# EU Framework Program for Research and Innovation (WATER-4a-2014 - H2020)

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Applying European market leadership to river basin networks and spreading of innovation on water ICT models, tools and data.

**Deliverable D6.1**
***First virtual Market Place report***

Version 1.0

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# 1 Introduction

This report (D6.1 - First virtual Market Place report) describes the current state of the prototype of the virtual Market Place at month 13 of the project. A final version of the virtual Market Place report describing the prototype at the end of the project will be delivered in month 20 as deliverable D6.2. The corresponding implementation is delivered as D6.3 and extended and maintained in an open repository (see Section 3 for more details). The Market Place prototype serves as a demonstrator for the concepts and services defined in the other work packages and, as a supporting action, uses default functionality of Drupal, a common framework for online platforms, as much as possible.

The Market Place provides the following core functionalities:

- browsing by linked categories through products, organisations, service requests, and service offerings
- common panel for upcoming events
- collaborative creation and editing of products, organisations, service requests/offerings and events
- a common place for adding and browsing service requests and service offerings
- option to subscribe for new products, service offerings, or service requests
- simple keyword search and advanced search facilities
- option to provide user feedback in the form of comments
- forum for open discussions about products or other related information
- learning tutorials on usage of certain products
- use the matchmaking functionality
- contact an expert with special requests
- read about success stories of product application

Before the actual implementation of the prototype was started, the requirements identified in work package 3 have been translated into user stories (Task 6.1) ending in milestone number 6 (MS6 – Use case definition and open user story platform ends). Afterwards, the implementation of the prototype was started in an agile manner considering requirements and feedback from the other work packages.The prototype implementation itself consists of two phases:

**Phase 1** has started in month 7 and ended in month 13 with milestone number 9 (MS9 - Prototype of collaborative tool/company editor and tool search), where a first version of the prototype should be ready to be tested and the pilot cases start (MS13 – Pilot Cases Start).

**Phase 2** will continue until month 20 and includes three milestones: At month 17 the prototype should be up and running and should support user feedback (MS12 - Prototype supports user feedback) and in month 20 the prototype should be ready for community contributions (MS14 – Prototype integration completed). At the same time, the prototype conclusions should be shared and the prototype and API documentation should be public (MS 15 – Prototype and API documentation public).

This report describes the activities and prototypical Market Place implementation (Task 6.3) of the first phase, the second phase will be considered in the final report (D6.2). The structure of this report is as follows: Section 2 describes the user requirements and user stories that were identified for the portal prototype. Section 3 provides some information about the general implementation including a description of the data types and the technologies used and the development. Section 4 describes the functionalities provided by the Market Place prototype in the style of a user guide. Finally, Section 5 provides and outlines the future tasks for the next phase and potential extensions beyond the project.

# 2 Requirements and User Stories

This section describes the user requirements (Section 2.1), the user roles (Section 2.2), and the user stories (Section 2.3) for the platform that have been derived from the work of the other work packages. They have been developed in an iterative process, where the different partners were able to edit and comment on the requirements and user stories on the Twiki page, where they are still maintained and updated, if needed[1].

## 2.1 Requirements

The user requirements have been identified and summarized in the WaterInnEU Draft Guidance Report (D3.1). A list of specific requirements for the Market Place has been derived from this report and is shown in Table 1.

*Table 1: List of user requirements (RQ) for the WaterInnEU Market Place*

| ID | Description |
|---|---|
| RQ1 | Provision of "application-oriented" products: products that help in the daily work of River Basin Managers (RBMs) |
| RQ2 | Product Specification Sheet for support with product selection and application |
| RQ3 | Commenting function (+ lessons learned) |
| RQ4 | Sortable inventory of products |
| RQ5 | Presentation of Case Studies |
| RQ6 | Support of product applications (external references, metadata, training) |
| RQ7 | Events calendar; newsfeed |
| RQ8 | Keyword search |
| RQ9 | Interaction between users and with experts |
| RQ10 | Interfaces should be simple and focused |

The first requirement (RQ1) states that only application-oriented products should be provided in the portal; hence, information about purpose as well as success stories/best practices should be given. A Product Specification Sheet (PSS) has been developed iteratively with the collaboration of all partners in order to identify common fields that should be contained in product descriptions. A PSS describing key elements of tools is needed for supporting end users in the selection and application of tools (RQ2). This includes adding and collaborative editing of products (and projects/organisations linked to these products). The final version of the PSS from February 2016 is given in Annex A.

The third requirement (RQ3) states that users should be able to add comments to products and describe lessons learned. Furthermore, users should be able to browse through the products available and to sort them by different description fields from the PSS, e.g. by category of the product (RQ4). Case studies on successful application of products should be accessible (RQ5). The sixth requirement (RQ6) includes the accessibility to external references, additional metadata and training material for products.

In order to plan for certain events, matchmaking events should be announced (RQ7) and recent news should be displayed on the portal. Besides browsing and sorting products as described in (RQ4), users should also be able to search for products, organisations, events, service requests and service offerings (RQ8). In case a user is not able to find matching products or has specific questions for experts, she should be able to interact with others or with experts (RQ9). In general,

[1] The Twiki Page on user stories is available at http://twiki.waterinneu.org/twiki/bin/view/WaterInnEUIntranet/UserStories.

the interfaces should be simple and focused (RQ10). This means that overloading the portal with rarely used complex functionality should be avoided.

To sum up, most important from the user perspective is the access to practical products, to get more information on successful applications of the product, and the ability to discuss or provide feedback on products as well as to interact with other river basin managers and experts. The portal should be kept simple and focused.

## 2.2 User Roles

Four different roles of Market Place users have been identified in the project: End user, portal member, portal moderator, and portal admin. The *end user* can access all functionalities that do not require registration and login to the portal, e.g. exploring the content of the Market Place, searching for products or organisations or reading service requests or offers. A *portal member* is a registered user who has also access to restricted functionalities after registration and login to the portal. Basically, all end users could become members by registration to the portal. Functionalities for portal members are, for example, adding or editing products or commenting on products. The *portal moderator* is responsible for checking new entries and comments or any updates of them, either by doing it by herself or by delegating this task to other experts. The *portal admin* is responsible for maintaining the portal technically and updating the general content. He is also the one who is able to finally delete entries. Therefore, the moderator needs to delegate that task to the admin.

*Table 2: User roles of the Market Place*

| User Role | Supported Functionality |
|---|---|
| End user | Read, search, navigate |
| Portal member | Comment, Discuss, Add/Edit entries |
| Portal moderator | Check new or edited entries |
| Portal admin | Maintain portal installation, delete entries |

In general, the roles are defined as extensions starting from the end user up to the portal admin. This means that the admin has all functionalities of the other roles. The moderator has the functionalities of the end user and portal member meaning that he can also add and edit entries. Portal members can also use the functionality of end users.

## 2.3 User Stories

The description of user stories is structured by the different user roles defined in the previous section. Table 3 shows the user stories for end users. The core functionalities for end users are browsing and searching the Market Place, as well as contacting experts. In order to access the functionality that is offered to portal members, the end user has also the option to register and login to the portal.

*Table 3: User stories for end users*

| ID | Description | Corresp. Requirement(s) |
|---|---|---|
| US1 | User searches for entries by keywords | RQ2,RQ8 |
| US2 | User searches for entries per search mask (pre-defined categories) | RQ1,RQ2,RQ4,RQ8 |
| US3 | User registers or logins at portal. | RQ3, RQ7, RQ9 |
| US4 | "ask the expert": User uses contact form to ask experts | RQ9 |
| US5 | User browses the content of the portal (e.g. list of tools) | RQ1,RQ2,RQ4,RQ5,RQ6 |
| US6 | User searches information in the Virtual Market Place | RQ1,RQ2,RQ4,RQ5, |

| ID | Description | Corresp. Requirement(s) |
|---|---|---|
| | | RQ6,RQ8 |

Initially, it was intended that all end users could edit entries and comments without login. However, this may result in a large number of spam comments or entries. Furthermore, it does not allow for a history of entries where certain changes can be assigned to users who have edited a product description. It was hence decided to only offer this functionality to registered users, the portal members. The user stories for portal members are shown in Table 4. A member is able to add or edit entries, e.g. product or organisation descriptions. Before or after editing, she may also check former edits in the history. A portal member can also add comments on certain entries. To start topic discussions, portal members can open a new thread in the forum, or post in an existing thread to contribute to a discussion.

*Table 4: User stories for portal member*

| ID | Description | Corresp. Requirement(s) |
|---|---|---|
| US7 | Registered user adds entry | RQ2, RQ9 |
| US8 | Registered user edits entry. | RQ2, RQ9 |
| US9 | Registered user comments on entry. | RQ3, RQ9 |
| US10 | Registered user writes an item in the forum. | RQ9 |
| US11 | Registered user starts new discussion (thread) in the forum | RQ9 |
| US12 | Registered user subscribes for new entries. | RQ7 |
| US13 | Registered user checks revision of collaboratively edited entry. | RQ9 |

The portal moderator is responsible for checking new or updated entries (see Table 5). Although it is recognized that the work of the moderator requires additional resources, it was considered to be important in order to check the correctness of new entries or updates and to avoid misuse, e.g. deleting an entry of a similar product or service or updating it with incorrect information. Also, the moderator is able to make sure that only products of interest for river basin managers are described in the portal. In general, the role of moderator should be taken by domain experts in the field of river basin management who are able to decide on correctness of products and the potential interest for river basin managers.

*Table 5: User stories for portal moderator*

| ID | Description | Corresp. Requirement(s) |
|---|---|---|
| US14 | Moderator checks and releases comment. | RQ1, RQ3 |
| US15 | Moderator checks and releases new entries. | RQ1, RQ2, RQ9 |
| US16 | Moderator checks and releases updates of entries. | RQ1, RQ2, RQ9 |
| US17 | Moderator deletes entries. | RQ1, RQ9 |

As can be seen by Table 6, the portal admin is responsible for maintaining the portal technically. This includes updating basic technology of the portal is using or changing the structure of a certain item, if required. Entries can only be deleted by the administrator. This avoids deleting entries accidentally or misusing deletion functionality. The admin is also able to make sure that the entries are also removed from the underlying database.

*Table 6: User stories for portal admin*

| ID | Description | Corresp. Requirement(s) |
|---|---|---|
| US18 | Admin maintains portal technically. | All |

# 3 Implementation

Before describing the current functionality in Section 4, we provide some details on the technical implementation in this section. The source code of the portal is delivered in D6.3 – Virtual Market Place Implementation, which also includes an installation description.

This section starts with the specification of the core data types for the different entries like product or organisation (Section 3.1), followed by a general overview on the implementation and technologies used (Section 3.2). Finally, the implementation process is described briefly (Section 3.3).

## 3.1 Data Types for Market Place Entries

Entries in the portal are specific data items that follow a pre-defined structure and are searchable in a structured way. Thus, data types need to be defined for these entries. As a result from the requirements and discussion of user stories, five different types of entries have been identified in the project[2]: Product, Organisation, Project, Service Request, Service Offering, and Event.

The most important entries of the portal are products that are outcomes of EU-funded research projects in the water domain. The data type for products has been defined in the PSS. Several fields of interest are defined in the PSS, including, for example, general title, description, related organisations, support of standards, etc. For the reason of limited space, the detailed specification is provided in Annex A.

As the products have been specified or are developed further by certain projects, some basic information about the projects needs to be provided as well. Originally, the complete project metadata gathered in the inventory of work package 2 has been imported in an early version of the prototype. However, after reviewing the data and its usability in the prototype, it was considered that the focus should rather be on the products as results of the projects than on the projects itself. Hence, only basic information is provided about the project, as described in Table 7.

*Table 7: Data type for project*

| Field Name | Data Type | Cardinality | Description |
|---|---|---|---|
| Title | String | 1 | Title of the project |
| Logo | Image format like png, jpeg, etc. | 0..1 | Logo of the project |
| Description | Text | 1 | Description of the project |
| Website | URL | 1 | Website of the project |
| End Date | Date | 1 | The date when the project has ended or will end |

A product can be related to zero or more projects and one project can be related to one or more products. Furthermore, a product can have links to one or more organisations, who may also offer services in the Market Place. Hence, organisations are another data type that has been specified, shown in Table 8. All organisations from the inventory of work package 2 have already been imported in the Market Place prototype.

[2] The data types have also been defined and discussed in the WaterInnEU Twiki in a collaborative manner at http://twiki.waterinneu.org/twiki/bin/view/WaterInnEUIntranet/DataSpecifications.

*Table 8: Data type for organisations*

| Field Name | Data Type | Cardinality | Description |
|---|---|---|---|
| Title | String | 1 | Title of the organisation |
| Logo | Image format like png, jpeg, etc. | 0..1 | Logo of the organisation |
| Description | Text | 0..1 | Textual description of the organization |
| Website | URL | 1..n | Website(s) of the organisation |
| Country | Term from pre-defined vocabulary | 1 | Country where the organization is located |
| Keywords | String | 0..n | Keywords associated with the organisation |
| Project | Project entry reference | 0..n | Link to one or more projects in the Market Place |
| Class | Term from pre-defined vocabulary | 1 | Class to which the organization belongs, e.g. consultancy |
| Service Offerings | Service offering entry | 0..n | Link to one or more service offerings the organisation offers |

As mentioned above, the portal also allows registering specific service request or offerings for specific products. Hence, the service requests and offerings also needed to be specified for the portal prototype and are shown in Table 9 and Table 10.

*Table 9: Data Type for service request*

| Field Name | Data Type | Cardinality | Description |
|---|---|---|---|
| Title | String | 1 | Title of the service request |
| Product | Product entry reference | 0..n | Link to one or more products for which a service is requested |
| Category | Term from pre-defined vocabulary | 1 | Category of the service |
| Description | Text | 1 | Textual description of the service request |

*Table 10: Data type for service offering*

| Field Name | Data Type | Cardinality | Description |
|---|---|---|---|
| Title | String | 1 | Title of the service offering |
| Product | Product entry reference | 0..n | Link to one or more products for which a service is offered |
| Category | Term from pre-defined vocabulary | 1 | Category of the service |
| Description | Text | 1 | Textual description of the service offering |
| Organisation | Organisation entry reference | 1 | Link to one organisation that is offering the service |

Finally, as the portal allows portal members to post new events or edit event description, an additional datatype has been specified for events (Table 11).

*Table 11: Data type for event*

| Field Name | Data Type | Cardinality | Description |
|---|---|---|---|
| Title | String | 1 | Title of the event |
| Language | Term from pre-defined vocabulary | 1 | Language of the event |
| Description | Text | 1 | Description of the event |
| Website | URL | 1 | Website of the event |
| Start date | Date | 1 | Country where the organization is located |
| End date | Date | 0..n | Keywords associated with the organisation |
| Venue | String | 1 | Name of venue where the event takes place |
| Country | Term from pre-defined vocabulary | 1 | Country, where the event takes place. |

## 3.2 General Implementation Overview

In order to re-use existing functionality as much as possible in the portal prototype implementation, we have been reviewing several content management systems (CMS) and frameworks for building Web applications. The decision was to use Drupal[3] as a basis for the Market Place implementation for the following reasons:

- Drupal is implemented as Open Source with General Public License version 2 or higher (GPL-2).
- Drupal is one of the most widely used CMS and a variety of tutorials and documentation exists.
- The modular structure of Drupal allows for a flexible re-use and composition of existing functionality and also allows implementing extensions as new modules.
- Drupal technology is widely used and this option facilitates the integration and reusability to other solutions in similar environments. Hence, some of the concepts developed in this project may be easily integrated into existing portals, such as EIP-water portal.

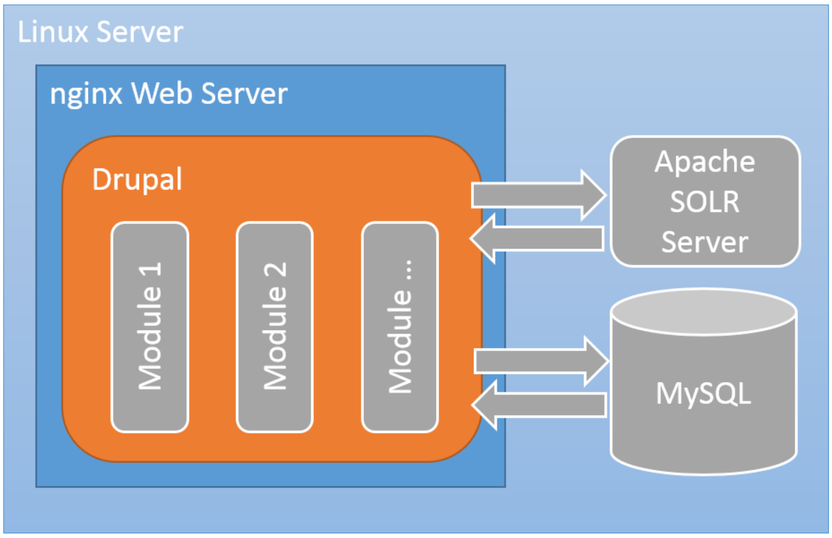


*Figure 1: Overview on the technical architecture of the Market Place*

[3] General information about Drupal can be found at: https://www.drupal.org/

The environment for deploying the WaterInnEU Market Place prototype is shown in Figure 1. The Market Place is using a MySQL database[4] version 5.5.47 for storing the information of the portal and is therefore re-using Drupal's default support for MySQL. For executing Drupal code, PHP 5.6.17 is used. The portal uses apache Solr 5.4.1[5] for indexing and searching.

In the development of the Market Place, several default modules of Drupal have been used. In the following only the most important modules are listed. The current set-up uses around 200 modules at all. Hence, the full list of used modules is provided in the WaterInnEU wiki topic for this report.[6]

- *52North Theme for WIEU*:
  The implementation of an own theme is improved by using the Drupal theme inheritance concept. An existing base theme is installed, and only the adjustments need to be implemented. These adjustments include styling of some elements and change of the colours. In addition, the landing page and advanced search are implemented as template suggestions. Template suggestions are template files that provide different templating instructions for specific parts of the page.
- *Chaos Tools:*
  This module provides Application Programming Interfaces (APIs) and tools for better developing with Drupal. One example is the definition of contexts. A context can be triggered by a logged-in user visiting a specified page and result in additional information being displayed, or just CSS adjustments. More information about the sub-modules and features of the Chaos Tools module can be found on its homepage[7].
- *Views:*
  The views module provides the user/developer of Drupal means for displaying the content in lists, galleries or other displays[8]. The prototypes used views for the content inventory displays of several entries and providing the advanced search feature.
- *Revisioning incl. Diff:*
  The revisioning module provides the functionality for handling revisions of each content entry[9]. This is required for fulfilling the collaborative content management approach in a manageable manner.
- *Harmony*:
  The harmony module package provides means for a forum. In addition to the Drupal default forum feature, it provides better handling and structuring of forum threads and posts.
- *reCAPTCHA*:
  The reCAPTCHA module provides means for spam protection.
- *Search API incl. Solr Search*:
  The Search API module in combination with the Solr Search module provides the means for the keyword and advanced search. By using Apache Solr the search feature is able to handle growing amounts of data in a scalable and manageable way. The module provides means for index and search server management (creation, definition, handling). Various plugins for different solutions are available: Apache Solr, elasticsearch, and database driven for example.
- *Panels:*
  The panels module is used for the landing page layout and advanced search page. It provides means for creating various layouts and override system layouts.
- *Strongarm*
  The Strongarm provides means to override the Drupal default settings, e.g. the landing page of the prototype.

[4] More information about MySQL can be found at: http://dev.mysql.com/
[5] More information about Apache Solr can be found at: http://lucene.apache.org/solr/
[6] http://twiki.waterinneu.org/twiki/bin/view/WaterInnEUIntranet/D6_1
[7] https://www.drupal.org/project/ctools
[8] More information about the View module can be found at: https://www.drupal.org/project/views
[9] More information about the Revisioning module can be found at: https://www.drupal.org/project/revisioning

- *Legal*
  The Legal module provides means for managing Terms & Conditions (T&C) in a documented way. It allows to enforce users to accept T&C before registration and log-in. In addition, versioning of T&C is possible including the documentation of the acceptance by the user. This includes that users having accepted the old version are forced to accept the new T&C version.
- *EU Cookie Compliance*
  This module provides means dealing with the EU Directive on Privacy and Electronic Communications.
- Features
  The Features module allows collecting configurations of different parts of a Drupal installation and migrate these to another instance. The configuration is moved to code and allows the monitoring of changes as the code version is compared to the live in database version.

Drupal is deployed in an nginx Server[10] version 1.6 which is run on a Linux Server running Debian GNU/Linux 8.2 "Jessie".

## 3.3 Implementation Process

The implementation is done in an agile manner. Thus, an early version of the prototype was already released in autumn 2015 (06/10/2015), shown in Figure 2 and used as a basis for discussing and refining the requirements and users stories maintained in the Twiki.

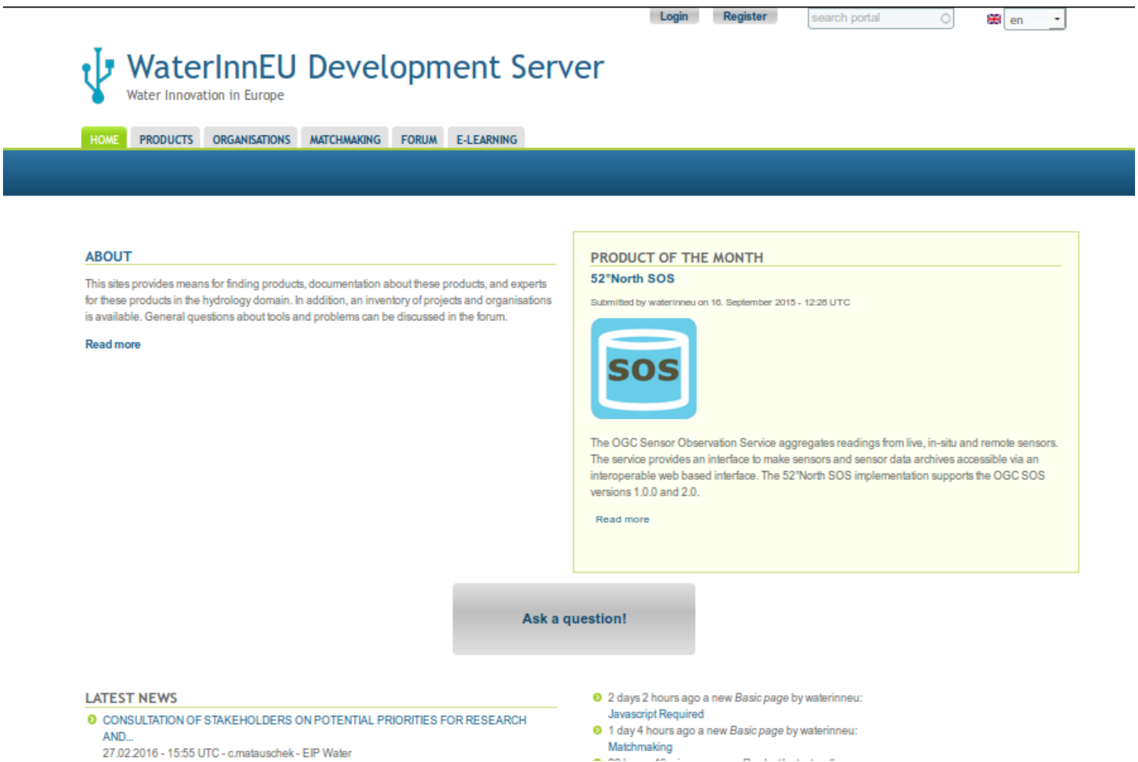

*Figure 2: Early prototype of the Market Place released in autumn 2015.*

Subsequently, several updates of the Market Place have been released and discussed. Final decisions on the design and functionalities of the Market Place were made in the WaterInnEU

[10] More information on the nginx server can be found at: http://nginx.org/

consortium meeting in Berlin (26 & 27/01/2016). Afterwards, the Market Place was re-designed and updated to the current version described in this deliverable. In order to gather a first amount of descriptions about products of interest in the portal, partners from work packages 3, 4 and 8 have circulated the PSS and are synthesizing product descriptions in the portal.

The source code of the prototype is managed in a Git repository[11] and a snapshot of this repository is delivered as D6.3 – Market Place Platform. The requirements and user stories are maintained in the Twiki (see Section 2). The Market Place will be made accessible to the public, if the matchmaking functionalities are implemented completely (User stories 1-18 as described in Section 2.3) and the prototype should be ready for community contributions in month 20 (MS14 – prototype integration completed). However, access to stakeholders from case studies will be given beforehand, in order to gather user feedback and incorporate the feedback for the final version of the Market Place, since the pilot cases start with month 13 (MS10 – Pilot cases start).

In the upcoming months, the implementation of the prototype will be continued and functionalities that have not yet been implemented completely will be finalized then (see Section 5 for an overview on the future tasks).

[11] The Git repository is accessible at: https://github.com/52North/waterinneu

# 4 Virtual Market Place Prototype

This section describes the functionality of the Market Place prototype in the style of a user guide with some additional background information about the functionality and its current implementation status. It starts with a general overview on the Market Place landing page (Section 4.1) and then describes the different functionalities, i.e. search, browsing, registration/login, collaborative content creation, forum, alerts and events in more detail (Sections 4.2 - 4.6).

## 4.1 Entering the Market Place

An overview on the landing page is given in Figure 3. The landing page provides basic information about the Market Place. Under the title and subtitle of the portal the horizontal navigation bar allows navigating to the subpages for *Products*, *Organisations*, *Matchmaking*, *Forum*, *E-Learning* and *Success Stories*[12]. In the upper right, a certain language can be chosen (English by default)[13]. Furthermore, a simple search form is also provided in the upper right. The search options are described in more detail in Section 0. The blue-white arrow down in the upper right corner hides the functionality for registration and login, as described in 4.4.

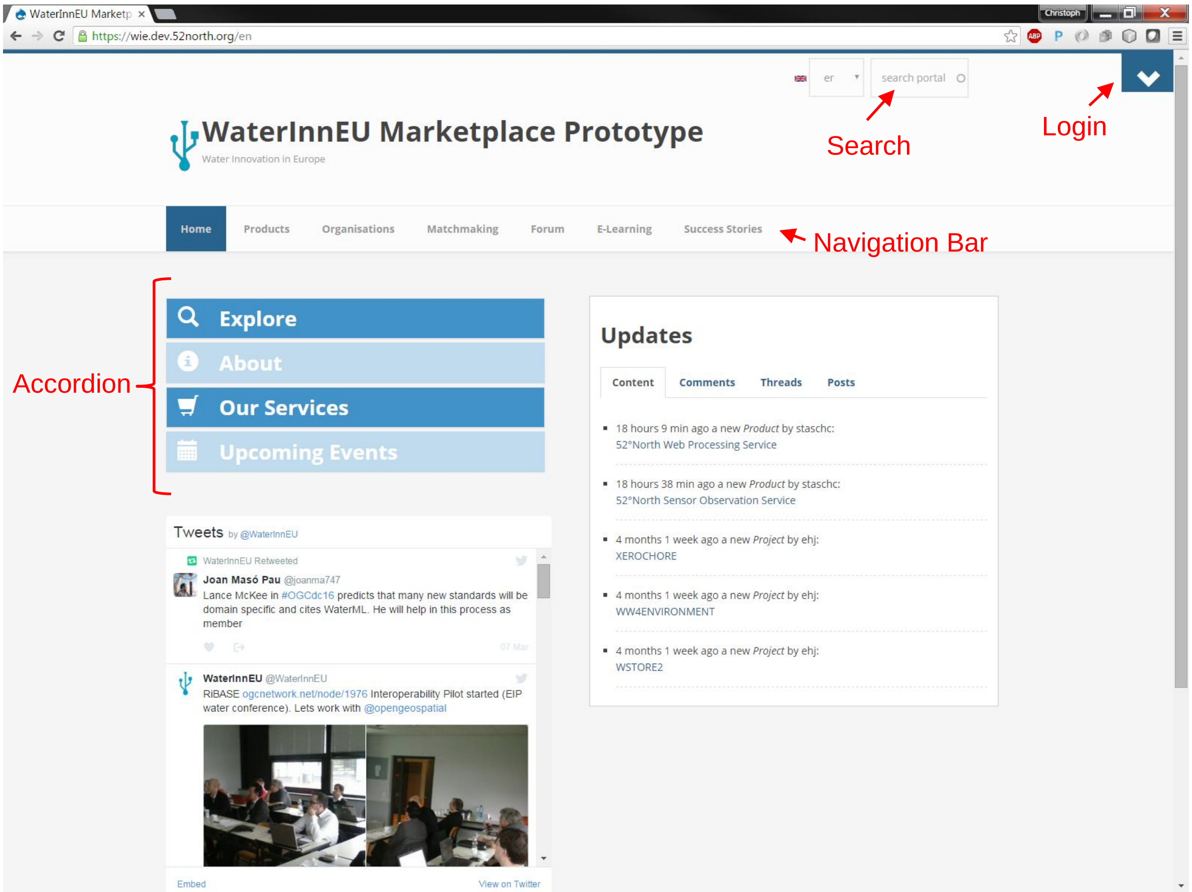


*Figure 3: Landing page of the WaterInnEU Market Place prototype*

The accordion on the left side provides basic information about the portal. It consists of four sections: *Explore* provides shortcuts to the core functionalities of the portal as shown in Figure 4. Once activated, the other accordion sections are presented in a similar way: *About* is providing general information about the Market Place, *Our Services* describes the services offered by the

[12] **Note:** Since the implementation of the E-Learning platform starts in Month 13 and success stories will be described from the case studies and/or the interoperability experiment, these subpages are currently left blank.

[13] **Note:** In the current implementation, only English language is supported. However, the portal implementation supports Internationalization and at a later stage, further languages may be added, depending on resources available.

Market Place and the WaterInnEU consortium, and *Upcoming Events* lists events in the near future.

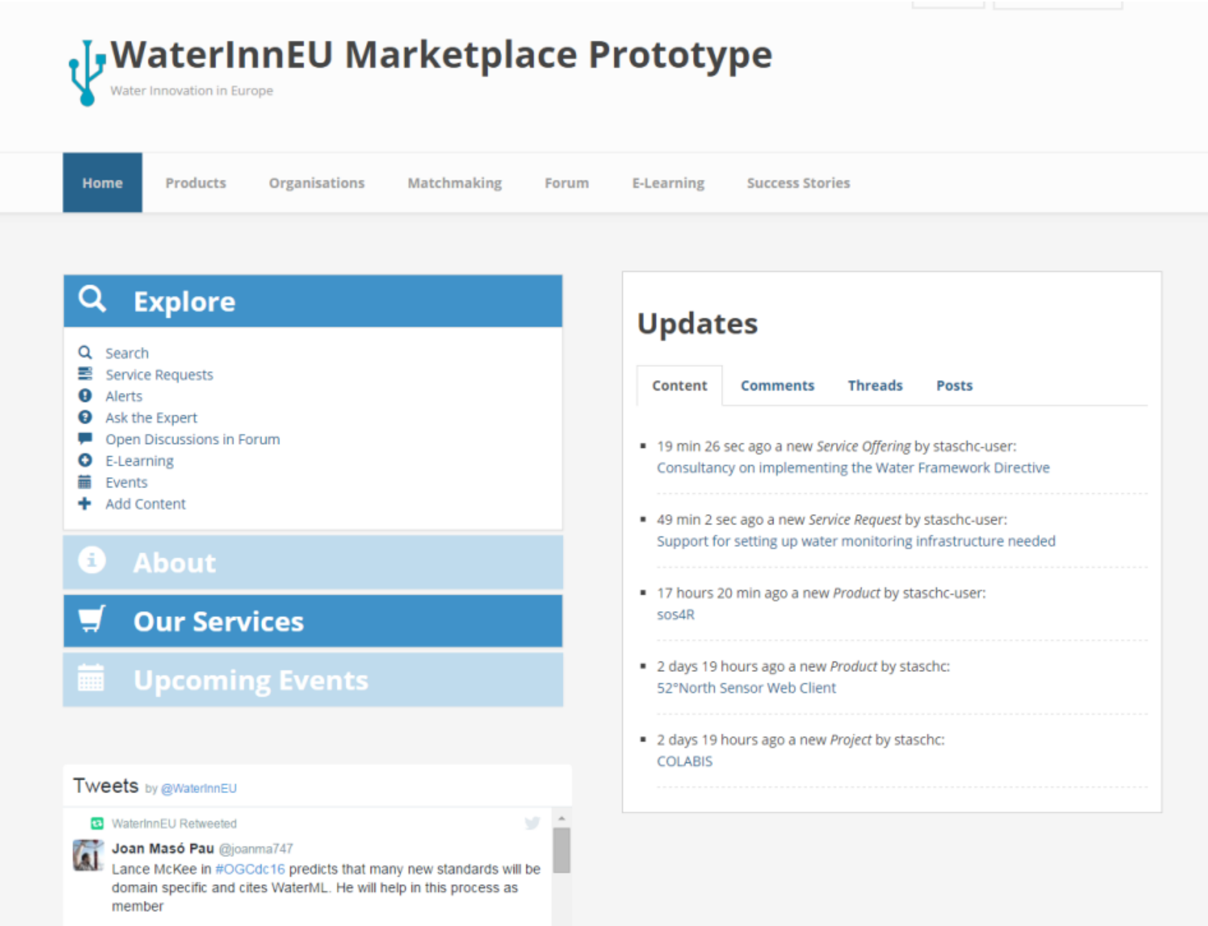


*Figure 4: Screenshot of landing page with opened Explore section in accordion.*

On the lower left, latest news from the WaterInnEU Twitter account are shown. On the right side, latest updates are shown, structured by entries, comments or forum threads/posts.

