
Read the Docs Template Documentation

Release 1.0

Read the Docs

Sep 03, 2018

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Subsol walkthrough

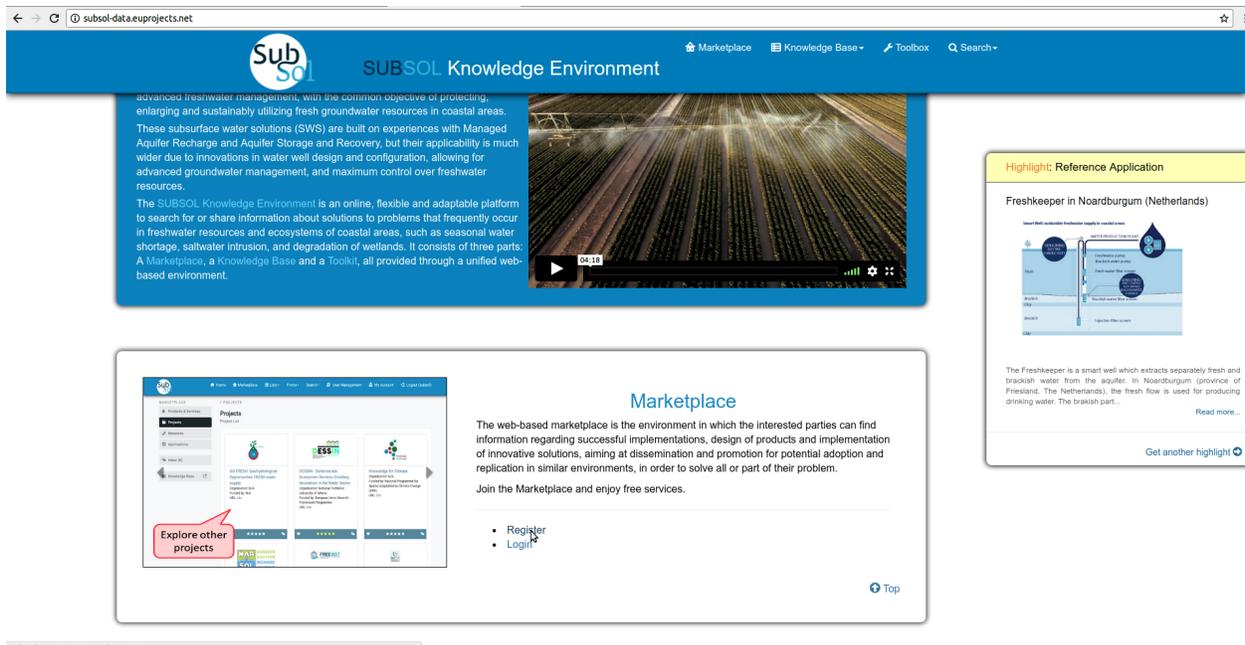
1.1 Create Account

- When a user access the Subsol site (<http://subsol-data.euprojects.net/>) the following screen is shown:

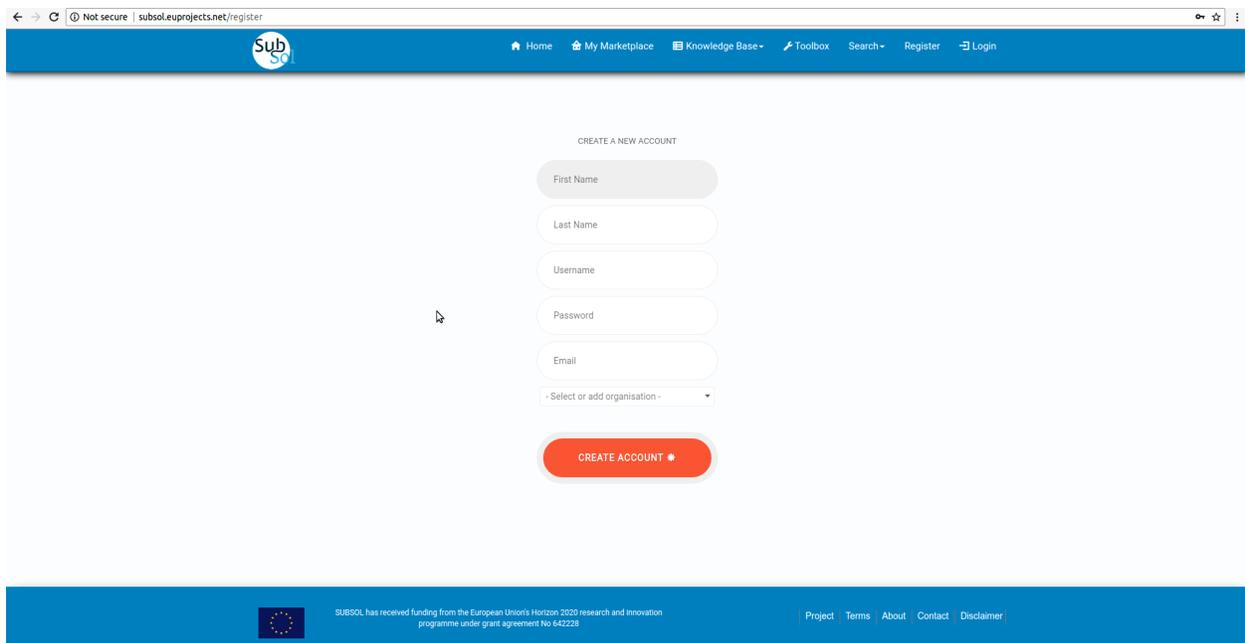
The screenshot shows the Subsol Knowledge Environment website. The header includes the SubSol logo and navigation links for Marketplace, Knowledge Base, Toolbox, and Search. The main content area features a video player with a play button and a progress bar at 04:18. To the right, there is a 'Highlight: Reference Application' section titled 'ASR-Coastal and Freshmaker in Schinias (Greece)' with a small image and a 'Read more...' link. Below the video, there is a 'Marketplace' section with a 'Register' button and a 'Customize your personal homepage' callout.

- Click on “Register” button.

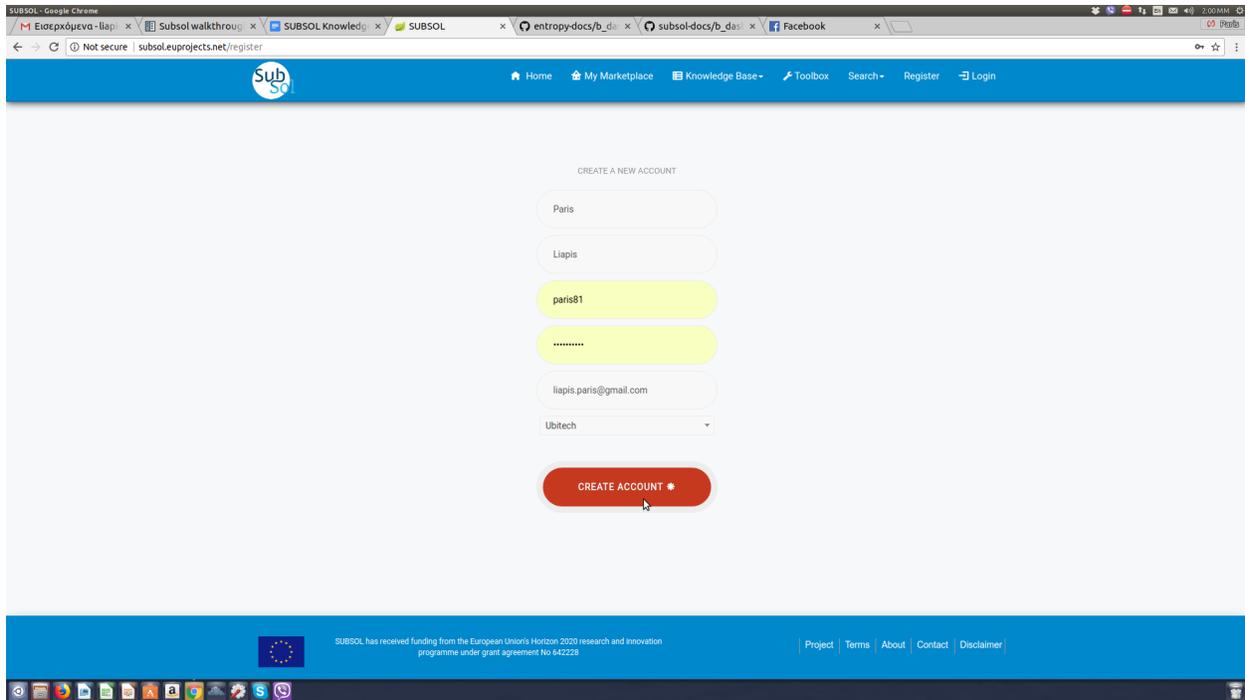
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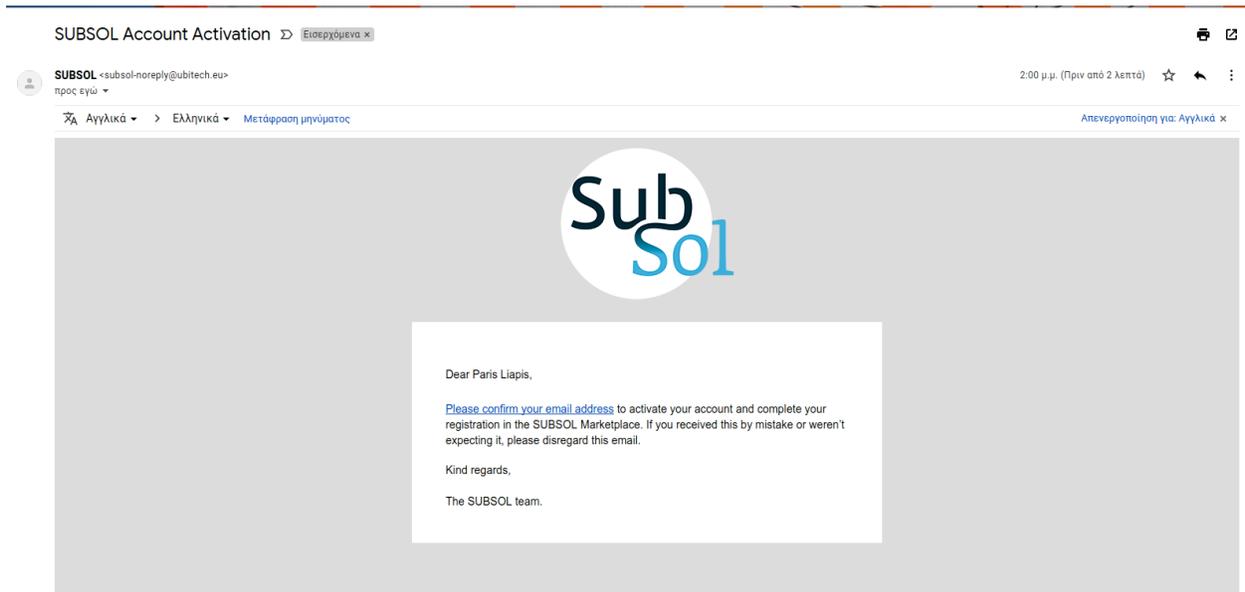
- Provide account information.



- Click on “Create Account” button.

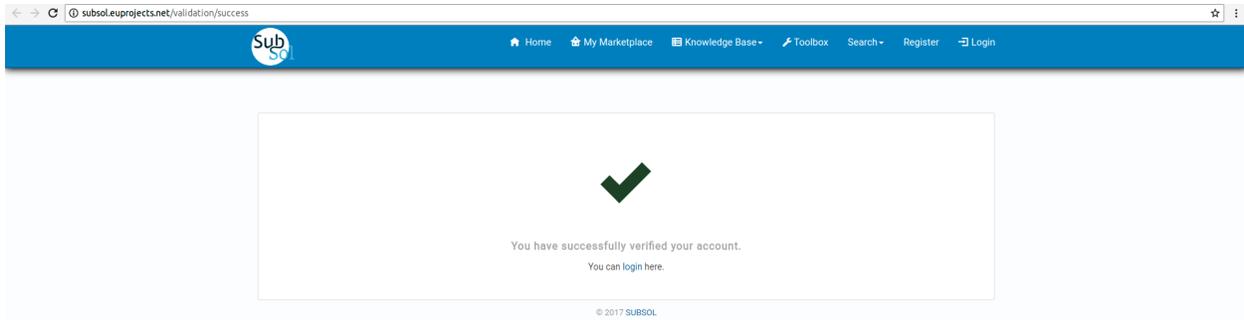


- Go to your email and click on Subsol account information link.

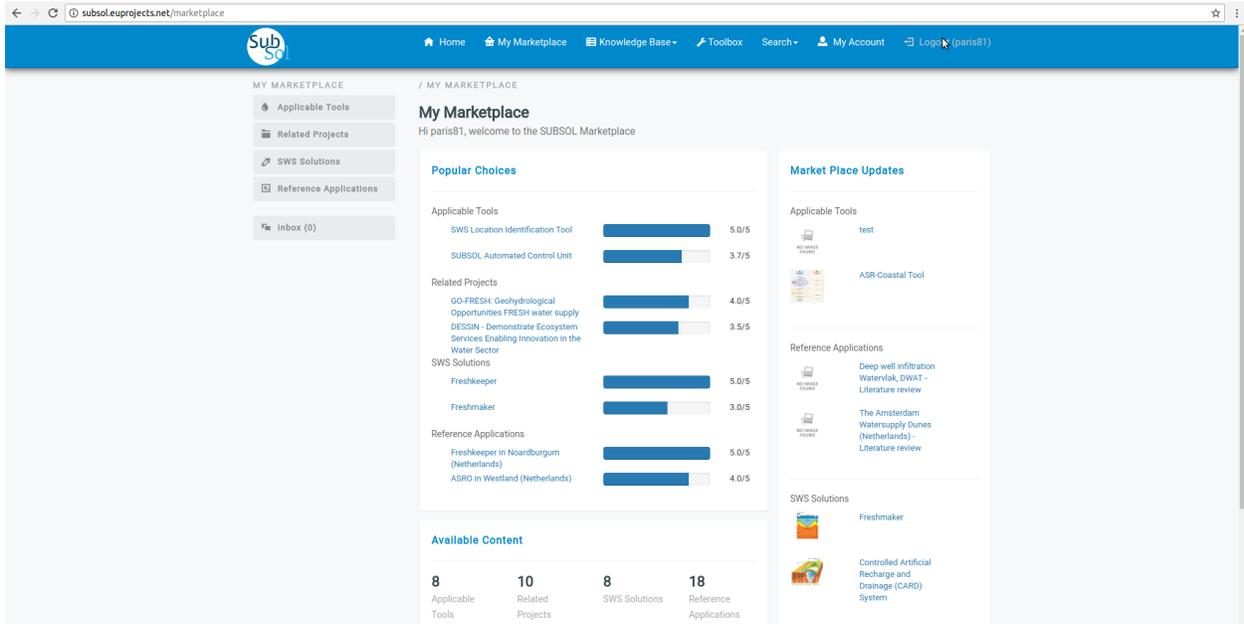


- Your Account has successfully verified.

Read the Docs Template Documentation, Release 1.0



- Now you can login to your account.



CHAPTER 2

Dashboard

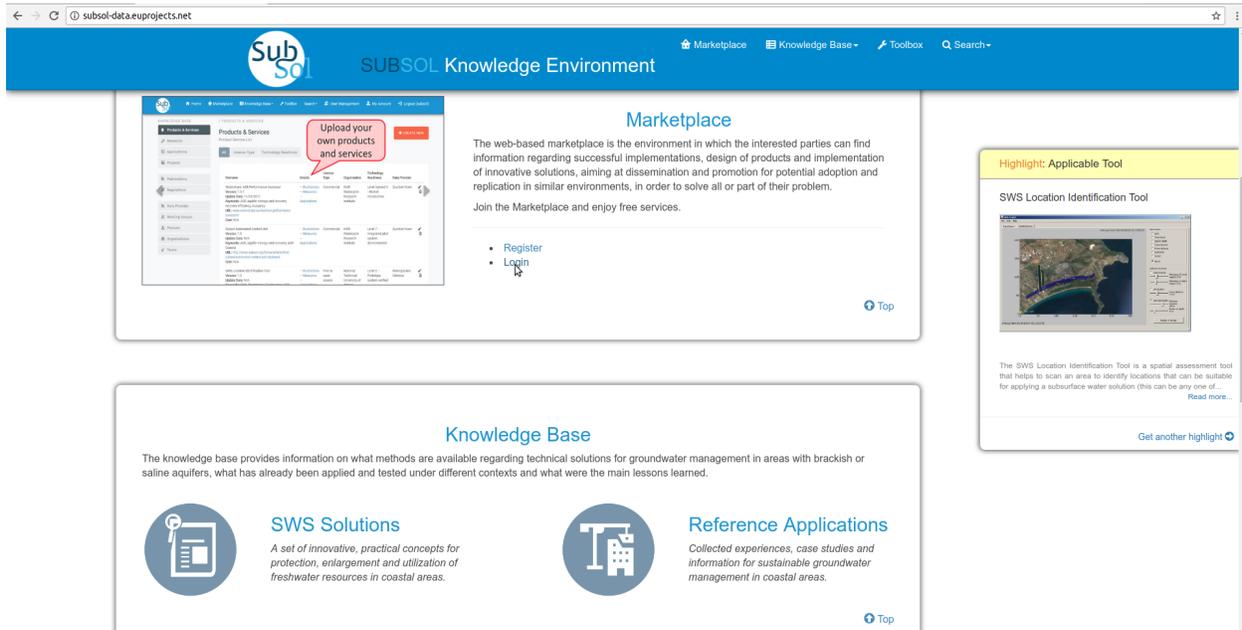
Access to the platform is provided through the URL <http://subsol-data.euprojects.net/>, where the end user is able to view introductory information regarding the set of services provided through the platform.

