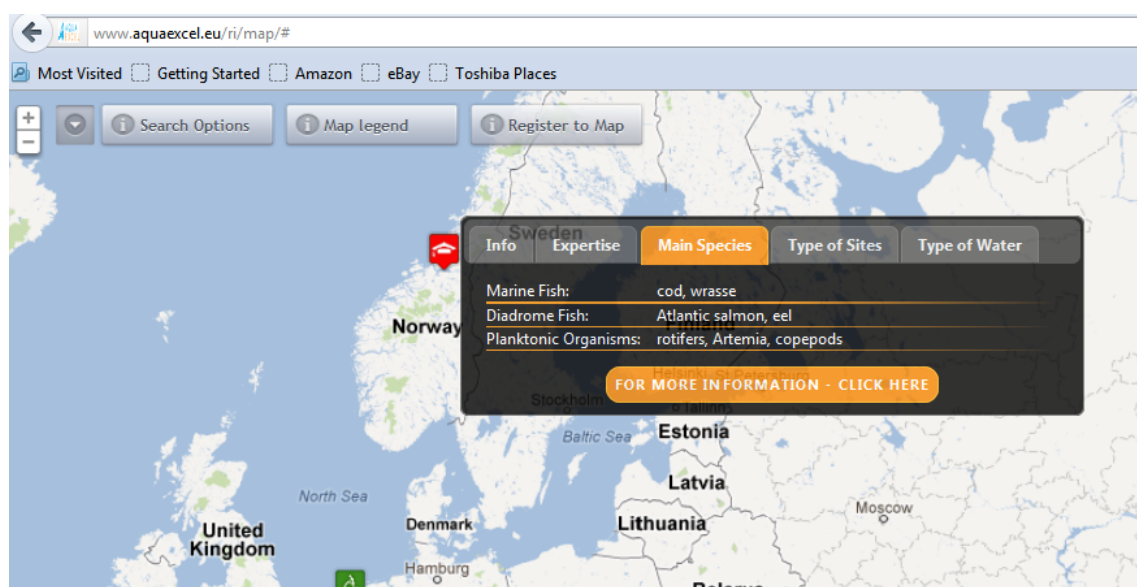
2) Initial pop-up screen, page 2 (Expertise) - NTNU

Page 2 of the initial pop-up screen displays information on Expertise available within the Research Infrastructure. Research Infrastructures can present up to three main fields of expertise, ranking them in order of importance and specifying the subfields for each.



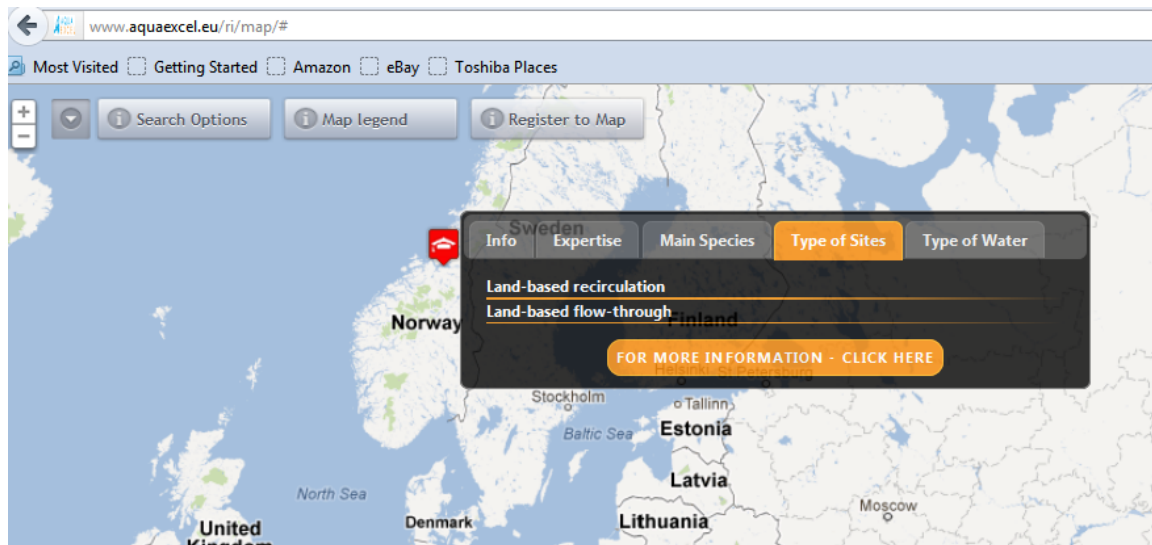
3) Initial pop-up screen, page 3 (Main Species) - NTNU

Page 3 of the initial pop-up screen displays information on the Main Species studied within the Research Infrastructure, showing a maximum of 8 species groups. Details are given for each selected Main Species.