## 4.2 Browsing the Market Place

This subsection illustrates how to navigate through the content of the site and describes the different subpages in more detail.

### 4.2.1 Browsing Products

The *Products* subpage shows an overview on the products available (Figure 5). The drop-down boxes at the top of the listing allow to sort and filter the products using pre-defined categories from the Product Specification Sheet, e.g. by product category. The blue-white arrow up in the right lower corner allows scrolling up to the top of the page again.

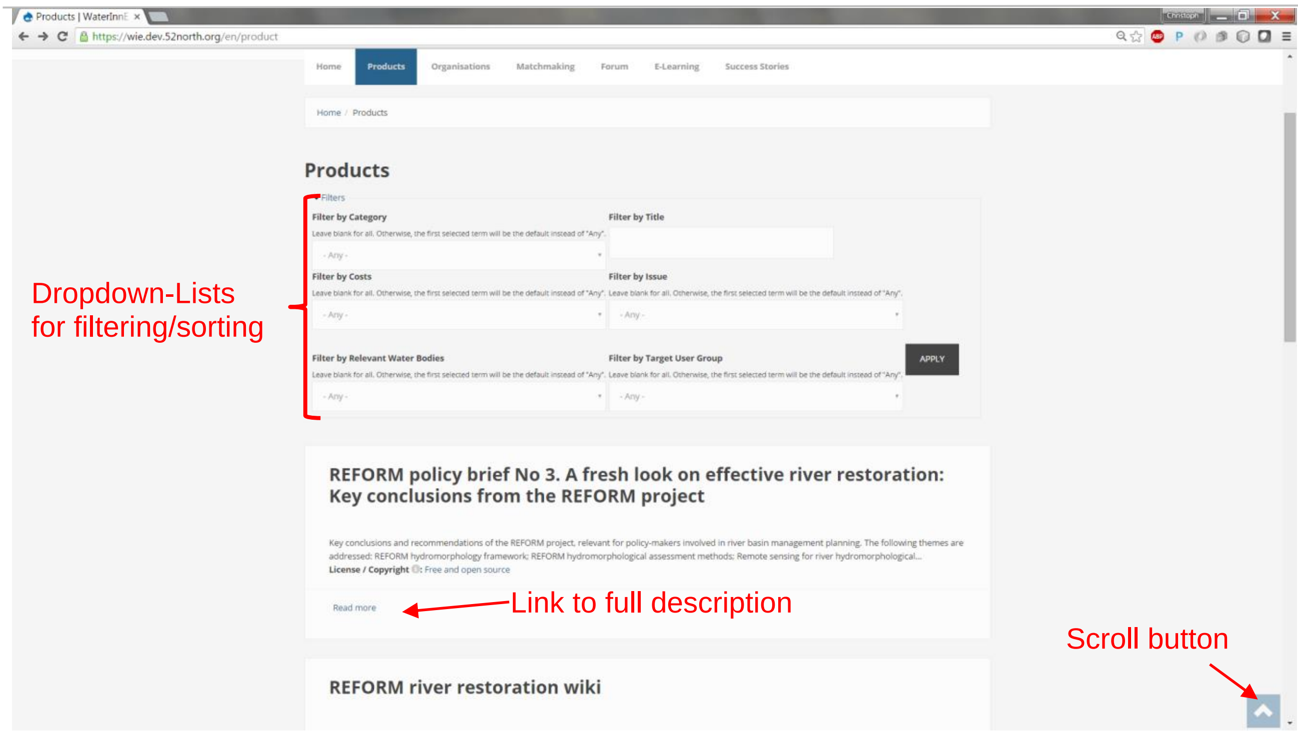


*Figure 5: Products panel of the Market Place*

The product overview only shows so called teasers (brief descriptions) of the products. The full information about a product can be assessed, if the *Read more* link in a product description is clicked. A screenshot of a full product description is given in Figure 6. The fields of the full description are defined in the product specification sheet (see Annex A). Next to each field is an information icon, which provides the description of the field if the icon is clicked.

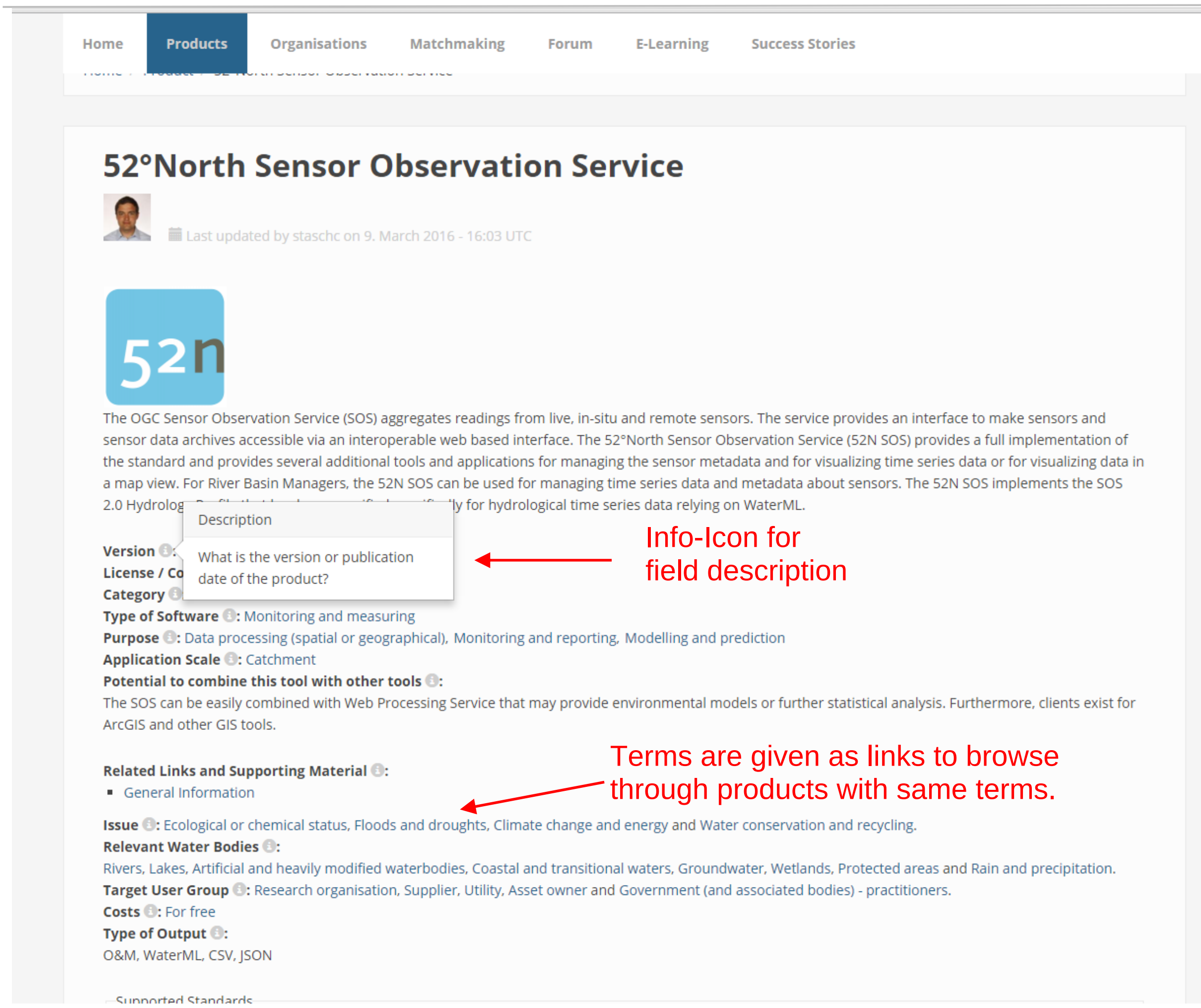


*Figure 6: Detailed product view*

Pre-defined terms are shown in blue and appear as links. Once the user has clicked on such a term-link, a new page opens that lists all other products linked to this term. Figure 7 shows such a listing after clicking on the term *Data processing (spatial or geographical)* in a detailed product description. The fieldname and term is given in the bar on the top of the listing. The linkage of terms allows the users to flexibly browse through products and linked organisations.

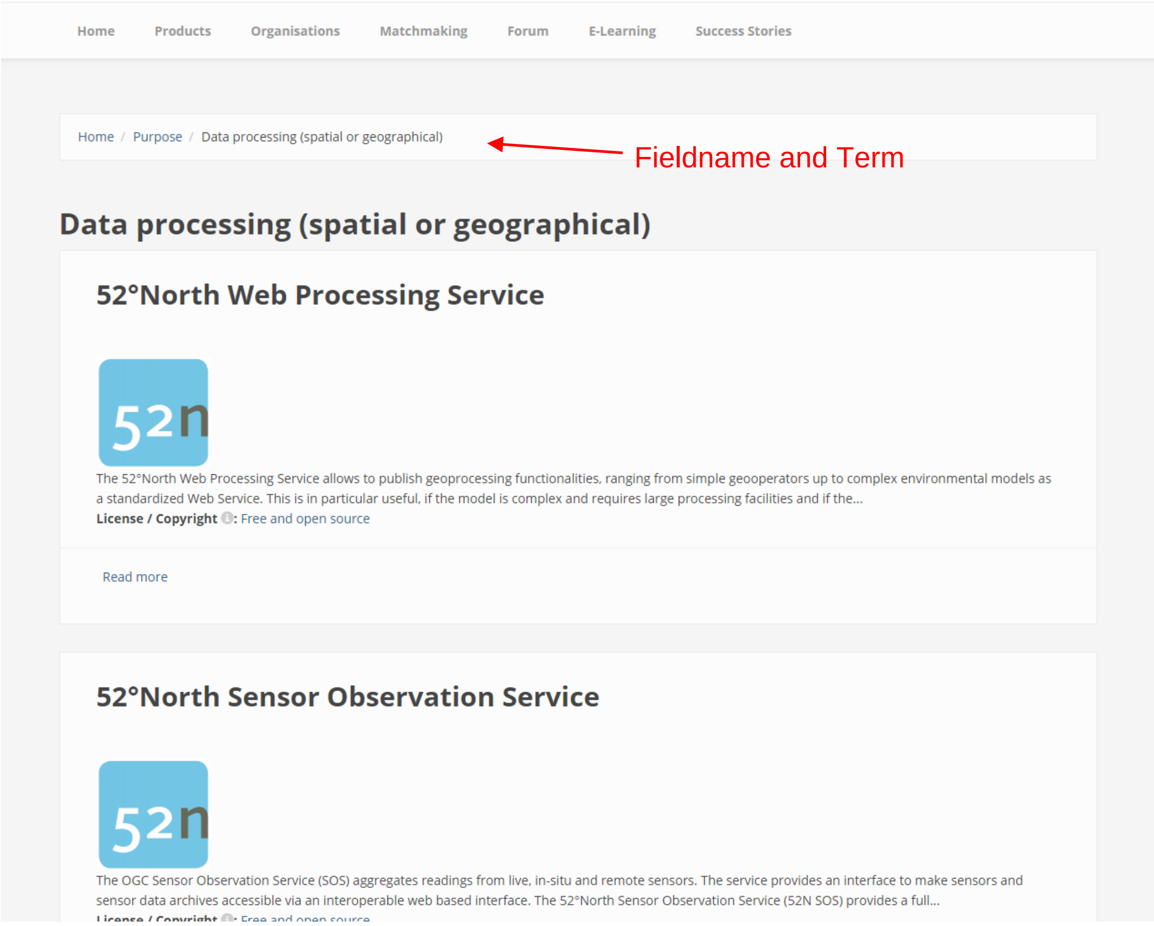

*Figure 7: Listing of all products with specific purpose*

Supported standards and the Technology-Readiness-Level are given in a similar manner and can be browsed as well (see Figure 8). For example, when clicking on the *OGC Sensor Observation Service 2.0.0* standard from a particular product description, all products supporting these standard are listed afterwards.

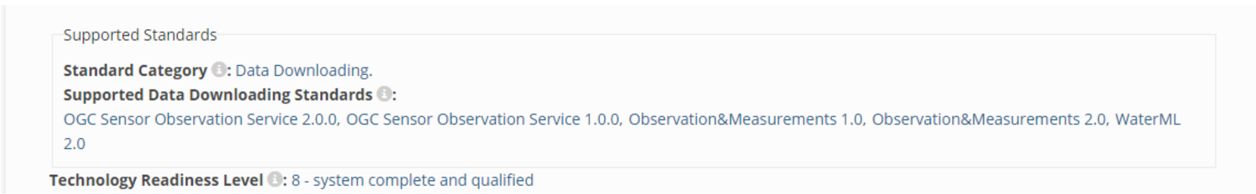

*Figure 8: Supported standards and TRL in product description*

Furthermore, as expressed in the requirements and user stories (compare Section 2), external material, trainings, success stories, applications, etc. should be linked within the corresponding product specification. Therefore, links with specific names can be provided in the product description, as shown in Figure 9 where a link to general information and a download link are provided for the product.

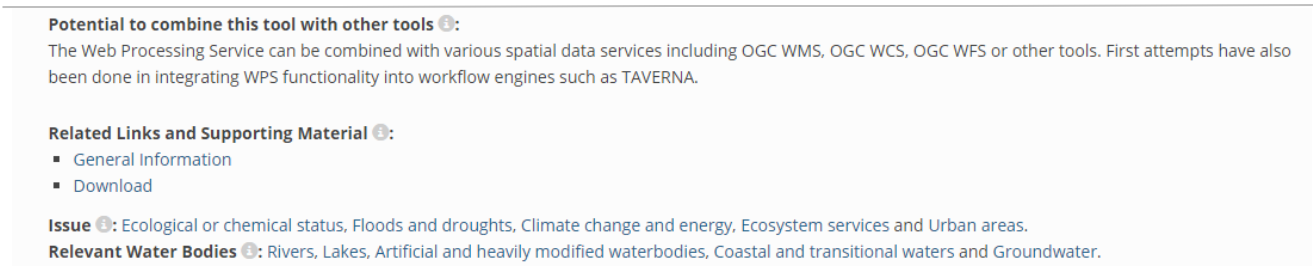


*Figure 9: Related links and supporting material in product description*

## 4.2.2 Browsing Organisations

Similarly to products, the *Organisations* panel provides an overview on the organisations that are registered in the Market Place (see Figure 10). Filtering and sorting is also supported by pre-defined categories. In the organisation teasers, only title, logo, class and description are visible. As can be seen in the screenshot below, description and logo of the company are optional and hence may not be displayed in the teaser or the detailed view.

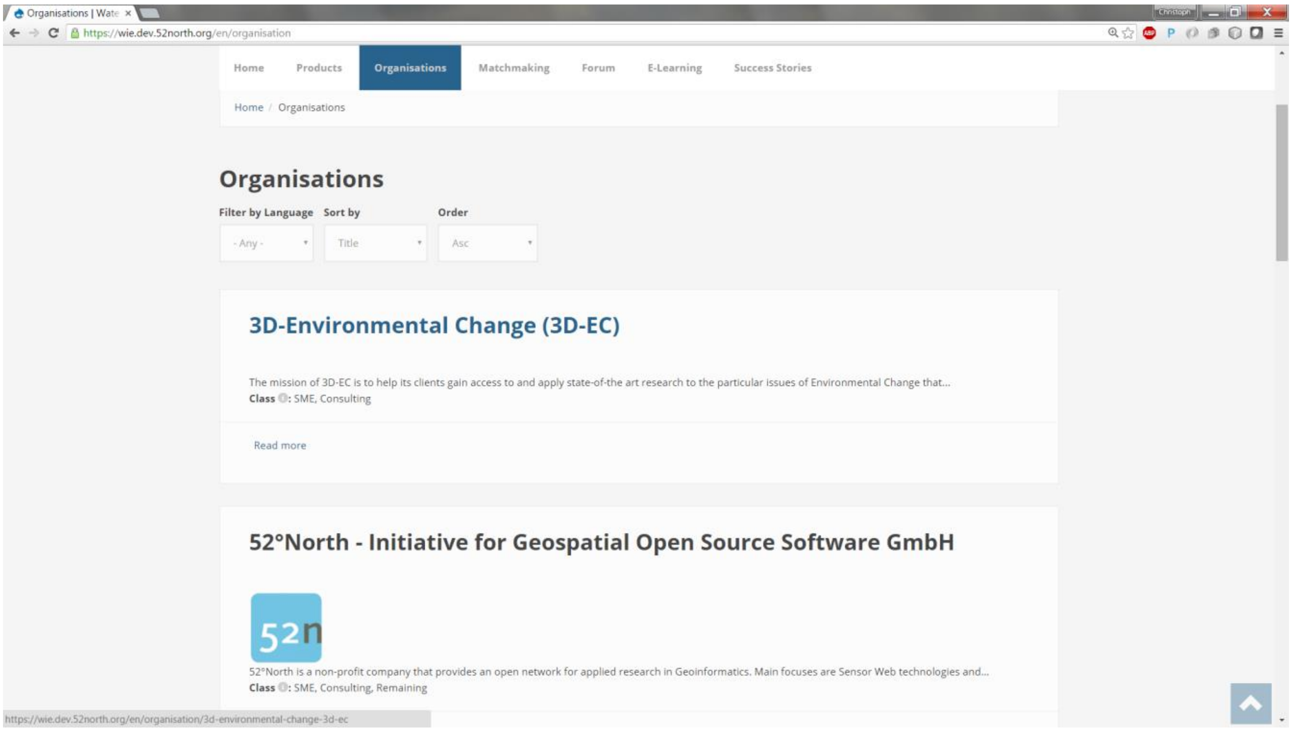


*Figure 10: Organisations page of the Market Place*

If following the *Read More* link, the full information about the organisations is shown including links to products and/or service offerings from the organisation (Figure 11). Again, similar to the product descriptions, there are links provided for pre-defined terms or other entries that can be used to browse, for example from a company to its products and vice versa.

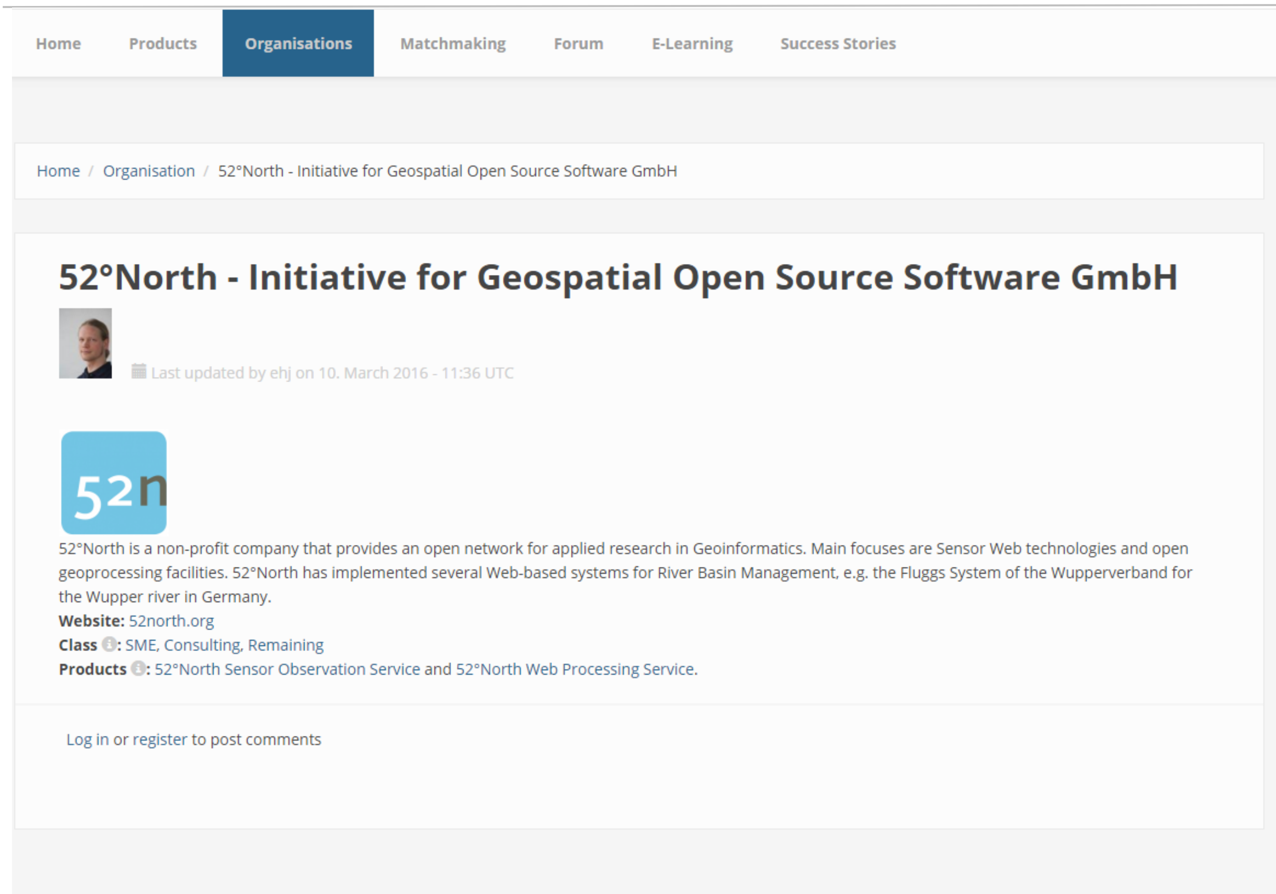


*Figure 11: Detailed view of an organisation description.*

### 4.2.3 Matchmaking Page

Enabling matchmaking between potential users and service providers as well as promoting the usage and uptake of products from research projects is one of the core aims of the WaterInnEU project.

In general, all functionalities offered by the Market Place support the matchmaking process. For example, browsing products may lead a river basin manager to a product he is looking for. However, after discussing how to explicitly help users in doing the matchmaking and emphasize the different options for matchmaking facilities in the portal, the consortium decided to provide a dedicated *Matchmaking* subpage that aggregates the different matchmaking options in the Market Place.

A screenshot of the Matchmaking page is shown in Figure 12. The page is structured using an accordion that lists the different matchmaking functionalities. These are as follows:

- *Search*: Search on the different entries, i.e. products, organisations, service requests, service offerings, and matchmaking events (Section 0).
- *Service* Requests and Offerings: Users can browse or add new service requests; organisations can provide service offerings (described in detail in Section 4.6).
- *Alerts*: Users can subscribe for new entries and are notified per mail, if a new entry matching their subscription has been added (described in detail in Section 4.9).
- *Ask the expert*: If none of the functionalities offered in the portal facilitate matchmaking, the users can ask the expert panel for support (described in detail in Section 4.10).

- *Open discussions in Forum*: The forum may be used to discuss potential matchmaking options (described in detail in Section 4.7).
- *Events*: If matchmaking events are considered as an option, they can be explored here (described in detail in Section 4.8).

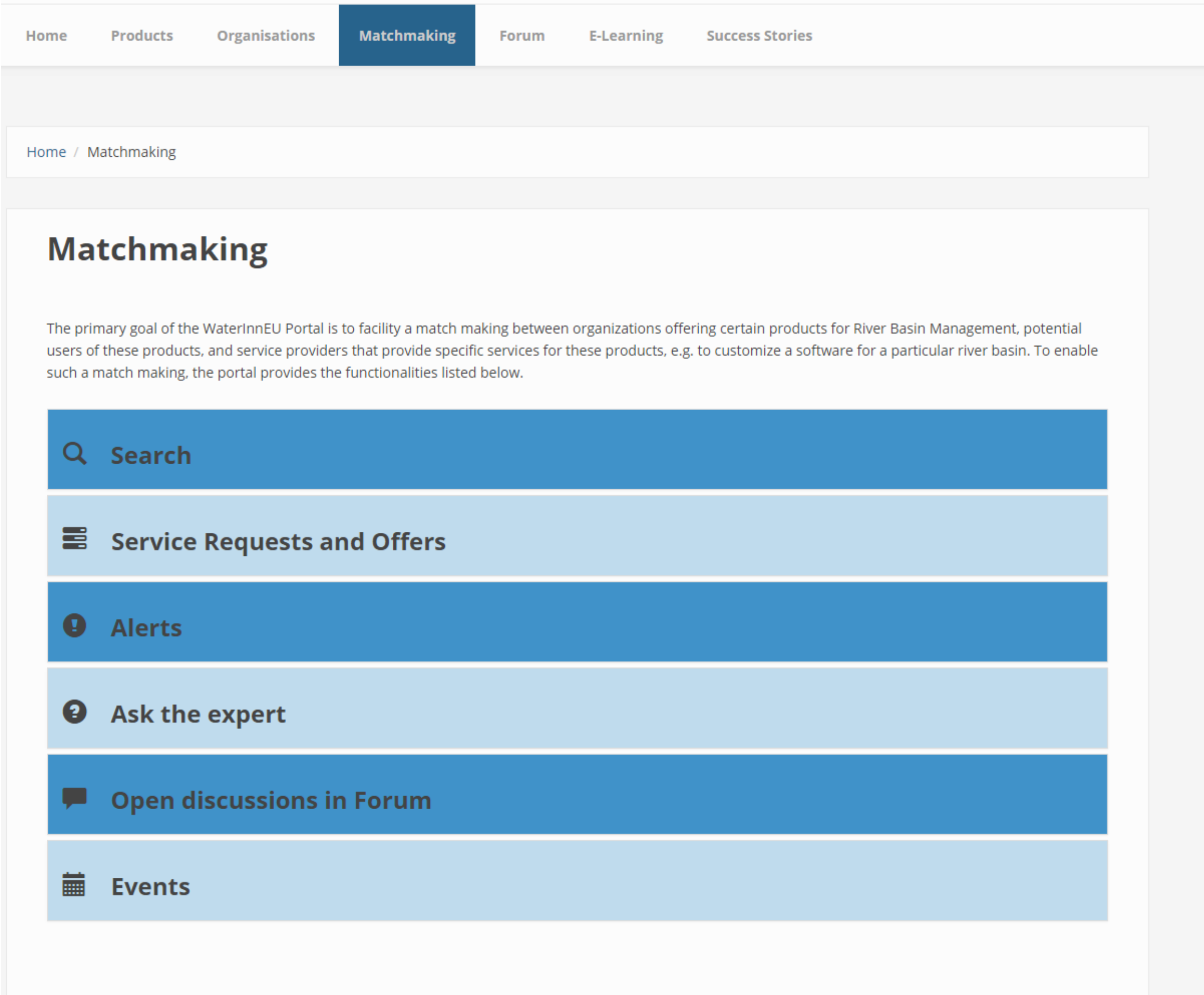


*Figure 12: Basic Matchmaking subpage*

Similar to the accordion in the landing page (see Section 4.1), clicking on a certain functionality activates the corresponding panel. For example, clicking on Alerts activates the Alerts panel as shown in Figure 13.

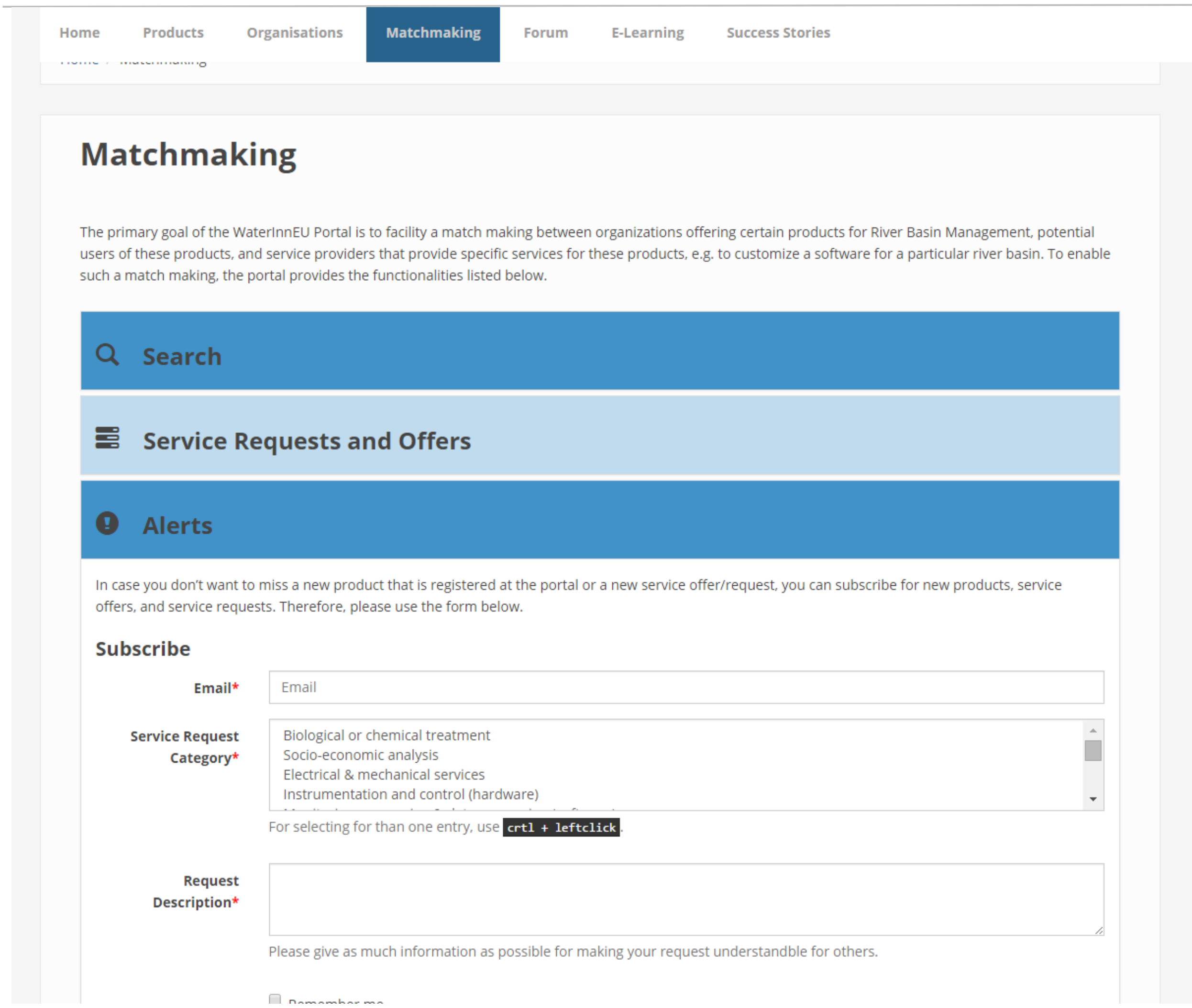


*Figure 13: Matchmaking site with activated panel for Alerts*

### 4.2.4 Success Stories

The success stories are left blank for now, as these will be filled in at a later stage of the project and will thus be described in the final version of the report (D6.4).

### 4.2.5 E-Learning

The implementation of the E-Learning tools will be done in the second year of the project. Thus, this page is left blank and a description will be available in the final Market Place report (D6.4).

## 4.3 Searching the Market Place

The main entry point for doing a search is on the upper right of the portal and from the *Search* section in the *Matchmaking* subpage. The default search form is shown in Figure 14. The drop-down menu allows restricting the search to certain entry types, e.g. on Products.