The screenshot displays the SUBSOL Knowledge Environment dashboard. The top navigation bar includes the logo and links for Marketplace, Knowledge Base, and Toolbox. The main content area is divided into three sections:

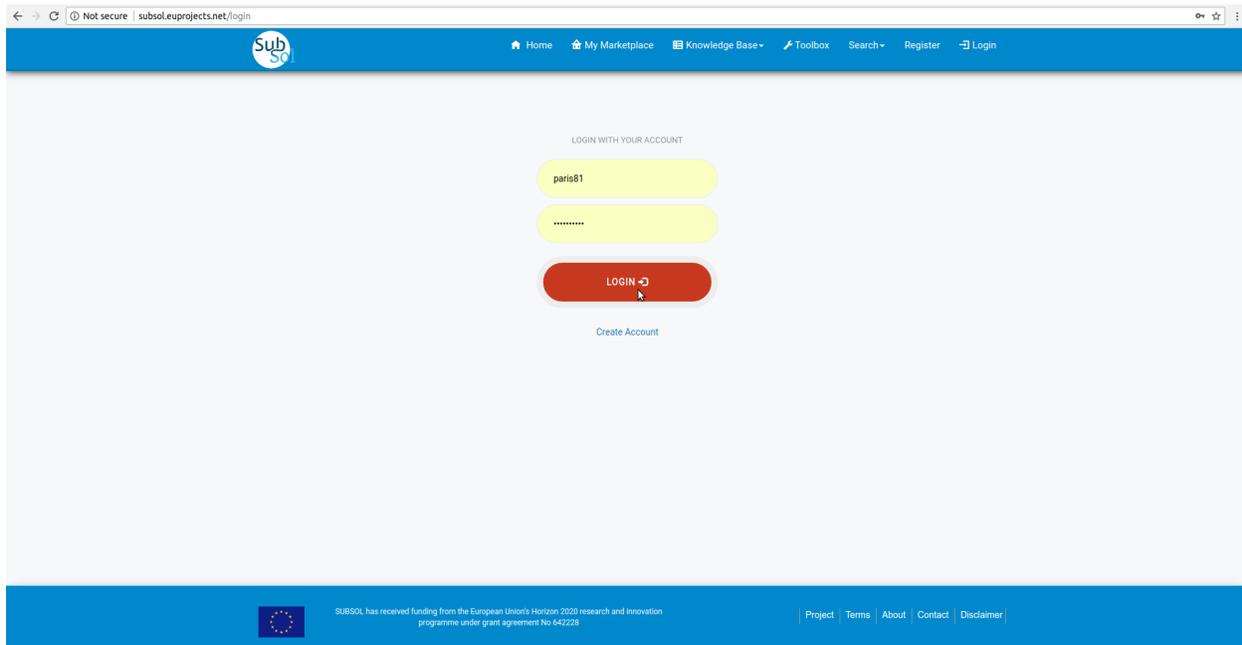
- Project Overview:** A video player with a description of the SUBSOL project, which is an EU-funded initiative to promote innovative, practical concepts for advanced freshwater management in coastal areas. It mentions sub-surface water solutions (SWS) and the SUBSOL Knowledge Environment platform.
- Marketplace:** A section titled "Marketplace" explaining that it is a web-based environment where interested parties can find information on successful implementations and innovative solutions. It includes a "Register" button and a note that free services are available.
- Highlight: Reference Application:** A section titled "Highlight: Reference Application" featuring a video and text about the "ASR-Coastal and Freshmaker in Schinias (Greece)". It describes the Schinias pilot as a hybrid application of ASR-Coastal and Freshmaker technologies.

From the dashboard, access is provided to the Knowledge Base, the Marketplace and the Toolbox. Free access is provided to the public part of the Knowledge Base, while in the rest parts registration is required.

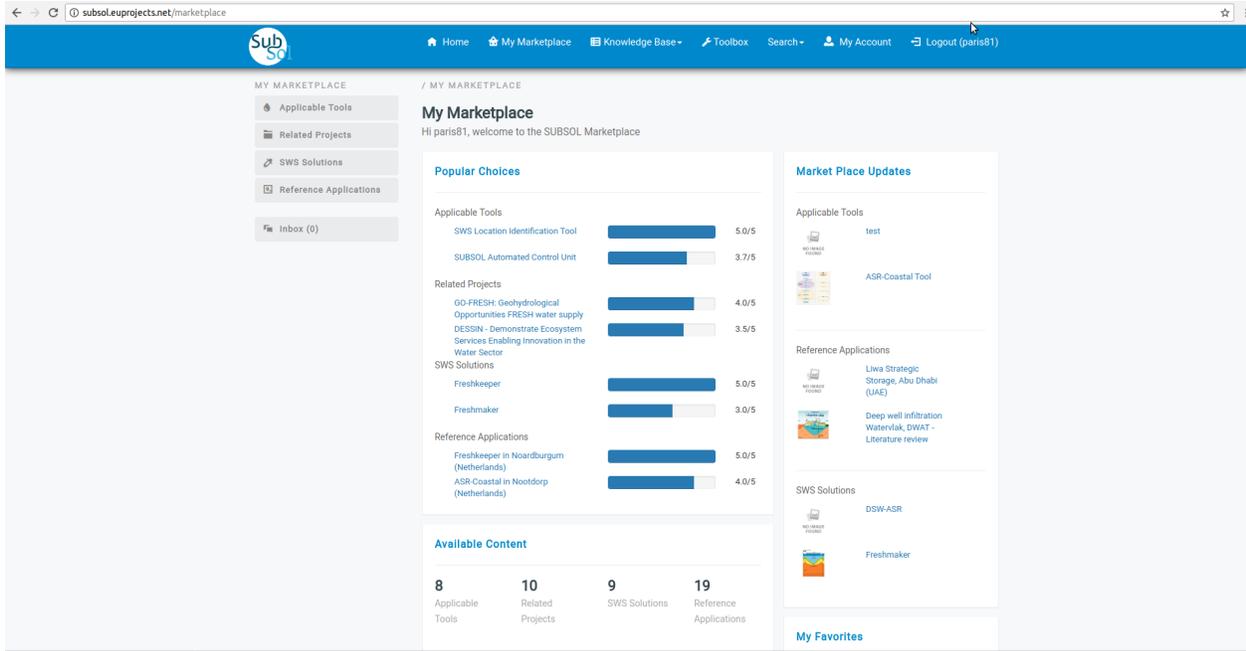
2.1 Login to account



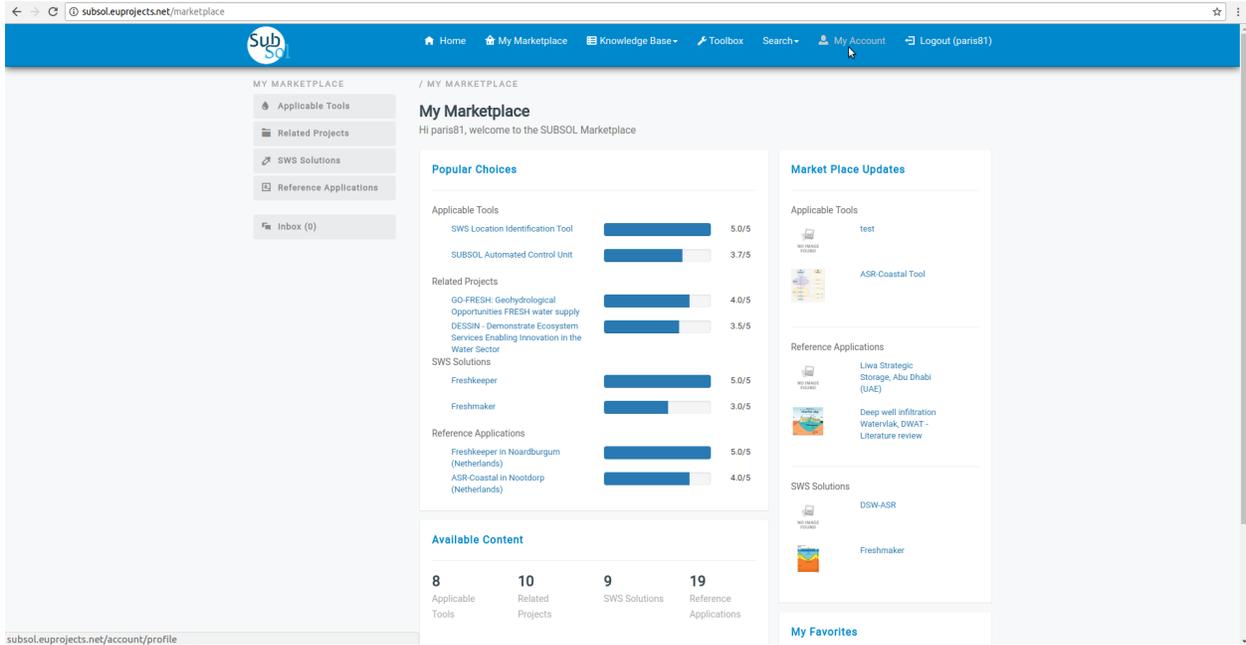
- Click on “LOGIN” button.



- You have successfully “LOGIN” to your account.



2.2 Edit account



- Click on “Edit Profile” button.

The screenshot shows the 'Account Profile' page. The browser address bar is 'subsoleuprojects.net/account/profile'. The navigation bar includes 'Home', 'My Marketplace', 'Knowledge Base', 'Toolbox', 'Search', 'My Account', and 'Logout (paris81)'. The page title is 'Account Profile Management'. A red 'EDIT PROFILE' button is located in the top right corner of the form area. The form contains the following fields:

- Firstname: Paris
- Lastname: Liapis
- Username: paris81
- Email: liapis.paris@gmail.com
- Organisation: Ubitech
- Role in Organisation: USER
- Areas of expertise: (empty)
- Interests: (empty)

- Provide your changes and click on “Save” button.

The screenshot shows the 'Account Profile' page with the 'Save' button highlighted. The browser address bar is 'subsoleuprojects.net/account/profile/edit'. The navigation bar is the same as in the previous screenshot. The form contains the following fields:

- liapis.paris@gmail.com
- Username: paris81
- Old Password: (empty)
- New Password: (empty)
- Repeat Password: (empty)
- Organisation: Ubitech
- Role in Organisation: USER
- Apply for manager role in the organisation
- Areas of expertise: (empty)
- Interests: (empty)
- Save button

- A pop-up message confirms that you have successfully updated your account.

The screenshot shows a web browser window with the URL `subso.eu/projects.net/account/profile/`. The page features a blue navigation bar with the SubSo logo and links for Home, My Marketplace, Knowledge Base, Toolbox, Search, My Account, and Logout (paris81). The main content area is titled 'Account' and 'Profile Management', with an 'EDIT PROFILE' button. A form contains the following fields: Firstname (Paris), Lastname (Liapis), Username (paris81), Email (liapis.paris@gmail.com), Organisation (Ubitech), Role in Organisation (USER), Areas of expertise, and Interests. A notification box at the bottom left states 'User has been updated' with a 'View Activity' link. The footer includes the European Union logo, a funding notice, and links for Project, Terms, About, Contact, and Disclaimer.

SUBSOL Type of Users

3.1 Knowledge Base Editor

- Editor

He has access to the public and private part of the Knowledge Base and is able to add/edit/delete content in all the database tables of the SUBSOL database (except the part of tables with fixed content).

- Anonymous User

He has access to the public part of the online platform and the Knowledge Base. He is able to see custom views and perform simple and advanced queries over the available content

3.2 Marketplace

- Organization Representative

He has access to the Marketplace and is able to add/edit/delete content that is associated with his organization (Products & Services, Projects, Measures, Applications). He is also responsible for interaction with interested parties with regards to the items belonging to the organization (e.g. expression of interest for a product). He is able to view all the content made available regarding Products & Services, Projects, Measures, Applications.

- Simple User

He has access to the Marketplace and is able to view all the content made available regarding Products & Services, Projects, Measures, Applications. He is able to express interest for specific items, provide rating for items and initiate communication with the organization representatives.

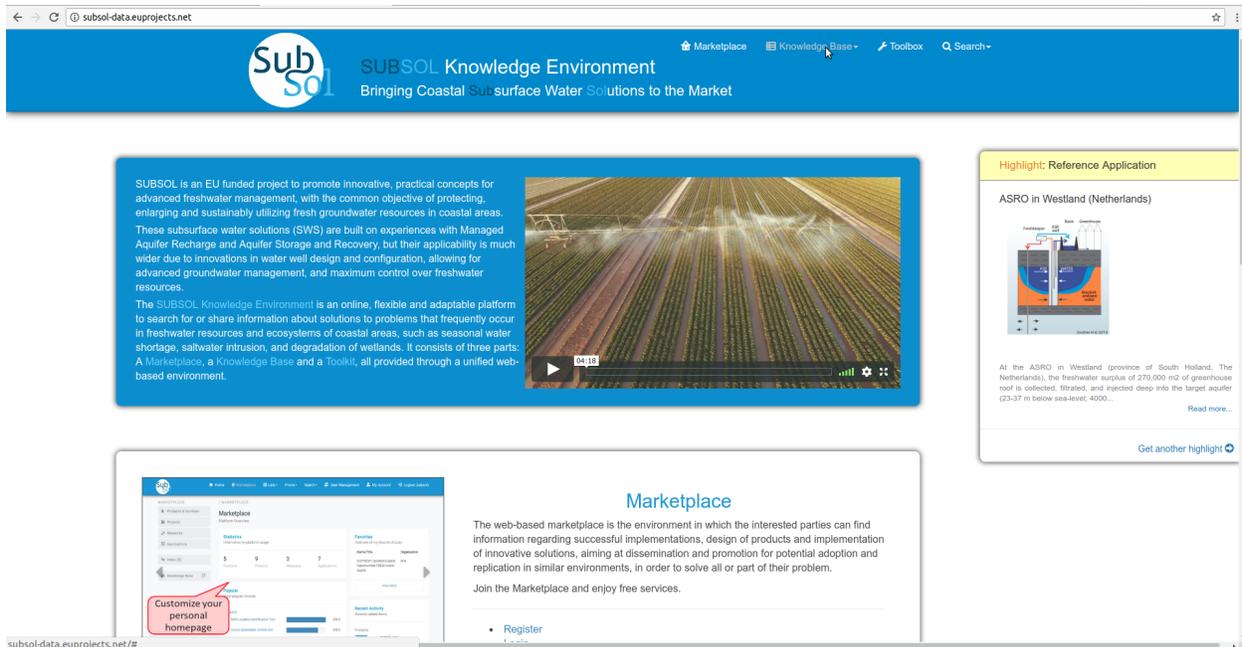
3.3 Administrator

He has access to all parts of the online platform and is able to add/edit/delete any content in the SUBSOL database.

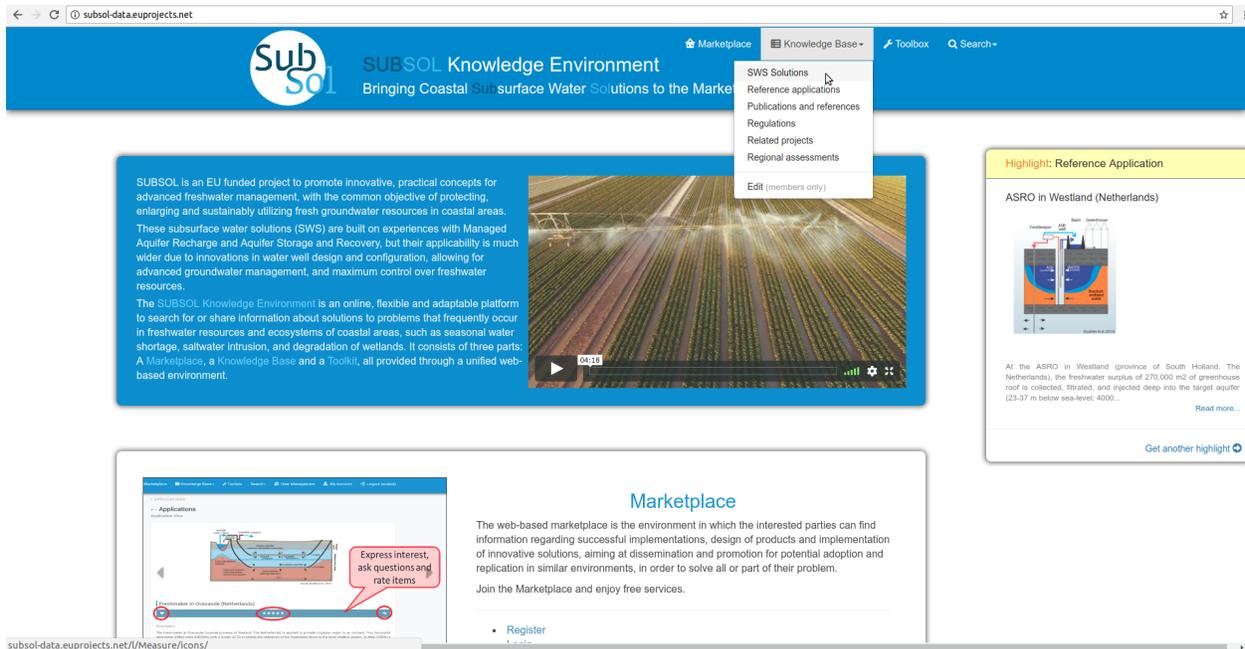
4.1 Public Services

1. Workflow

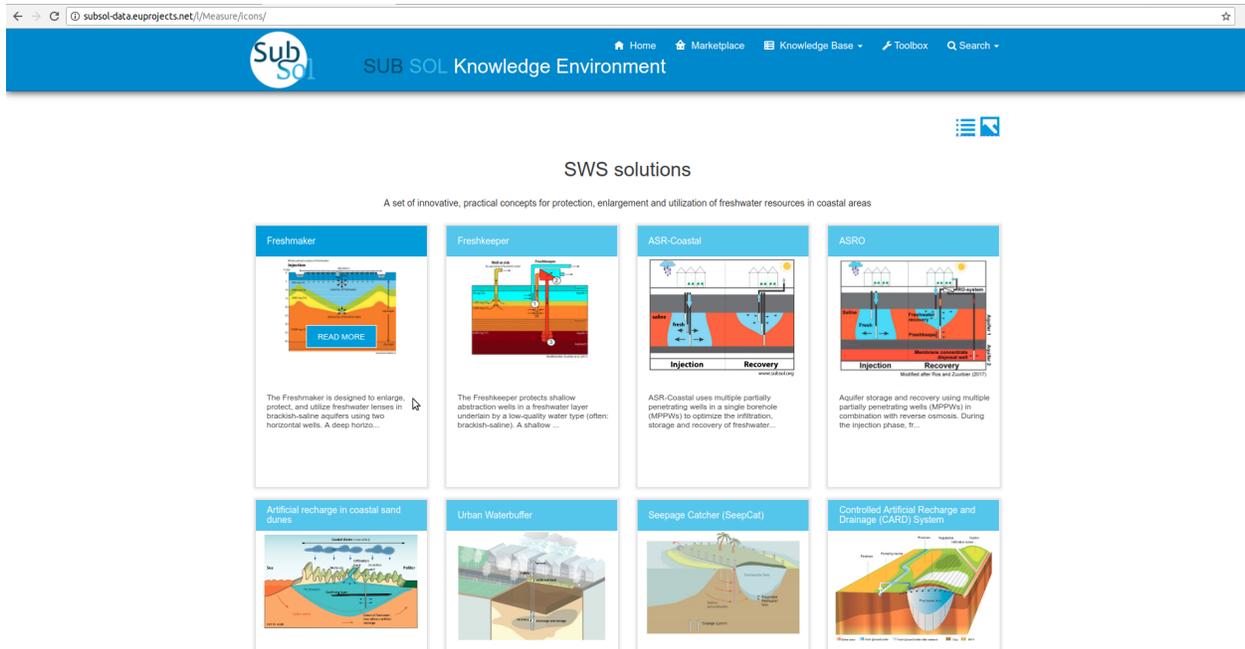
- Click on the “Knowledge Base” drop-down list.