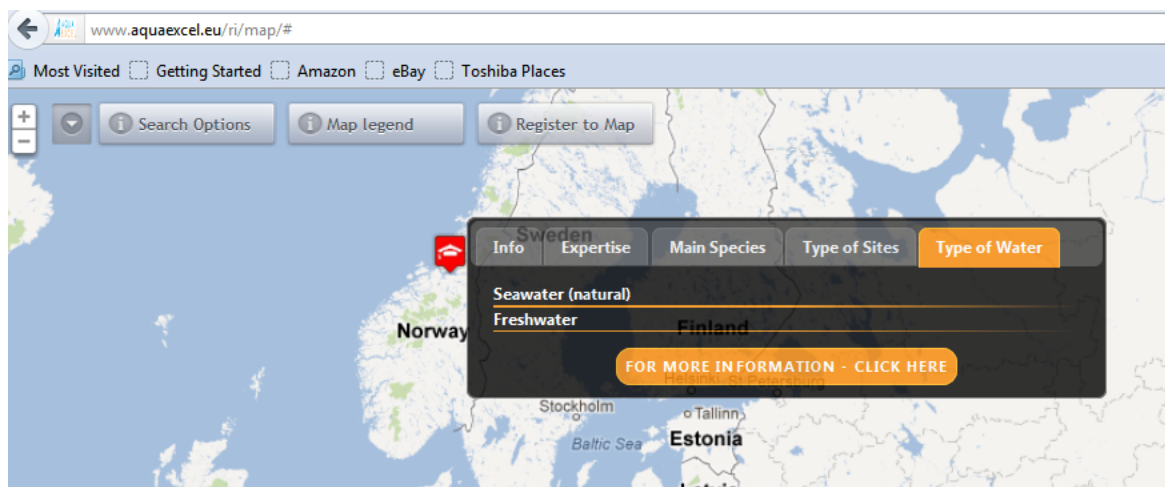
4) Initial pop-up screen, page 4 (Type of Sites) – NTNU

Page 4 of the initial pop-up screen displays information on the Type of Sites available within the Research Infrastructure, showing a maximum of 6 different site types.