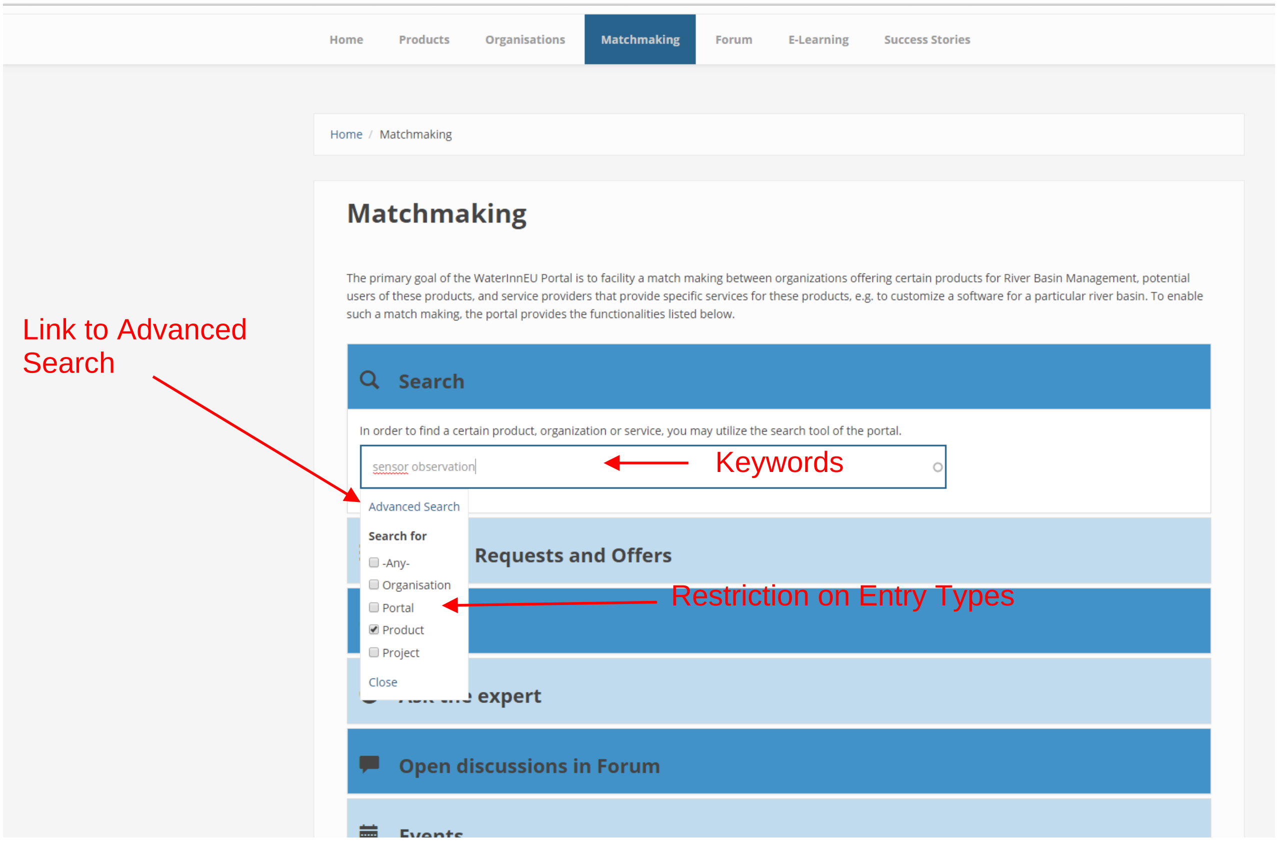


*Figure 14: Basic search mask.*

The search is started once keywords have been typed in and the *Enter*-key is pressed. The results are presented in a list as shown in the figure below (Figure 15).

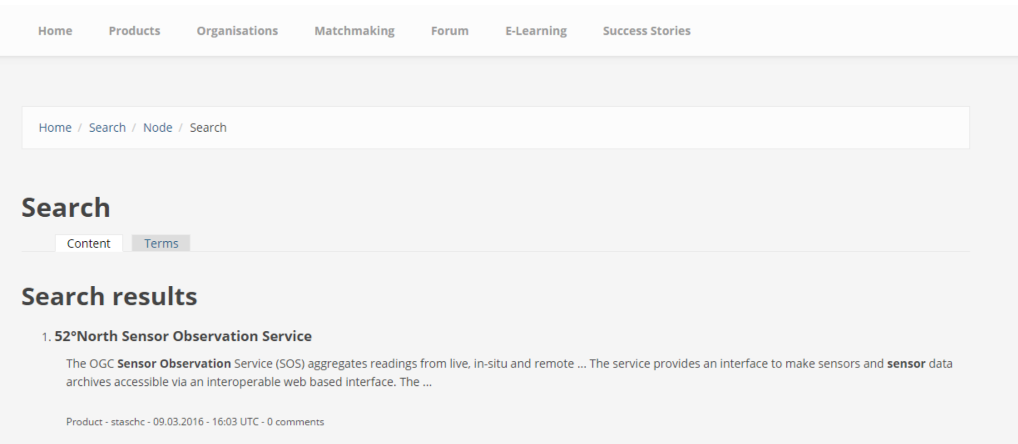


*Figure 15: List containing search results.*

Besides simple keyword search, also an advanced search is provided when clicking on the *Advanced Search* link in the search form shown in Figure 14. The advanced search starts with a selection of an entry type on the tabs in the landing page (Figure 16).

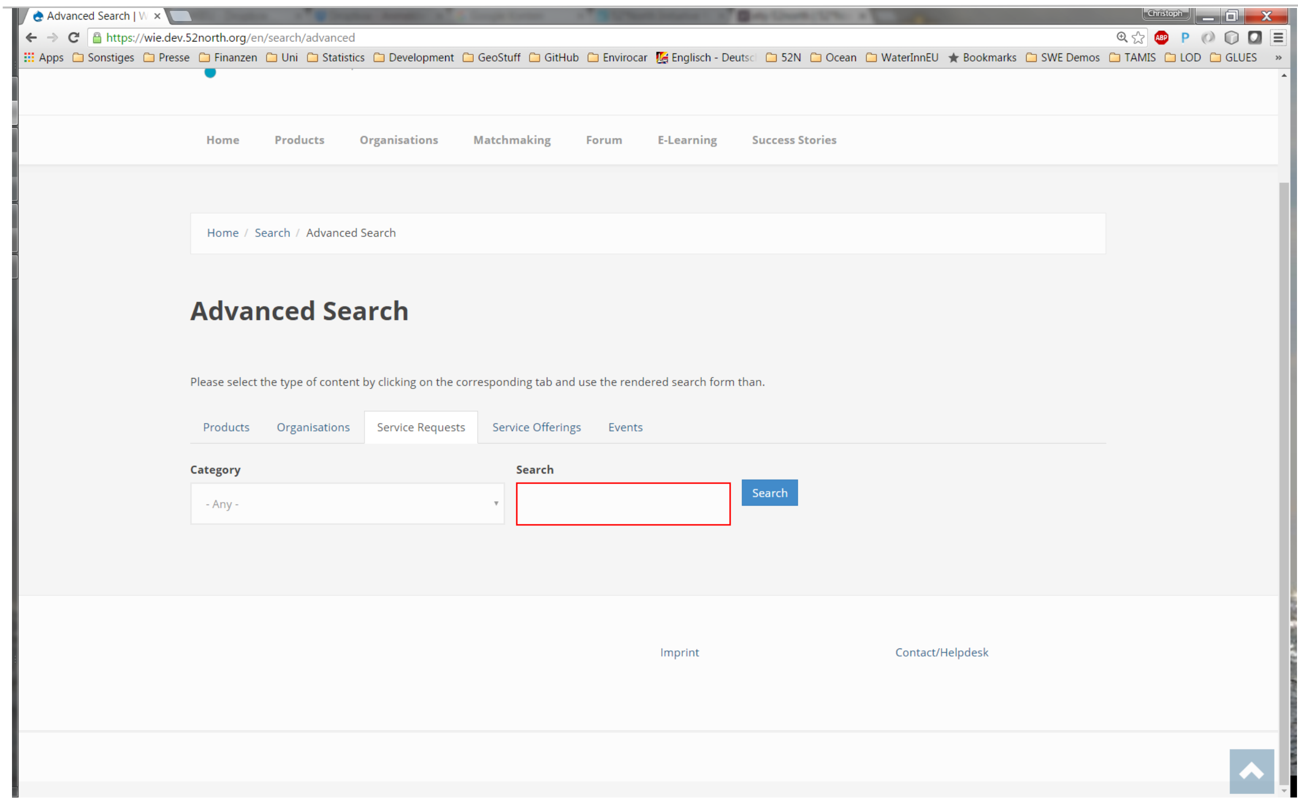


*Figure 16: Selection of entry type in advanced search*

Once the entry type has been chosen, certain categories for fields can be chosen, as the category of product, if Products has been selected as entry type, as shown in Figure 17. In addition, also keywords can be defined in the red *Search* form.

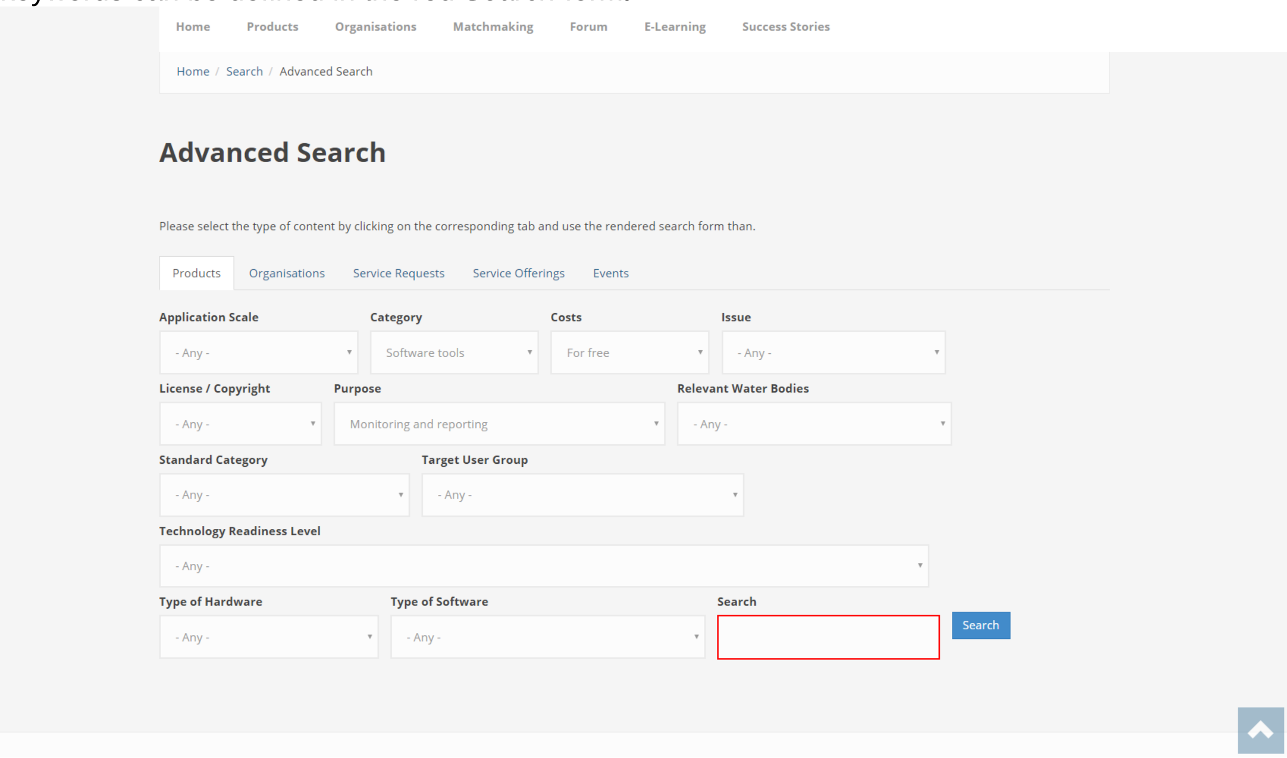


*Figure 17: Advanced search for products*

The results are presented in the same way as the results of the simple search (see Figure 15).

## 4.4 Registration, Login and Logout

As mentioned above, the blue arrow down in the upper right can be used to activate the registration and login bar as shown in Figure 18.

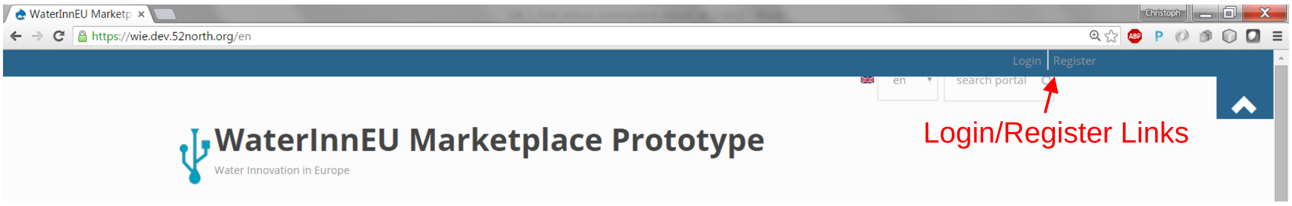


*Figure 18: Activated registration and login bar on the top of the Market Place*

Following the *Register* Link, a registration form is shown in Figure 19 . The form requests a username and an email-address from the user. Furthermore, a time zone can be chosen. It also lists the terms of use and checks, whether the user has read and accepts them. In order to prevent spam accounts, a captcha is used. Note that during the registration process, an informed consent on the collection of personal data is included.

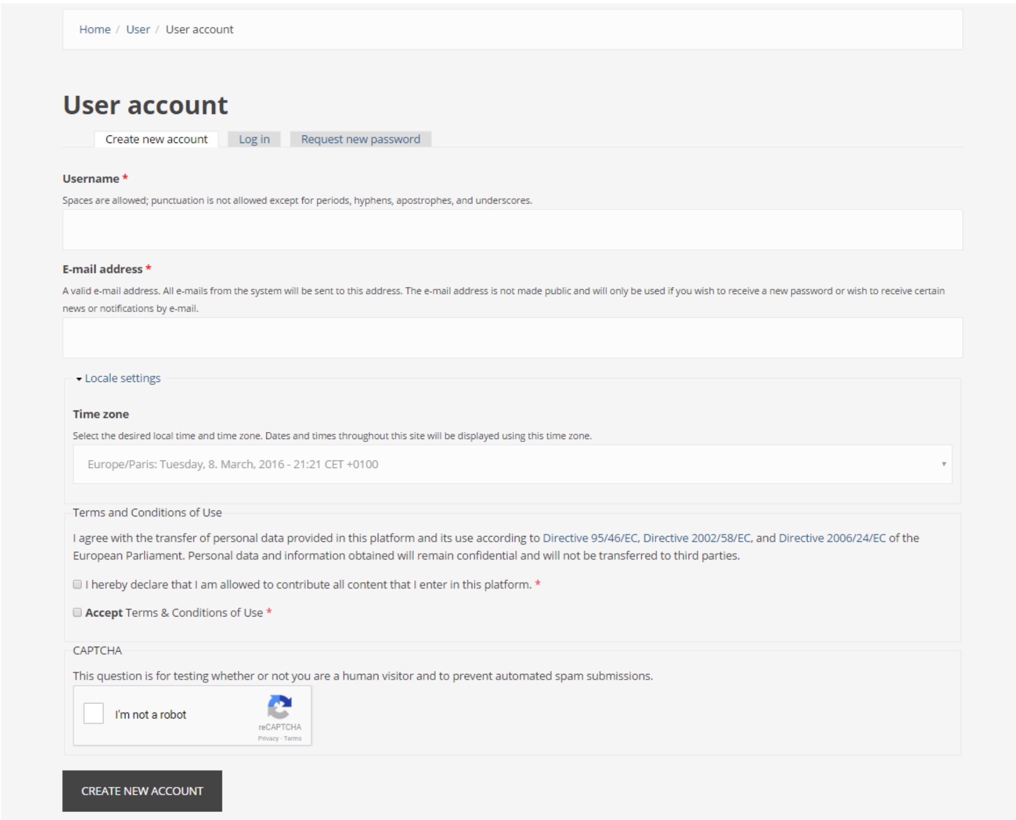


*Figure 19: Registration Form of the Market Place*

Once the user has registered by clicking the *CREATE NEW ACCOUNT* Button, the data is transferred to the portal. The admin needs to accept the request and a confirmation email is sent to the user with the requirement to re-set the password. The user can then use the login form (see Figure 20) to login to the portal and enters the portal with its member landing page (see Figure 21).

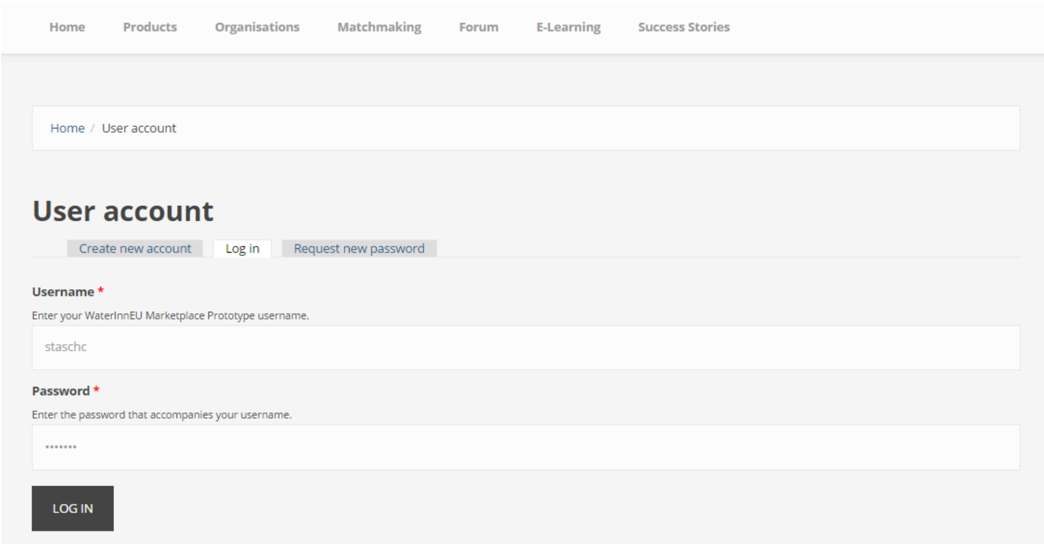


*Figure 20: Login form of the Market Place*

On the left side, the *Add Content* item provides the entry point for editing content as described in Section 4.5.1. Per default, users who register and subsequently log in the portal change their role from End User to Portal Member (compare Section 2.2) and are thus able to edit entries, to comment on products or to start or contribute to discussions in the forum. Furthermore, subscribing to new entries (Section 4.8) also requires to be logged in. The *My Content* section lists all entries that have been created by the member.

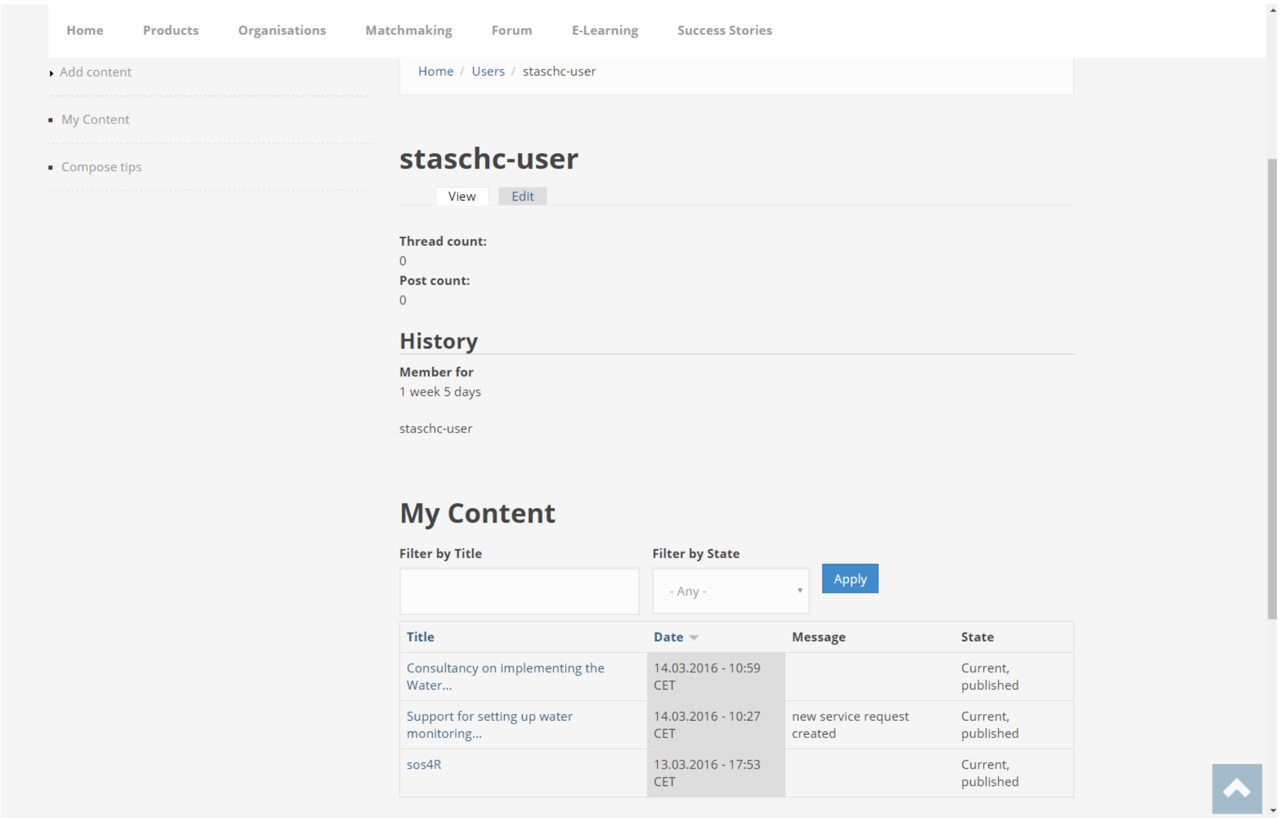


*Figure 21: Member landing page with option for adding content*

The *Logout* functionality and a link to the account settings are offered in the blue top bar, if a user is logged in (Figure 22). After logging out, only the non-restricted functionality is available again.

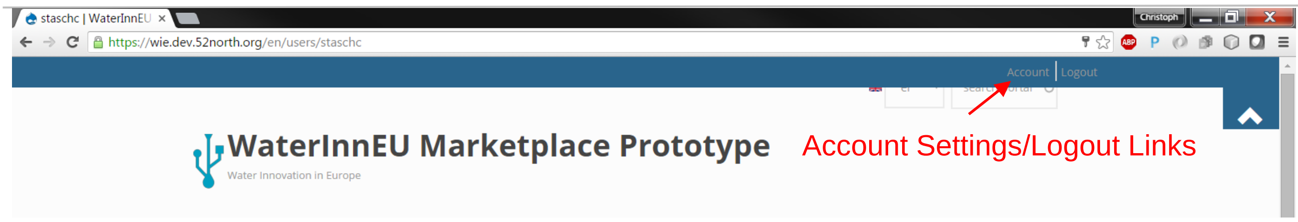


*Figure 22: Activated Account/Logout bar in the Market Place*

## 4.5 Collaborative Content Creation

As mentioned above, the portal provides facilities for adding or updating descriptions of products, organisations, projects, and events in a collaborative manner.

### 4.5.1 Adding Entries

Products, organisations, projects, or events can only be created by portal members. Thus, users need to be registered and logged in before being able to create new entries. Once the users are logged in, they can follow the Add Content link in the left menu bar to choose a certain entry type that should be added.

In the following, the creation of a new product is described as an example. The creation of related projects and organisations can also be done using the products form. Events can be created in a similar manner and are not explained in detail.

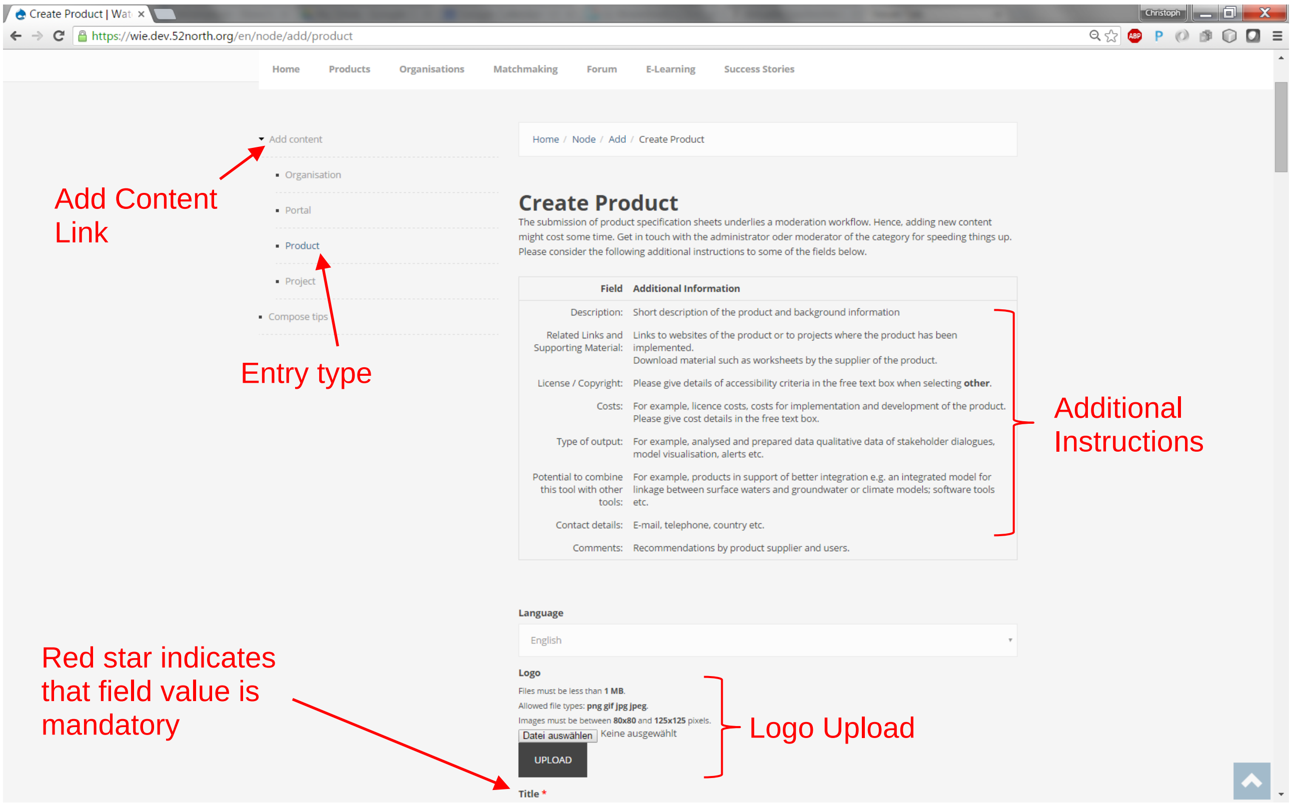


*Figure 23: Create Product page*

The form allows the user to fill in values for all fields as defined in the product specification sheet (Annex A) and therefore provides different functionalities. For adding a logo, a file can be chosen and uploaded as shown at the bottom in Figure 23. Mandatory fields are marked with a red star after the field name, as shown for *Title* field at the bottom in Figure 23. For adding text values, e.g. for title, version and description, form inputs are provided as shown in Figure 24. Furthermore, one or more links to external resources can be added with a title that is later displayed in the detailed view of the product description.

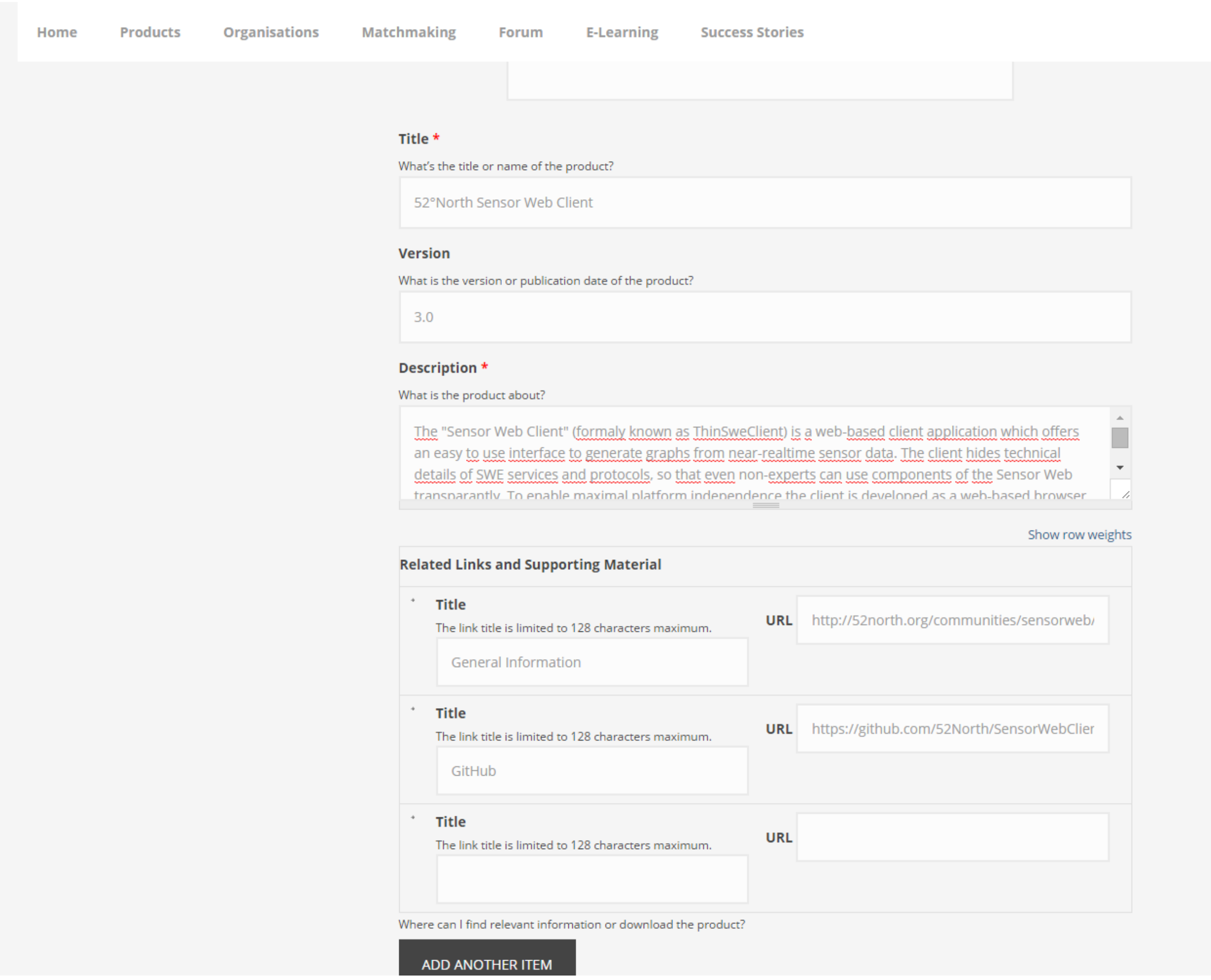

*Figure 24: Adding text and links*

For specifying field values with predefined terms, the user can choose from a drop-down list, as shown in Figure 25.

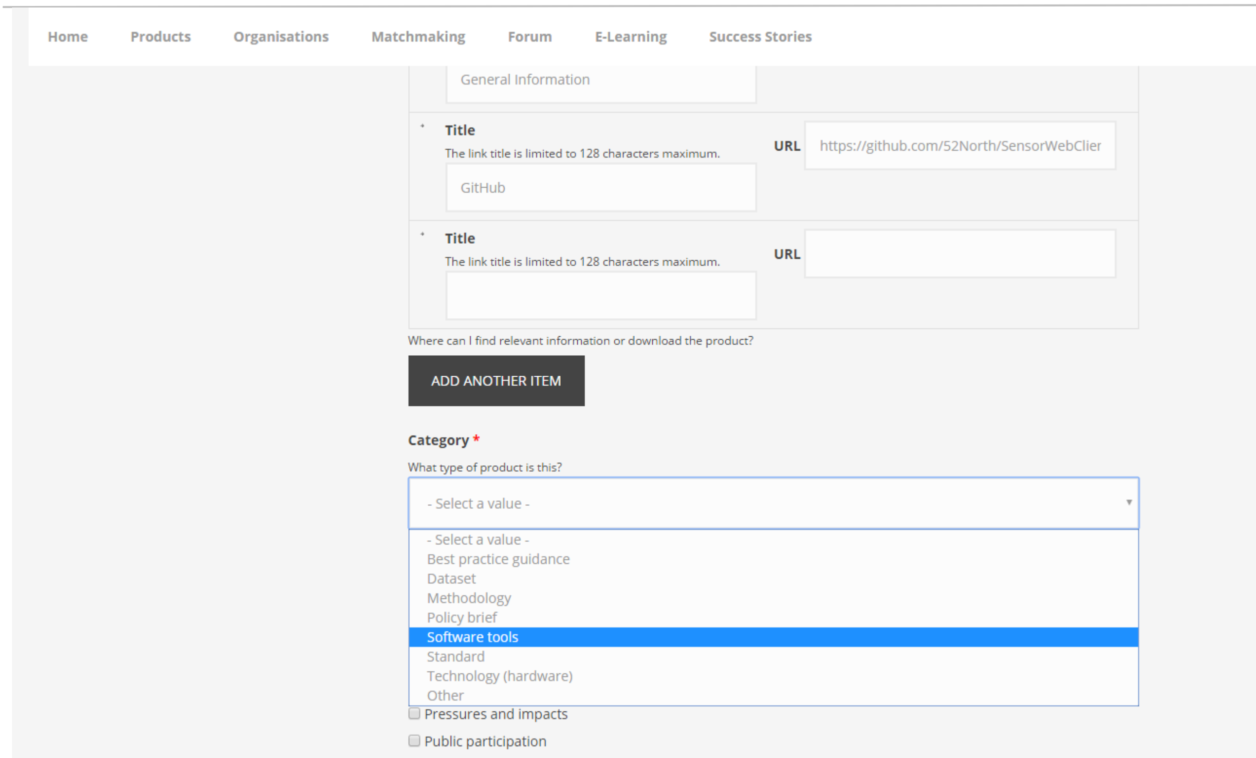


*Figure 25: Choosing a product category*

Depending on the type of product, different additional fields may be shown. If the *Category* is for example *Software tools*, an additional field *Type of software* is displayed as shown in Figure 26. This field would not be visible, if the *Category* would be *Policy Brief*.