- Select the preferred category from the dropdown list. (In this use case “SWS SOLUTIONS”)



- Select an item to view detailed information.



- Click on “Read More” button.

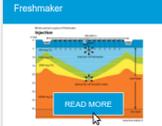
subsol-data.euprojects.net/d/Measure/f/cons/

SubSol SUB SOL Knowledge Environment

SWS solutions

A set of innovative, practical concepts for protection, enlargement and utilization of freshwater resources in coastal areas

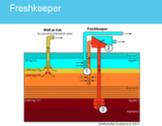
Freshmaker



[READ MORE](#)

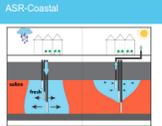
The Freshmaker is designed to enlarge, protect, and utilize freshwater lenses in brackish-saline aquifers using two horizontal wells. A deep horizo...

Freshkeeper



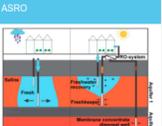
The Freshkeeper protects shallow abstraction wells in a freshwater layer underlain by a low-quality water type (often: brackish-saline). A shallow ...

ASR Coastal



ASR-Coastal uses multiple partially penetrating wells in a single borehole (MPPWs) to optimize the infiltration, storage and recovery of freshwater...

ASRO



Aquifer storage and recovery using multiple partially penetrating wells (MPPWs) in combination with reverse osmosis. During the injection phase, fr...

Artificial recharge in coastal sand dunes



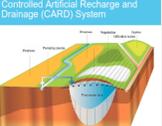
Urban Waterbuffer



Seepage Catcher (SeepCat)



Controlled Artificial Recharge and Drainage (CARD) System



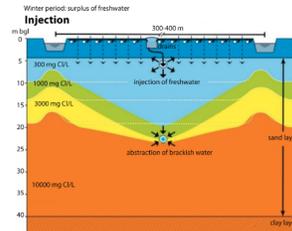
subsol-data.euprojects.net/d/Measure/3

- View full information available for this item.(In this use case “Freshmaker.”)

subsol-data.euprojects.net/d/Measure/3

SubSol SUB SOL Knowledge Environment

SWS solution: Freshmaker



Water period surplus of freshwater

Injection

300-400 m

0 m bgl

5

10

15

20

25

30

35

40

1000 mg Cl/L

3000 mg Cl/L

10000 mg Cl/L

injection of freshwater

abstraction of brackish water

sand layer

clay layer

www.kwrwater.nl

Cross section of the Freshmaker. During times of surplus, freshwater is injected through the upper horizontal well while brackish water is abstracted from the lower well. Source: <https://www.kwrwater.nl/en/projects/salinitation-and-freshwater-ovezande/>

Description

The **Freshmaker** is designed to enlarge, protect, and utilize freshwater lenses in brackish-saline aquifers using two horizontal wells. A deep horizontal well is used for abstraction (or: interception) of brackish water, the shallow horizontal well is used for infiltration and recovery of freshwater. The technique was initiated by the recent development of horizontal directional drilled wells (HDDWs).

Water use - End users

- Drinking water
- Irrigation water

Reference applications

- Freshmaker in Ovezande (Netherlands)
- ASR-Coastal and Freshmaker in Schinas (Greece)

Title

[Freshmaker](#)

Synonyms

[ASR](#), [Zoetmaker](#)

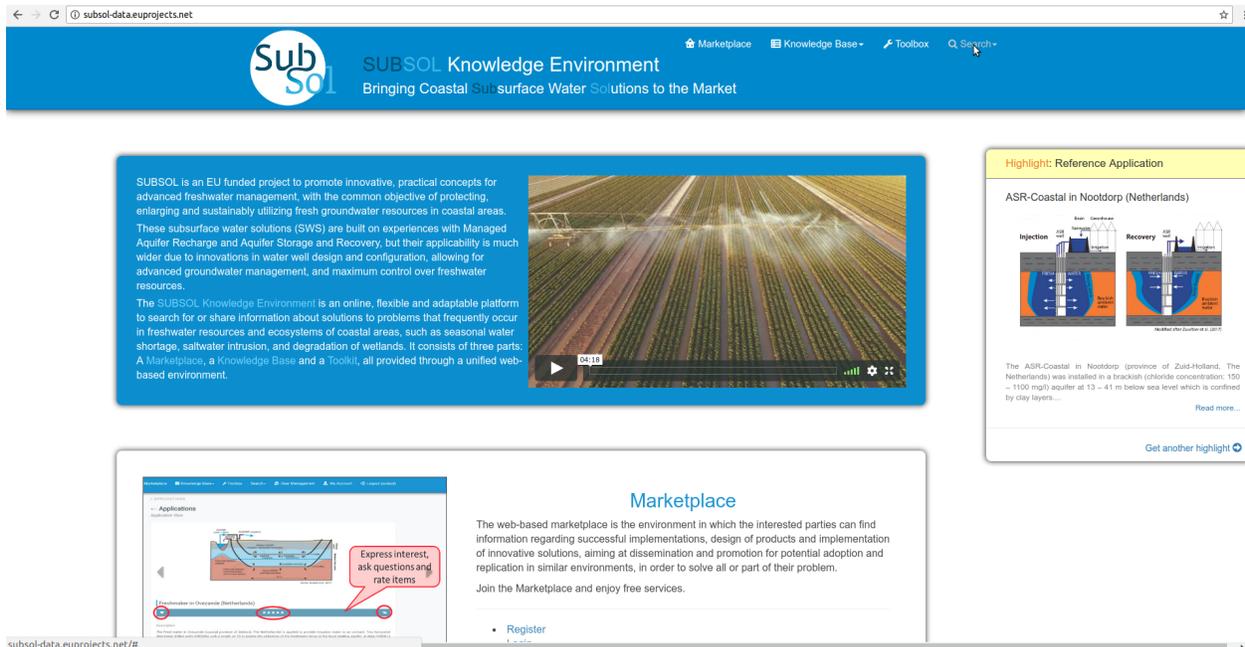
Timestamp

2018-06-19 07:20:02+00:00

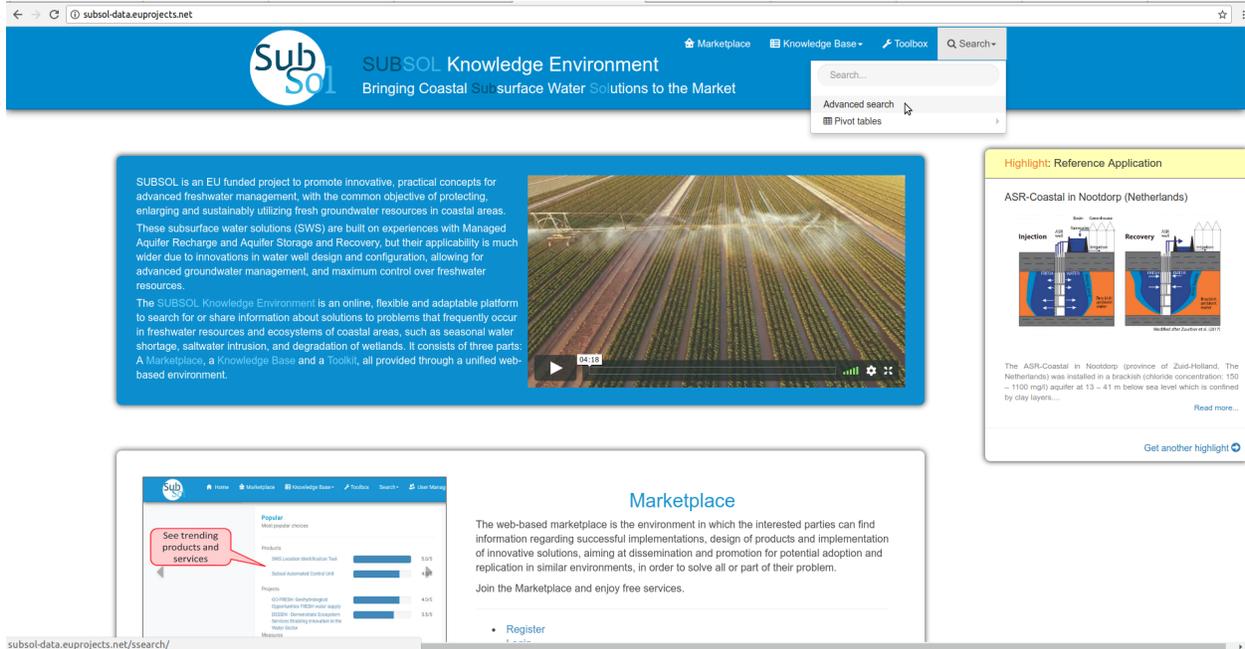
2. Search

2.1 Advanced search

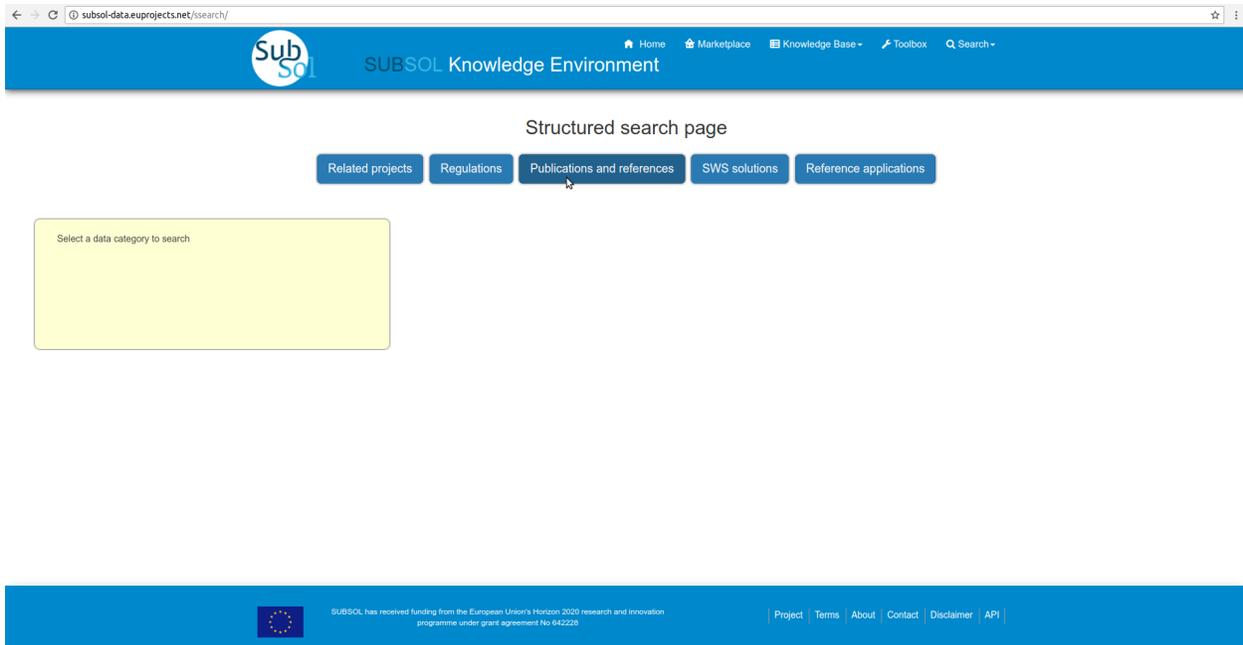
- Click on “Search” button.



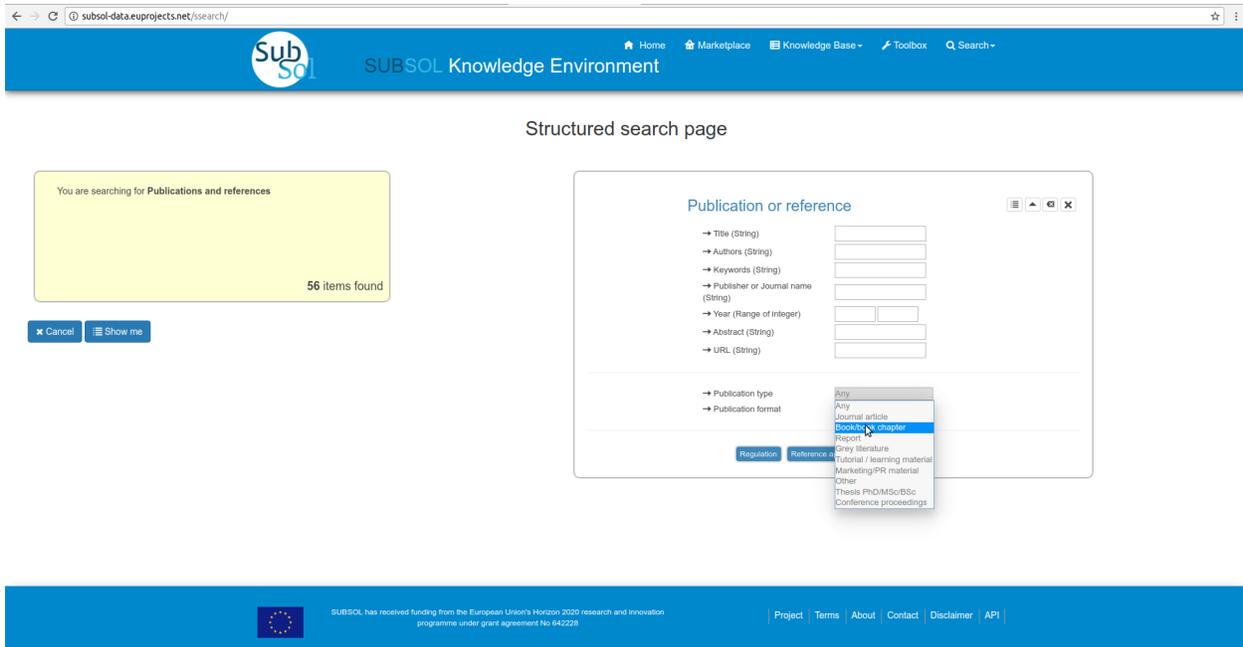
- Select the “Advanced Search” option from dropdown list.



- Select a data category to search.



- Provide Search criteria.



- Select an item from the search results.

Publications and references

Publications, references and other sources related to the protection, enlargement and utilization of freshwater resources in coastal areas

Show 10 entries

Title	Authors	Publisher or Journal name	Year	Abstract
A post audit and inverse modeling in reactive transport: 50years of artificial recharge in the Amsterdam Water Supply Dunes	RH Karlsen, FJC Smits, PJ Stuyfzand, TN Oltshoon, BM van Breukelen	Journal of Hydrology 454-455: 7-25	2012	This article describes the post audit and inverse modeling of a 1-D forward reactive transport model. The model simulates the ...
Analysis of the thickness of a fresh water lens and of the transition zone between this lens and upwelling saline ...	S Eerhain, A Leijnse, PAC Raats, SEATM van der Zee	Advances in Water Resources 34: 291-302	2011	In regions with saline groundwater, fresh water lenses may develop due to rainwater infiltration. The amount of fresh water that ...
Assessing Impacts of climate change, sea level rise, and drainage canals on saltwater intrusion to coastal aquifer	P. Rasmussen, T. O. Sonnenborg, G. Gorcear, K. Hinsby	Hydrology and Earth System Sciences 17: 421-443	2013	Groundwater abstraction from coastal aquifers is vulnerable to climate change and sea level rise because both may potentially impact saltwater ...
Assessment of Aquifer Storage and Recovery (ASR) feasibility at selected sites in the Emirate of Abu Dhabi, UAE	S Sathiah, MM Mohamed	Environmental Earth Sciences 77: 112	2018	Aquifer storage and recovery (ASR) is considered as a strategy for the storage of water to ensure a sustainable water
Benefits and hurdles of using brackish groundwater as a drinking water source in the Netherlands	Pieter J. Stuyfzand, Klaasjan J. Raai	Hydrogeology Journal 18(1): 117-130	2010	The production of fresh drinking water from brackish groundwater by reverse osmosis (BWRO) is becoming more attractive, even in temperate ...
Consequences and mitigation of saltwater intrusion Induced by short-circuiting during aquifer storage and recovery in a coastal subsurface	Koen G. Zuurbier, Pieter J. Stuyfzand	Hydrology and Earth System Sciences 21: 1173-1189	2017	Coastal aquifers and the deeper subsurface are increasingly exploited. The accompanying perforation of the subsurface for those purposes has increased ...
Desalination of brackish groundwater and concentrate disposal by deep well injection	Nico Wolthek, Klaasjan J. Raai, Jan A. de Ruijter, Antoinette Kemperman, Ale T. Oosterhof	Desalination and Water Treatment 51(4): 1131-1136	2013	In the province of Friesland (in the Northern part of The Netherlands), problems have arisen with the abstraction of fresh ...
Dutch Freshkeeper broadly applicable	Klaasjan J. Raai, Ale T. Oosterhof, Frans Heelis, Petra Ross	H2O Water Matters 1: 35-37	2015	In the past decade several concepts to manage fresh and salt (brackish) groundwater more effectively and so improve the fresh ...
Effects of Intake Interruptions on dune infiltration systems in the Netherlands, their quantification and mitigation	Pieter J. Stuyfzand, Martin L. van der Schans	Science of the Total Environment 630: 757-773	2018	In the coastal dunes of the Western Netherlands, managed aquifer recharge (MAR) is applied for drinking water supply since 1957 ...
Enabling successful aquifer storage and recovery of freshwater using horizontal directional drilled wells in coastal aquifers	Koen G. Zuurbier, Jan W. Koolman, Michel M.A. Groen, Bas Maas, Pieter J. Stuyfzand	Journal of Hydrologic Engineering 20(3)	2015	Aquifer storage and recovery (ASR) of freshwater surpluses can reduce freshwater shortages in coastal areas during periods of prolonged droughts. ...

- View full information available for this item.