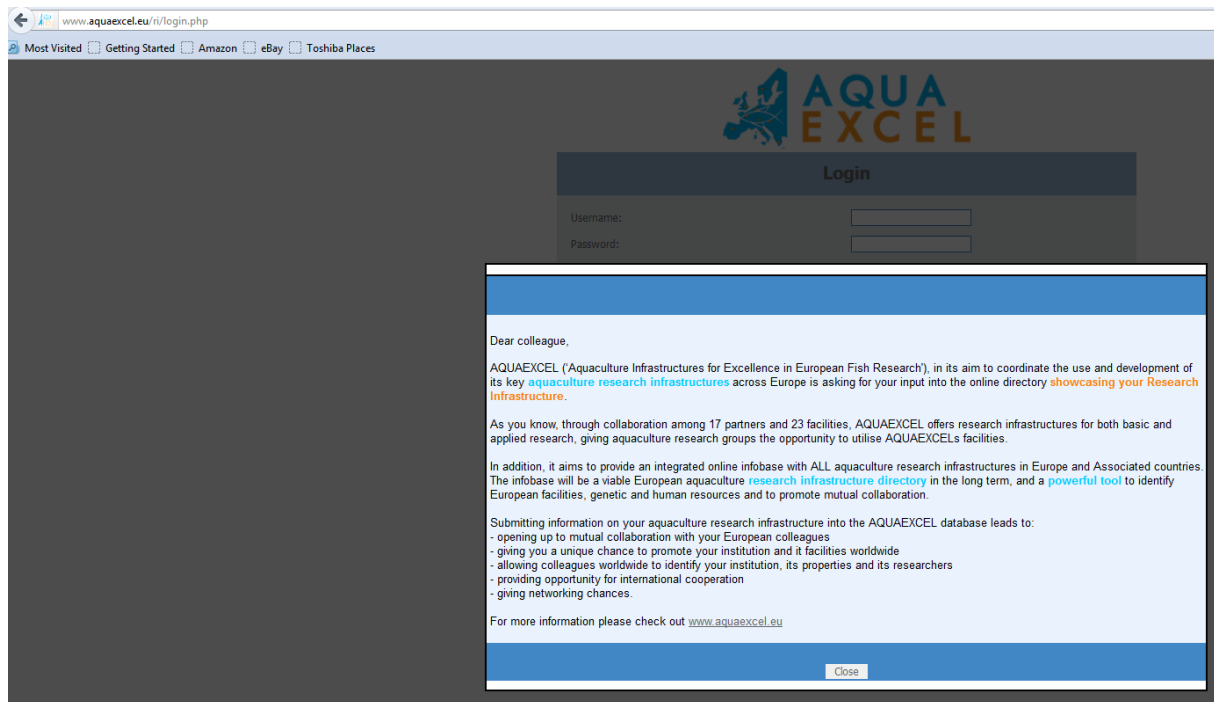
5) Initial pop-up screen, page 5 (Type of Water) – NTNU

Page 5 of the initial pop-up screen displays information on Types of Water systems available within the Research Infrastructure, showing a maximum of 5 different water types.



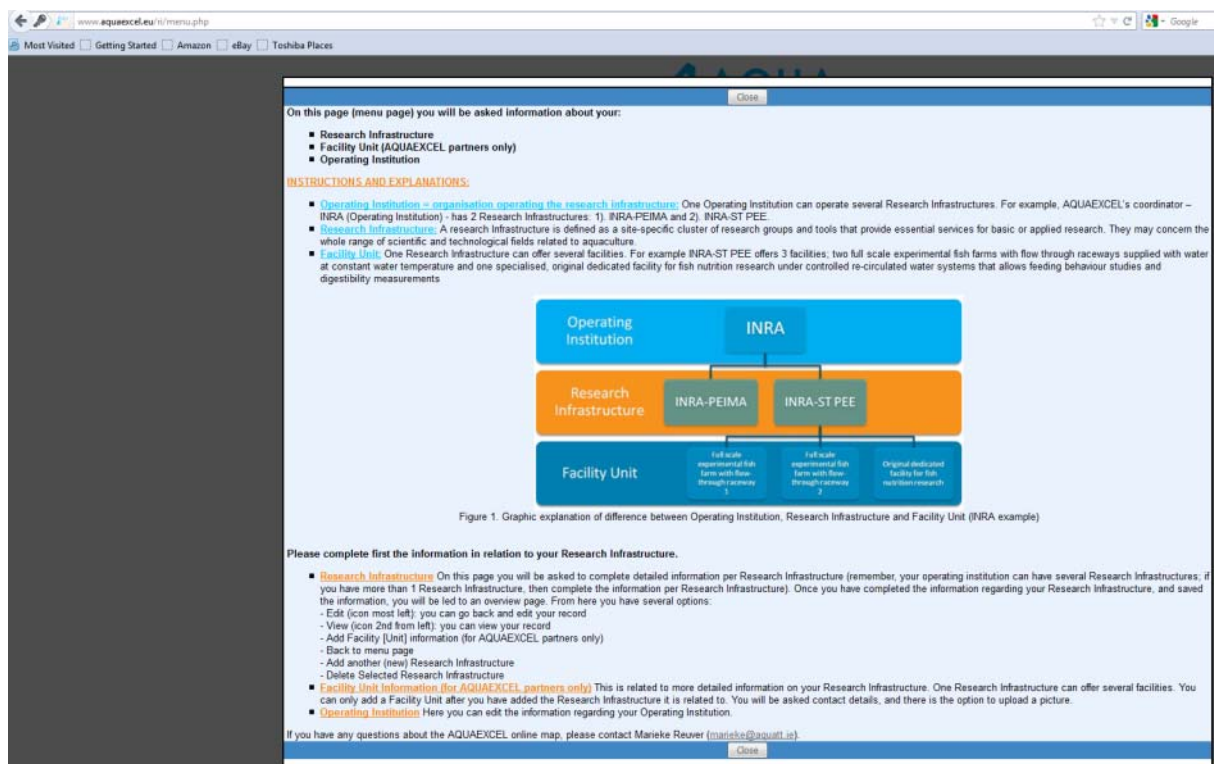
- **Back end (user admin)** – homepage (<http://www.aquaexcel.eu/ri/login.php>)