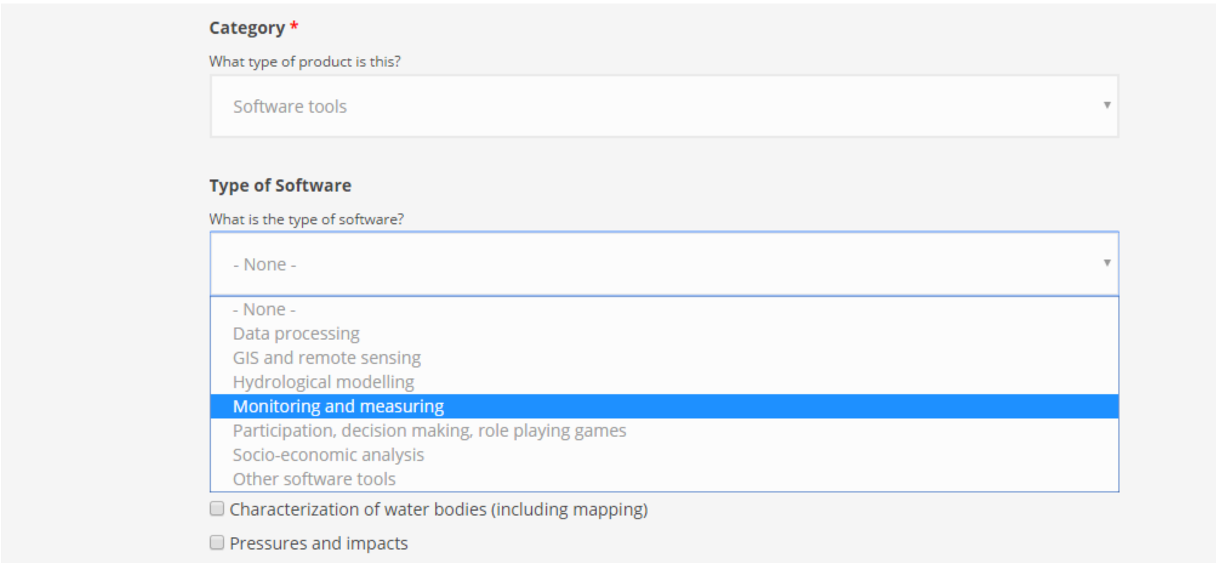


*Figure 26: Additional field Type of Software, if Category is Software tools*

If not just one, but several terms should be selectable as field values, all possible terms are listed and can be selected by checkboxes, as shown in Figure 27 for the field *Purpose*.

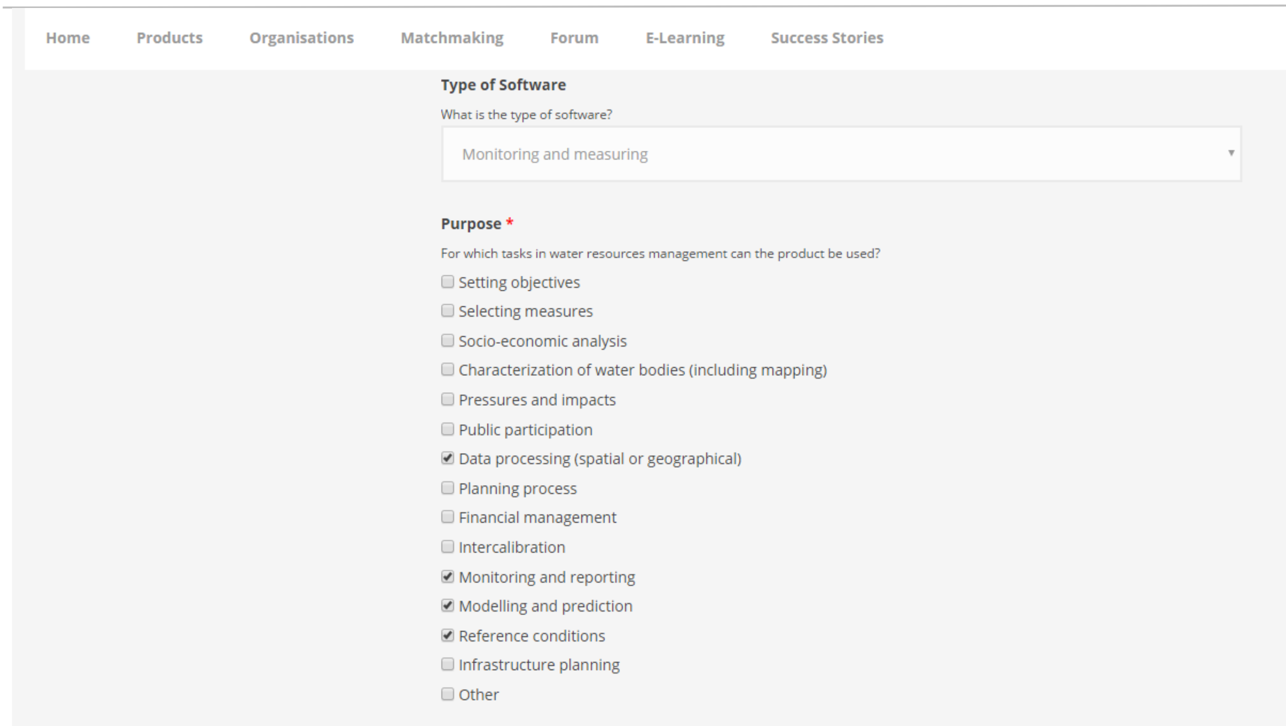


*Figure 27: Selecting several terms using checkboxes.*

If none of the pre-defined terms matches the product or there is another important purpose, the user can also choose *Other* and then type in another term in the textbox that appears (Figure 28).

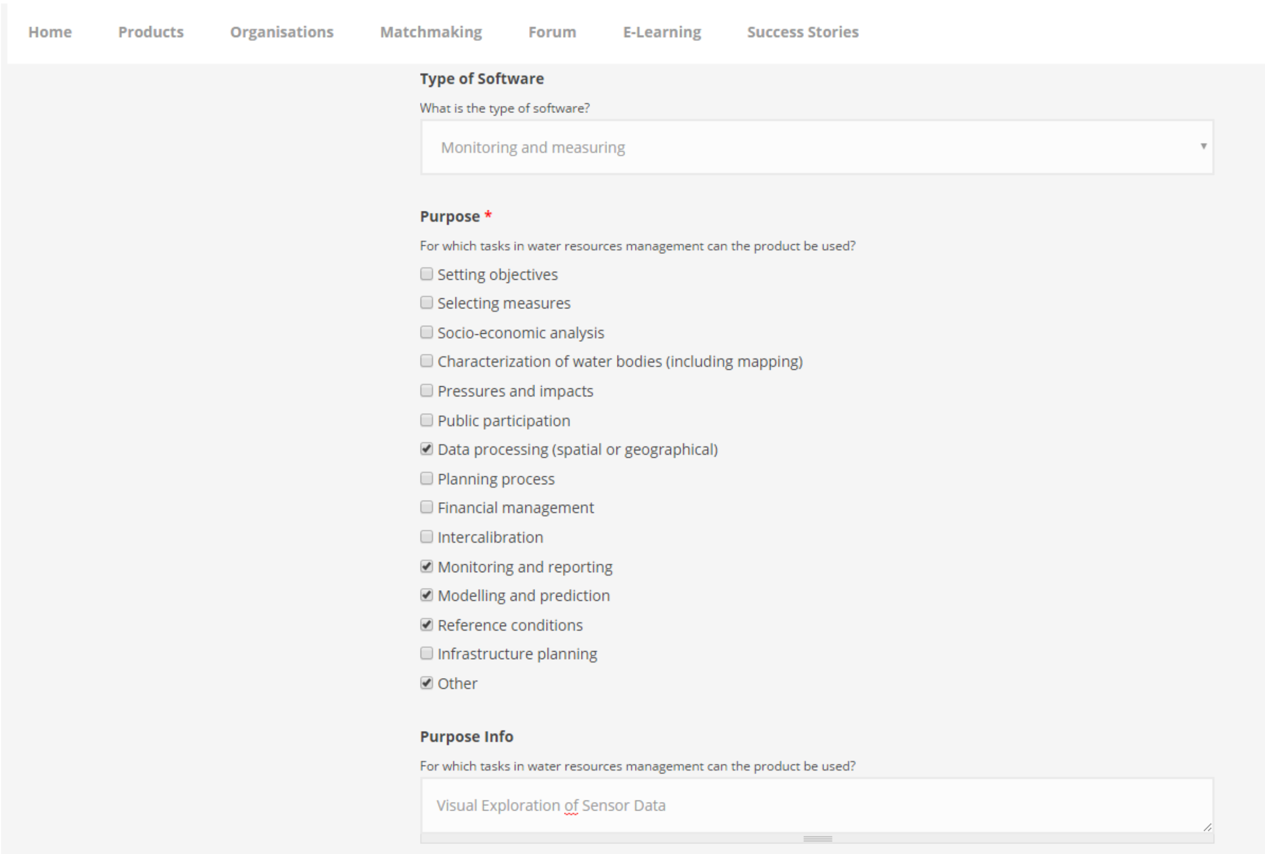


*Figure 28: Defining an additional term that is not pre-defined*

Additional terms can be analogously defined in drop-down boxes as shown for the field Licensing/Copyright in Figure 29.

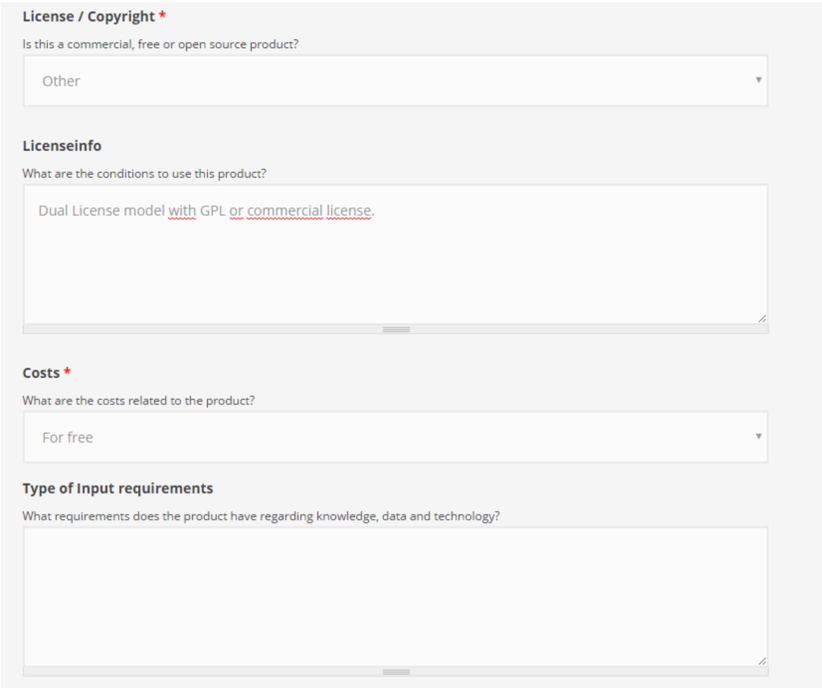


*Figure 29: Defining an additional License/Copyright item*

For defining the standards, one or more categories in the Standard Category need to be chosen at first. Depending on the chosen values in Standard Category, input boxes for the standards appear as shown in Figure 30, where Data Downloading and Data Encoding are chosen as Standard Category.

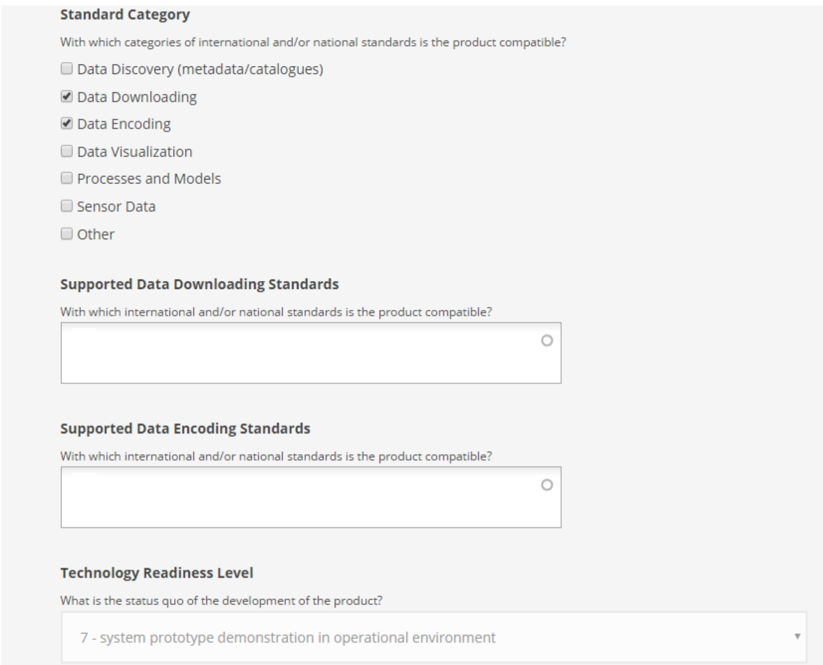


*Figure 30: Choosing a Standard Category*

The user can then type in the standards the products is supporting. The standards that have been already defined beforehand, are provided in a drop-down list (Figure 31).

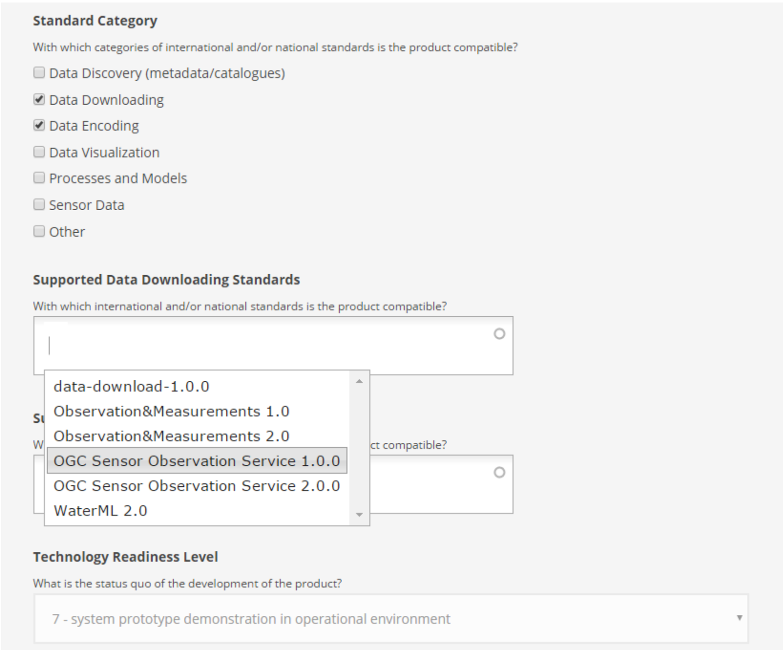


*Figure 31: Selecting previously defined standards*

If the standard has not been defined before, it can be added by typing the name in the box and pressing the Enter key. When typing in the name of the standard, previously defined standards matching the name are suggested in a drop-down list as shown in Figure 32.

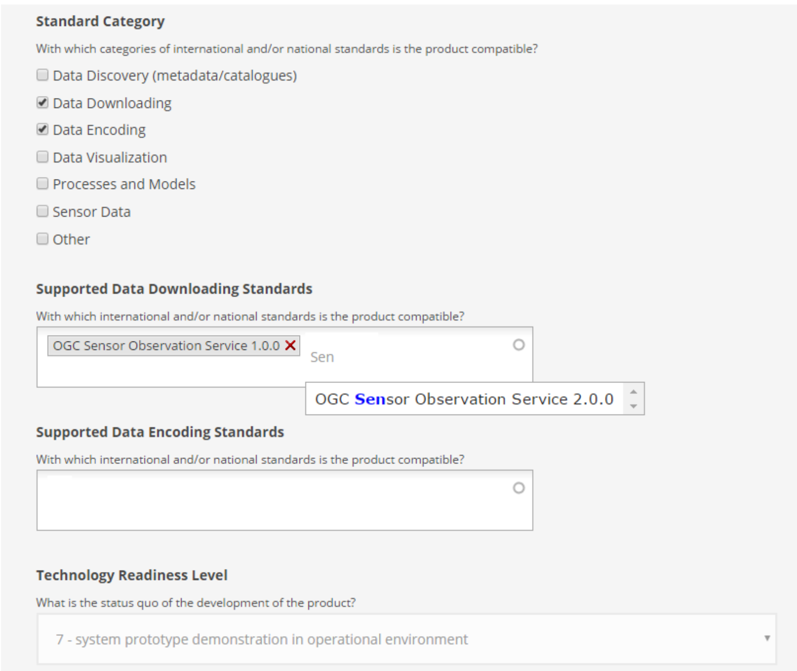


*Figure 32: Suggesting previously defined standards*

If no matching standard is found, a message appears that the standard will be added and clicking the Enter key adds the standard to the list (Figure 33).

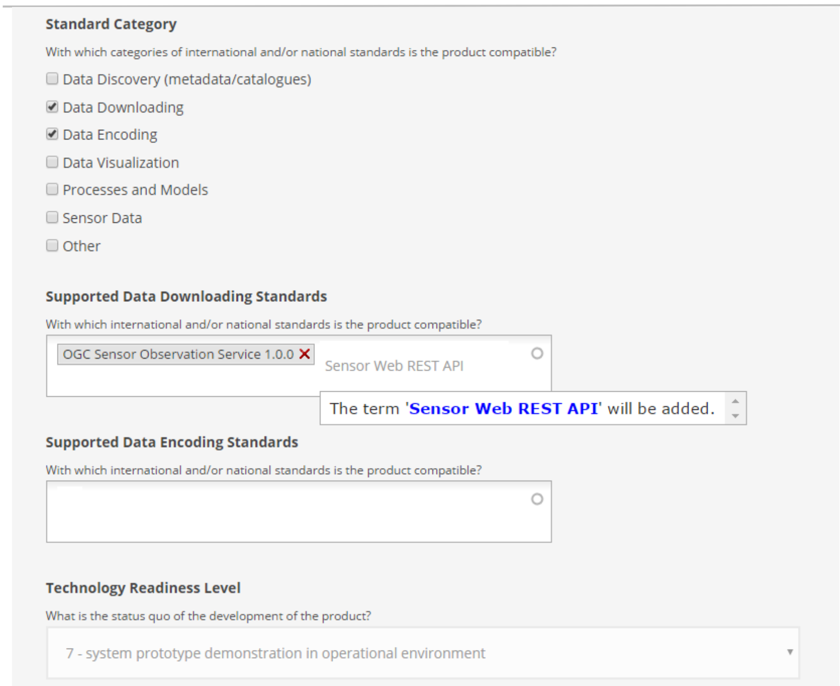


*Figure 33: Defining a new standard*

As the Technology Readiness Level is pre-defined, there is no option for adding additional terms (see Figure 34).

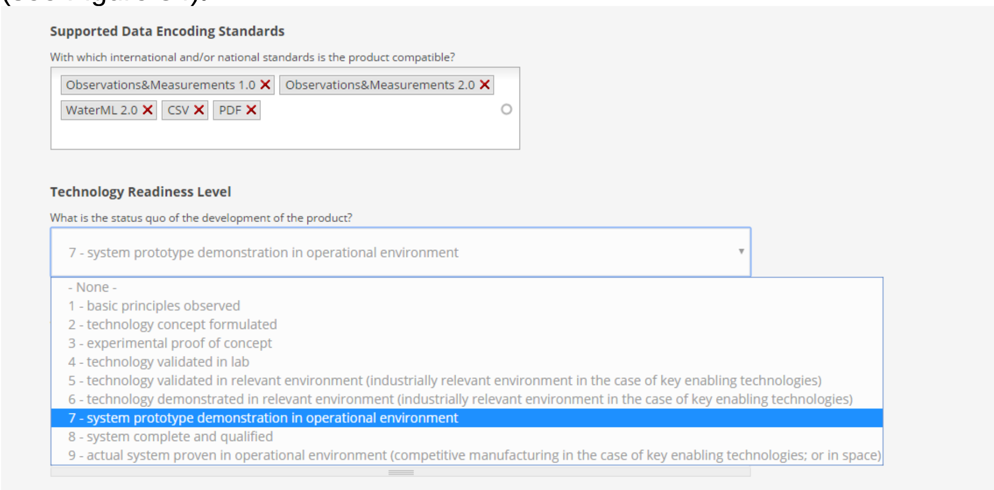


*Figure 34: Selecting Technology-Readiness-Level*

As a product has been developed in a certain project by a certain organisation that is already registered on the Market Place, the product can linked to a project or an organisation by using the *ADD EXISTING PROJECT* or *ADD EXISTING ORGANISATION* button. A new form opens where existing organisations are shown in a drop-down list (see Figure 35).

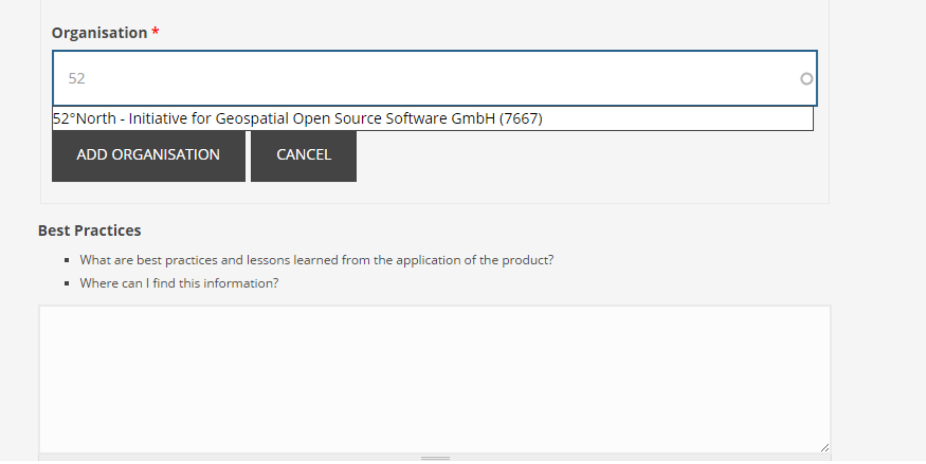


*Figure 35: Selecting an existing organisation*

By clicking on an organisation, the organisation is selected and can be edited or removed later (see Figure 36).

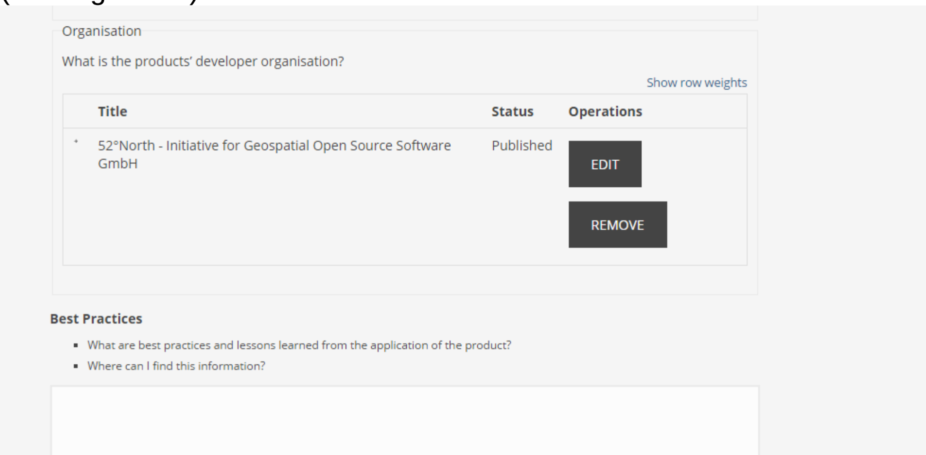


*Figure 36: Display of organisation in create project form*

In case the project and/or organisation is not yet existing in the portal, the *ADD NEW PROJECT* and *ADD NEW ORGANISATION* button can be used to create new entries. For example, if clicking on the *ADD NEW PROJECT* button, a new form for adding information about the new project is opened, as shown in Figure 37.

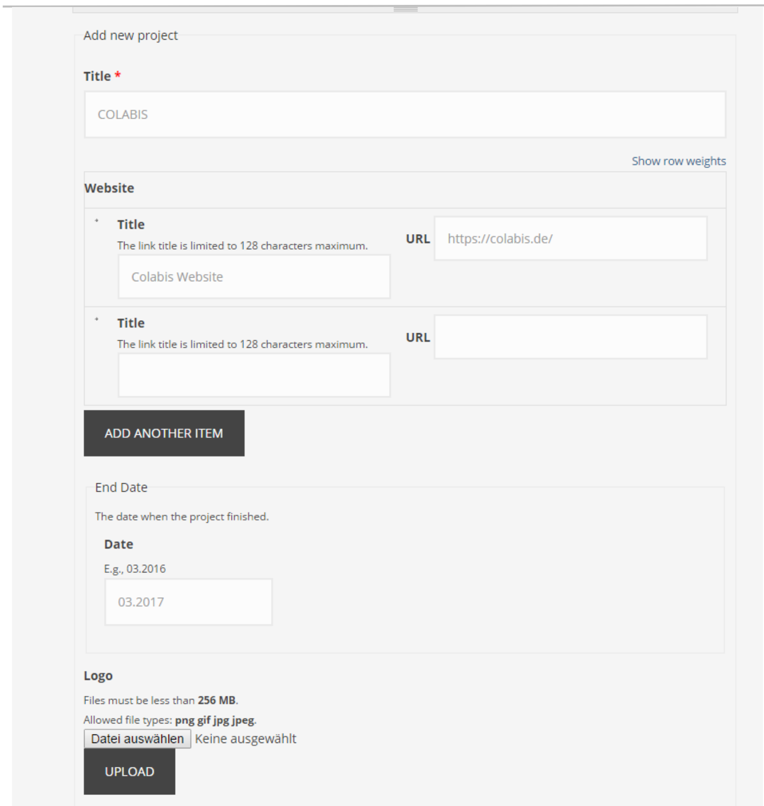


*Figure 37: Adding a new project*

After providing all necessary information about the project, the CREATE PROJECT BUTTON at the bottom of the subform can be used to create the project. The new project is the displayed in the product form and can subsequently be edited or removed (Figure 38).

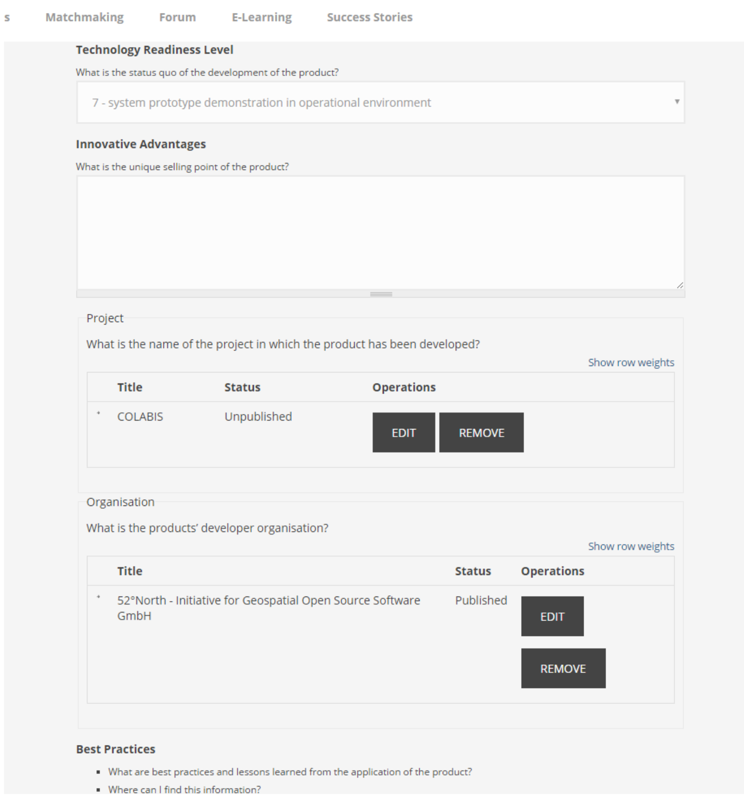


*Figure 38: Display of a project in the create product form*

After finishing the information on the product, clicking the preview button generates a preview of the product description. Before finally saving a product, the user needs to preview her entries in order to do a final check.

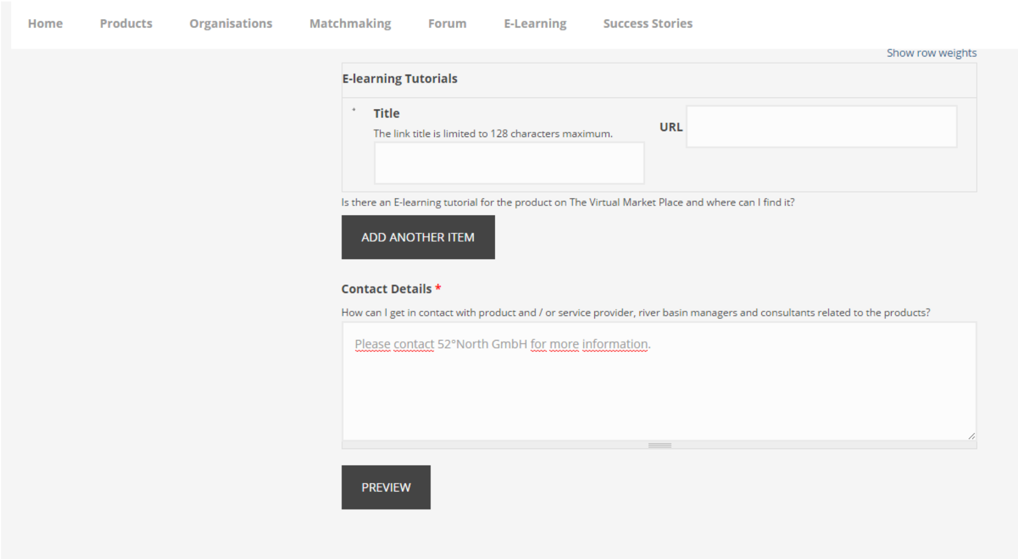


*Figure 39: Preview button to do check the product preview before saving it*

Once clicking the preview button, automated checks will be run, e.g. providing the mandatory fields. If these fail, error messages will appear as shown in Figure 40.