Publication or reference: A post audit and inverse modeling in reactive transport: 50years of artificial recharge in the Amsterdam Water Supply Dunes (Journal article)

Keywords
 Reactive transport modeling • Artificial recharge • Groundwater • Cation exchange • Model calibration • Parameter estimation

Abstract
 This article describes the post audit and inverse modeling of a 1-D forward reactive transport model. The model simulates the changes in water quality following artificial recharge of pre-treated water from the river Rhine in the Amsterdam Water Supply Dunes using the PHREEQC-2 numerical code. One observation dataset is used for model calibration, and another dataset for validation of model predictions. The total simulation time of the model is 50 years, from 1957 to 2007, with recharge composition varying on a monthly basis and the post audit is performed 26 years after the former model simulation period. The post audit revealed that the original model could reasonably predict conservative transport and kinetic redox reactions (oxygen and nitrate reduction coupled to the oxidation of soil organic carbon), but showed discrepancies in the simulation of cation exchange. Conceptualizations of the former model were inadequate to accurately simulate water quality changes controlled by cation exchange, especially concerning the breakthrough of potassium and magnesium fronts. Changes in conceptualization and model design, including the addition of five flow paths, to a total of six, and the use of parameter estimation software (PEST), resulted in a better model to measurement fit and system representation. No unique parameter set could be found for the model, primarily due to high parameter correlations, and an assessment of the predictive error was made using a calibration constrained Monte-Carlo method, and evaluated against field observations. The predictive error was found to be low for Na⁺ and Ca²⁺, except for greater travel times, while the K⁺ and Mg²⁺ error was restricted to the exchange fronts at some of the flow paths. Optimized cation exchange coefficients were relatively high, especially for potassium, but still within the observed range in literature. The exchange coefficient for potassium agrees with strong fixation on illite, a main clay mineral in the area. Optimized CEC values were systematically lower than clay and organic matter contents indicated, possibly reflecting preferential flow of groundwater through the more permeable but less reactive aquifer parts. Whereas the artificial recharge initially acted as an intrusion of relatively saline water triggering Na⁺ for Ca²⁺ exchange, further increasing total hardness of the recharged water, the gradual long-term reduction in salinity of the river Rhine since the mid 1970s has shifted to an intrusion of fresher water causing Ca²⁺ for Na⁺ exchange. As a result, seasonal and longer term reversal of the initial cation exchange processes was observed adding to the general long-term reduction in total hardness of the recharged Rhine water.

URL
<https://doi.org/10.1016/j.jhydrol.2012.05.019>

Reference application
 • The Amsterdam Water Supply Dunes (AMSDunes1) - 1. Nardine rouder

Title
 A post audit and inverse modeling in reactive transport: 50years of artificial recharge in the Amsterdam Water Supply Dunes

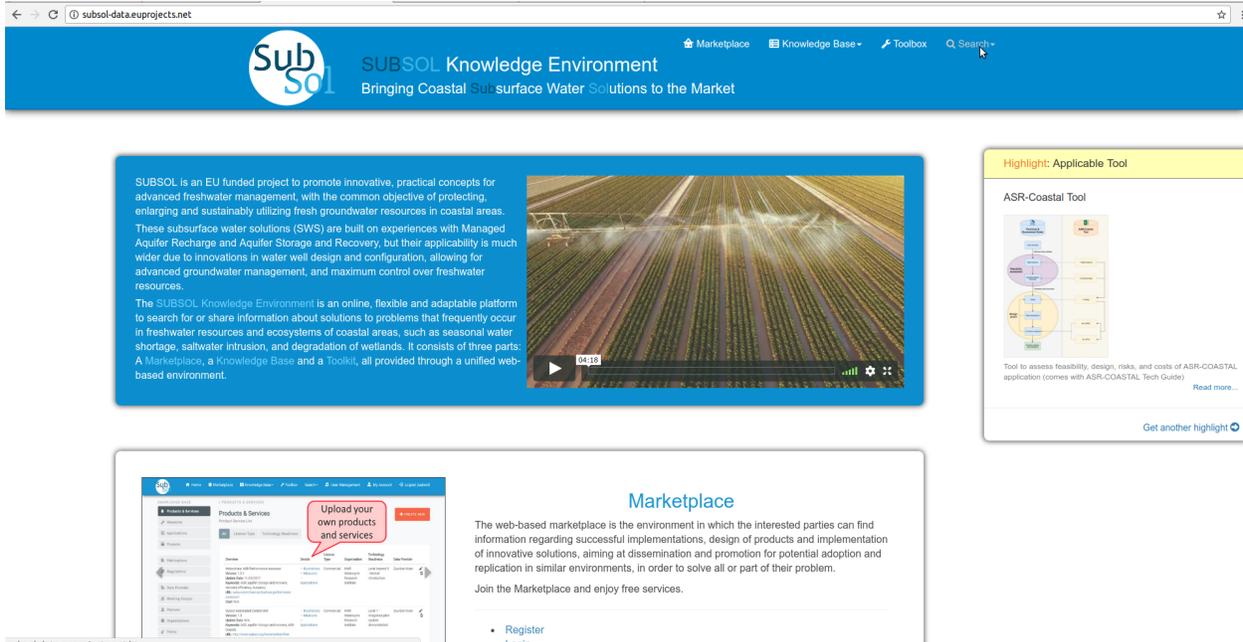
Authors
 RH Karlsen, FJC Smits, PJ Stuyfzand, TN Oltshoon, BM van Breukelen

Publisher or Journal name
 Journal of Hydrology 454-455: 7-25

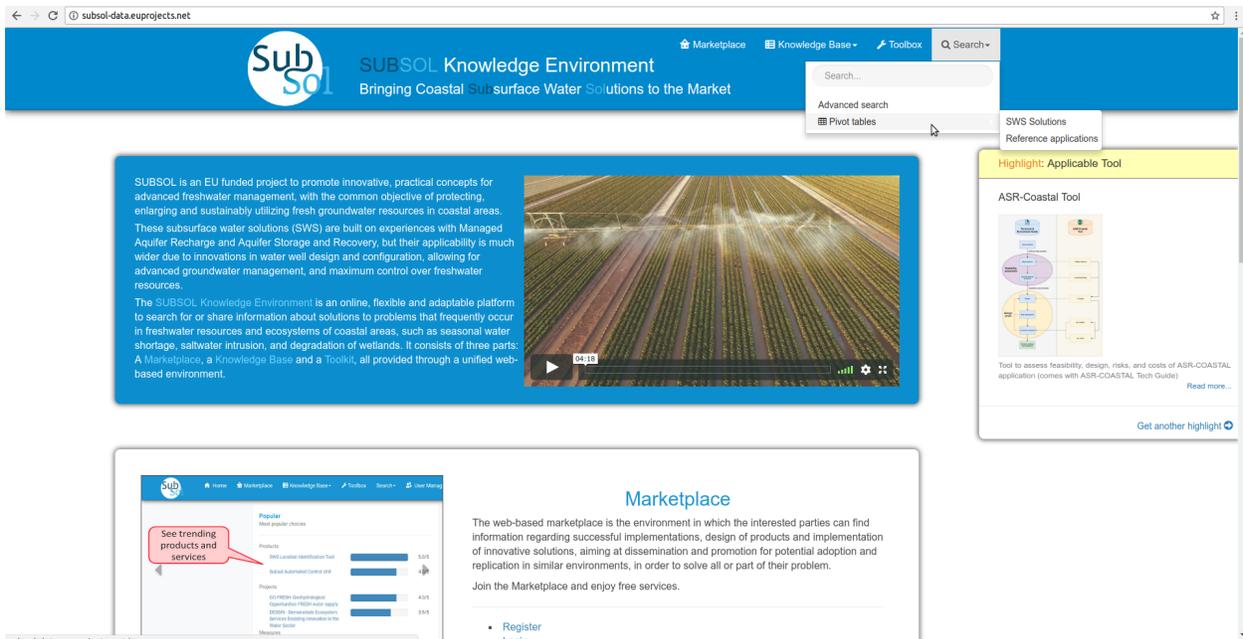
Year
 2012

3. Pivot Tables

- Click on “Search” button.



- Click on “Pivot Tables”.



- Select the preferred category from the dropdown list. (In this use case “SWS SOLUTIONS”).

SUBSOL Knowledge Environment
Bringing Coastal Subsurface Water Solutions to the Market

SUBSOL is an EU funded project to promote innovative, practical concepts for advanced freshwater management, with the common objective of protecting, enlarging and sustainably utilizing fresh groundwater resources in coastal areas. These subsurface water solutions (SWS) are built on experiences with Managed Aquifer Recharge and Aquifer Storage and Recovery, but their applicability is much wider due to innovations in water well design and configuration, allowing for advanced groundwater management, and maximum control over freshwater resources.

The SUBSOL Knowledge Environment is an online, flexible and adaptable platform to search for or share information about solutions to problems that frequently occur in freshwater resources and ecosystems of coastal areas, such as seasonal water shortage, saltwater intrusion, and degradation of wetlands. It consists of three parts: A Marketplace, a Knowledge Base and a Toolkit, all provided through a unified web-based environment.

Marketplace
The web-based marketplace is the environment in which the interested parties can find information regarding successful implementations, design of products and implementation of innovative solutions, aiming at dissemination and promotion for potential adoption and replication in similar environments, in order to solve all or part of their problem. Join the Marketplace and enjoy free services.

Highlight: Applicable Tool
ASR-Coastal Tool
Tool to assess feasibility, design, risks, and costs of ASR-COASTAL application (comes with ASR-COASTAL Tech Guide)

- Select the preferred parameters from dropdown lists.

Pivot Table of SWS solutions

Objectives	Drinking water	Irrigation water	Process water (industry)	Water reuse	(Urban) water management	Ecosystem service
Well type						
Objectives						
Method cost	1	2				
building_blocks						
Water use - End users	1	1				
Improve (production) water quality		1				
Increase (seasonal) freshwater availability	2	2		1		1
Urban water management						
Mitigate groundwater overexploitation	2	2		1		1
Strategic freshwater reserves	1	2				
Ecosystem service	1			1		1

Scope: 1

subsol-data.eu/projects.net/p/Measure/1/?model1=final_uses&model2=final_uses

SubSol SUBSOL Knowledge Environment

Home Marketplace Knowledge Base Toolbox Search Help

How to use: (1) Select the parameters from the drop-down menus. (2) The table is filled-in with the numbers of SWS solution elements that match the parameter values. (3) Click on the numbers in the cells to list the resulting SWS solutions.

Pivot Table of SWS solutions

Water use - End users

	Drinking water	Irrigation water	Process water (industry)	Water reuse	(Urban) water management	Ecosystem service
Drinking water	5					
Irrigation water		6				
Process water (industry)						
Water reuse				1		
(Urban) water management						
Ecosystem service						1

Scope: 1

Water use - End users

- Well type
- Objectives
- Method cost building blocks
- Water use - End users

- Click on preferred results.

subsol-data.eu/projects.net/p/Measure/1/?model1=measurecosts&model2=final_uses#

SubSol SUBSOL Knowledge Environment

Home Marketplace Knowledge Base Toolbox Search Help

How to use: (1) Select the parameters from the drop-down menus. (2) The table is filled-in with the numbers of SWS solution elements that match the parameter values. (3) Click on the numbers in the cells to list the resulting SWS solutions.

Pivot Table of SWS solutions

Water use - End users

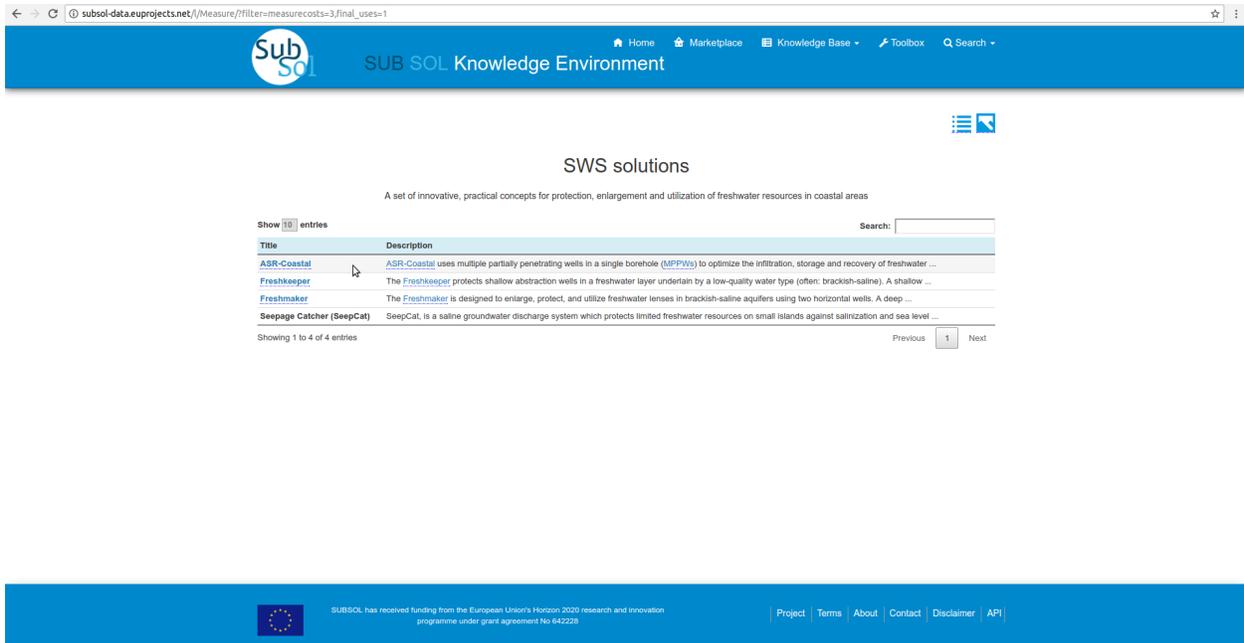
Method cost

	< 1.000 euros	1.000 - 10.000 euros	10.000 - 100.000 euros	100.000 - 1.000.000 euros	> 1.000.000 euros
Drinking water			4	3	2
Irrigation water			6	4	3
Process water (industry)					
Water reuse					
(Urban) water management					
Ecosystem service					

Scope: 1

subsol-data.eu/projects.net/p/Measure/?filter=measurecosts=3&final_uses=1

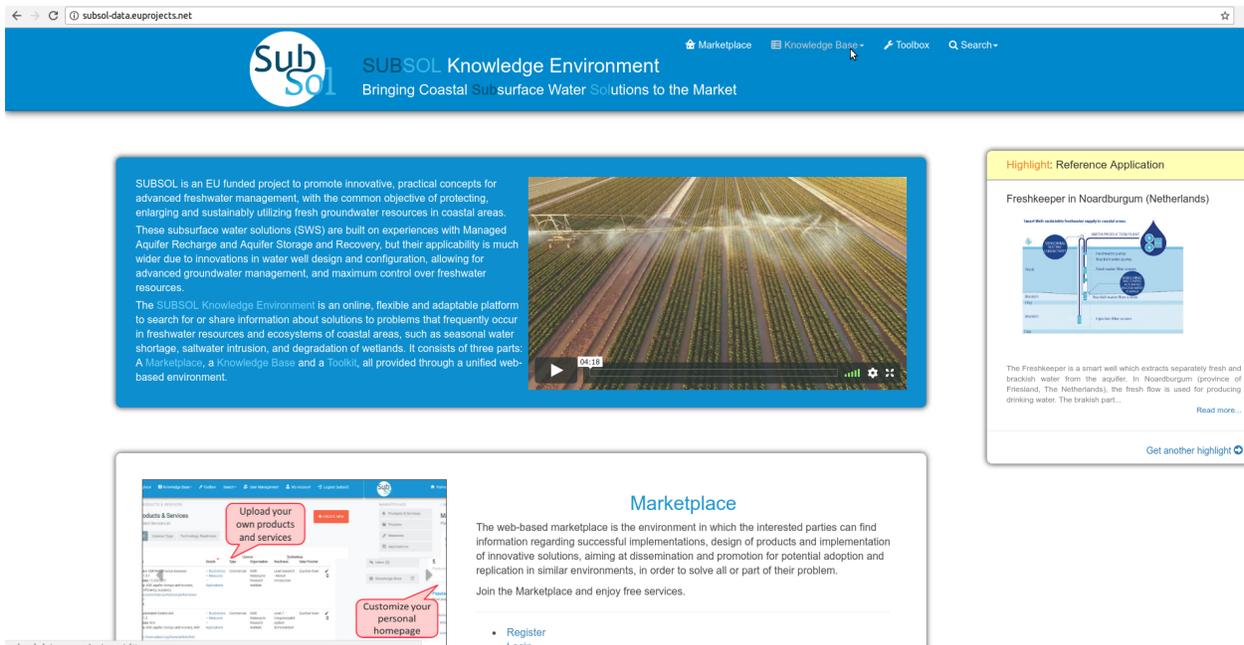
- Click on relevant item and view details.



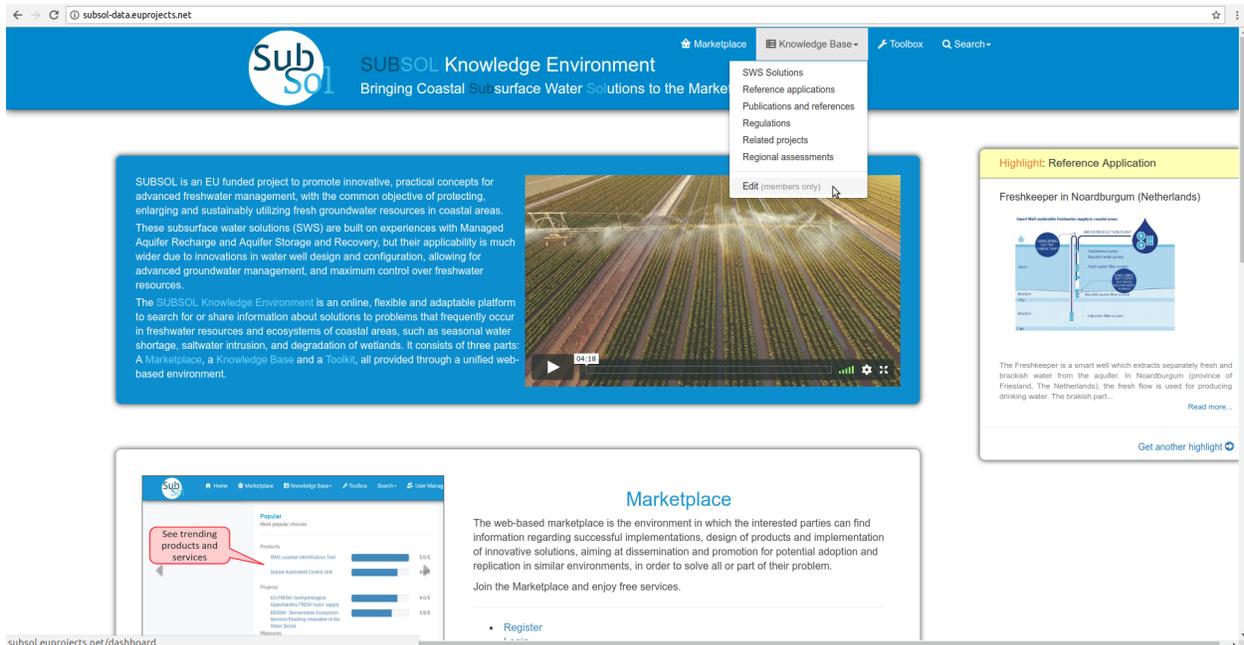
4.2 Private Services

1. Categories

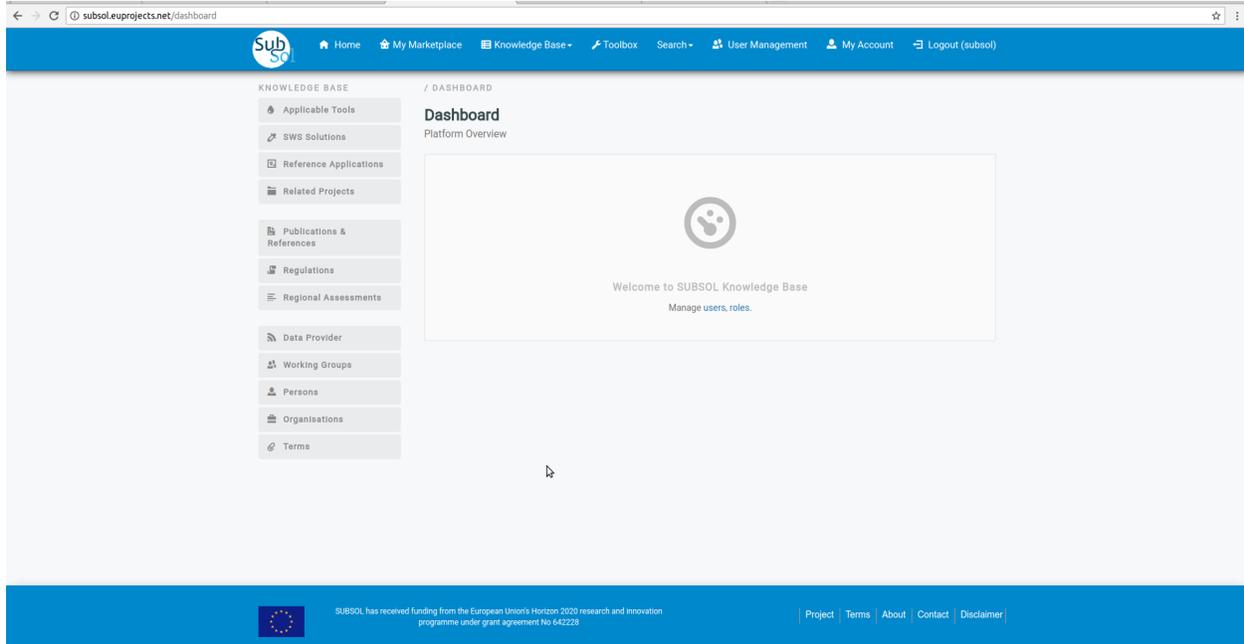
- Initially the user must login with private account privileges.