When clicking on “Read Info”, an information page appears explaining the rationale of the directory.



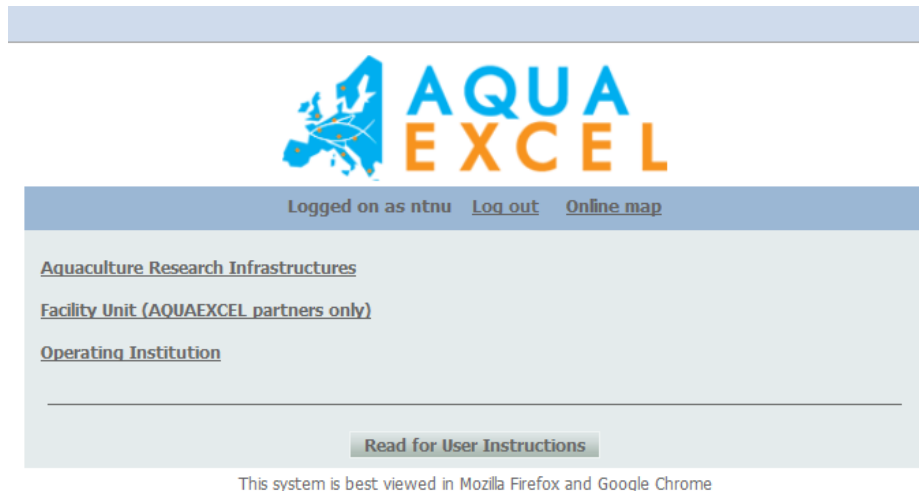
- **Back end (user admin)** – instruction page

After login, users can view the instruction page, describing the definitions of the different infrastructure levels (OI, RI and FU) and how to proceed.



- **Back end (user admin)** – menu page for users


The start page allows the registered RI providers to select the level of their input. Non-AQUAEXCEL partners are asked to complete details about the available aquaculture RIs and the corresponding Operating Institution. Members of the AQUAEXCEL consortium also need to fill out data for the facilities (FU) that are open for Transnational Access.



The screenshot displays the AQUAEXCEL user interface. At the top, the AQUAEXCEL logo is centered. Below it, a navigation bar shows the user is logged in as 'ntnu' with links for 'Log out' and 'Online map'. The main content area contains three links: 'Aquaculture Research Infrastructures', 'Facility Unit (AQUAEXCEL partners only)', and 'Operating Institution'. A 'Read for User Instructions' button is located at the bottom of the main content area. Below the button, a message states: 'This system is best viewed in Mozilla Firefox and Google Chrome'.

▪ **Back end (user admin) – Research Infrastructure page**

When selecting the RI level, the providers are requested to fill out the appropriate data in the different categories. Some fields are mandatory, whereas others are optional. The provider can choose to submit the data sheet directly or at a later stage. The entries can be altered at any time by the provider.



Aquaculture Research Infrastructure, Add new record

published ☒

Research Infrastructure

Please complete information on your Research Infrastructure below. If you have more than 1 Research Infrastructure, then complete the information per Research Infrastructure (Add a new record for each Research Infrastructure). Somebody else may complete information about another Research Infrastructure from your Operating Institution.