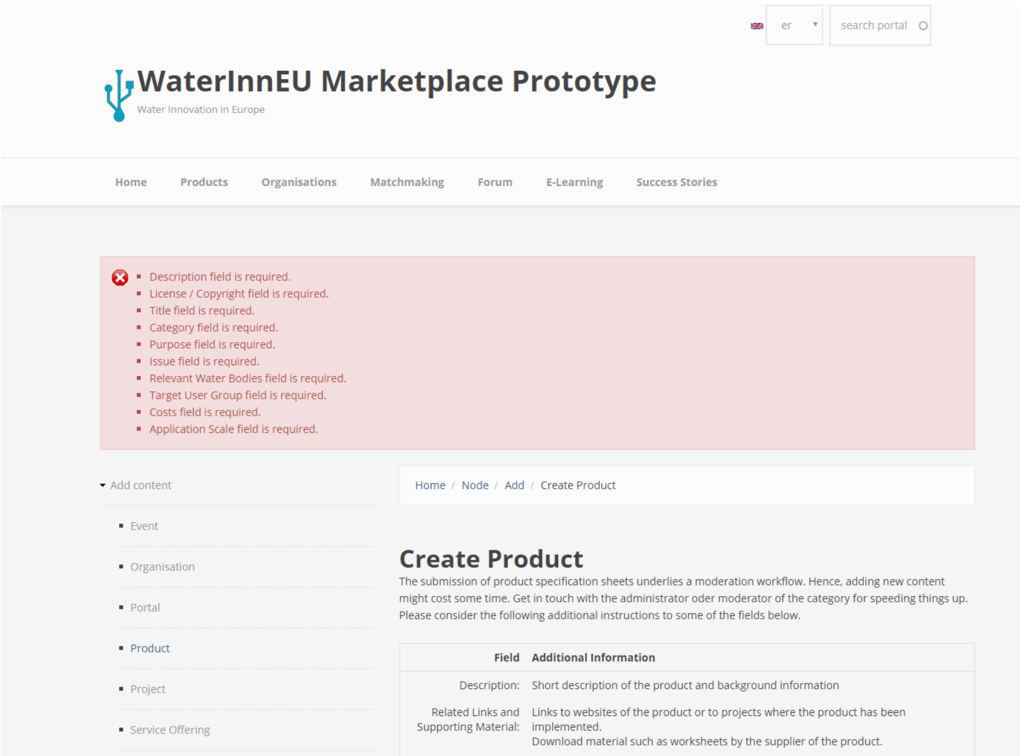


*Figure 40: Error message, if one or more mandatory field value is missing*

After checking the preview and doing final edits, the product can be saved and the moderator will do a final check before publishing the product (The moderator functionality is described in Section 4.5.4). In addition, the author is able to add a comment for the revision of the product, e.g. “initial version”.

### 4.5.2 Editing Entries and Edit History

Editing existing products or other entries can be done in a similar way as creating new entries. To edit an existing product description, the user needs to be logged in and the product needs to be displayed in the detailed view as shown in Figure 41.

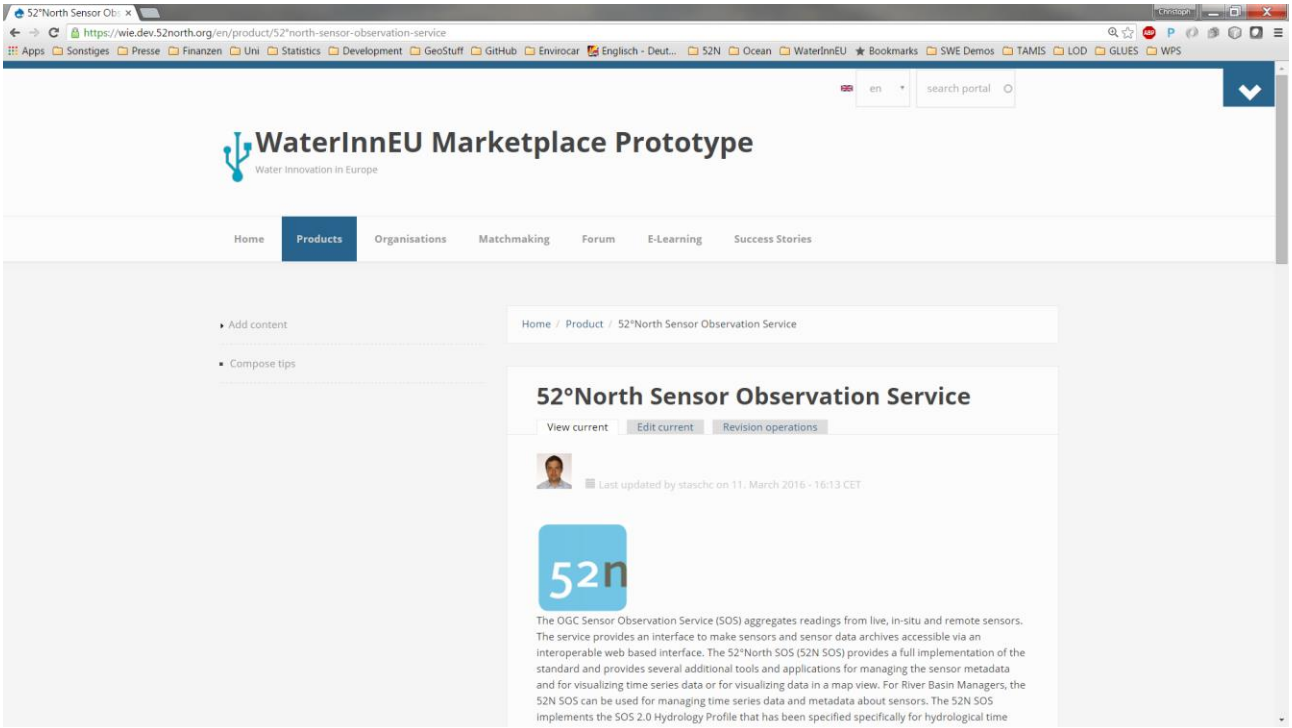


*Figure 41: Detailed product view for portal members with option to edit*

Per default, the current version of the product description is displayed. Two more options are available: *Edit Current* and *Revision operations*. By clicking *Edit current*, the edit form for the product appears. The form is the same as for creating new products, but the values of the current product description are shown as field values.

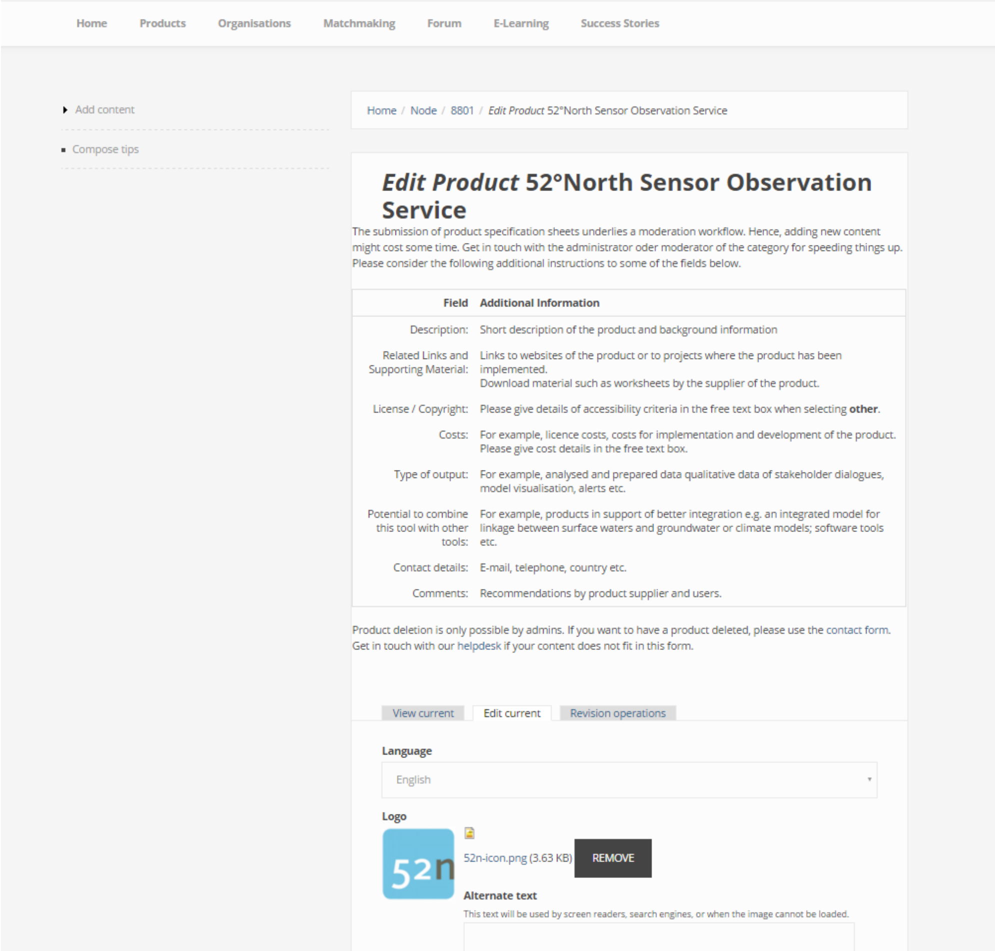


*Figure 42: Form for editing a product description*

After editing a product, the user again needs to check the preview by clicking the PREVIEW button at the bottom of the edit form (Figure 43).

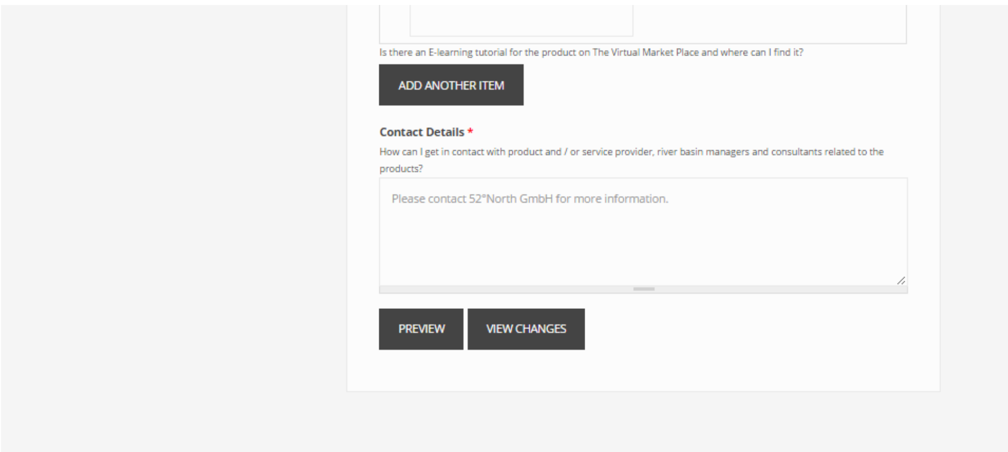


*Figure 43: Previewing product description or viewing changes made when editing products*

The user is also able to check only the changes by clicking the *VIEW CHANGES* button. A comparison view appears as shown in Figure 44. Concrete changes are shown in red color.

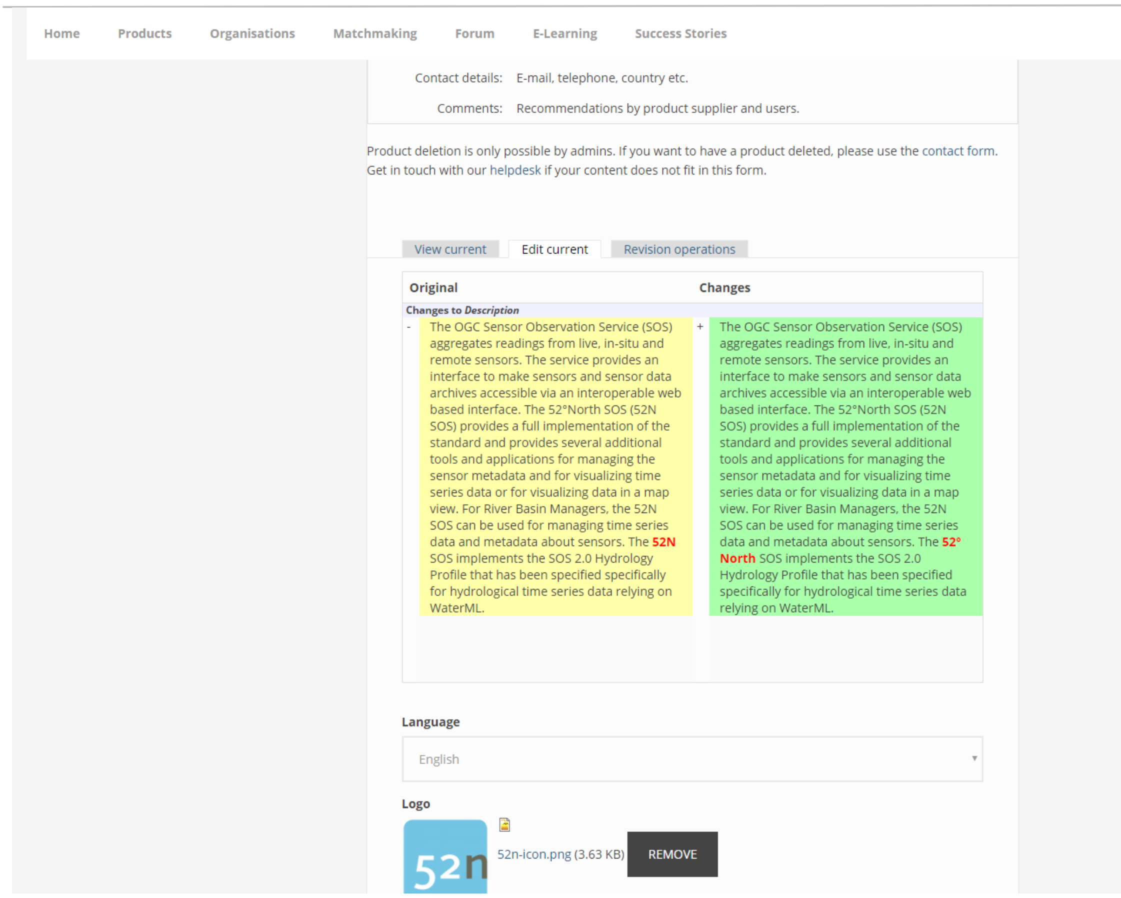

*Figure 44: Comparing changes when editing a product*

After viewing the preview or the changes, the user can then add a Revision log message, as shown in Figure 45. The log message will be displayed in the edit history of the product. After clicking the *SAVE* button, the new version of the product description is passed to the moderator who will check and publish the new version.

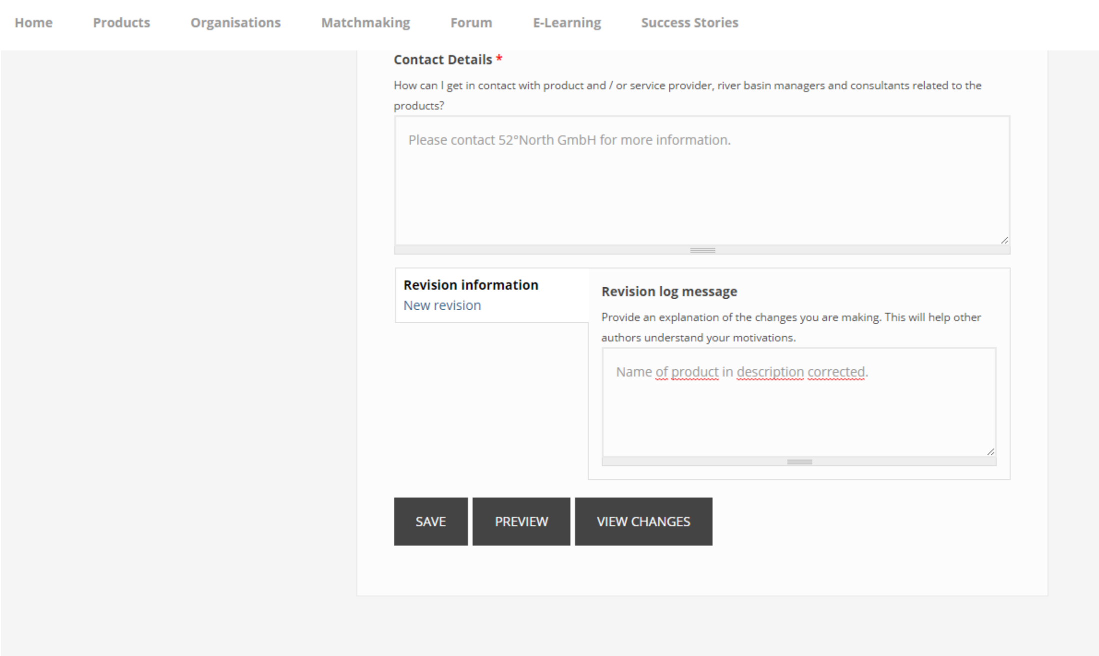

*Figure 45: Adding a revision log message before saving the product.*

A success message is displayed as shown in Figure 46.

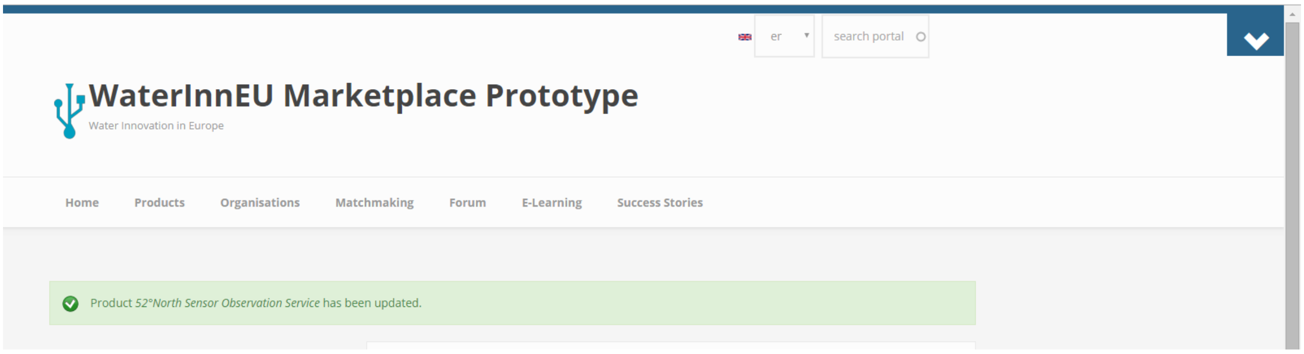


*Figure 46: Success message after editing a product.*

All portal members, who are logged in, are also able to check the edit history of a product. Therefore, they need to click on the *Revision operations* link in the detailed view of a product description to open the list of revisions (Figure 47). Published revisions are shown as yellow and pending revisions as red. The user can also select two revisions and use the COMPARE button to generate a comparison view similar to the one shown above in Figure 44).

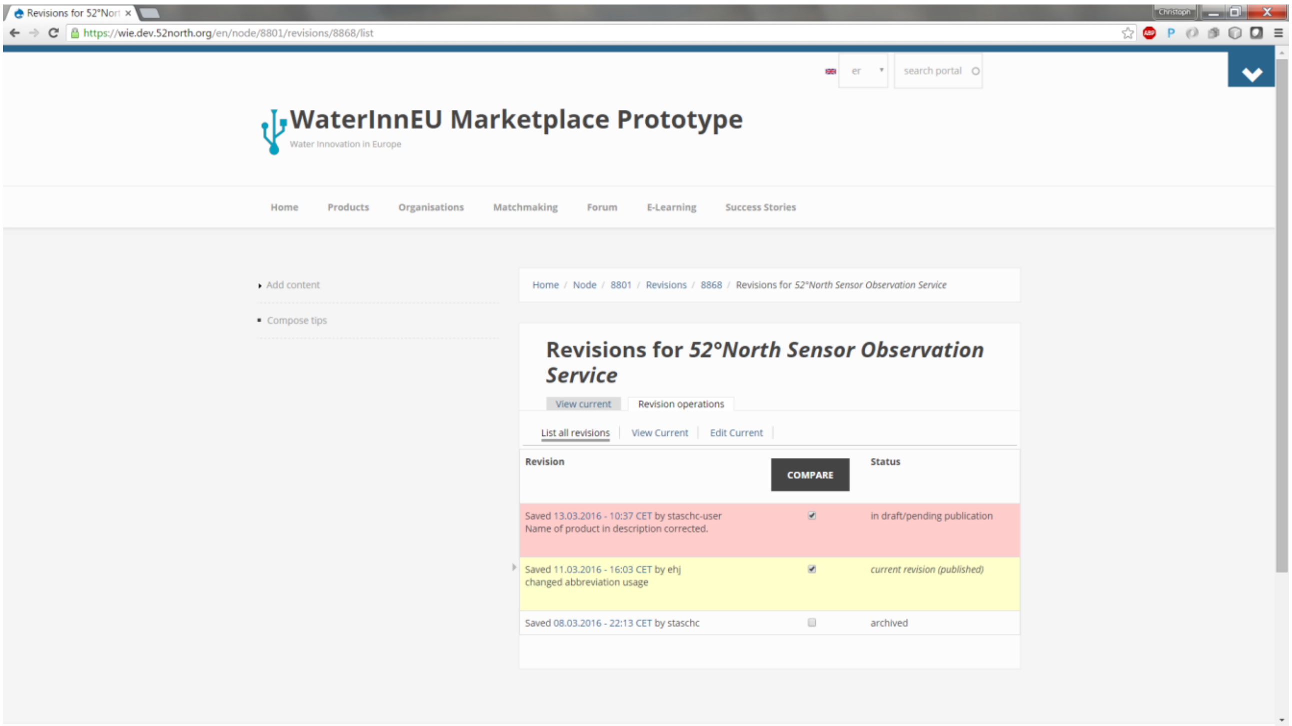


*Figure 47: Viewing the edit history of a product*

### 4.5.3 Adding Comments

Comments can be added to all entries, i.e. products, organisations, service request and service offerings. The main entry points are the links at the bottom of detailed views of these entries, as shown in Figure 48.

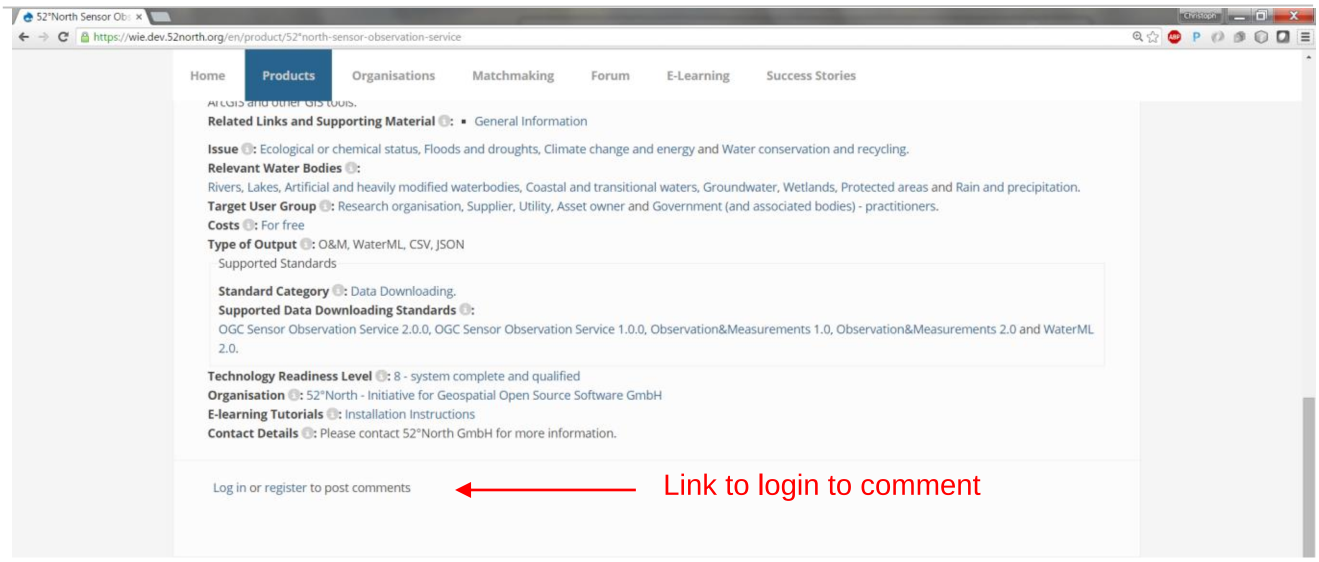

Figure 48: Commenting links at the end of a detailed entry view

If logged in, a new form for adding a comment is shown (Figure 49). The user needs to type in the comment and may also add a subject to the comment.

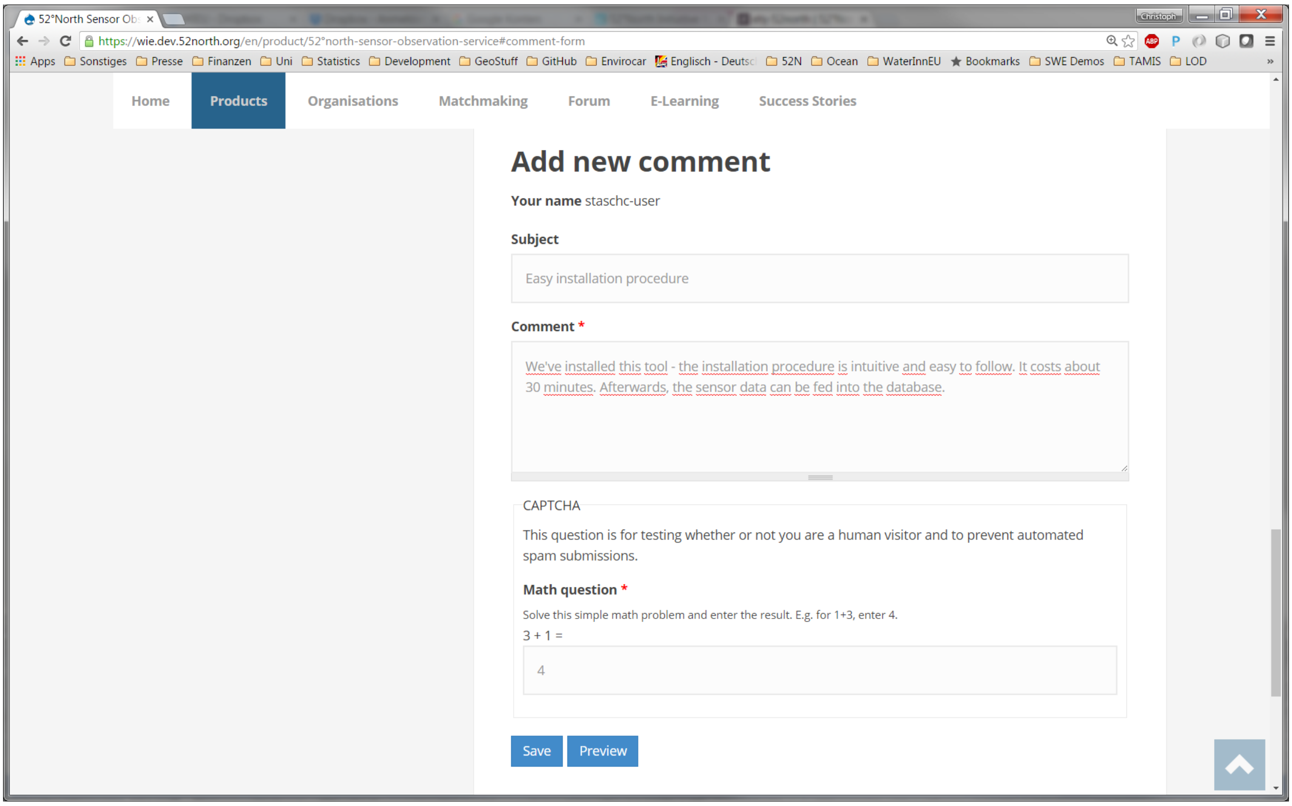

Figure 49: Form for adding comments on an entry

After clicking the *SAVE* button, a success message appears as shown in Figure 50 and the comment is queued for review by the moderator. The review functionality for the moderator is described in the next section.

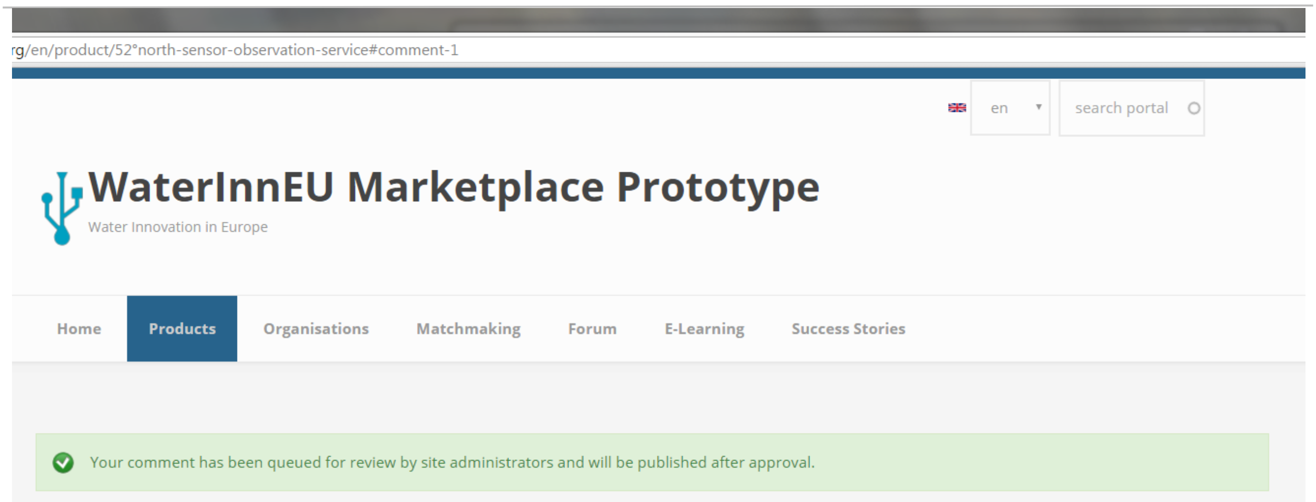


*Figure 50: Success message after adding a comment.*

### 4.5.4 Moderator

All entries that have been added or changed by portal members need to be checked and published by the moderator (compare Section 2.2). If a moderator enters the portal, entries that have been edited and need to be checked by the moderator are shown on the right side under Pending Revisions (see Figure 51).

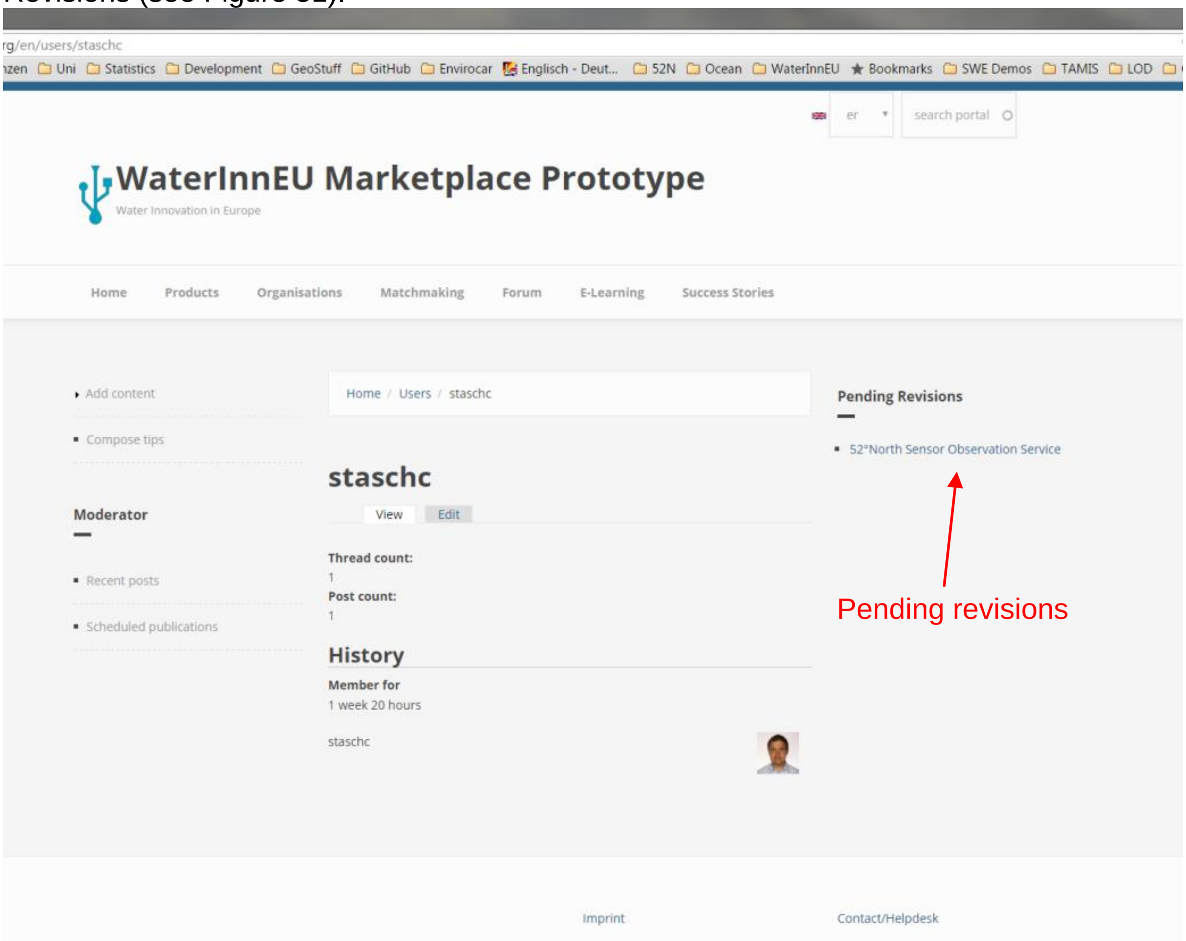


*Figure 51: Pending revisions for moderator*

If the moderator clicks on an entry under *Pending Revisions*, the detailed revision view of this entry appears (Figure 52). The different revision operations are as follows:

- *List all revisions*: links to a list of all revisions and to compare the changes made with between two revisions.