- Click on "Edit".



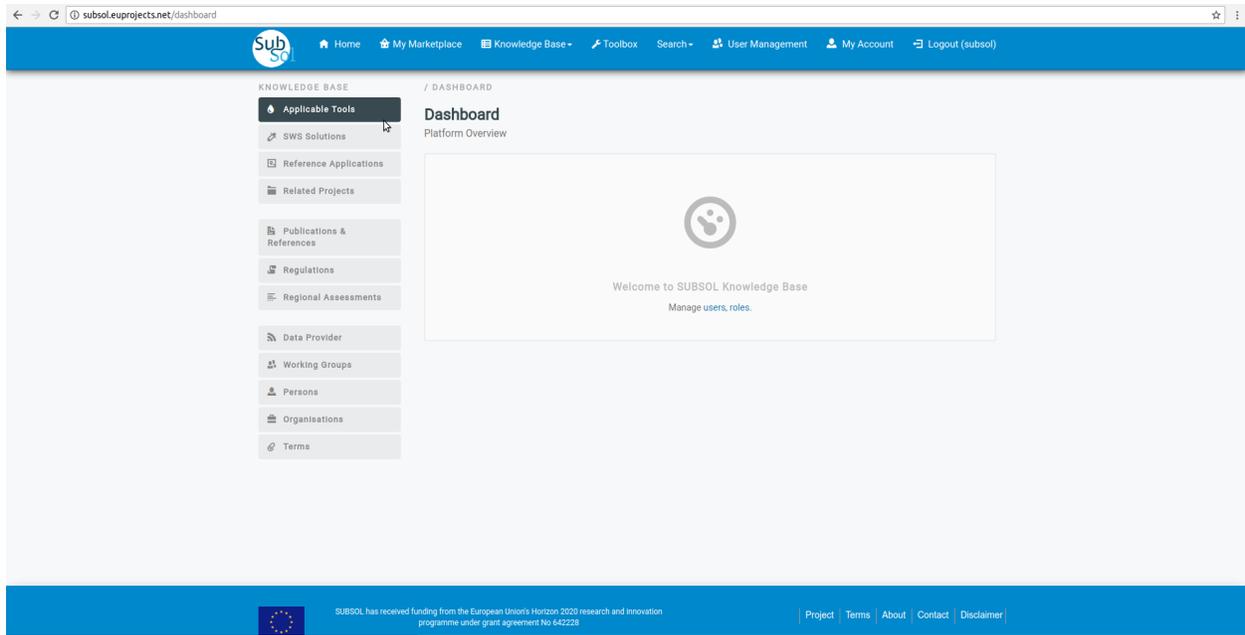
- The desired Knowledge base category are at left menu.



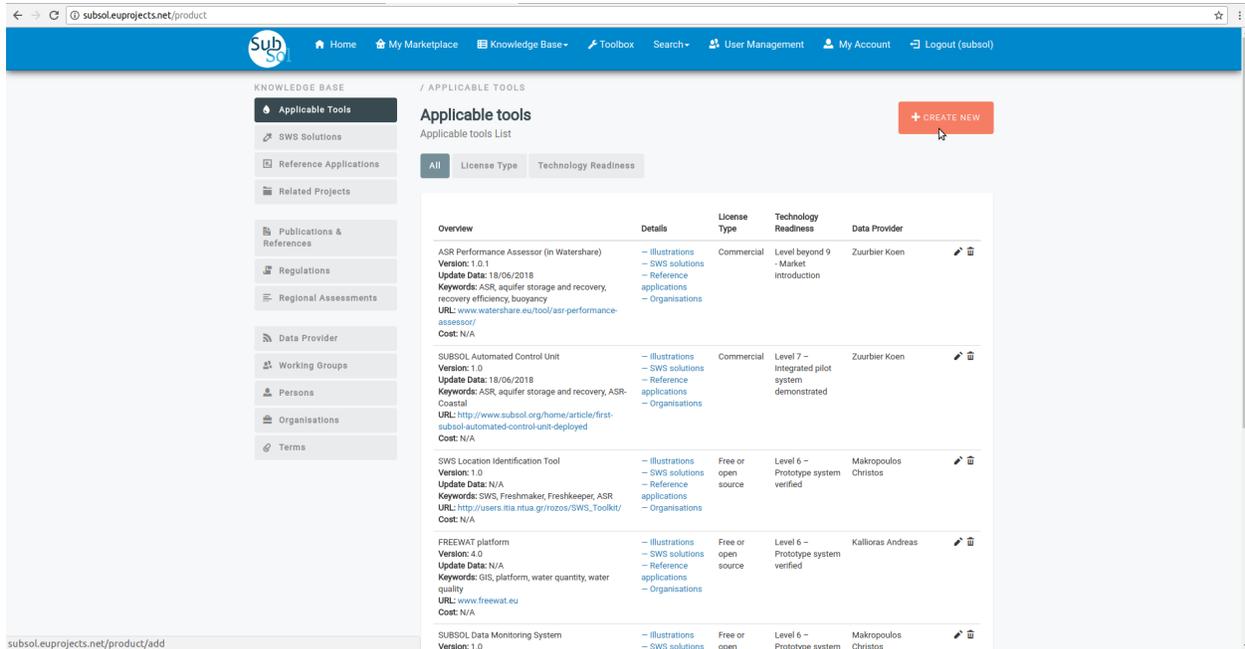
Add Content

- Click on desired menu-item (in this case Application Tools).

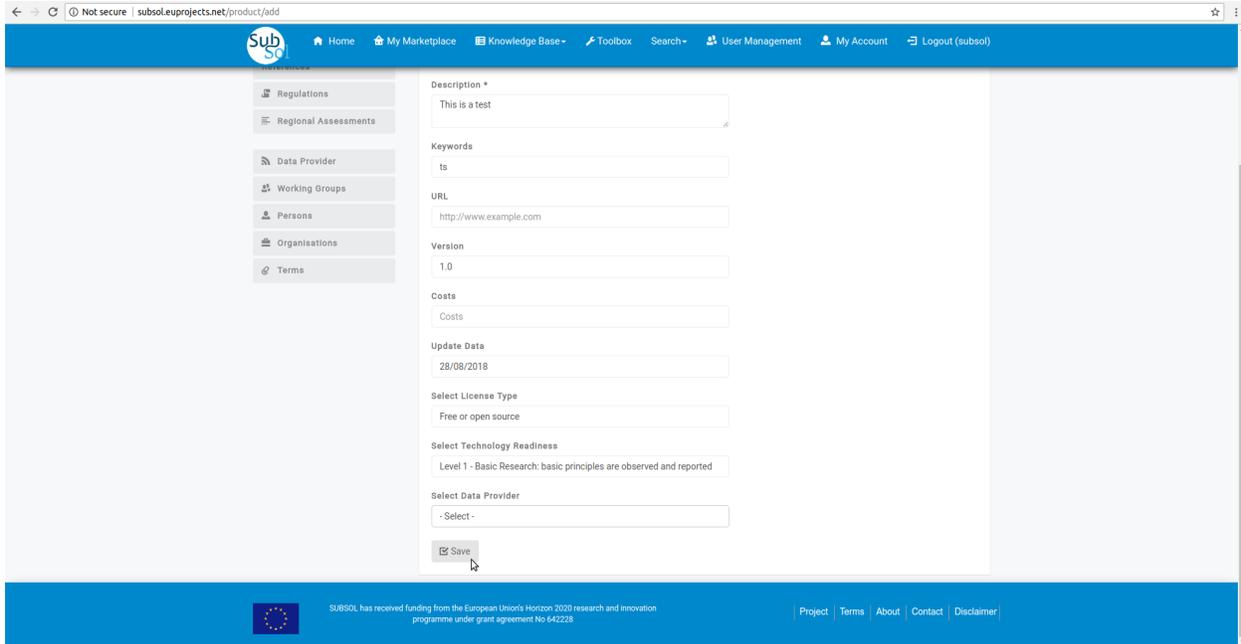
Read the Docs Template Documentation, Release 1.0



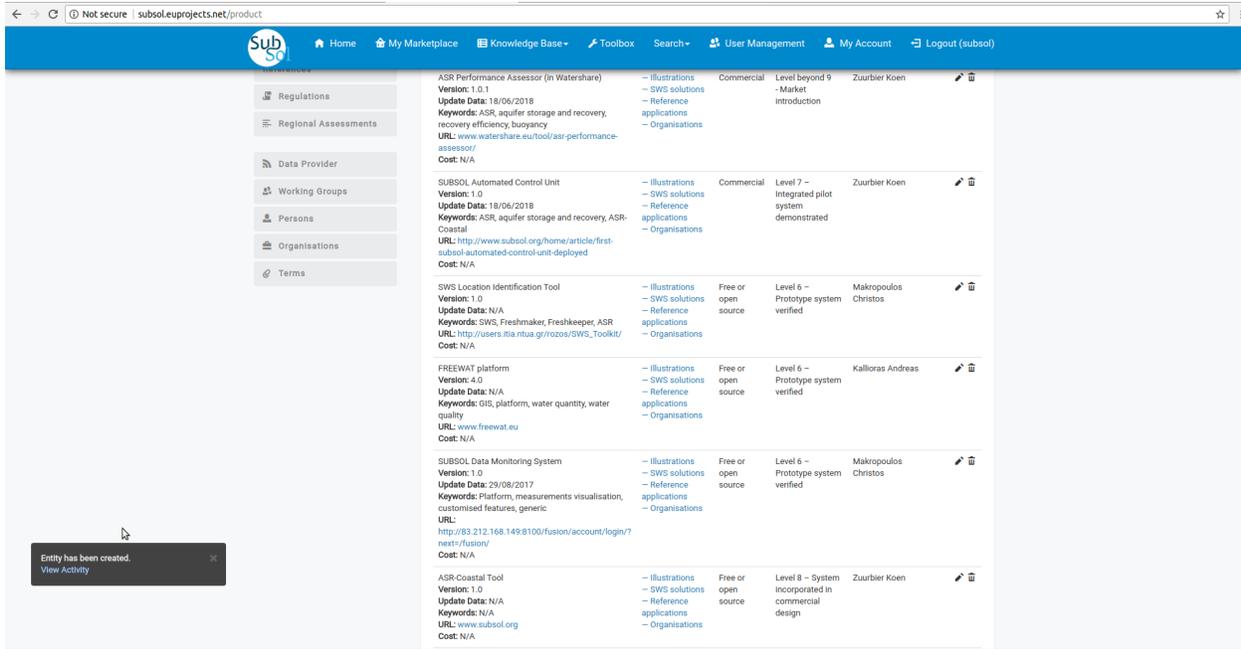
- Click on “CREATE NEW” button.



- Provide your info and click on “Save” button.



- A pop-up message confirms that you have successfully create your new entry.



Modify Content

- Click on “Modify” pencil-item.

The screenshot shows the 'Applicable tools' page in the SubSol Knowledge Base. The page has a blue header with navigation links: Home, My Marketplace, Knowledge Base, Toolbox, Search, User Management, My Account, and Logout (subsol). Below the header, there's a sidebar with 'KNOWLEDGE BASE' and 'APPLICABLE TOOLS' sections. The main content area is titled 'Applicable tools' and includes a '+ CREATE NEW' button. Below this, there's a table with columns: Overview, Details, License Type, Technology Readiness, and Data Provider. The table lists several tools, including 'ASR Performance Assessor (in Watershare)', 'SUBSOL Automated Control Unit', 'SWS Location Identification Tool', 'FREEWAT platform', and 'SUBSOL Data Monitoring System'. Each row provides details like version, update date, keywords, URL, and cost.

- Provide your changes and click on “Save” button.

The screenshot shows the 'Applicable tools' form in the SubSol Knowledge Base. The form has a blue header with navigation links: Home, My Marketplace, Knowledge Base, Toolbox, Search, User Management, My Account, and Logout (subsol). Below the header, there's a sidebar with 'KNOWLEDGE BASE' and 'APPLICABLE TOOLS' sections. The main content area is titled 'Applicable tools' and includes a '+ CREATE NEW' button. Below this, there's a form with fields for: Description (text area), Keywords (text input), URL (text input), Version (text input), Costs (text input), Update Data (text input), Select License Type (dropdown menu), Select Technology Readiness (dropdown menu), and Select Data Provider (text input). A 'Save' button is located at the bottom of the form.

- A pop-up message confirms that you have successfully create your new entry.

The screenshot shows the 'Applicable Tools' page in the SubSo Knowledge Base. The page has a blue header with navigation links like Home, My Marketplace, Knowledge Base, and Toolbox. On the left, there's a 'KNOWLEDGE BASE' sidebar with categories like SWS Solutions, Reference Applications, and Related Projects. The main content area is titled 'Applicable tools' and contains a table of tools. A red '+ CREATE NEW' button is located in the top right of the main content area.

Overview	Details	License Type	Technology Readiness	Data Provider
ASR Performance Assessor (in Watershare) Version: 1.0.1 Update Data: 18/06/2018 Keywords: ASR, aquifer storage and recovery, recovery efficiency, buoyancy URL: www.watershare.eu/tool/asr-performance-assessor/ Cost: N/A	- Illustrations - SWS solutions - Reference applications - Organisations	Commercial	Level beyond 9 - Market introduction	Zuurbier Koen
SUBSOL Automated Control Unit Version: 1.0 Update Data: 18/06/2018 Keywords: ASR, aquifer storage and recovery, ASR-Coastal URL: http://www.subsol.org/home/article/first-subsol-automated-control-unit-deployed Cost: N/A	- Illustrations - SWS solutions - Reference applications - Organisations	Commercial	Level 7 - Integrated pilot system demonstrated	Zuurbier Koen
SWS Location Identification Tool Version: 1.0 Update Data: N/A Keywords: SWS, Freshmaker, Freshkeeper, ASR URL: http://users.ita.ntua.gr/rozos/SWS_Toolkit/ Cost: N/A	- Illustrations - SWS solutions - Reference applications - Organisations	Free or open source	Level 6 - Prototype system verified	Makropoulos Christos
FREEWAT platform Version: 4.0 Update Data: N/A Keywords: GIS, platform, water quantity, water quality URL: www.freewat.eu Cost: N/A	- Illustrations - SWS solutions - Reference applications - Organisations	Free or open source	Level 6 - Prototype system verified	Kallioras Andreas
SUBSOL Data Monitoring System Version: 1.0	- Illustrations - SWS solutions	Free or open	Level 6 - Prototype system	Makropoulos Christos

2.Applicable Tools

2.1. Licence Type

- Click on “Licence Type” menu-item

This screenshot is identical to the previous one, showing the 'Applicable Tools' page. The difference is that the 'License Type' filter tab is now selected in the navigation bar above the table, and the table content remains the same.

- Click on “CREATE NEW” button.

Read the Docs Template Documentation, Release 1.0

The screenshot shows the 'License Types' page in the SubSo Knowledge Base. The page title is 'License Types' and the breadcrumb is '/ APPLICABLE TOOLS / LICENSE TYPES'. There is a '+ CREATE NEW' button in the top right. Below the title, there are tabs for 'All', 'License Type', and 'Technology Readiness'. A table lists two license types:

Name	Description	
Commercial	The tool is developed for commercial purposes	 
Free or open source	Refers to a free or open source tool	 

The left sidebar contains a 'KNOWLEDGE BASE' menu with items like 'Applicable Tools', 'SWS Solutions', 'Reference Applications', 'Related Projects', 'Publications & References', 'Regulations', 'Regional Assessments', 'Data Provider', 'Working Groups', 'Persons', 'Organisations', and 'Terms'. The footer contains the SubSo logo, a funding notice from the European Union, and links for 'Project', 'Terms', 'About', 'Contact', and 'Disclaimer'.

- Provide licence type info and click on “Save” button.

The screenshot shows the 'License Types Add' page in the SubSo Knowledge Base. The page title is 'License Types' and the breadcrumb is '/ APPLICABLE TOOLS / LICENSE TYPES'. There is a '+ CREATE NEW' button in the top right. Below the title, there are tabs for 'All', 'License Type', and 'Technology Readiness'. A form is displayed with the following fields:

Name *
New

Description
New Type

Save

The left sidebar and footer are identical to the previous screenshot.

- A pop-up message confirms that you have successfully create your new licence type.