Name of the Research Infrastructure *

Address *

Country *

URL *

Contact person name (first and last name) *

Contact person e-mail address *

AQUAEXCEL TNA facility

Is your Research Infrastructure open for use by external users (independent of the AQUAEXCEL Calls for Access)? ☐

Operating Institution

Please NOTE, a Research Infrastructure is different from the Operating Institution. The Operating Institution is the legal entity owning the Research Infrastructure(s). An Operating Institution can operate several Research Infrastructures. For example, AQUAEXCEL's coordinator – INRA (Operating Institution) - has 2 Research Infrastructures: 1). INRA-PEIMA and 2). INRA-ST PEE.

Operating Institution - Type Please select *

Operating Institution - Name Please select Add new *

AQUAEXCEL Member ☐

Expertise fields

Below we would like you to select and rank the field(s) of expertise in your Research Infrastructure. You can choose up to 3 main fields of expertise. The first one you choose is what you consider the most important field of expertise, and any subsequent main field of expertise will indicate decreasing priority. For each main field of expertise chosen, please indicate your subfield(s).

Most Important field of expertise Please select * Main expertise 1 – subfields If you wish to add an "other" subfield, please check the box, and complete name ☐

2nd Field of Expertise Please select Main expertise 2 – subfields If you wish to add an "other" subfield, please check the box, and complete name ☐

3rd Field of Expertise Please select Main expertise 3 – subfields If you wish to add an "other" subfield, please check the box, and complete name ☐

Research Infrastructure Characteristics

Please complete information on the main species, fish lines, type of site and instrumentation of your Research Infrastructure

Main species Identified fish lines Type of site Type of water Instrumentation

Please indicate the main species in your Research Infrastructure. You can choose as many options as needed. For each chosen category, please specify the main species. If a category is not applicable, you can leave it empty.