- *View Latest* (shown by default): shows the latest view of the entry.
- *Edit Latest*: allows editing the latest version of the entry.
- *Publish*: allows publishing the pending entry.
- *Compare to current*: allows comparing the pending version to the current published version.

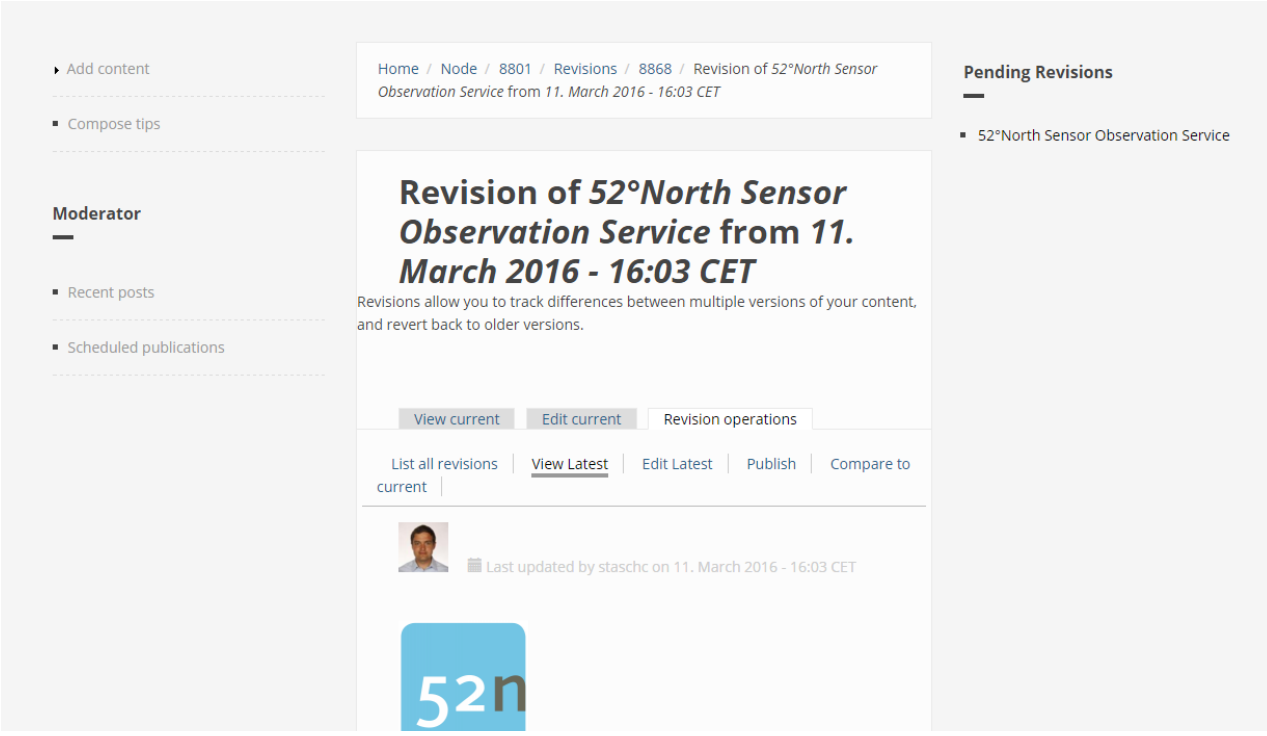


Figure 52: Revision view of a pending entry

When choosing *List all revisions*, the revision history of the entry is shown (Figure 53). The history lists all revisions including the date, the editor and the current status of a revision, wherein pending revisions are shown in red colour.

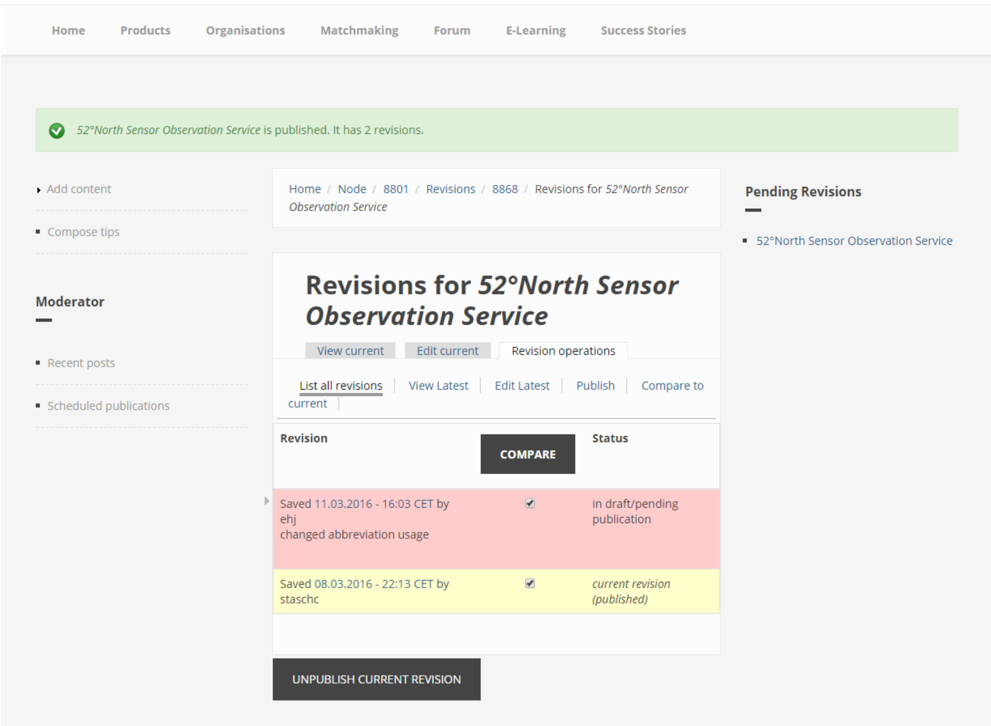


Figure 53: Revision history of a pending product

The moderator is also able to select two revisions and compare the edits made to each other. A view appears as shown in Figure 54, where in this case the pending revision is compared to the published version using the *Compare to current* option.

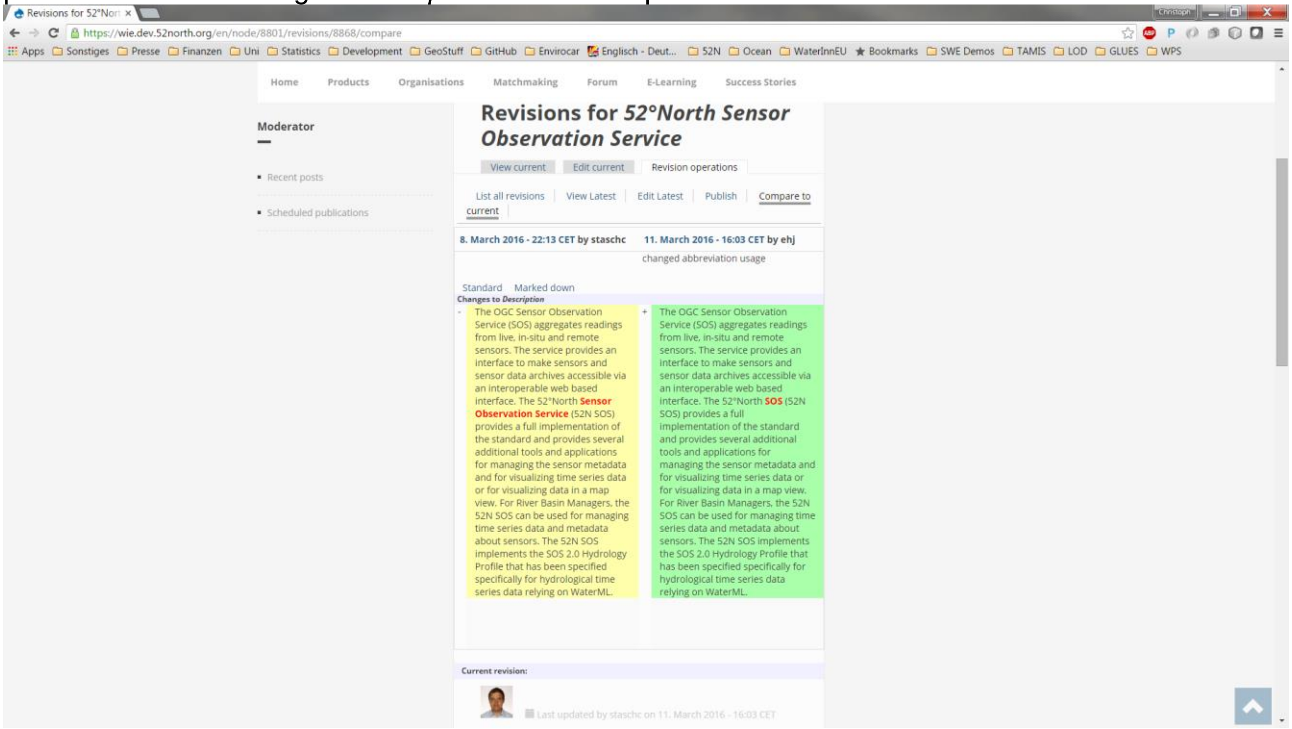


*Figure 54: Comparing a pending version to the current published version*

Finally, if the moderator agrees with the changes made, he can then choose publish and a final check appears. Therein, the moderator may also choose a later date and time for publication. If not, the entry is directly published at the portal once the PUBLISH button is clicked.

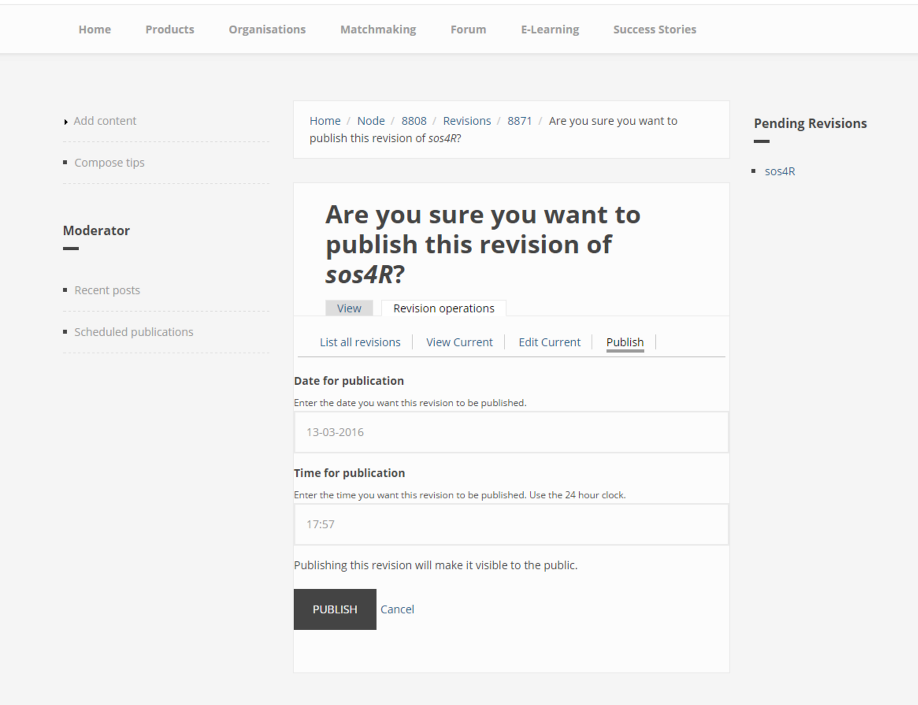


*Figure 55: Publishing an entry*

Afterwards, a success message is displayed that the entry has been released (Figure 56).

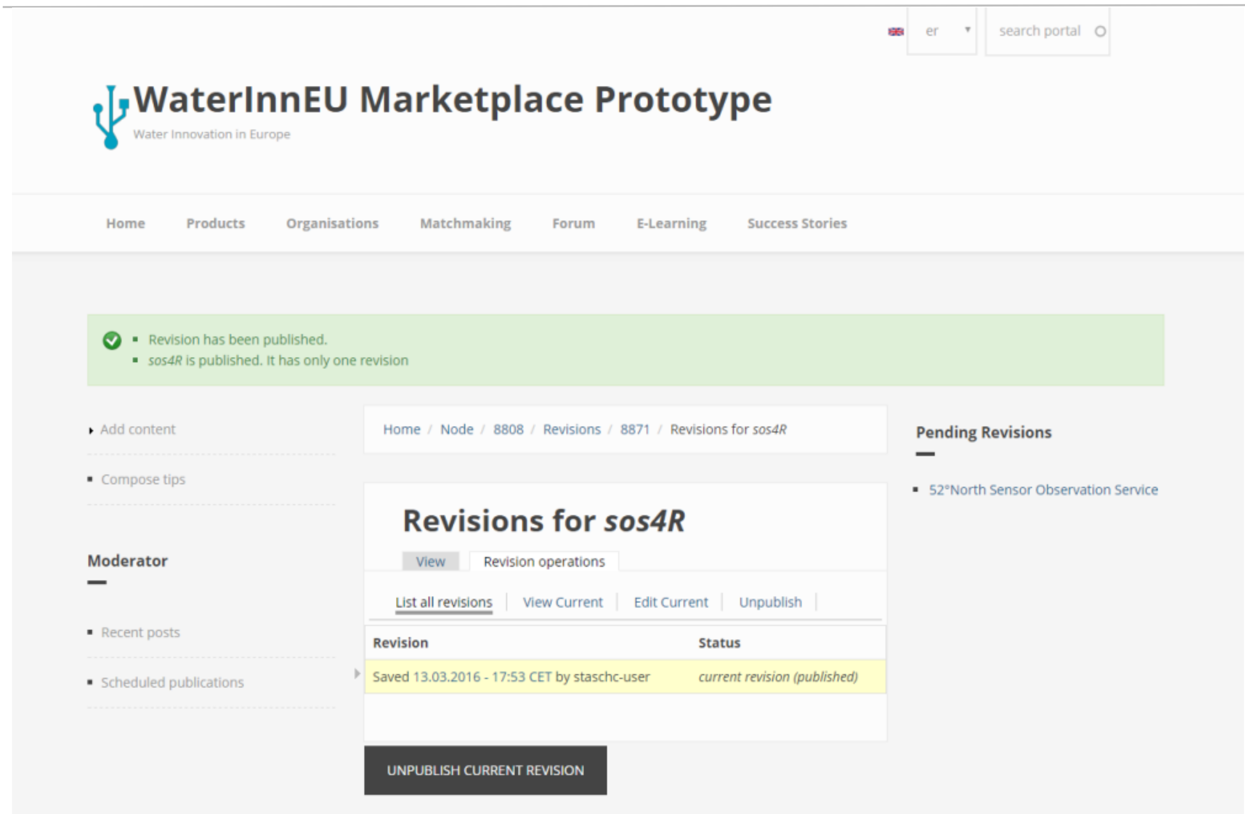


*Figure 56: Success message after publishing an entry.*

## 4.6 Service Requests and Service Offerings

The Market Place provides a common place to publish service requests and offerings. The main entry point for the service requests and offerings is the section Service Requests and Offers in the Matchmaking page. A screenshot of this section is shown in Figure 57. The latest updates of the service request and offerings are shown in the two tabs Service Requests and Service Offerings[14].

[14] **Note:** The latest updates are currently mocked, since the implementation requries additional extensions of existing drupal modules. However, the general functionality and listing of service requests and offerings is already finished. The list of latest updates will be implemented for the final version of the Market Place.

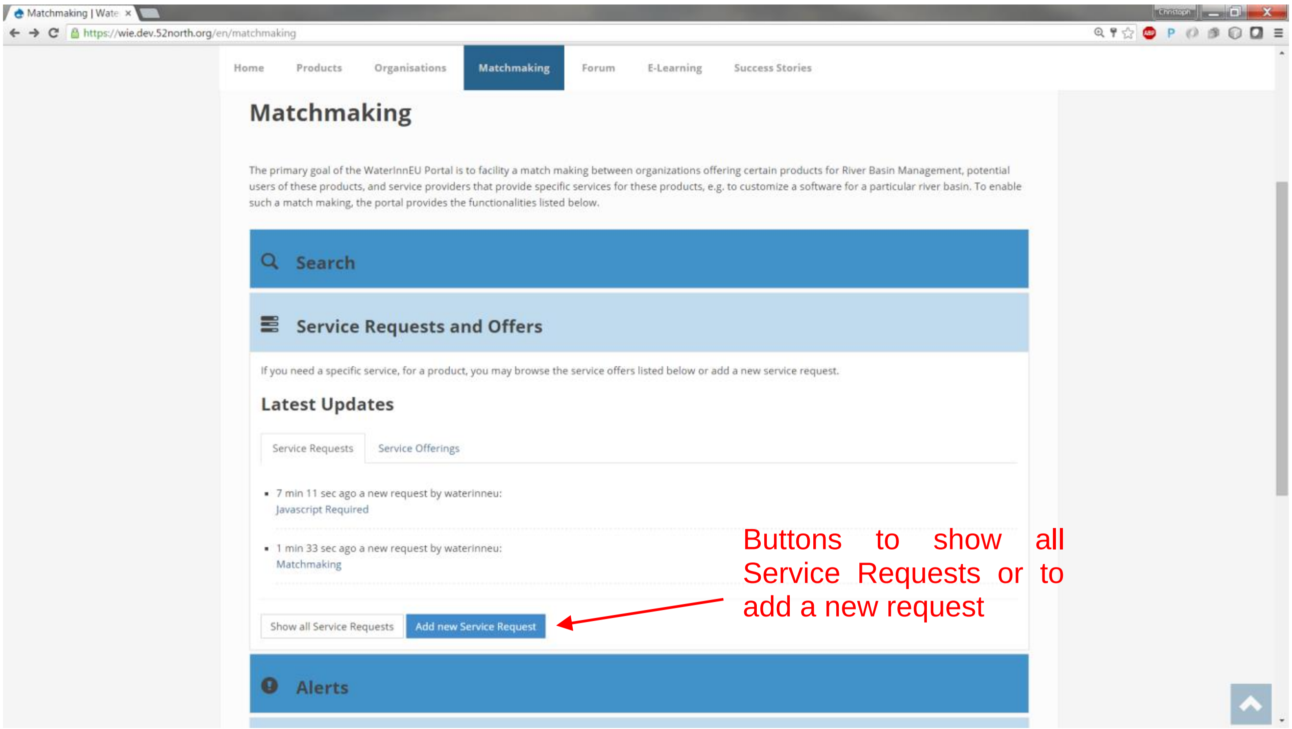


*Figure 57: Service requests and offers in the matchmaking page*

### 4.6.1 Service Requests

Selecting the *Service Requests* tab lists the latest updates and allows accessing all service requests by clicking the *Show all Service Requests* button. A list of all service requests is shown in Figure 58.

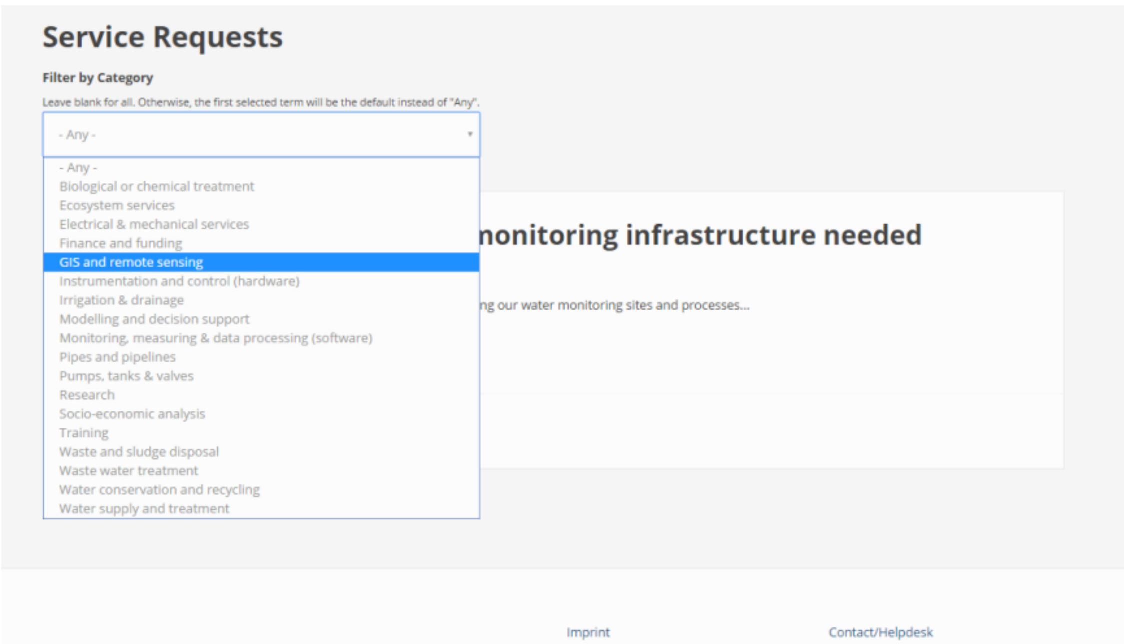


*Figure 58: List of service request with filter option on category*

If the user wants to read a full service request and may want to add comments (e.g. hints or a response), he needs to click the *Read more* link in the service request teaser. An example of a detailed view is shown in Figure 59. The detailed view also allows adding comments to the request.

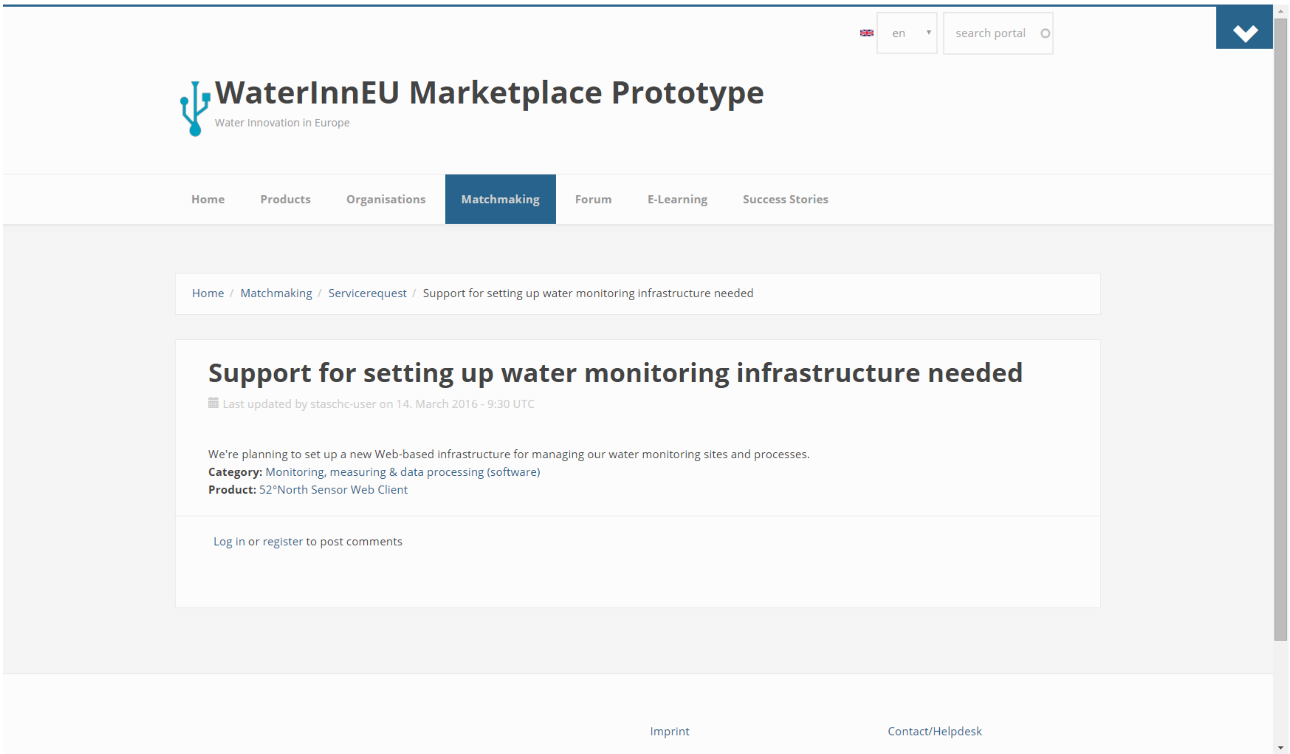


*Figure 59: Detailed view of a service request*

If there is not yet a similar service request, the user can add a new service request by clicking the *Add new Service Request* button. If the user is not yet logged in, the login form appears. Otherwise, the form for adding a new service request is directly shown (Figure 60).

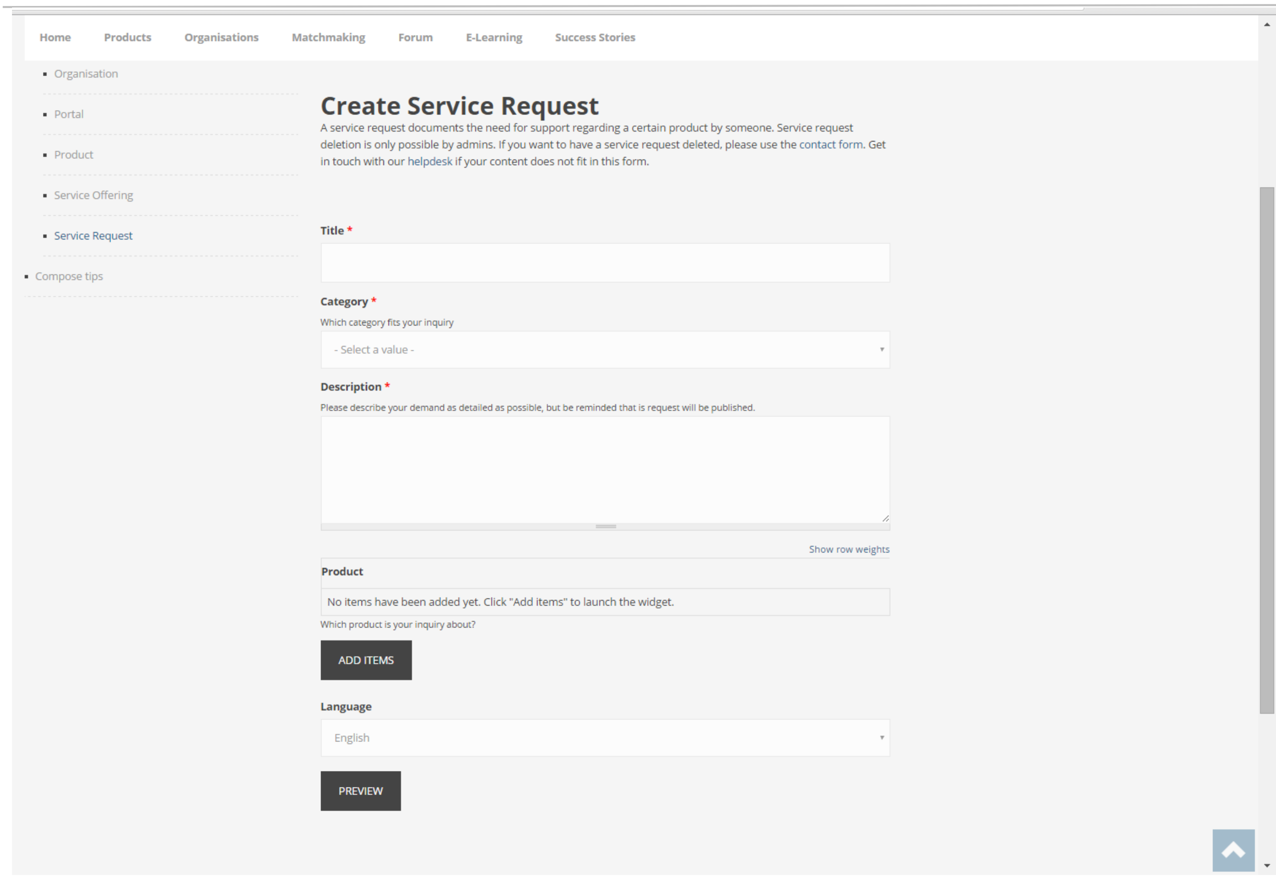


*Figure 60: Form for adding a new service request*

A service may be requested for one or more products. Hence, products may be linked to the service request. The *ADD ITEMS* button opens a pop-up where existing products can be selected (Figure 61).

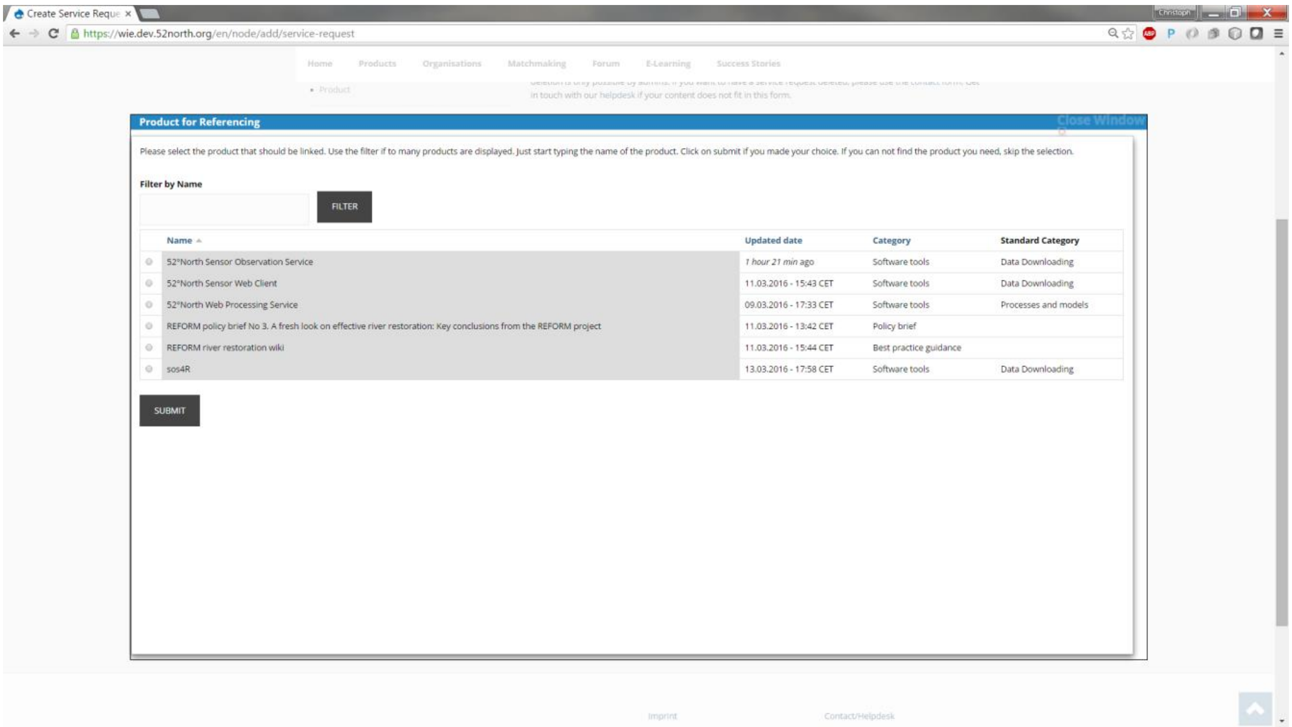


*Figure 61: Selecting products for a new service request*

After selecting products, these are shown in the form and the *PREVIEW* button can be used to have a final check before saving the service request (Figure 62).