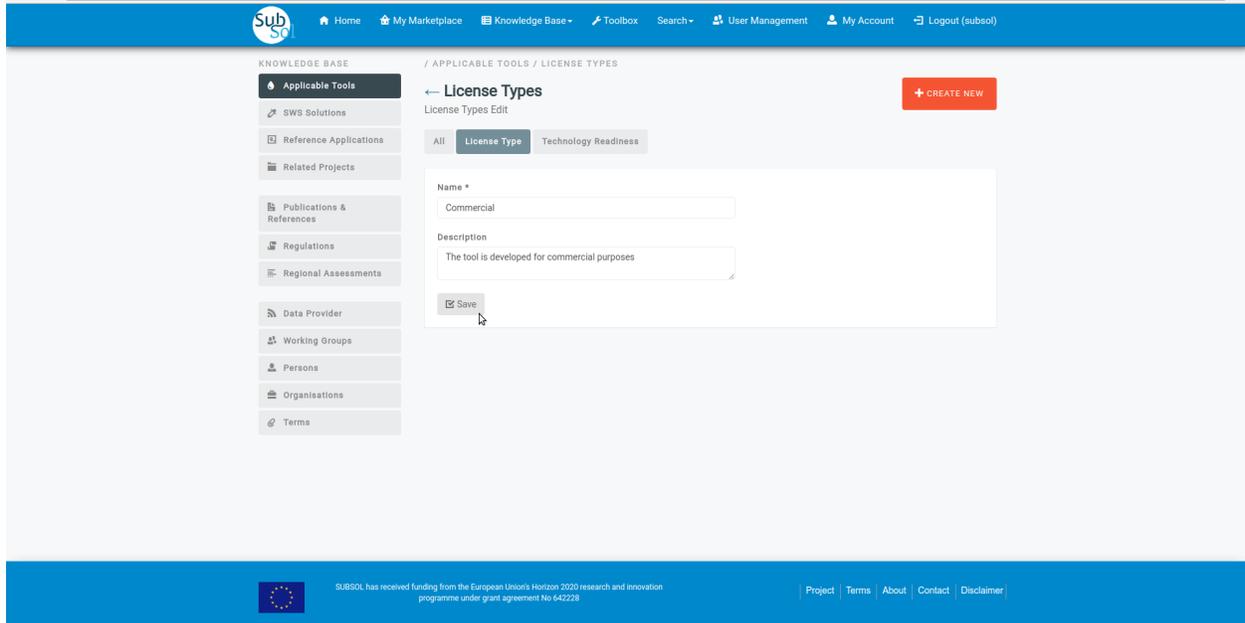
Entity has been created.
View Activity

Name	Description	
Commercial	The tool is developed for commercial purposes	 
Free or open source	Refers to a free or open source tool	 
New	New Type	 

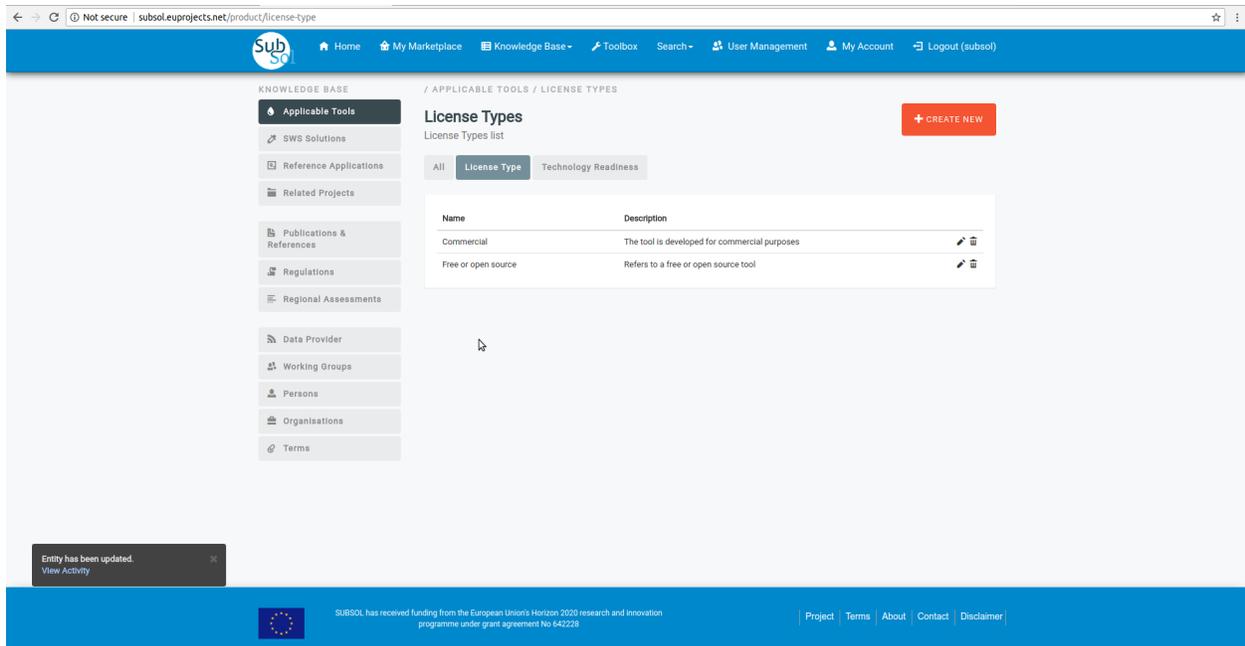
- Edit Licence Type
- Click on “Modify” pencil-item.

Name	Description	
Commercial	The tool is developed for commercial purposes	 
Free or open source	Refers to a free or open source tool	 

- Provide your changes and click on “Save” button.



- A pop-up message confirms that you have successfully update your licence type.



2.2 Technology Readiness

- Add Technology Readiness
- Click on “Technology Readiness” menu-item.

subsol.euprojects.net/product/technology-readiness

KNOWLEDGE BASE / APPLICABLE TOOLS / TECHNOLOGY READINESS

Technology Readiness

Technology Readiness list

All License Type **Technology Readiness**

Level	Description	
Level 1 - Basic Research: basic principles are observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include fundamental investigations and paper studies.	
Level 2 - Applied Research: technology concept and/or application formulated	Once basic principles are observed, practical applications can be formulated. Examples are limited to analytic studies and experimentation.	
Level 3 - Critical function, proof of concept established	Active research and development is initiated. Laboratory studies aim to validate analytical predictions of separate components of the technology. Examples include components that are not yet integrated or representative.	
Level 4 - Laboratory testing of prototype component or process	Design, development and lab testing of technological components are performed. Here, basic technological components are integrated to establish that they will work together. This is a relatively "low fidelity" prototype in comparison with the eventual system.	
Level 5 - Laboratory testing of integrated system	The basic technological components are integrated together with realistic supporting elements to be tested in a simulated environment. This is a "high fidelity" prototype compared to the eventual system.	
Level 6 - Prototype system verified	The prototype, which is well beyond that of level 5, is tested in a relevant environment. The system or process demonstration is carried out in an operational environment.	
Level 7 - Integrated pilot system demonstrated	Prototype is near, or at, planned operational system level. The final design is virtually complete. The goal of this stage is to remove engineering and manufacturing risk.	
Level 8 - System incorporated in commercial design	Technology has been proven to work in its final form under the expected conditions. In most of the cases, this level represents the end of true system development.	
Level 9 - System ready for full scale deployment	Here, the technology in its final form is ready for commercial deployment.	

subsol.euprojects.net/product/technology-readiness

- Click on “Create New” button.

subsol.euprojects.net/product/technology-readiness

KNOWLEDGE BASE / APPLICABLE TOOLS / TECHNOLOGY READINESS

Technology Readiness

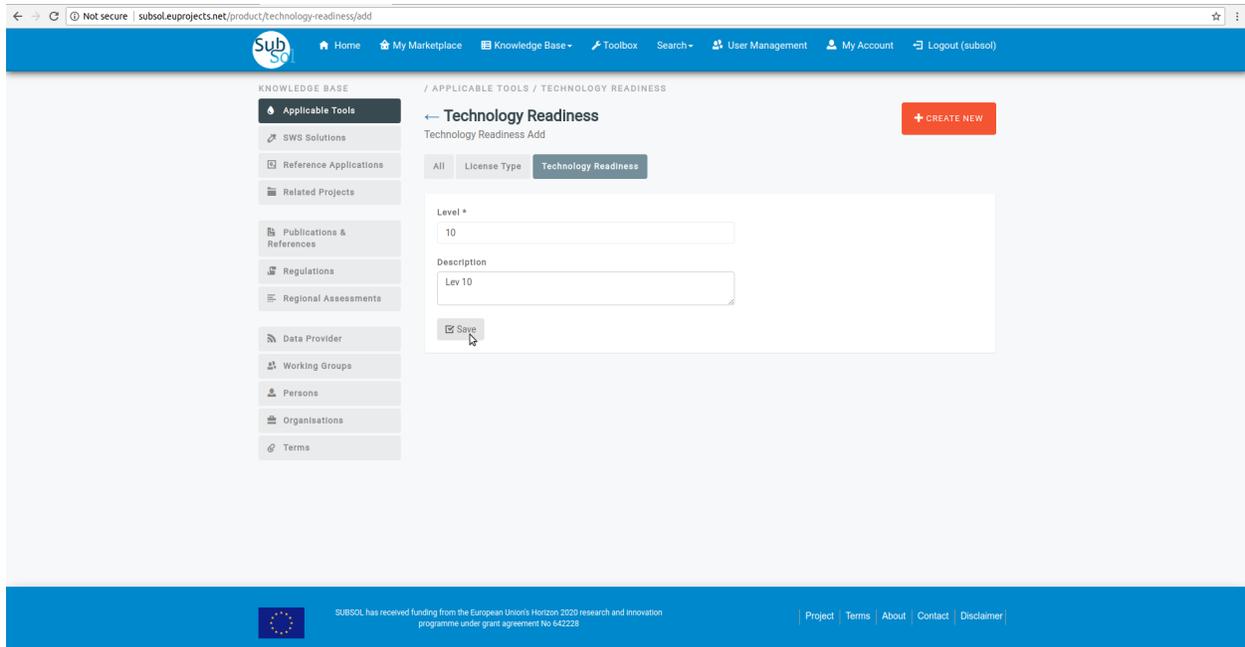
Technology Readiness list

All License Type **Technology Readiness**

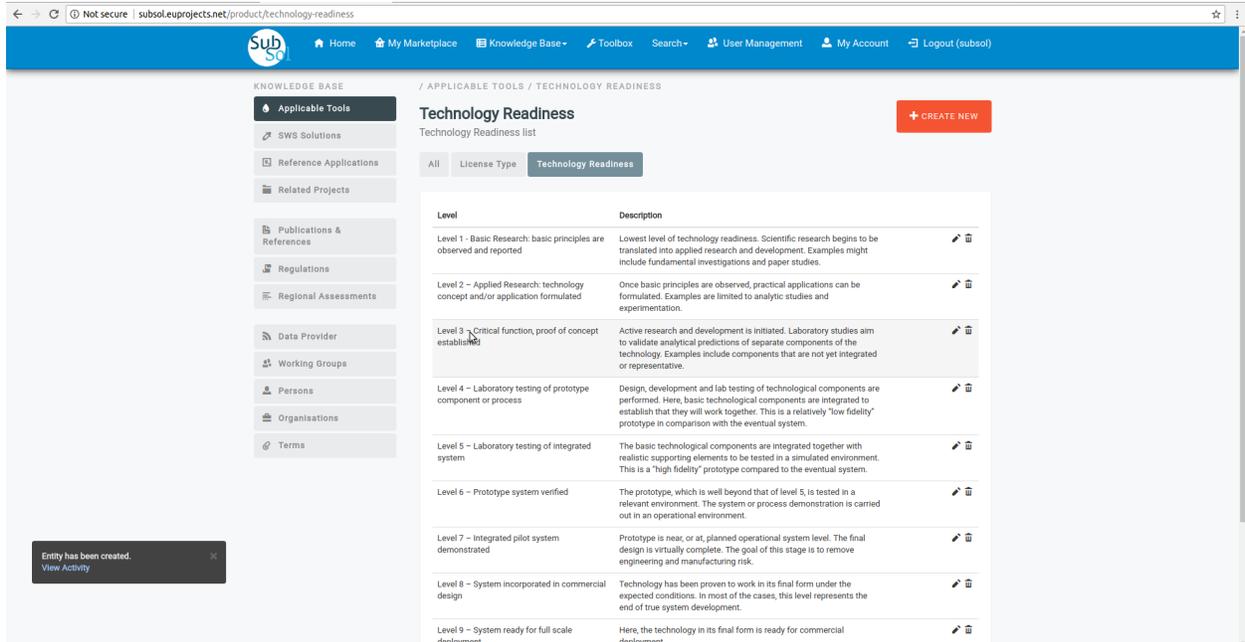
Level	Description	
Level 1 - Basic Research: basic principles are observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include fundamental investigations and paper studies.	
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Level 9 - System ready for full scale deployment	Here, the technology in its final form is ready for commercial deployment.	

subsol.euprojects.net/product/technology-readiness/add

- Provide your credentials and click on “Save” button.



- A pop-up message confirms that you have successfully create a new Technology Readiness entry.



- Edit Technology Readiness
- Click on "Modify" pencil-item.

The screenshot shows the 'Technology Readiness' page in the SubSol Knowledge Base. The page title is 'Technology Readiness' and it contains a 'Technology Readiness list'. A red '+ CREATE NEW' button is visible in the top right corner. The list is organized into a table with two columns: 'Level' and 'Description'. The table contains nine rows, each representing a different level of technology readiness, from Level 1 to Level 9. Each row includes a brief description of the level and a small icon for editing or deleting the entry.

Level	Description
Level 1 - Basic Research: basic principles are observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include fundamental investigations and paper studies.
Level 2 - Applied Research: technology concept and/or application formulated	Once basic principles are observed, practical applications can be formulated. Examples are limited to analytic studies and experimentation.
Level 3 - Critical function, proof of concept established	Active research and development is initiated. Laboratory studies aim to validate analytical predictions of separate components of the technology. Examples include components that are not yet integrated or representative.
Level 4 - Laboratory testing of prototype component or process	Design, development and lab testing of technological components are performed. Here, basic technological components are integrated to establish that they will work together. This is a relatively "low fidelity" prototype in comparison with the eventual system.
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Level 9 - System ready for full scale deployment	Here, the technology in its final form is ready for commercial deployment.

- Provide your changes and click on “Save” button.

The screenshot shows the 'Technology Readiness Edit' page in the SubSol Knowledge Base. The page title is 'Technology Readiness' and it contains a 'Technology Readiness Edit' form. A red '+ CREATE NEW' button is visible in the top right corner. The form is organized into a table with two columns: 'Level' and 'Description'. The 'Level' column contains the text 'Level 1 - Basic Research: basic principles are observed and reported'. The 'Description' column contains the text 'Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples'. A 'Save' button is visible at the bottom of the form.

Level	Description
Level 1 - Basic Research: basic principles are observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples

- A pop-up message confirms that you have successfully update your Technology Readiness entry. .

The screenshot shows a web application interface for a Knowledge Base. The browser address bar shows 'subsol.euprojects.net/product/technology-readiness'. The navigation bar includes 'Home', 'My Marketplace', 'Knowledge Base', 'Toolbox', 'Search', 'User Management', 'My Account', and 'Logout (subsol)'. The main content area is titled 'Technology Readiness' and contains a 'Technology Readiness list' table. The table has columns for 'Level' and 'Description'. A '+ CREATE NEW' button is visible in the top right. A notification box at the bottom left states 'Entity has been updated. View Activity'.

KNOWLEDGE BASE / APPLICABLE TOOLS / TECHNOLOGY READINESS

Technology Readiness + CREATE NEW

Technology Readiness list

All License Type **Technology Readiness**

Level	Description		
Level 1 - Basic Research: basic principles are observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include fundamental investigations and paper studies.		
Level 2 - Applied Research: technology concept and/or application formulated	Once basic principles are observed, practical applications can be formulated. Examples are limited to analytic studies and experimentation.		
Level 3 - Critical function, proof of concept established	Active research and development is initiated. Laboratory studies aim to validate analytical predictions of separate components of the technology. Examples include components that are not yet integrated or representative.		
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Level 9 - System ready for full scale deployment	Here, the technology in its final form is ready for commercial deployment.		

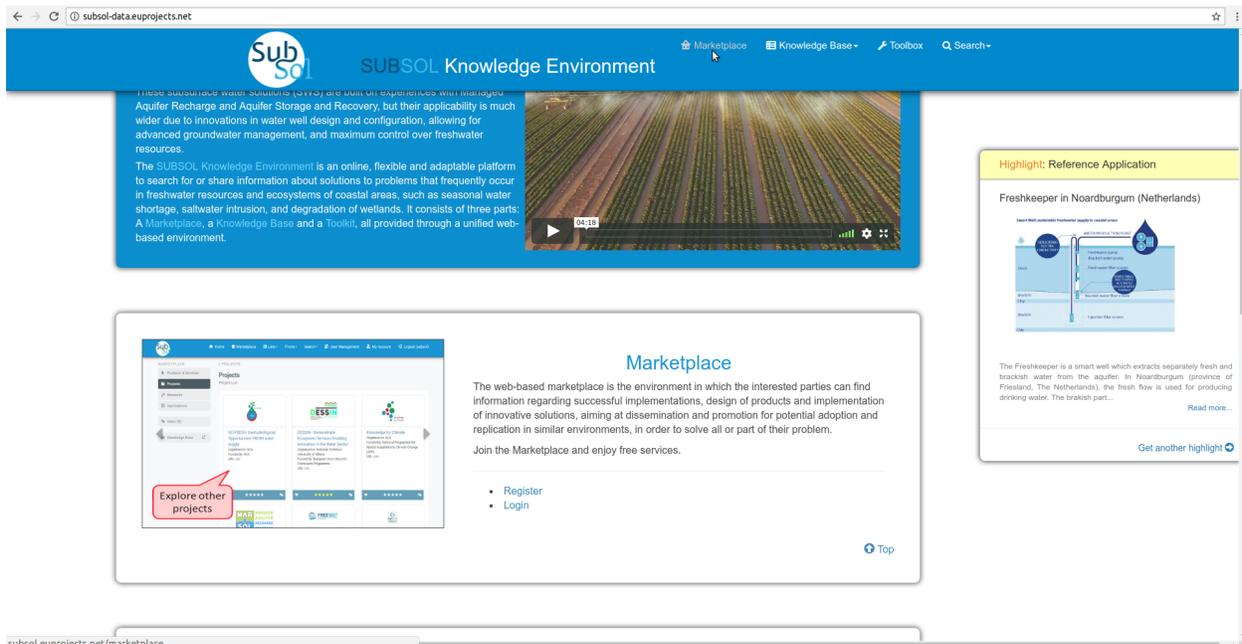
Entity has been updated. [View Activity](#)