Marine Fish

Diadrome Fish

Freshwater Fish

Ornamental Fish

Shellfish

Macroalgae

Planktonic Organisms

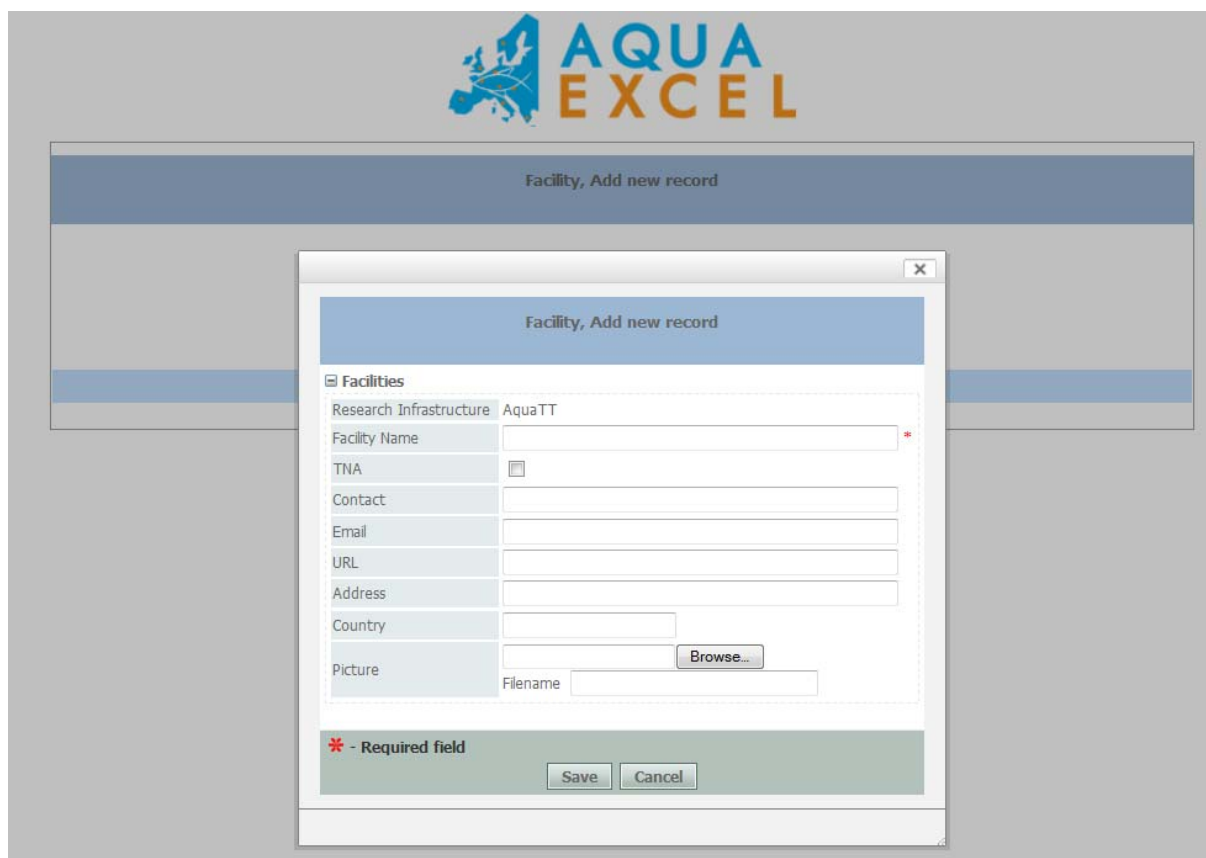
Other Species

* - Required field

Save and Continue Back to list

- **Back end (user admin) – Facility Unit page**

Information on the aquaculture facility unit level is only requested for AQUAEXCEL partners. It should be indicated whether the facility is open for Transnational Access (TNA) or not.

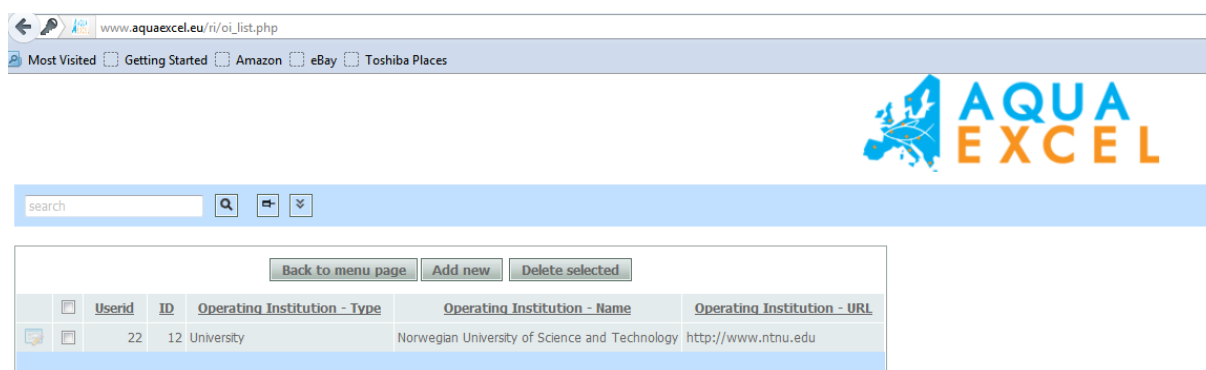


The screenshot shows the AQUAEXCEL logo at the top. Below it, a header bar reads "Facility, Add new record". A modal window titled "Facility, Add new record" is open, displaying a form with the following fields:

- Research Infrastructure: AquaTT
- Facility Name: *
- TNA: ☐
- Contact:
- Email:
- URL:
- Address:
- Country:
- Picture:

At the bottom of the form, there is a legend: "* - Required field". Below the legend are "Save" and "Cancel" buttons.

- **Back end (user admin) – Operating Institution page**



The screenshot shows the AQUAEXCEL logo at the top. Below it, a header bar reads "Facility, Add new record". A modal window titled "Facility, Add new record" is open, displaying a form with the following fields:

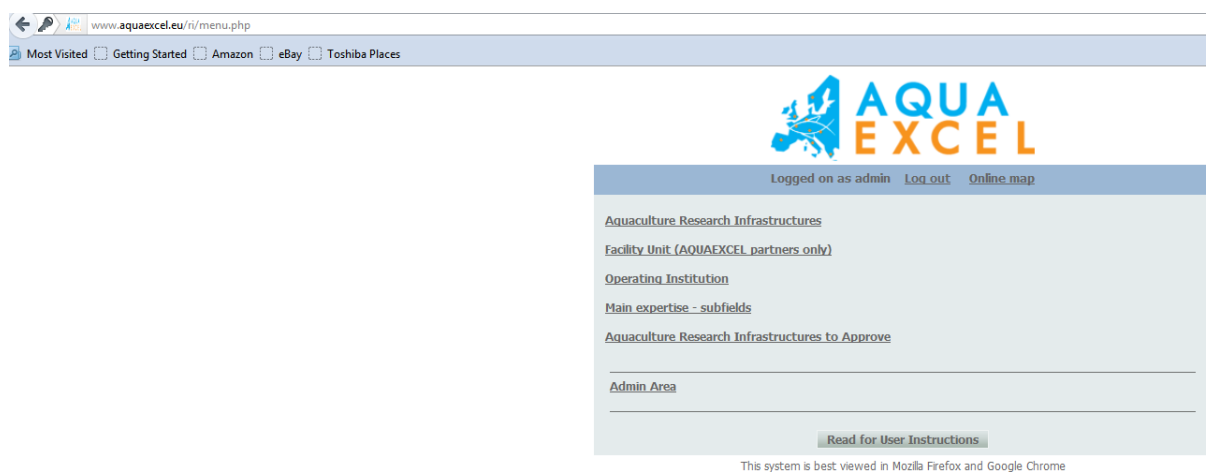
- Research Infrastructure: AquaTT
- Facility Name: *
- TNA: ☐
- Contact:
- Email:
- URL:
- Address:
- Country:
- Picture:

At the bottom of the form, there is a legend: "* - Required field". Below the legend are "Save" and "Cancel" buttons.

This system is best viewed in Mozilla Firefox and Google Chrome

- **Back end (central admin)** – Homepage / menu page

The administrators of the directory log into the system as admin and can thereby access all provided entities. This interface is also used for approval of new entries.



Conclusion

The AQUAEXCEL online interactive system has been developed for the registration of aquaculture research infrastructure properties across Europe. The system allows RI providers, within and outside the AQUAEXCEL consortium, to make information about their facilities, services, analytical laboratories and biological resources available to the aquaculture community.

The infobase is expected to become a viable European aquaculture research infrastructure directory. It will also be a powerful tool for identifying European facilities, genetic and human resources, and for promoting mutual collaboration.

The infobase will be promoted throughout the duration of the project, via existing dissemination channels such as the AquaTT Training News newsletter, all partner contacts, at conferences and any other appropriate medium. It will be maintained continuously, monitoring new additions and approving them when suitable. If needed, the system can be updated and improved, and all stakeholders will be encouraged to contribute on a regular basis. Discussions with EurOcean will be undertaken at a later stage, to consider integration of the two systems to enhance sustainability.

The online system is available from the AQUAEXCEL project website – <http://www.aquaexcel.eu/ri/map/>

Annex 1

Deliverable Check list (to be completed by Deliverable leader)

	Check list		Comments
BEFORE	I have checked the due date and have planned completion in due time		<i>Please inform Management Team of any foreseen delays</i>
	The title corresponds to the title in the DOW	X	<i>If not please inform the Management Team with justification</i>
	The dissemination level corresponds to that indicated in the DOW	X	
	The contributors (authors) correspond to those indicated in the DOW	X	
	The Table of Contents has been validated with the Activity Leader		<i>Please validate the Table of Content with your Activity Leader before drafting the deliverable</i>
	I am using the AQUAEXCEL deliverable template (title page, styles etc)	X	<i>Available in "Useful Documents" on the collaborative workspace</i>
The draft is ready			
AFTER	I have written a good summary at the beginning of the Deliverable	X	<i>A 1-2 pages maximum summary is mandatory (not formal but really informative on the content of the Deliverable)</i>
	The deliverable has been reviewed by all contributors (authors)		<i>Make sure all contributors have reviewed and approved the final version of the deliverable. You should leave sufficient time for this validation.</i>
	I have done a spell check and had the English verified	X	<i>Ask a colleague with a good level of English to review the language of the text and do a spell-check too.</i>
	I have sent the final version to the Activity Leader and to the 2 nd Reviewer for approval	X	<i>Send the final draft to your Activity Leader and the 2nd Reviewer and leave 2 weeks for feedback and final changes before the due date. Once validated by the 2 reviewers, the draft is ready to be sent to the Management Team that will ask for the Coordinator validation and then transfer it to the EC.</i>