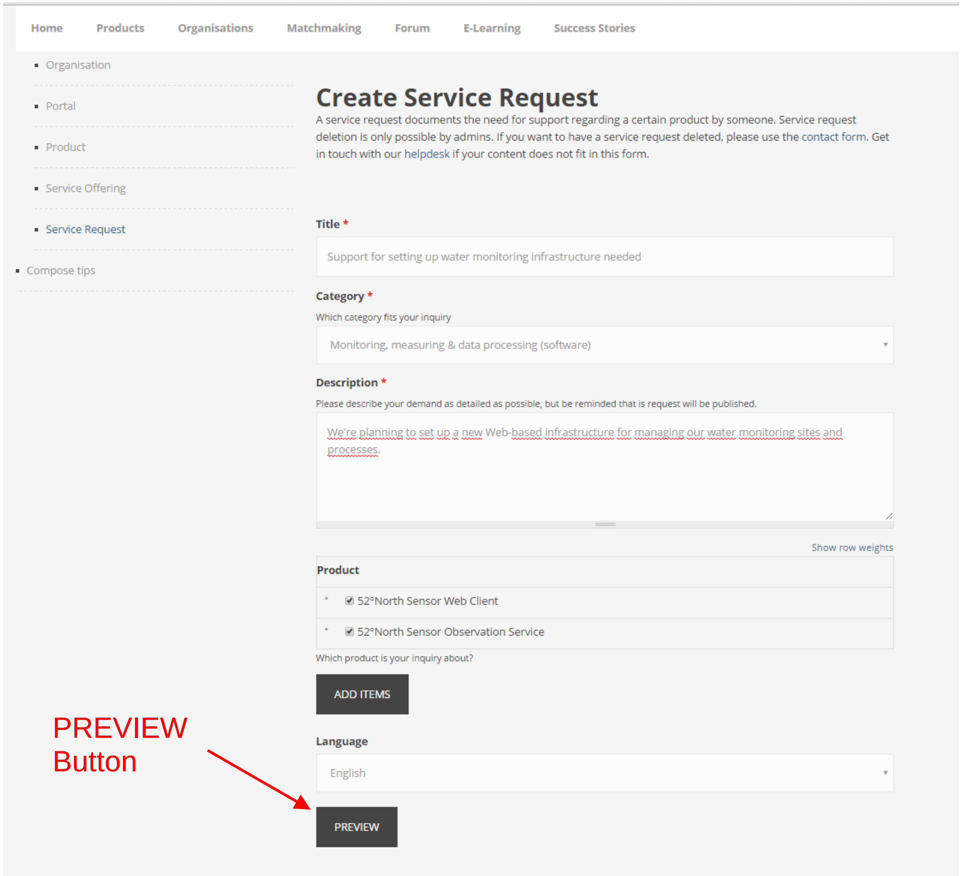


*Figure 62: Create service request with selected products and preview button*

In the preview, the user has the chance to do a final review of the service request and may still do further adjustments. Finally, he can press the *SAVE* button to save the new service request, as shown in Figure 63.

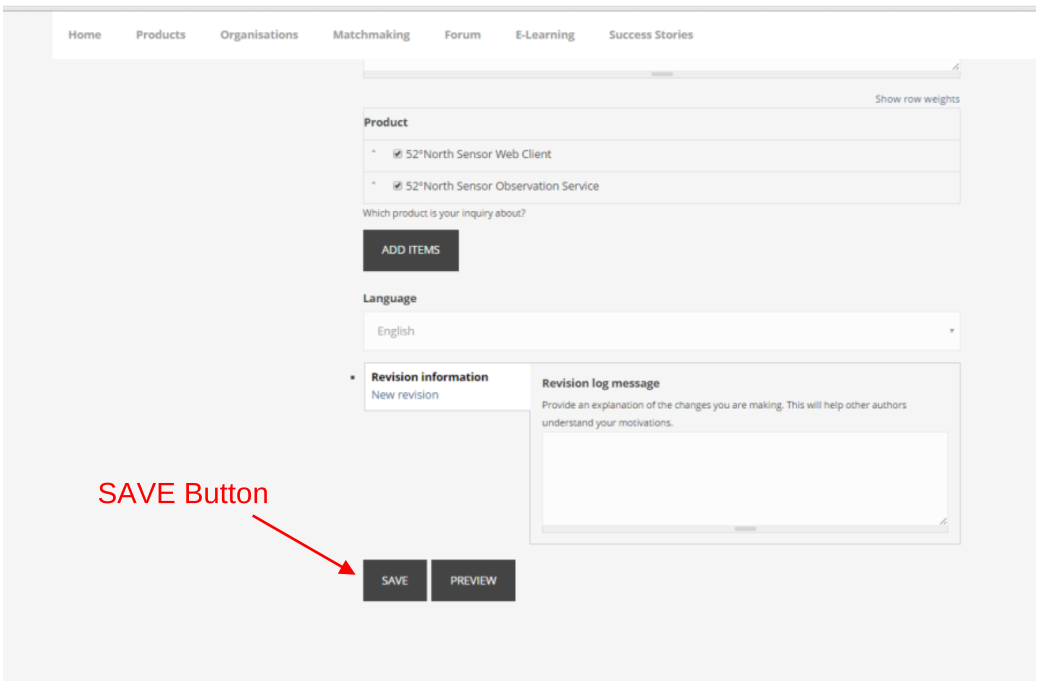


*Figure 63: Saving new service requests*

A success message as given in Figure 64 appears. The new service request is then queued to be checked by the moderator and, if everything is fine, will be released afterwards to the public.

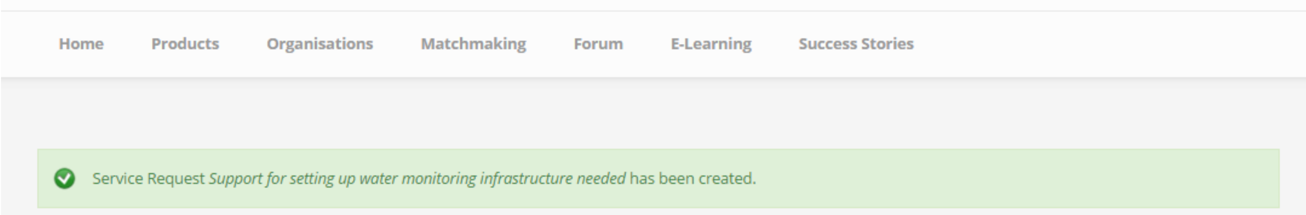


*Figure 64: Success message after adding a new service request*

## 4.6.2 Service Offerings

For service offerings, only the option to list all offerings is given in the *Service Offerings* tab (Figure 65).

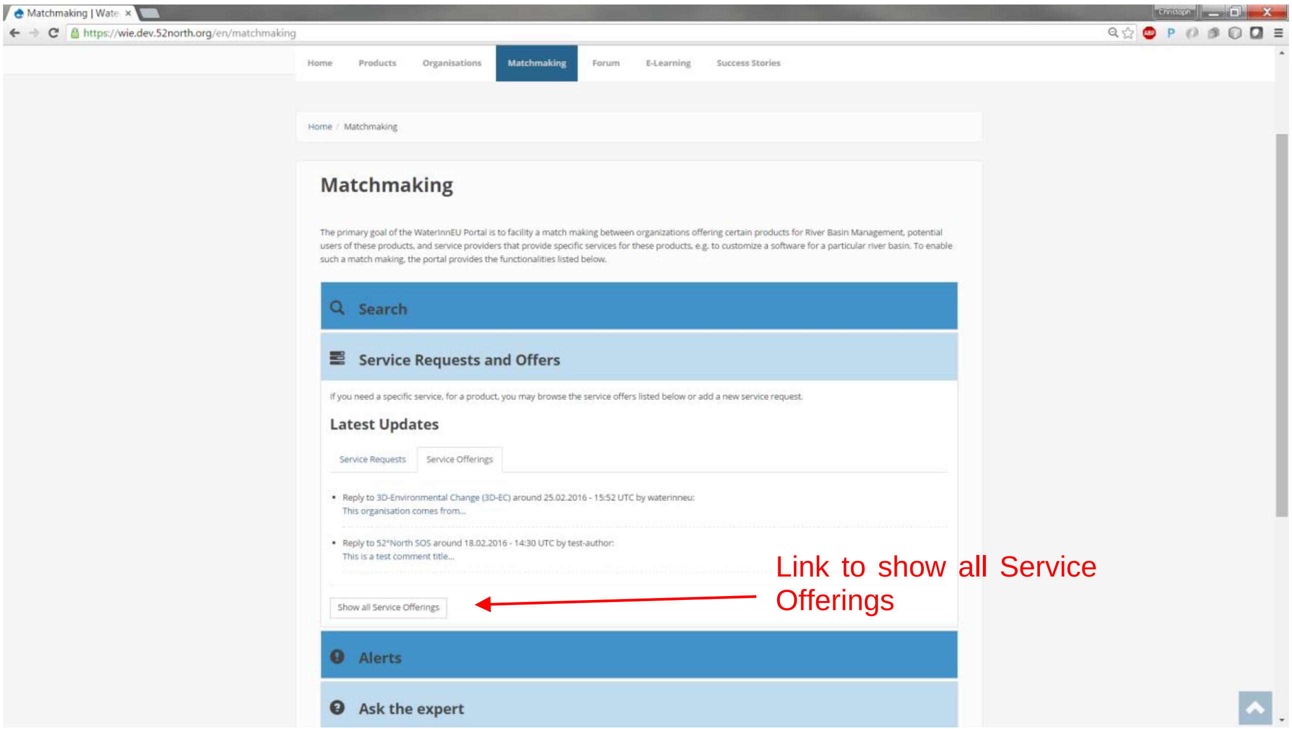


*Figure 65: Service offerings tab on matchmaking page*

Under the list of latest updates, the button *Show all Service Offerings* links to the list of all service offerings. The list looks similar to the list of service requests shown, except that details about the organisation offering the service are also provided (see Figure 66).

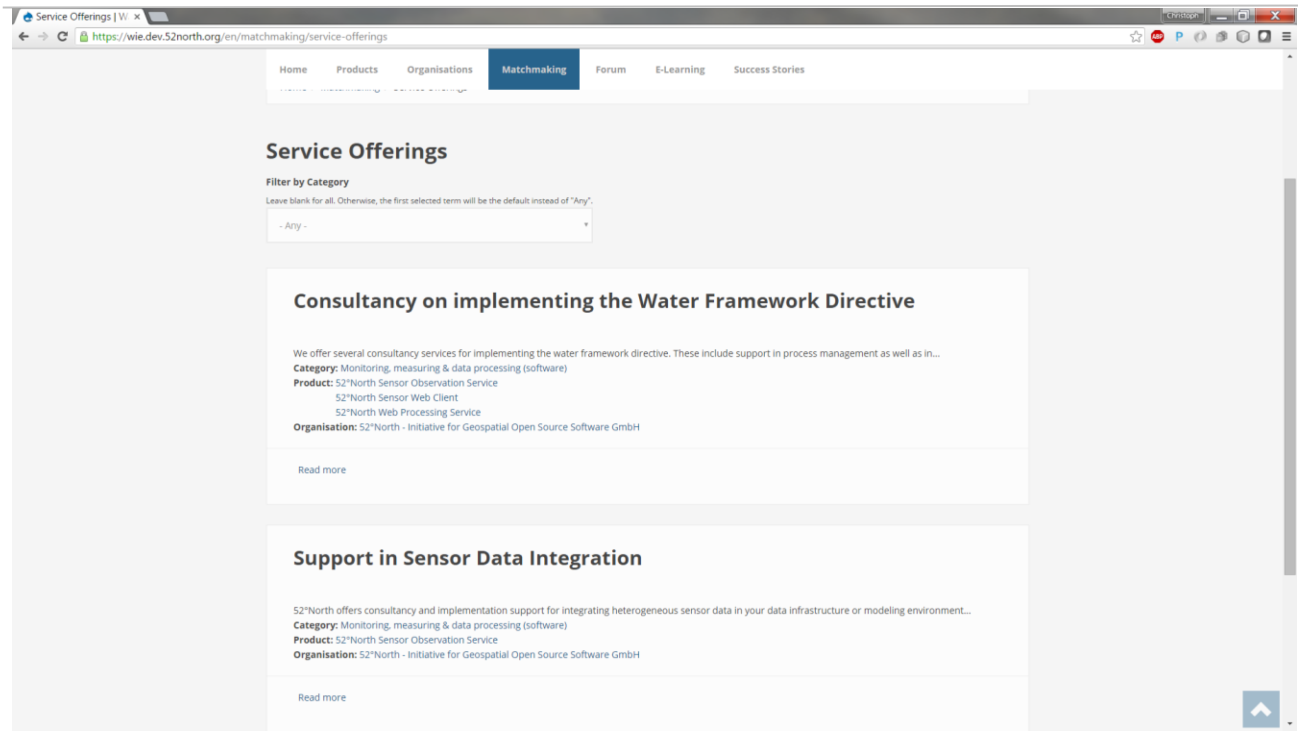


*Figure 66: List of service offerings*

The button for adding new service offerings is intentionally not provided at the *Matchmaking* page. Since service requests should be provided by existing members tied to organisations, we have decided to provide this functionality only in the main page for creating entries as described in Section 4.5.1. Once a portal member has chosen to create a new service offering, a form appears as shown in Figure 67.

In addition to service requests, the user can also select one organisation that offers the service. Again, once the user has finished editing, he needs to preview and afterwards save the service offerings. It will then be checked by the moderator and released afterwards.

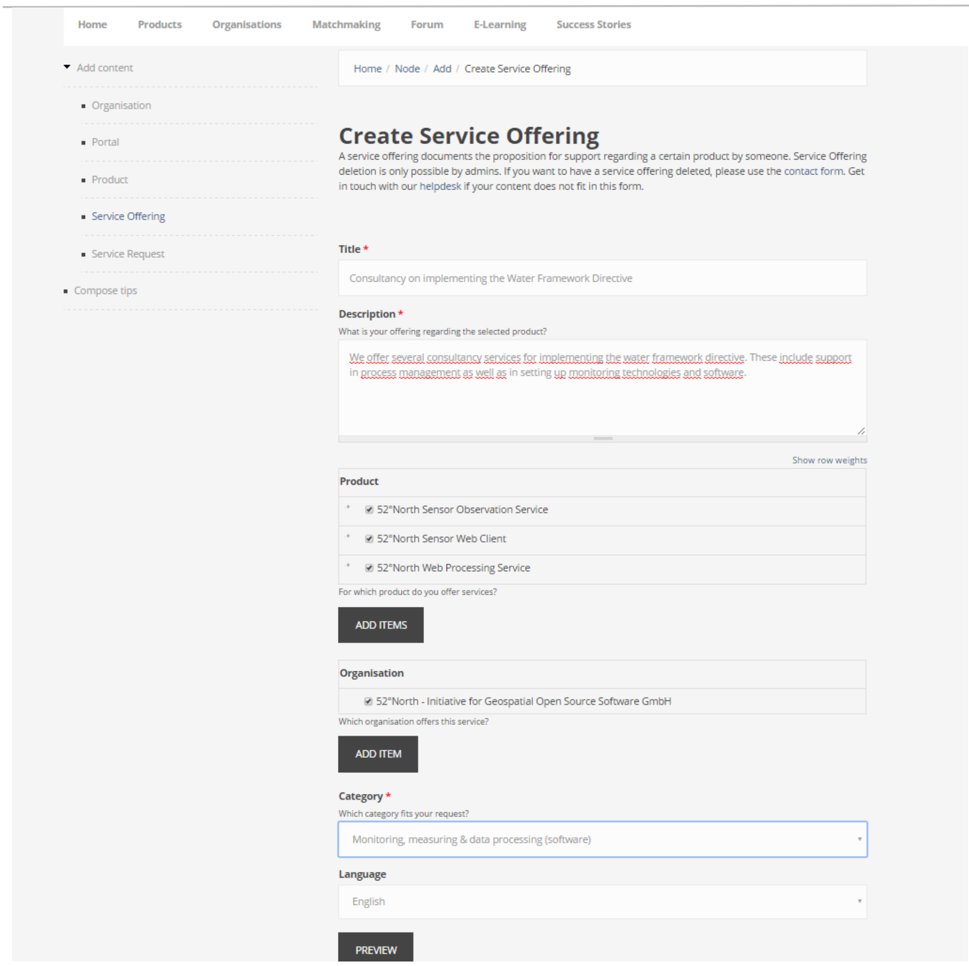

*Figure 67: Form for adding service offerings*

## 4.7 Using the Forum

The forum can be reached from the landing page, the Matchmaking page and the navigation bar. The landing page of the forum is shown below (Figure 68). The several threads are listed by *Title*, *Category* and with the number of *Posts* and *Views* and the latest update (*Updated*). As indicated at the bottom of the page, only logged-in members are able to add new content (threads or posts) in the forum.

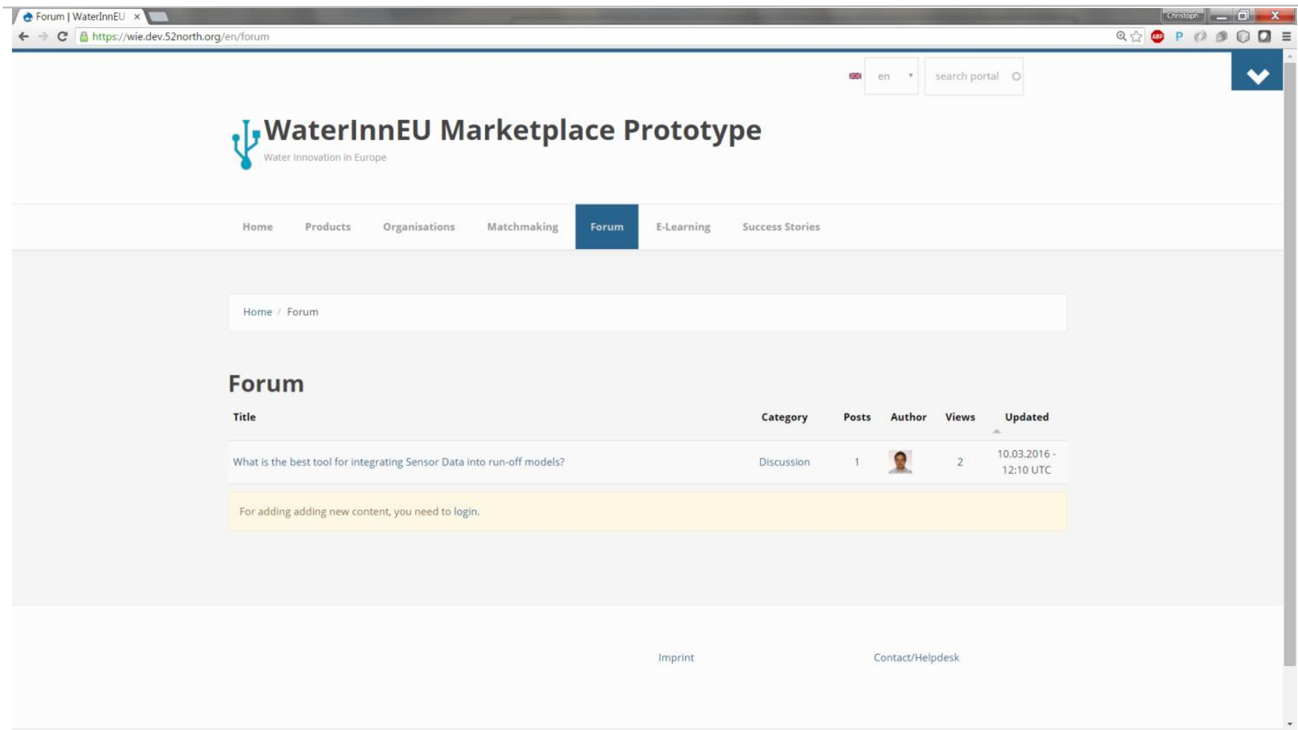


*Figure 68: Landing page of the forum*

Users can see the posts of a thread, if clicking on the title of a particular thread. The posts are of the single thread are then listed (see Figure 69).

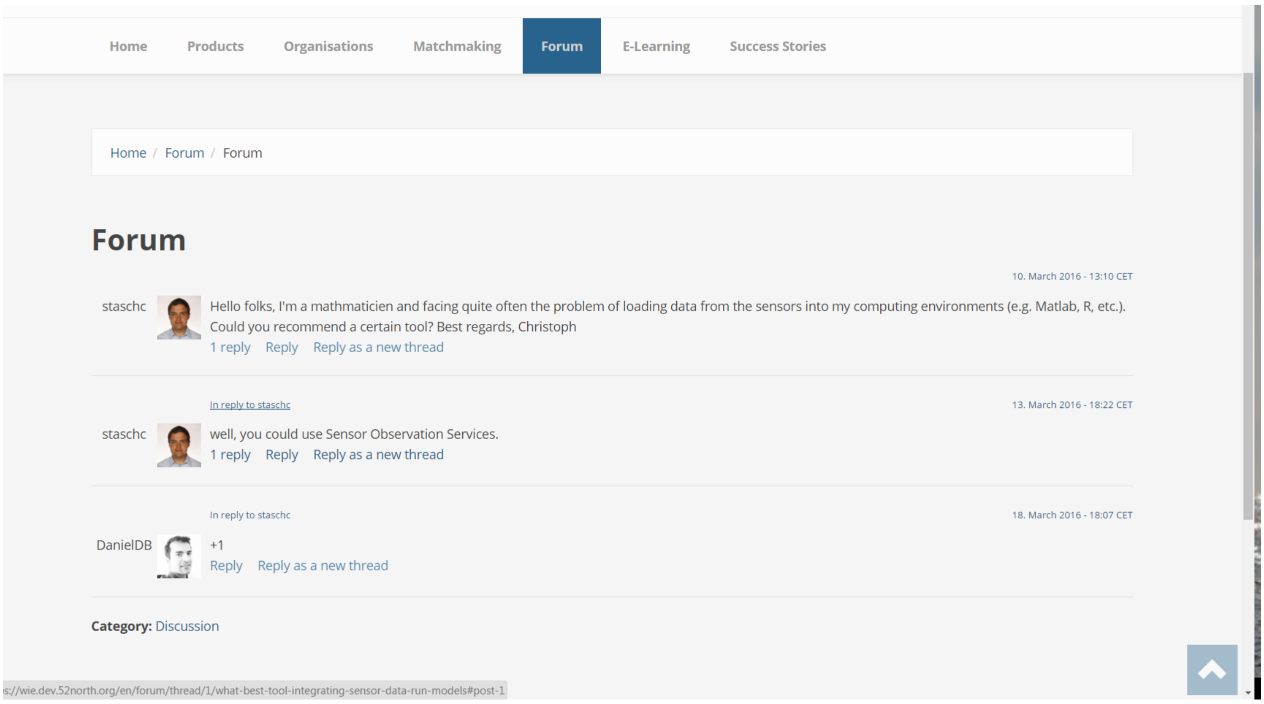


*Figure 69: Posts of a single thread in the forum*

If a user is logged in, he has also the ability to *Reply* or *Reply as a new thread*. If clicking on *Reply*, a new form for the reply opens, as presented in Figure 70.

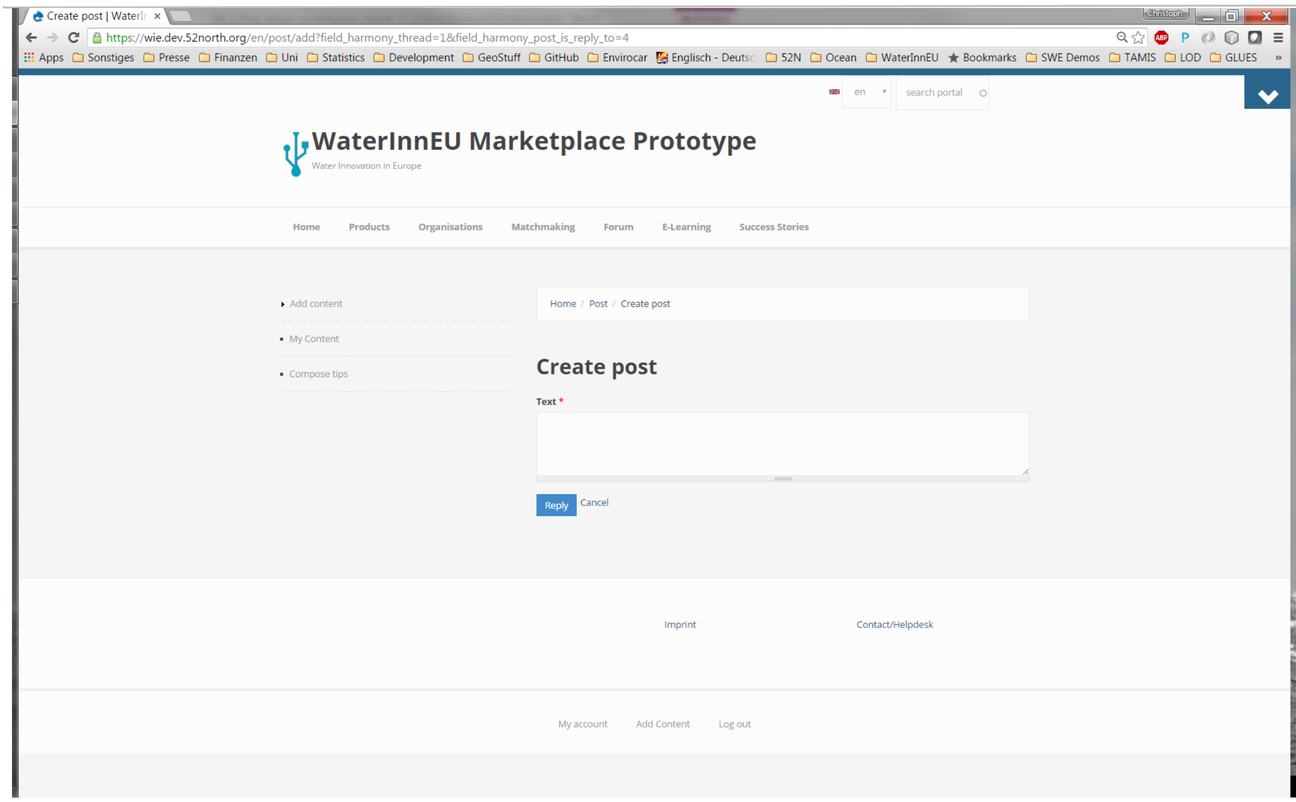


*Figure 70: Creating a post in a forum thread*

By clicking on *REPLY*, the new post is added in the thread. It can still be edited by the author at a later stage (Figure 71).

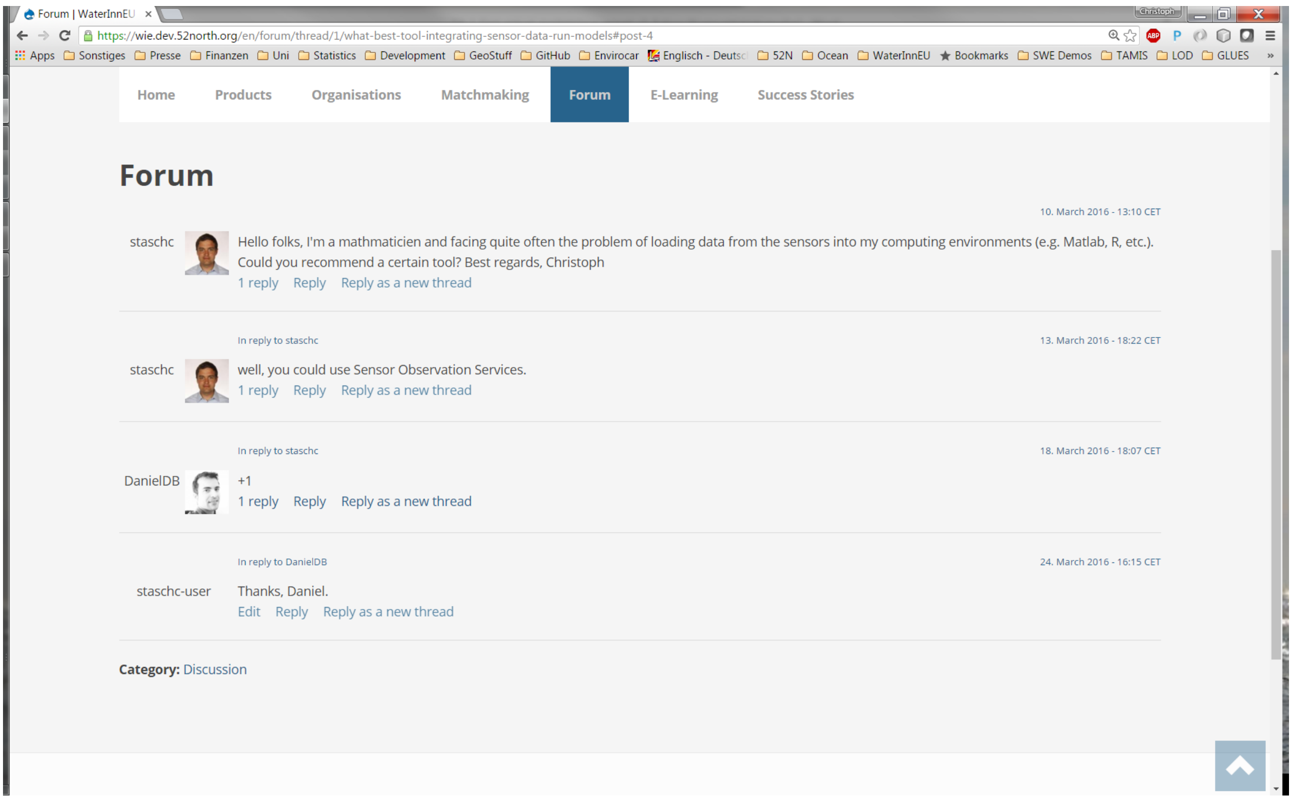


*Figure 71: Display of new post in forum thread*

## 4.8 Events

Upcoming (matchmaking) events can be added and edited by portal members and are accessible from the landing page (see Section 4.1) and the *Matchmaking* page (see Section 4.2.3). In both cases, the latest updates on events are shown as short links[15]. Furthermore, the user has the ability to see all *events* by clicking the *SHOW ALL EVENTS* button or to add new events using the *ADD NEW EVENT* button, as shown in Figure 72.

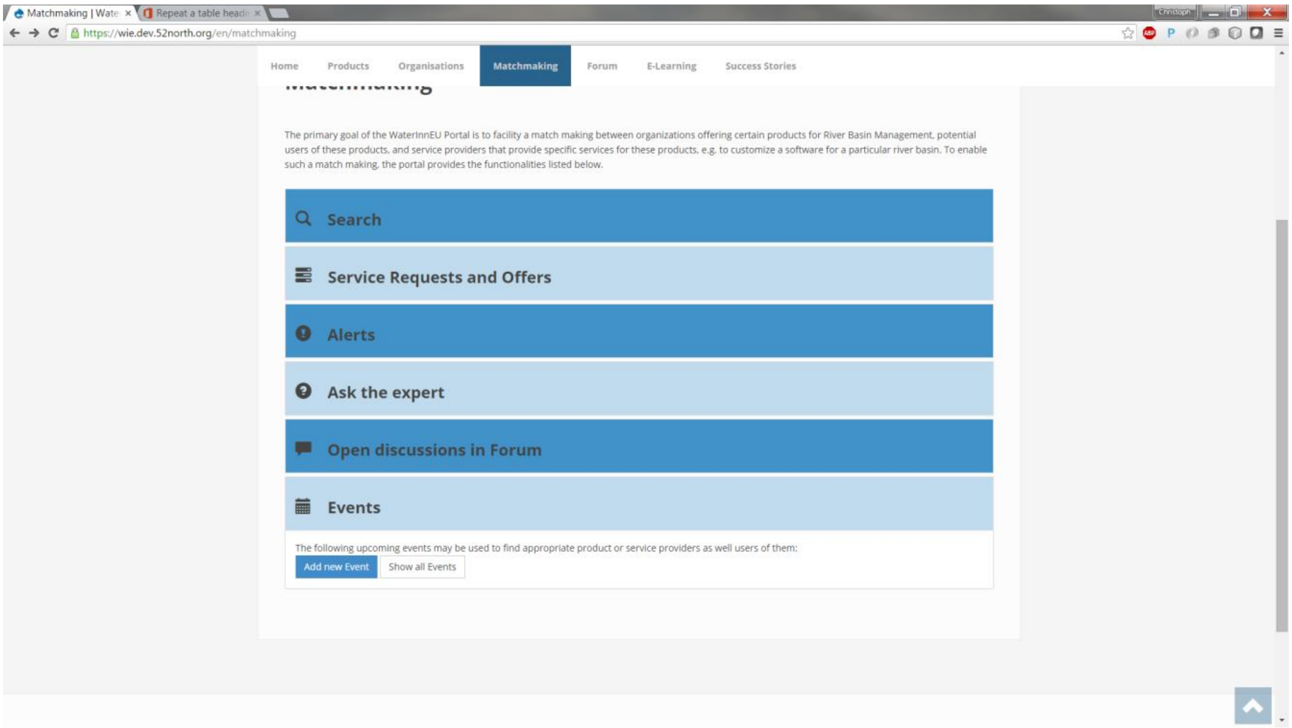


*Figure 72: Events section in matchmaking page*

The *SHOW ALL EVENTS* button opens a list showing all upcoming events are shown in Figure 73. The events can be filtered by its start date. Following the Read more link allows to retrieve a full description of the event. In the full description, comments can also be added about the event, e.g. whether it is considered to be useful or whether a certain side-meeting will be planned.