5.1 Organization Representative

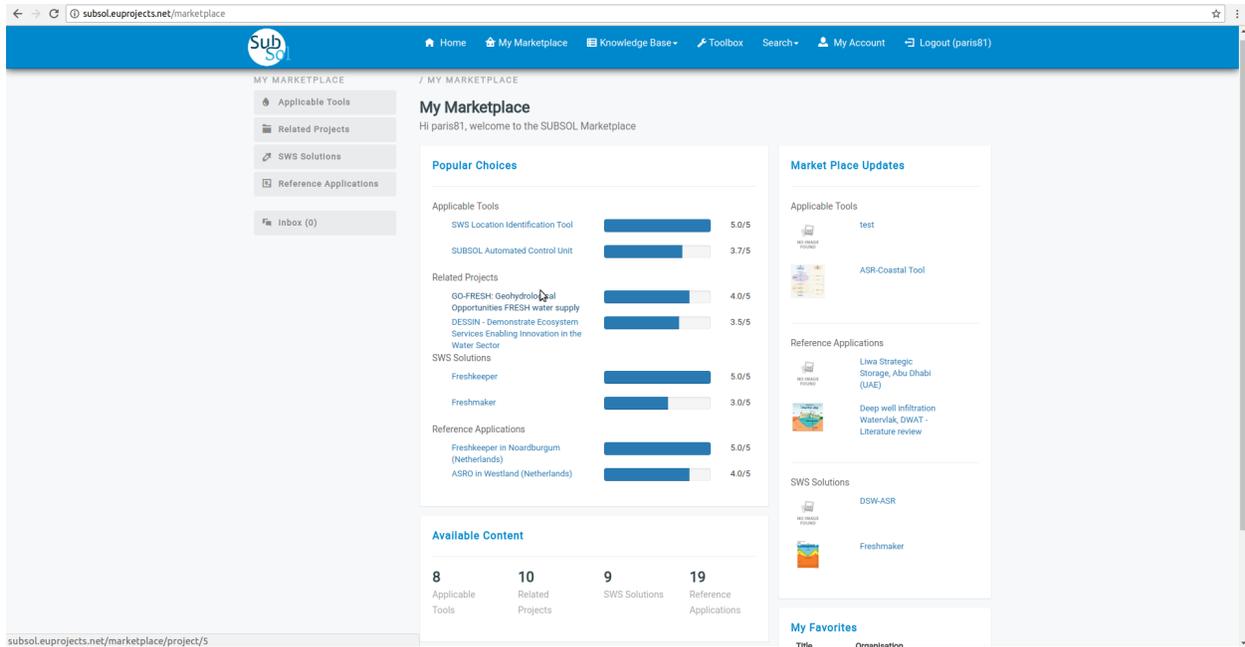
5.2 Simple User

1. Dashboard

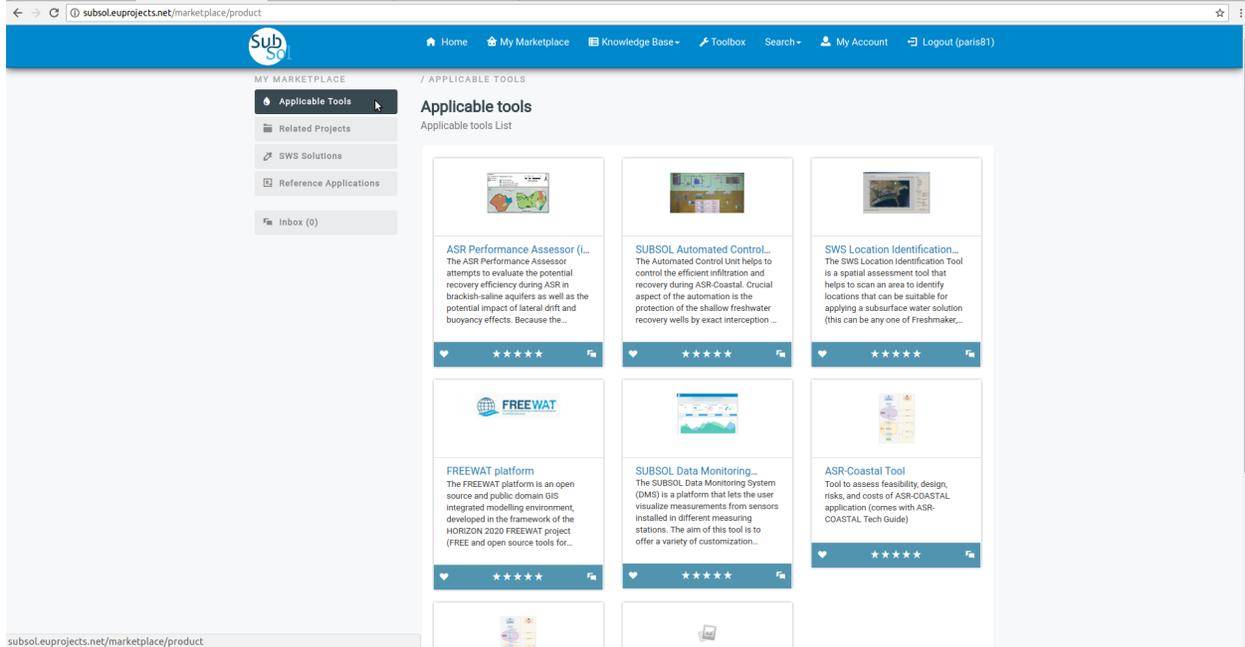
- Click on “Marketplace” Menu-item.



- The user can review the marketplace area.

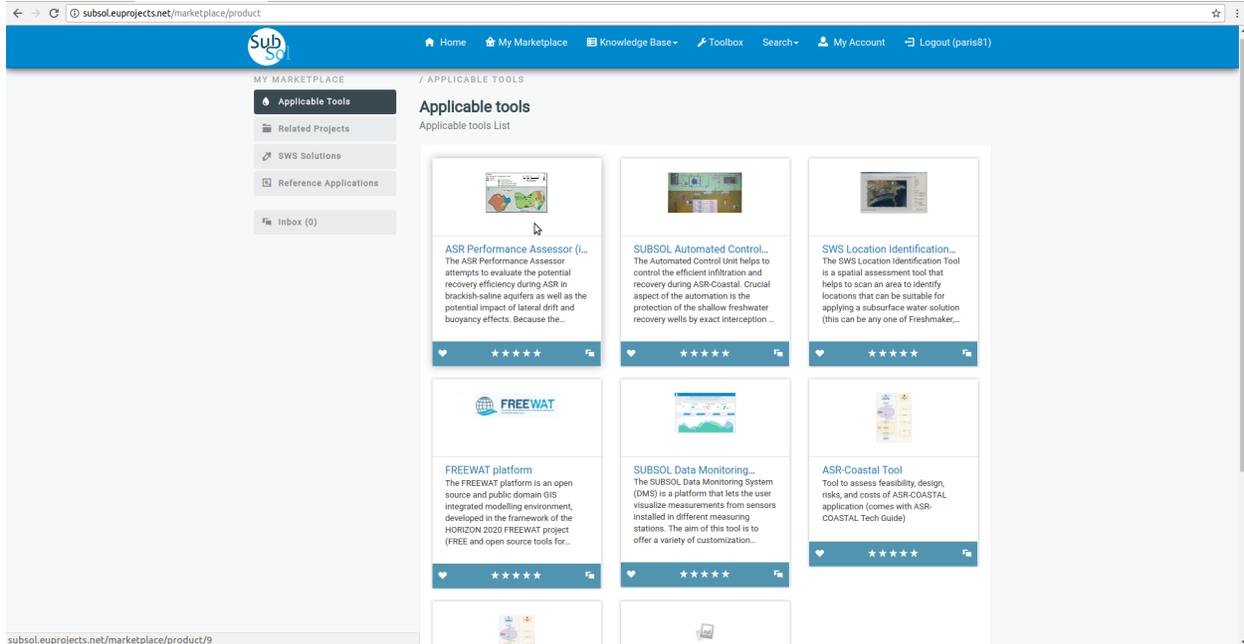


2. Applicable Tools

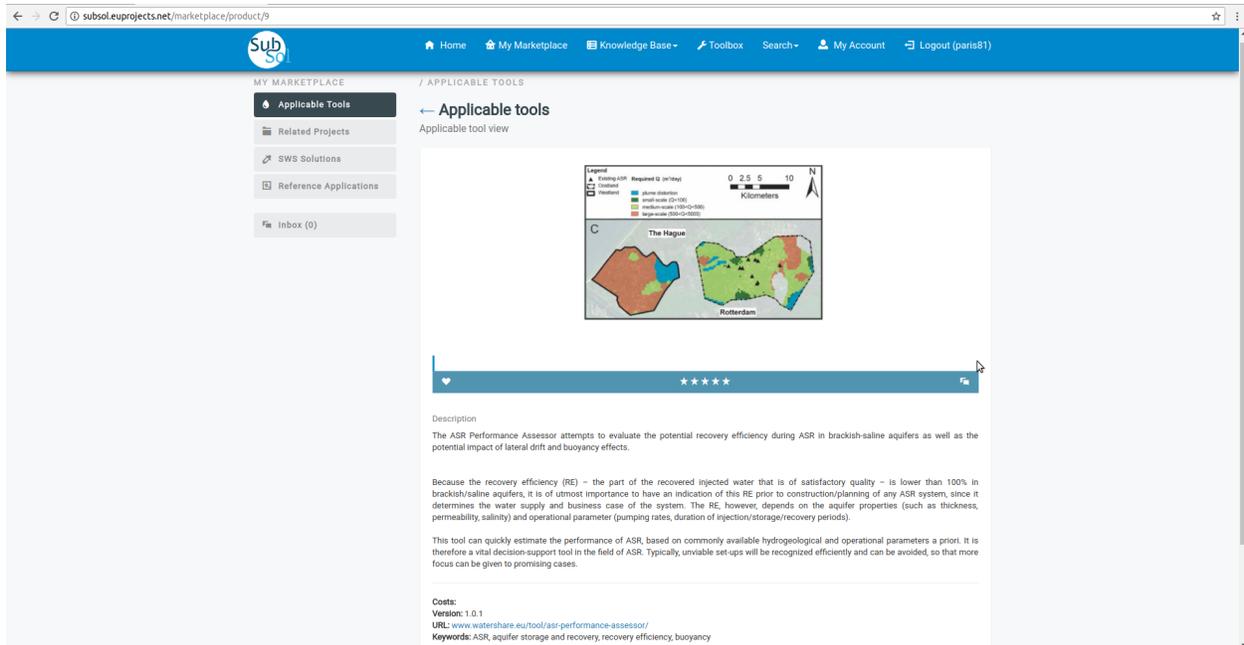


2.1 Open

- Click on preferred icon view from applicable list.



- View full information available for this item.



2.2 Rate a product

- Click on “Rate a product” stars to evaluate it.

The screenshot shows a web browser window with the URL `subsol.eu/projects.net/marketplace/product/9`. The page header includes navigation links for Home, My Marketplace, Knowledge Base, Toolbox, Search, My Account, and Logout (paris81). The main content area is titled 'Applicable tools' and features a map of The Hague and Rotterdam. The map legend includes categories for Existing ASR, Required Q (m³/day), and various aquifer types. Below the map, there is a 'Rate this product' button with a star rating and a 'heart' icon. The description text explains the ASR Performance Assessor tool and its purpose in evaluating recovery efficiency during ASR in brackish-saline aquifers.

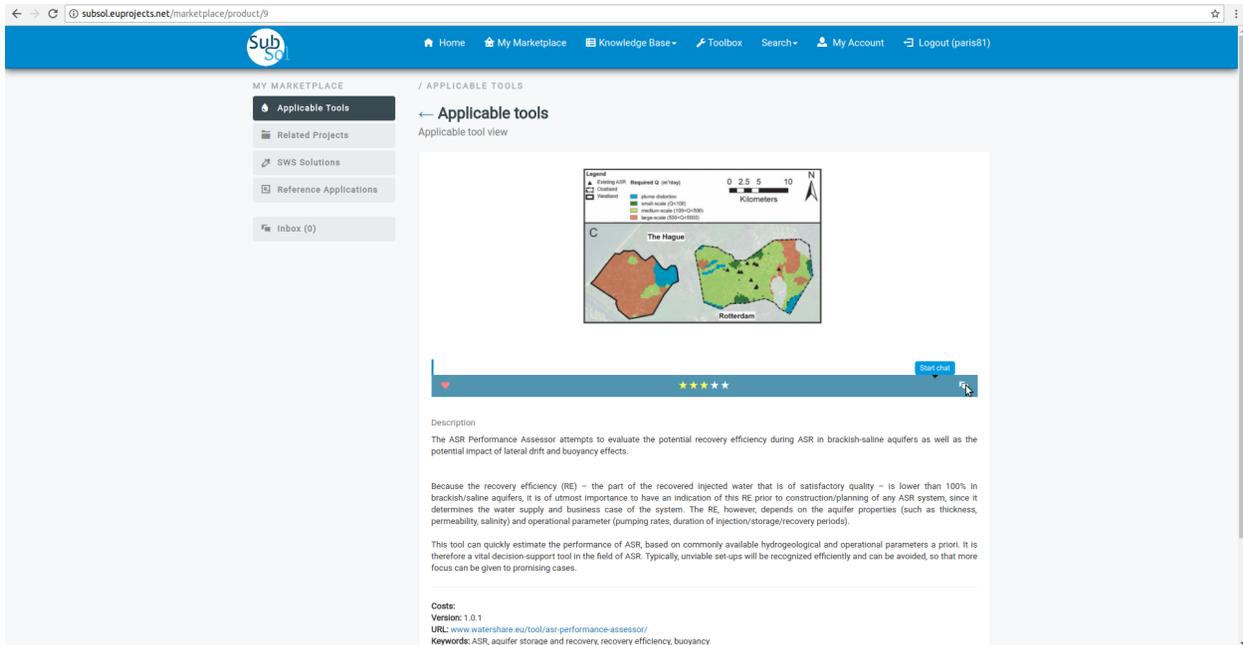
2.3 Add to Favorites

- Click on “heart” button to add this product to favorites.

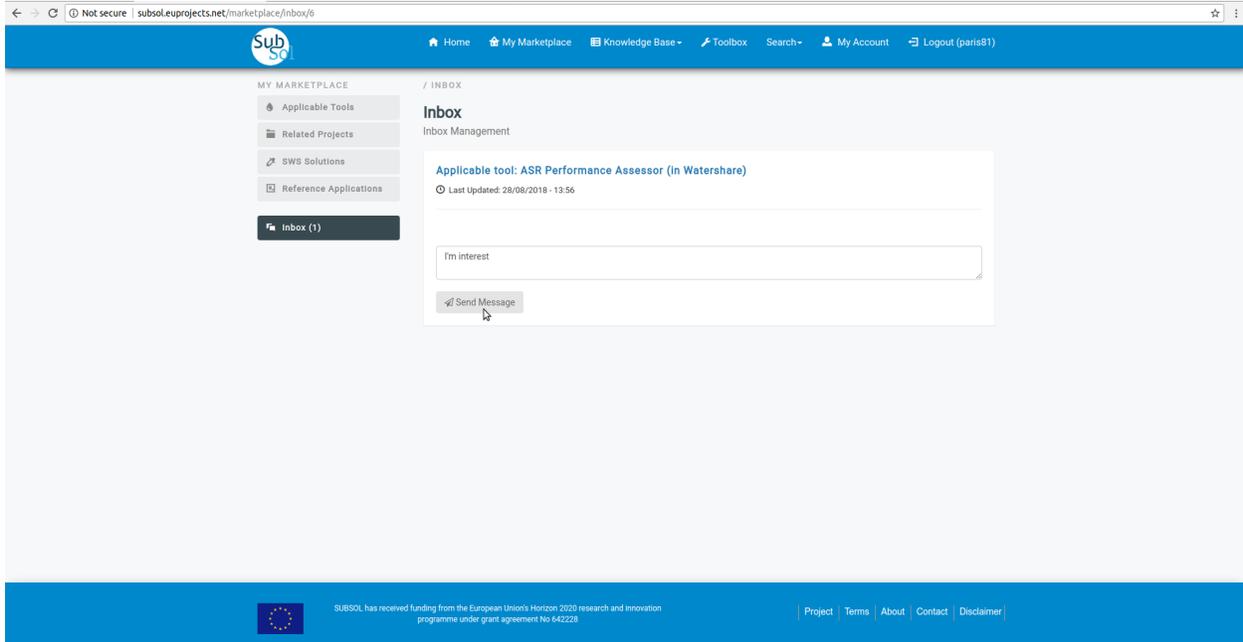
This screenshot is identical to the previous one, but the 'Add to favorite' button (represented by a heart icon) is highlighted with a red box, indicating the action to be taken. The rest of the page content, including the map and description, remains the same.

2.4. Chat

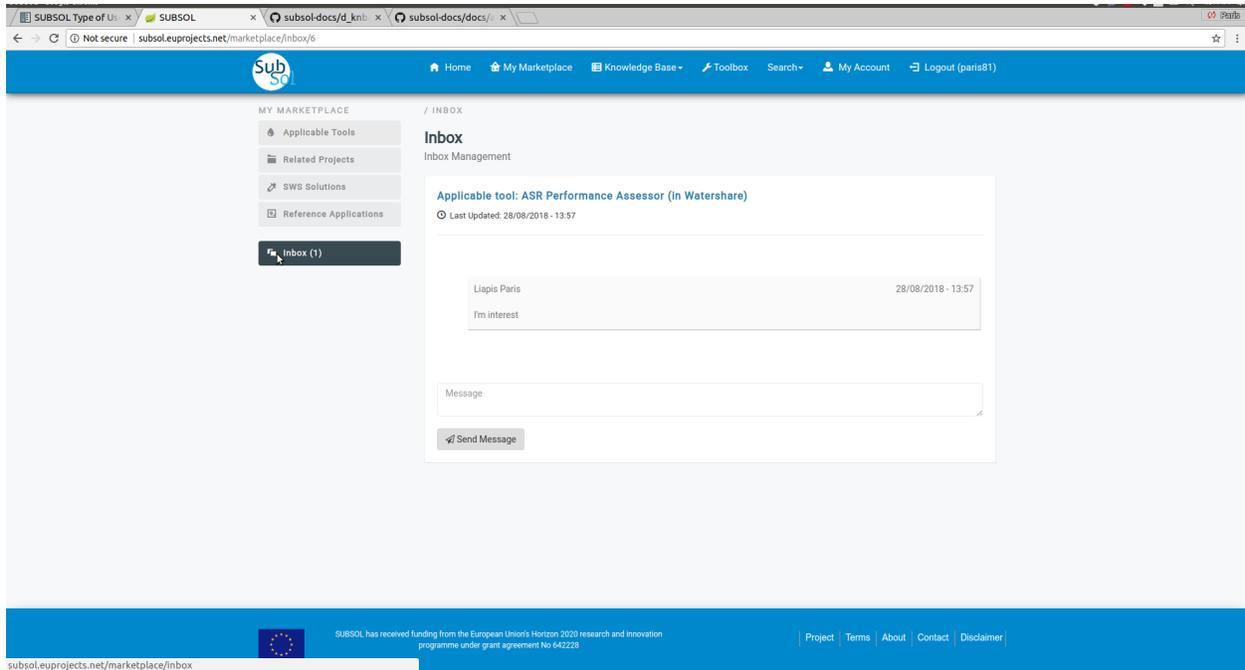
- Click on “Start Chat” button.



- Provide your message and click on “save” button.

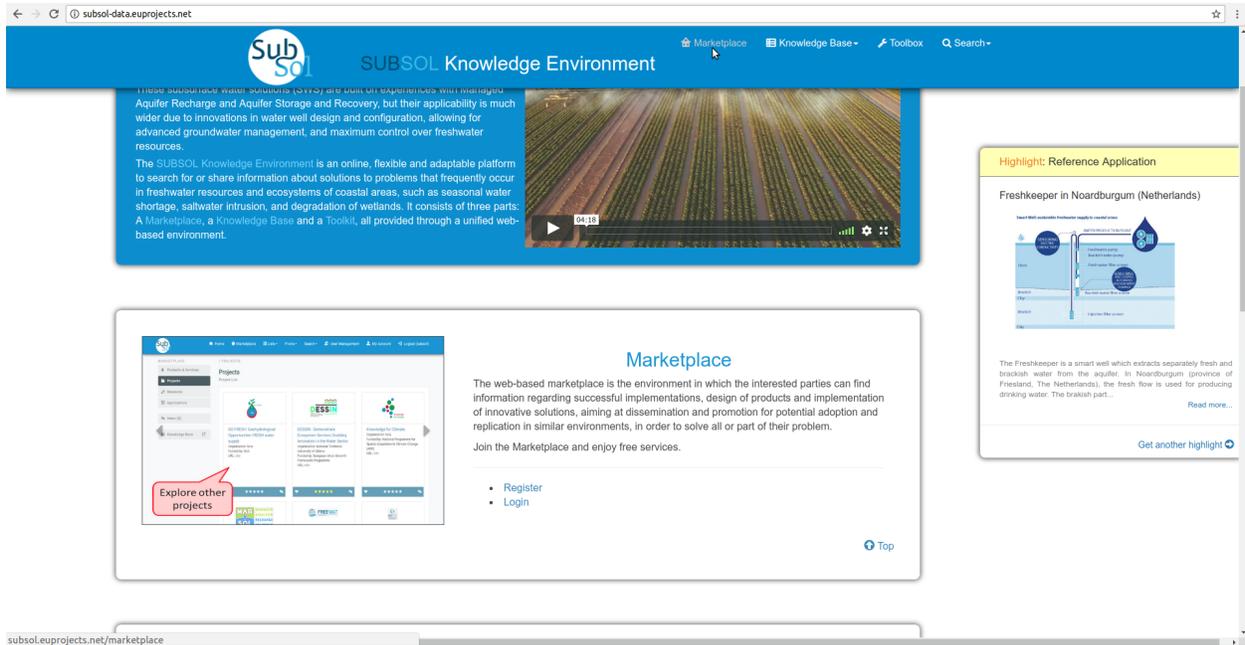


- You have successfully send your message to Manager.

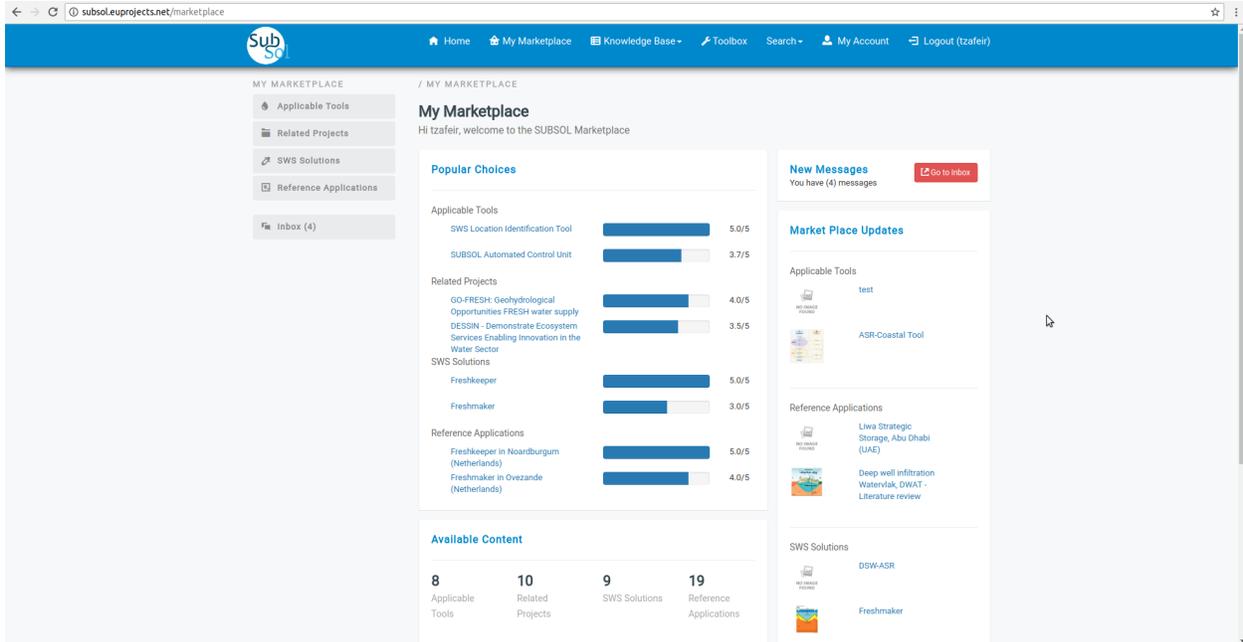


5.3 Manager

1. Manager View



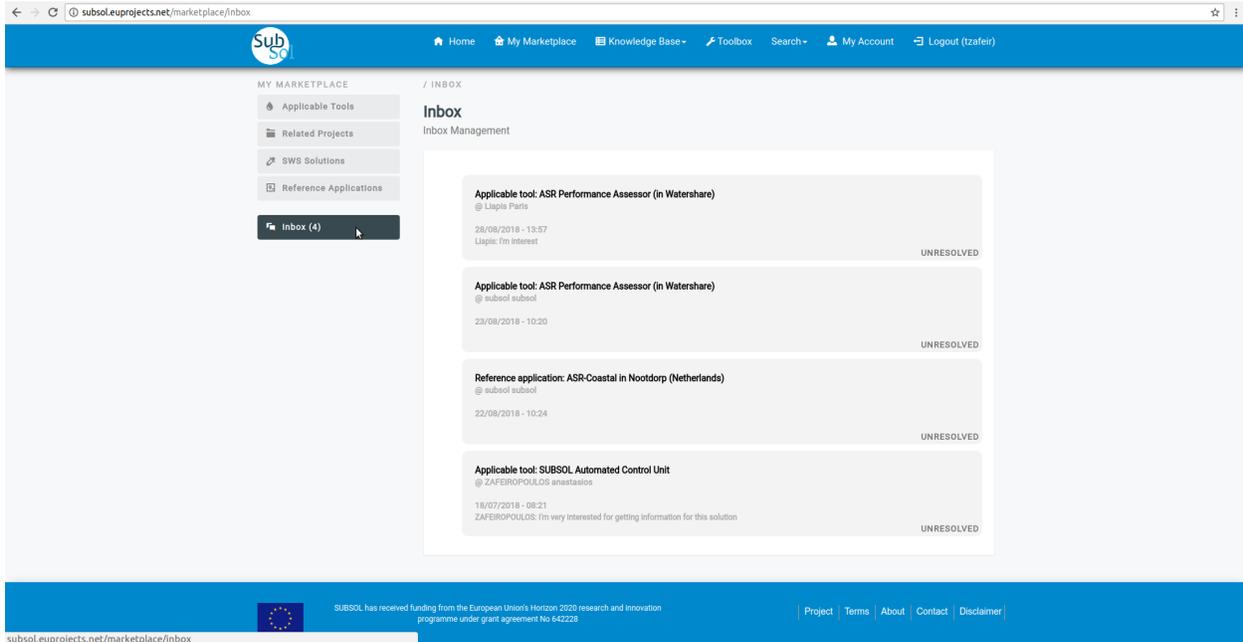
- Initially the user must login with manager account privileges.



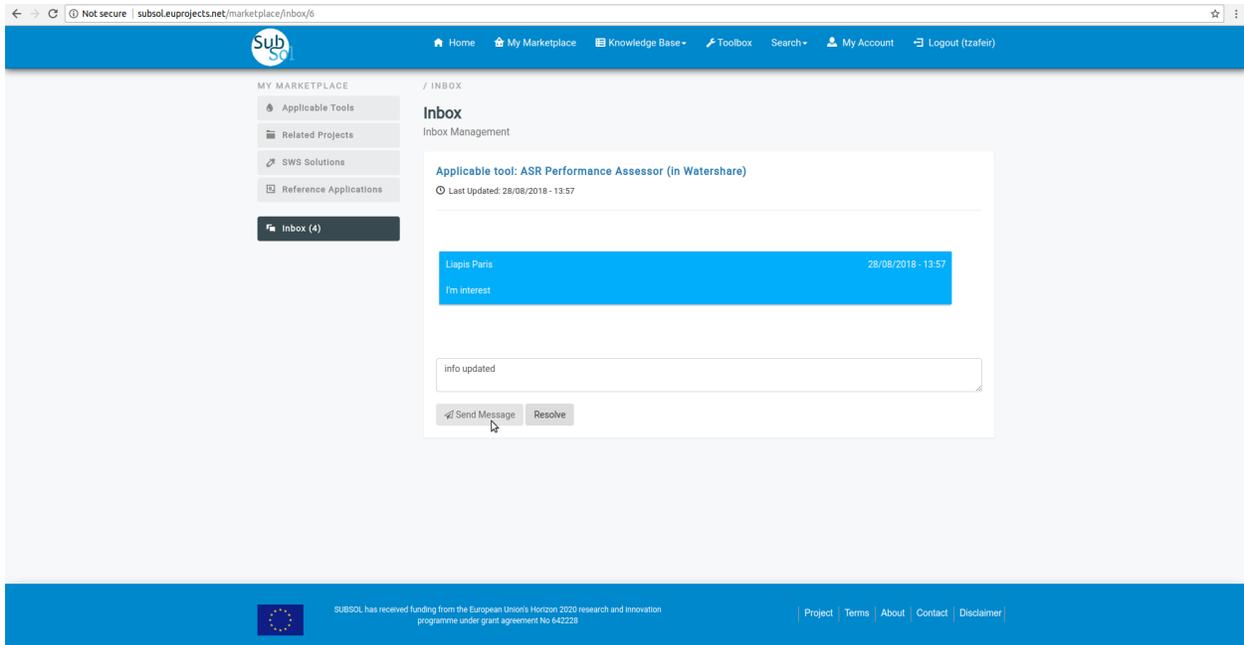
2. Inbox

2.1. Send Messages

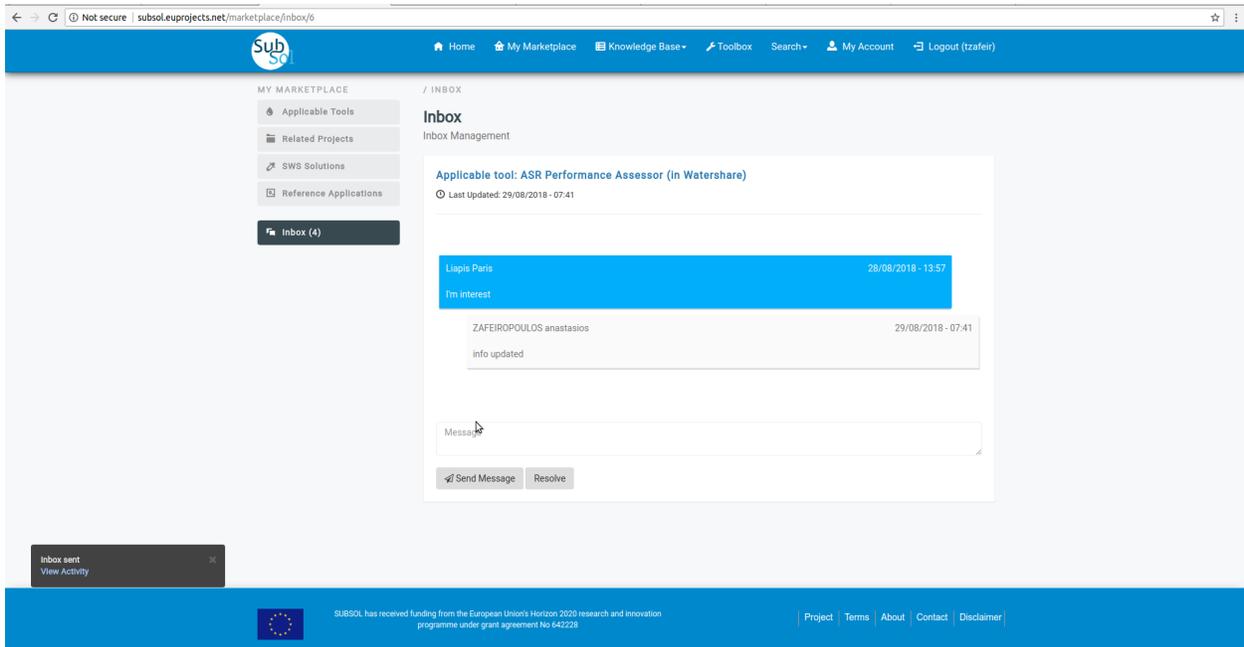
- Click on “inbox” menu-item.



- Write your answer and click on “Send Message” menu-item.

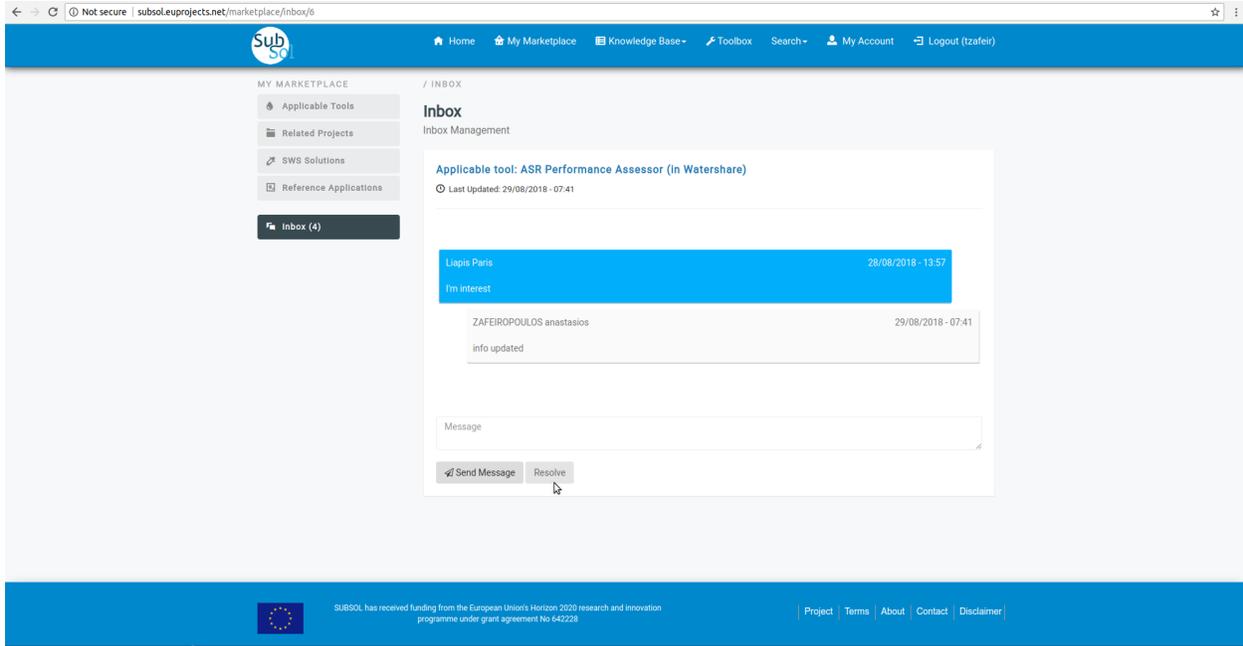


- A pop-up message confirms that you have successfully send your answer.

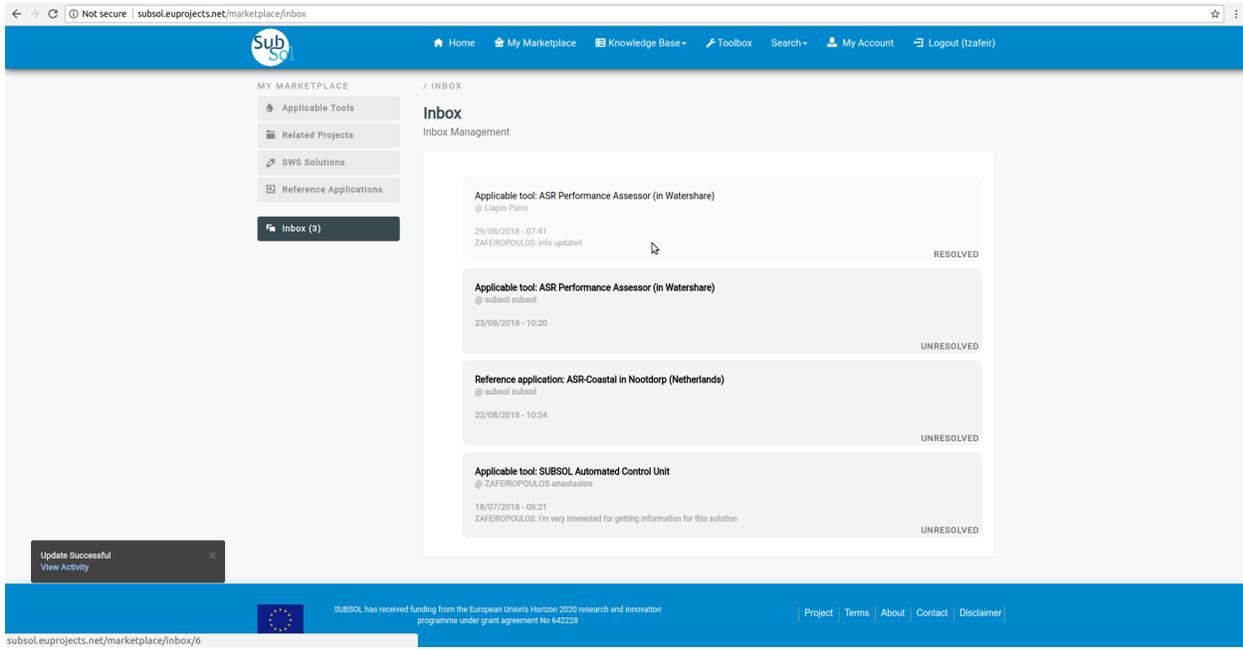


2.2. Resolve Issue

- Click on “Resolve” button.



- A pop-up message confirms that you have successfully update your chat status.



6.1 Data Monitoring System

6.2 SWS Screening Tool

CHAPTER 7

Indices and tables

- genindex
- modindex
- search