[15] **Note:** The listing of the latest updates on events is not yet fully implemented and will be available in the final Market Place prototype and hence described in the final version of this report (D6.4).

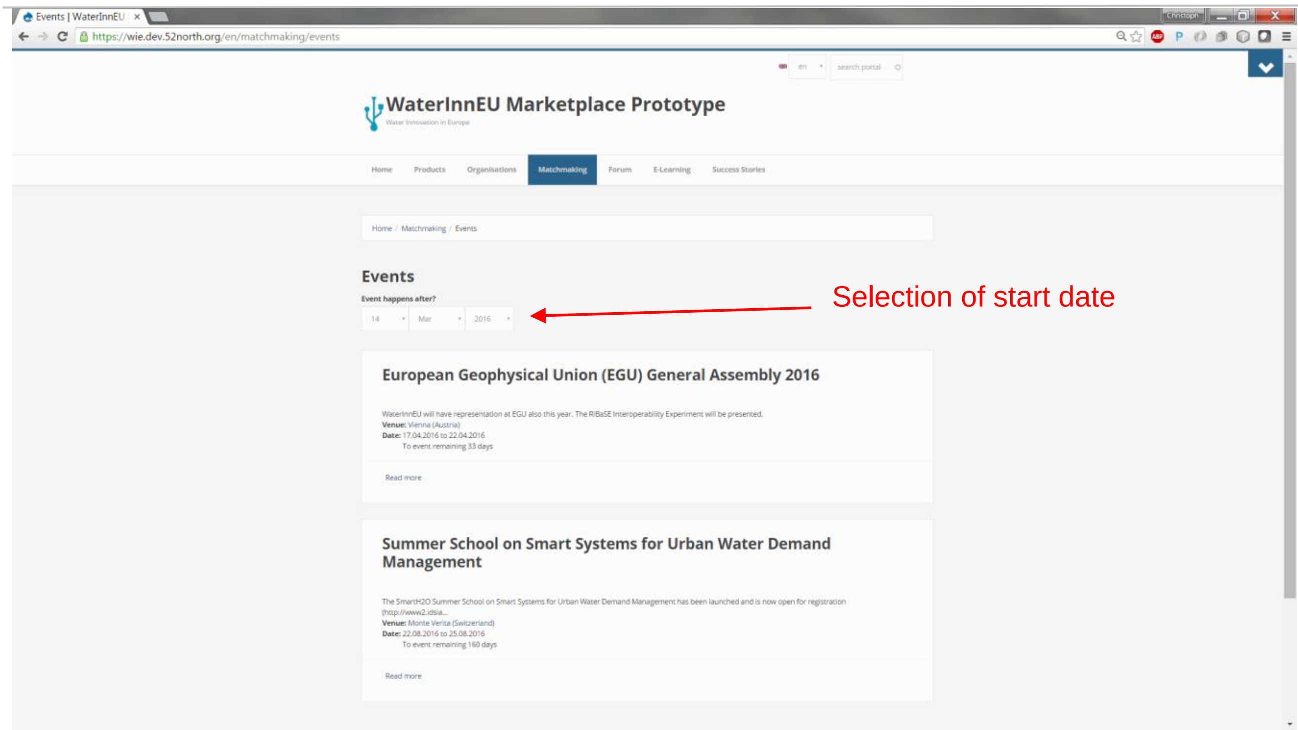


Figure 73: List of upcoming events

For adding new events, the *ADD NEW EVENT* button (shown in Figure 72) opens a form as displayed in Figure 74. For new events, the title, language, description, as well as start and end date and venue can be defined.

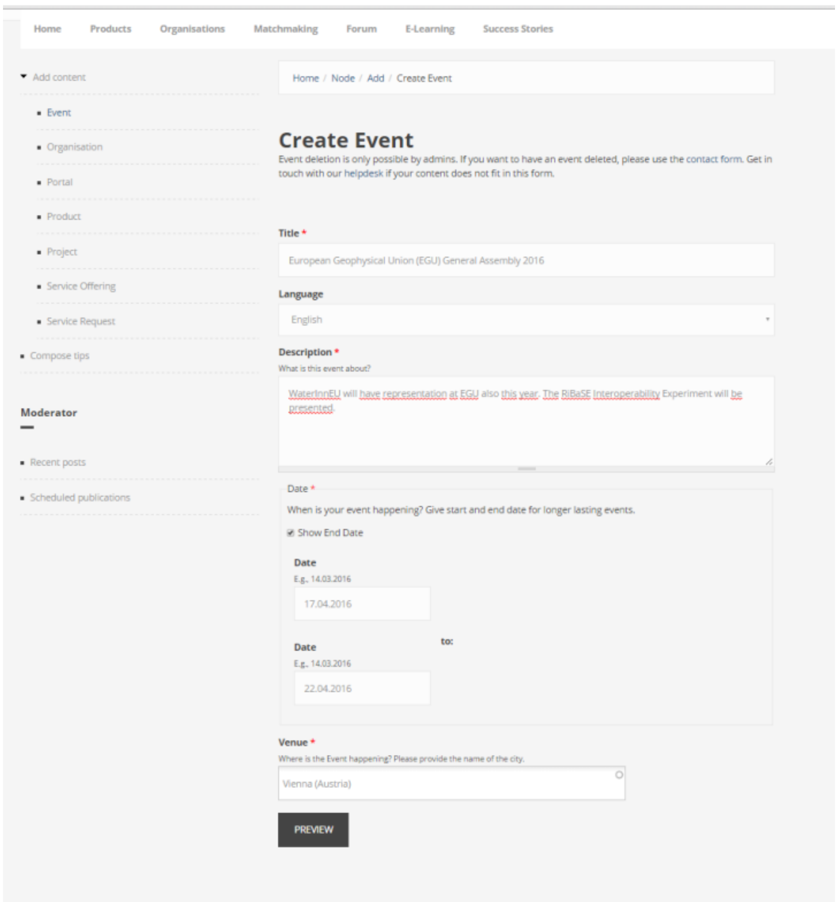


Figure 74: Form for creating events

After all information about the event has been altered, the user needs to *PREVIEW* the entry and can then use the *SAVE* button to save the entry. The event description is then scheduled to be checked by the moderator and will later be released to the public, if everything is fine.

## 4.9 Alerts

As mentioned in the overview of the Matchmaking page, the user has also the option to subscribe to new entries, in case he has not yet found a matching entry[16]. The main entry point is the *Alerts* section in the *Matchmaking* page. The form is shown in Figure 75. The user needs to specify the email-address to which the notifications should be sent once a matching entry is added in the portal. Furthermore, he needs to select the content type (e.g. product or service offering) and can select further categories for the subscription. Finally, after clicking the *Subscribe* button, the subscription is stored and the user will be notified, in case a new entry that matches his subscription is added. The user can unsubscribe by following a link in subscription emails, similar to unsubscribing from mailing lists.

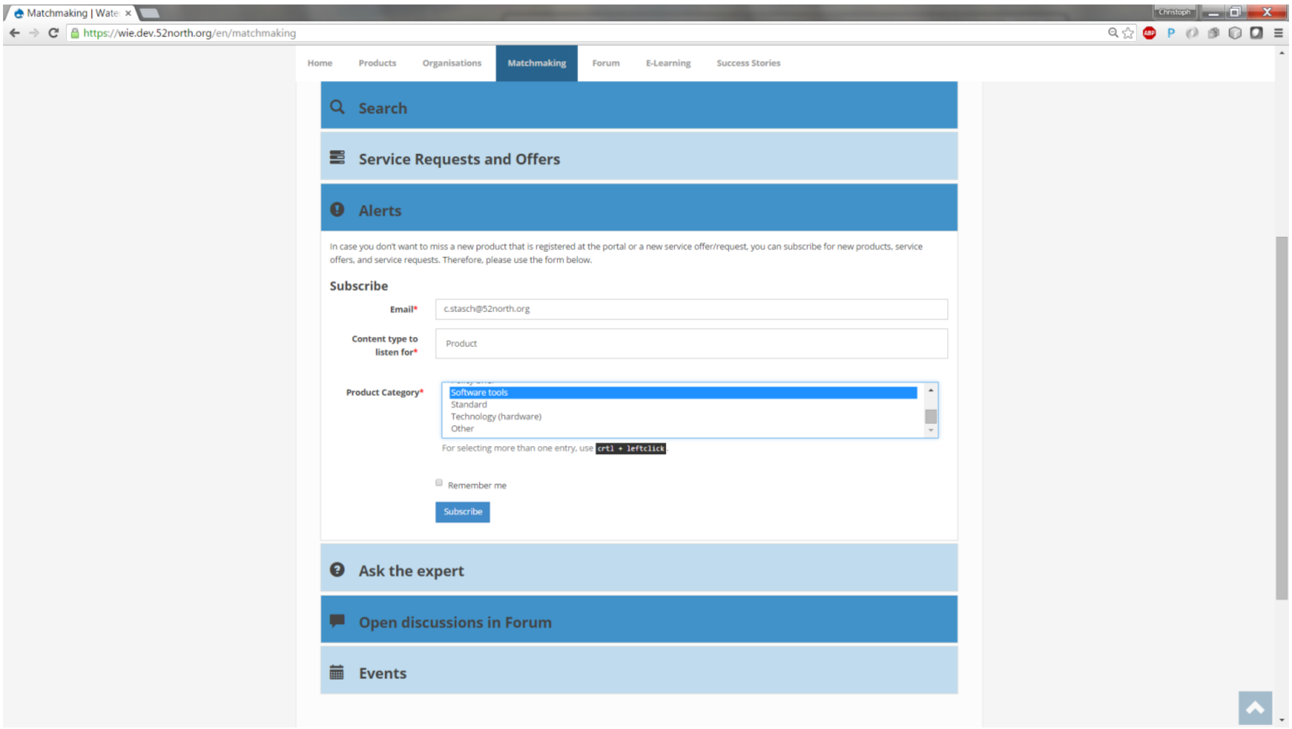


*Figure 75: Subscribing for new entries*

## 4.10 Contacting Experts

If none of the matchmaking functionalities fulfilled the needs of a user, she is also able to contact the experts of the WaterInnEU project. The experts can be contacted from the Matchmaking page as shown in Figure 76. In addition, the portal renders a *Contact/Helpdesk* link on the bottom of each page, which links to the same feature.

[16] **Note**: This functionality is not yet fully implemented and will be available in the final Market Place prototype and hence described in the final version of this report (D6.4).

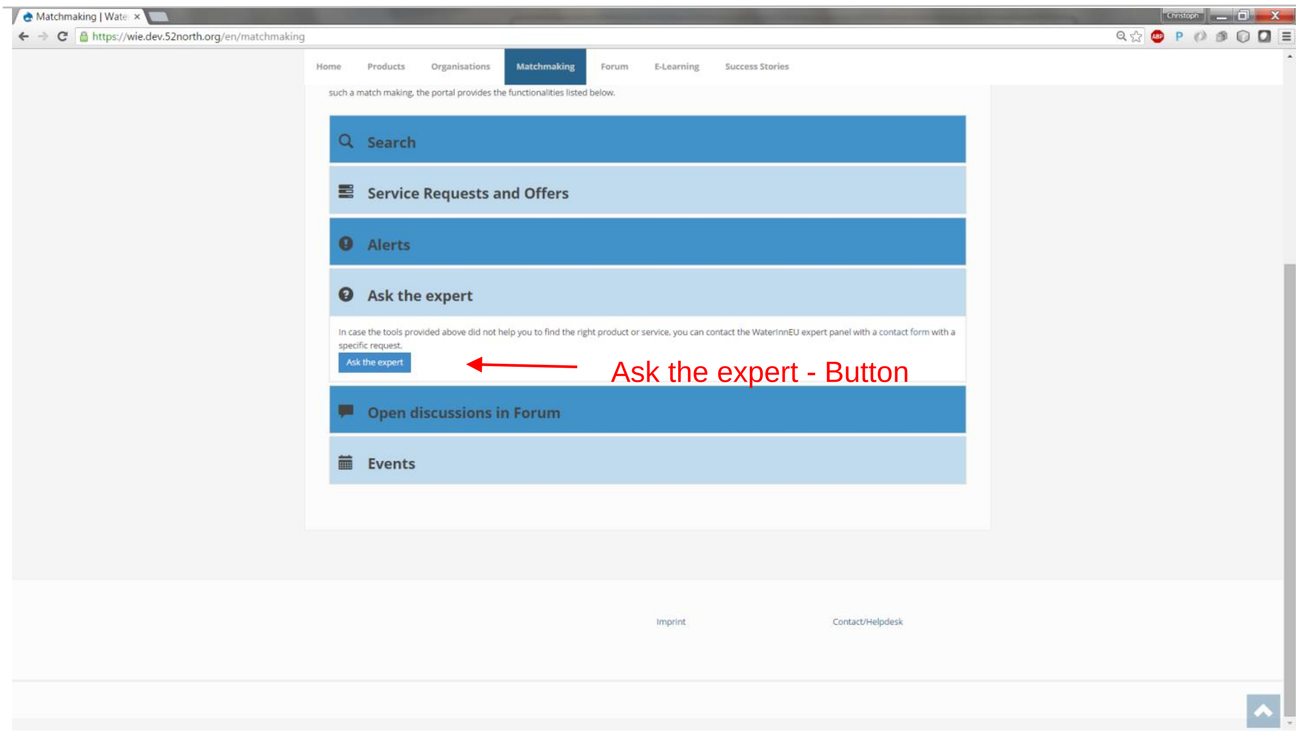


*Figure 76: Ask the expert*

If the user clicks on the *Ask the expert* button, a contact form appears, as shown in Figure 77, where the user needs to specify his name and email address as well as a subject and a category and the description of his help request.

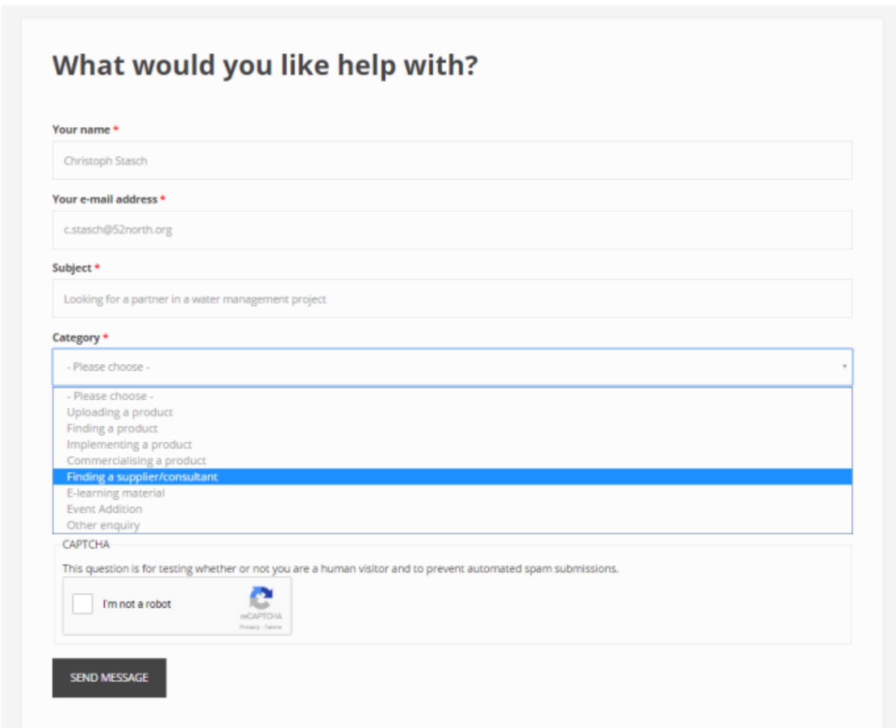


*Figure 77 Ask the expert form*

After clicking the *SEND MESSAGE* button, a success message is displayed as shown below (Figure 78).

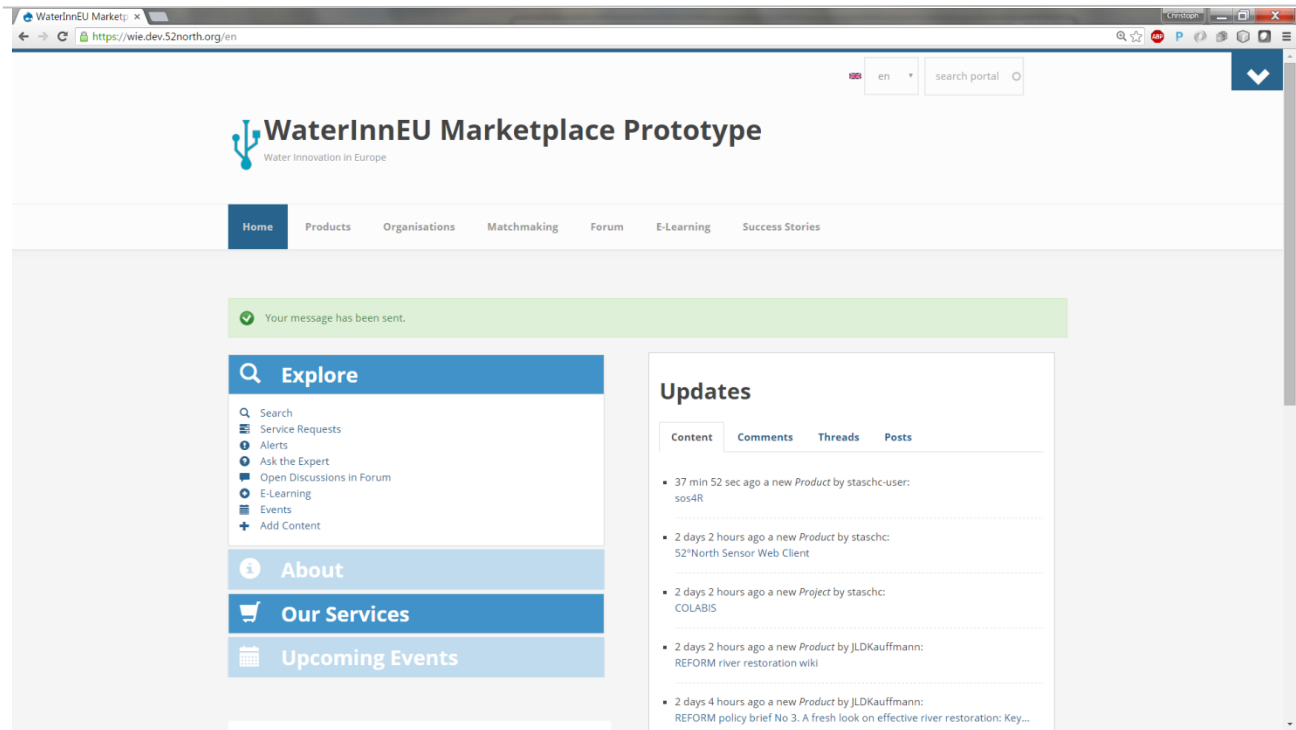


*Figure 78: Success message after asking the experts*

# 5 Discussion & Outlook

This deliverable describes the current status of the WaterInnEU Market Place prototype at month 13 of the project (31/03/2016). The prototype serves as a proof-of-concept for novel ideas developed in the project in order to facilitate matchmaking between products, potential users and service providers in the domain of Water management. The prototype has been implemented to address the requirements identified in the other work packages and is developed in an agile manner.

An important aspect, which is also part of task 6, is the integration with other projects and portals. Several options have been discussed in telephone conferences with the EIP-Water and WiDEST projects and, in addition, at the EIP Water conference in Leeuwarden in February 2016. At the moment, a loosely coupled approach appears to be the best solution. A potential solution for such a loose coupling is sketched in Figure 79. It would allow to generate new options to access the underlying data of the portals by a main entry point relying on common vocabularies.

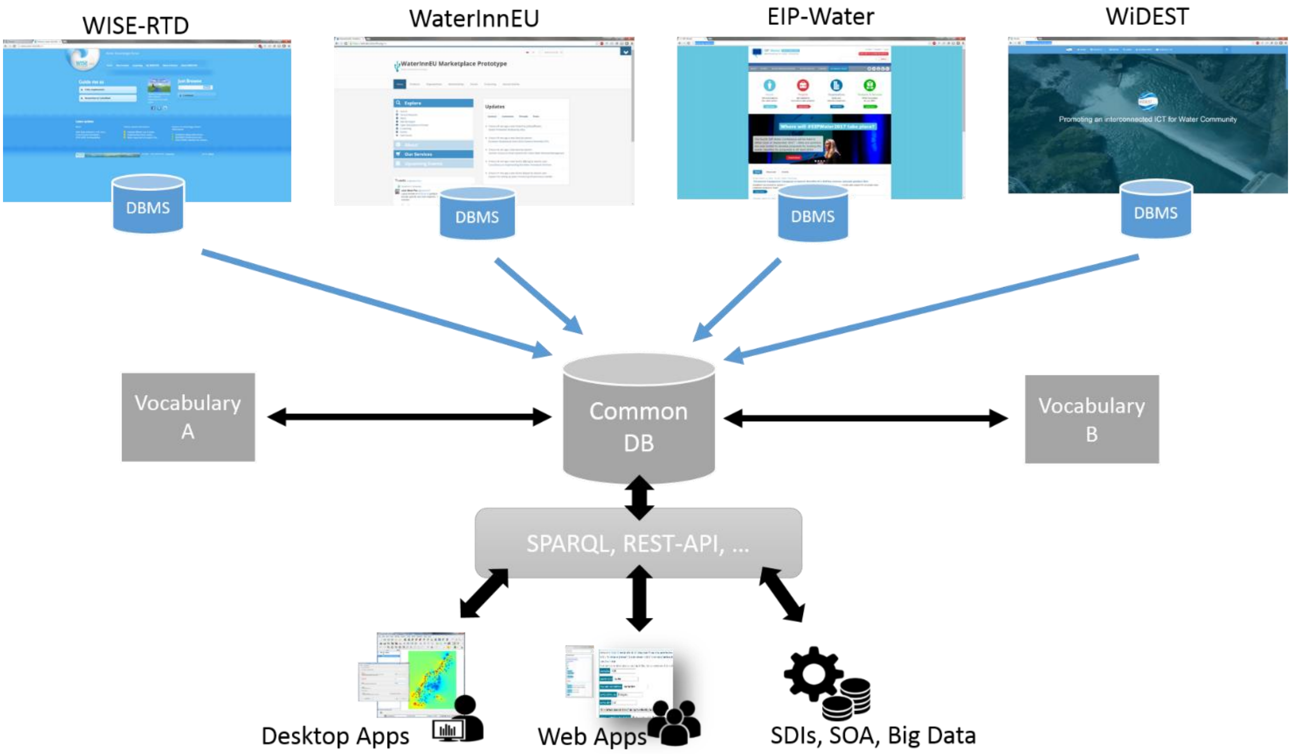


*Figure 79: Idea of a common database for water-related metadata*

The figure currently only presents the idea and no final decision about the approach, e.g. what database technology and which vocabularies to use, has been made, as the ideas are currently being discussed. Most likely, a triple store will be used, since it makes the implementation flexible (no pre-defined schema) and allows an explicit use of common vocabularies. Selected data may be transferred from the databases of the different portals or projects and would then be available for further usage in Web applications or other information infrastructures. The definition of the vocabularies and the database is planned to be done in close collaboration with the WiDEST project.

Besides setting up the common database, some future enhancements are planned for the second phase of the project. The current Market Place provides the following core functionalities:

- browsing by linked categories through products, projects and organisations
- common panel for upcoming events
- collaborative creation and editing of products, organisations, projects, and events
- a common place for adding and browsing service requests and service offerings
- simple keyword search and advanced search facilities
- user feedback in the form of comments
- forum for open discussions about products or other related information

The following functionalities will be completed in the second implementation phase for the final demonstrator:

- Alerts: the subscription mechanism is not yet fully implemented.
- Matchmaking: The listing of the latest updates on service requests and offerings and events is not yet dynamically filled.
- Success stories: The success stories will be added from the case studies and the interoperability pilots once these are finished.
- E-Learning platform: The development of the e-leaning tools starts with the second phase of the prototype. The implementation will be directly integrated in the current prototype so that conflicts with modules used will be avoided.

- Enhanced user feedback: enhance the user feedback beyond text comments, e.g. by implementing a five-star rating similar to large online-Market Places like Amazon.

The requirements and user stories will be continuously updated with feedback and results from the case studies and interoperability pilot. Further enhancement that are currently considered to be realized, depending on the resources available, are as follows:

- Support for further languages
- Support for listing similar products: people who visited product A were also interested in product B.
- Analogy to a dating app: provide facilities to ease direct interaction between portal members; the subscription mechanism is considered to be a functionality towards a dating app.

Further enhancements and feedback will also be collected and described in the final report for the virtual Market Place prototype that will be delivered in month 20 as D6.2.

# Annex

# Annex A

### Product Specification Sheet

| Field name | Cardinality | pre-defined terms for drop down selection or Text | Field Description (Questions are visible for all; bullet points only for suppliers) | Dependency on base category (also limited categories) |
|---|---|---|---|---|
| **Title** | 1 | FREE TEXT | What's the title or name of the product? | |
| **Version** | 0..1 | FREE TEXT | What is the version or publication date of the product? | |
| **Description*** | 1 | FREE TEXT | What is the product about?<br><br>- Short description of the product and background information | |
| **Related Links and Supporting Material** | 0..n | LINK | Where can I find relevant information or download the product?<br><br>- Links to websites of the product or to projects where the product has been implemented.<br>- Download material such as worksheets by the supplier of the product. | |
| **Category*** | 1 | Policy brief<br>Best practice guidance<br>Technology (hardware)<br>Software tools<br>Dataset<br>Methodology<br>Standard<br>Other | What type of product is this? | Software tools subcategory activated only if Software tools is chosen. |

| Field name | Cardinality | pre-defined terms for drop down selection or Text | Field Description (Questions are visible for all; bullet points only for suppliers) | Dependency on base category (also limited categories) |
|---|---|---|---|---|
| **Type of Software** | 0..1 | Monitoring and measuring<br>Data processing<br>Hydrological modelling<br>GIS and remote sensing<br>Participation, decision making, role playing games<br>Socio-economic analysis<br>Other software tools | What is the type of software? | Only visible, if "Software tools" is chosen in Category. |
| **Type of Hardware** | 0..1 | Instrumentation & control<br>Biological or chemical treatment<br>Water supply and wastewater<br>Irrigation and drainage<br>Other hardware | What is the type of hardware? | Only visible, if "Technology (hardware)" is chosen in Category. |
| **Purpose*** | 1..n | Setting objectives<br>Selecting measures<br>Socio-economic analysis<br>Characterization of water bodies (including mapping)<br>Pressures and impacts<br>Public participation<br>Data processing (spatial or geographical)<br>Planning process<br>Financial management<br>Intercalibration<br>Monitoring and reporting<br>Modelling and prediction<br>Reference conditions<br>Infrastructure planning<br>Other | For which tasks in water resources management can the product be used? | |
| **Issue*** | 1..n | Ecological or chemical status<br>Floods and droughts<br>Climate change and energy<br>Ecosystem services<br>Urban areas<br>Water conservation and recycling<br>Other | What subject is the product related to? | |

| Field name | Cardinality | pre-defined terms for drop down selection or Text | Field Description (Questions are visible for all; bullet points only for suppliers) | Dependency on base category (also limited categories) |
|---|---|---|---|---|
| **Relevant water bodies*** | 1..n | Rivers<br>Lakes<br>Artificial and heavily modified waterbodies<br>Coastal and transitional waters<br>Groundwater<br>Wetlands<br>Protected areas<br>Rain and precipitation<br>Other | What types of water bodies is the product related to? | |
| **Target user group*** | 1..n | Research organisation<br>Supplier<br>Industry consultants<br>Utility<br>Asset owner<br>Trade associations<br>Government (and associated bodies) – policy<br>Government (and associated bodies) – practitioners<br>Regulator<br>Campaigning organisation or charity<br>Funding and investment<br>Training provider<br>Water user representative<br>Networking organisation<br>Other | What is the target user group of the product? | |
| **License / copyright*** | 1 | Public domain<br>Free and open source<br>Proprietary<br>Other | Is this a commercial, free or open source product?<br>- Please give details of accessibility criteria in the free text box. | |
| | | FREE TEXT | | Only visible, if “Other” is selected. |

| Field name | Cardinality | pre-defined terms for drop down selection or Text | Field Description (Questions are visible for all; bullet points only for suppliers) | Dependency on base category (also limited categories) |
|---|---|---|---|---|
| **Costs*** | 1 | For free<br>< EUR 5000<br>EUR 5000-10,000<br>EUR 10,000-25,000<br>EUR 25,000 to 50,000<br>>EUR 50,000<br>On request | What are the costs related to the product?<br>- For example, licence costs, costs for implementation and development of the product.<br>- Please give cost details in the free text box. | Not applicable to policy brief or best practice guidance. |
| | | FREE TEXT | | Only visible, if “Other” is selected. |
| **Type of input requirements** | 1 | FREE TEXT | What requirements does the product have regarding knowledge, data and technology? | Not applicable to policy brief or best practice guidance. |
| **Type of output** | 1 | FREE TEXT | What are the outcomes of the application of a product?<br>- For example, analysed and prepared data qualitative data of stakeholder dialogues, model visualisation, alerts etc. | Not applicable to policy brief or best practice guidance. |
| **Potential to combine this tool with other tools** | 1 | FREE TEXT | Which other products is this product compatible with?<br>- For example, products in support of better integration e.g. an integrated model for linkage between surface waters and groundwater or climate models; software tools etc. | Not applicable to policy brief or best practice guidance. |
| **Application scale*** | 1,,n | Individual monitoring site<br>Farm<br>Water body (or river section)<br>District<br>Catchment<br>Regional<br>National | What is the relevant scale of application of the product? | Not applicable to policy brief or best practice guidance. |
| **Supported legacy systems** | 1 | FREE TEXT | With which (data-) systems can the product be used? | Not applicable to policy brief or best practice guidance. |
| **Supported standards** | 0..n | FREE TEXT | With which international and/or national standards is the product compatible? | Not applicable to policy brief, best practice guidance or standard. |

| Field name | Cardinality | pre-defined terms for drop down selection or Text | Field Description (Questions are visible for all; bullet points only for suppliers) | Dependency on base category (also limited categories) |
|---|---|---|---|---|
| **Standard Category** | 0..n | Data discovery (metadata/ catalogues)<br>Data encoding<br>Data visualization<br>Data Downloading<br>Sensor data<br>Processes and models<br>Other | What is the standard category | Only applicable, if at least one supported standard is chosen. |
| **Technology Readiness Level (TRL)** | 1 | Estimated TRL level | What is the status quo of the development of the product?<br>For standard TRL definitions, please use | Not applicable to policy brief, best practice guidance, methodology, standard or dataset. |
| **Innovative Advantages** | 1 | FREE TEXT | What is the unique selling point of the product? | Not applicable to policy brief, best practice guidance, methodology, standard or dataset. |
| **Project** | 1 | DATE, NAME OF PROJECT, FREE TEXT | What is the name of the project in which the product has been developed? | |
| **Organisation / Institution*** | 1 | FREE TEXT | What is the name of the products' developer organisation? | |
| **Best practices** | 1 | FREE TEXT, LINKS | What are best practices and lessons learned from the application of the product?<br><br>Where can I find this information? | |
| **E-learning tutorials** | 0..n | LINKS | Is there an E-learning tutorial for the product on The Virtual Market Place and where can I find it? | |
| **Contact details*** | 1 | FREE TEXT | How can I get in contact with product and / or service provider, river basin managers and consultants related to the products?<br><br>- E-mail, telephone, country etc. | |
| **Comments** | 1..n | FREE TEXT | What are the experiences users have had with the application of the product?<br><br>- Recommendations by product supplier and users. | |

*Mandatory fields

**List of potential product/services categories: for the 'Organisation' template (ie for the matchmaking between service offerings and service requests):**

| | |
|---|---|
| Biological or chemical treatment | |
| Socio-economic analysis | Finance and funding |
| Electrical & mechanical services | Irrigation & drainage |
| Instrumentation and control (hardware) | Modelling and decision support |
| Laboratory services | Pipes and pipelines |
| Monitoring, measuring & data processing (software) | Pumps, tanks & valves |
| Research | Training |
| Waste water treatment | Waste and sludge disposal |
| Water conservation and recycling | Water supply and treatment |
| Ecosystem services | GIS and remote sensing |