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<b>Author</b>	Sandra Murg, Silvia Russegger
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In Task 2.2 a web based tool portal was created for managing products, test results and further data such as manufacturer and company information. This tool was made available to the consortium and will be developed further to integrate the test results and questionnaires as they are created during the test phase of OptimaSteel. This document describes the aforementioned tool.



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<sup>1</sup> PU = PUBLIC

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

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## Abbreviations and acronyms

<b>EWF</b>	European Federation for Welding, Joining and Cutting
<b>JR</b>	JOANNEUM RESEARCH
<b>KoM</b>	Kick-off-Meeting
<b>PSA</b>	Peugeot Citroen Automoveis Portugal, S.A.
<b>WP</b>	Work Package

# 1. Aim and objective

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In Task 2.2 a web-based tool portal was created for managing products, test results and further data such as manufacturer and company information. This tool was made available to the consortium for using/testing and **data entry** in project month 12 (May 2020) and will be developed further to integrate the test results and questionnaires as they are created during the test phase of OptimaSteel. The final version including the questionnaire results and gathered sensor data will be made **public as a read-only version** for a wider range of interested parties when the data sets are available.

This document describes this tool and can be used as a tutorial.

## 2. Introduction

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Within the OptimaSteel project, tools are being collected and evaluated. These are intended to make the workplace more suitable and better for employees, especially in the steel processing industry, but also to improve their quality of life. Ranging from tools for raising awareness of nutrition and physical activity up to the use of sensors to evaluate living habits these should and can lead to a change in living habits and thus to longer fitness and health in old age - even beyond the workplace.

With the ToolPortal.Web a tool is made available, with which on the one hand the applications can be managed, but on the other hand, also user data (i.e. test results) can be added to evaluate the use of the applications. In the following the basic functions of the ToolPortal.Web are described.

## 3. Overview

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ToolPortal.Web is a database application where fields and entry masks are freely configurable. In addition to data acquisition, great importance was given to providing an application that not only manages data on applications, but also records their use and provides evaluations.

The development of the portal is based on the **Model-View-Controller** pattern, where development is separated into the components data model, presentation and program control. This allows complete flexibility and separation of the program components.

The basis is a **relational database**, which can be designed flexibly. In addition to the predefined standard fields, system administrators can create fields and generate their own entry screens to cover specific requirements.

During development and design, great importance is attached to ensuring that the look and feel of the system are consistent throughout, so that the user can quickly find his way around every page of the system.

## 4. Starting the application

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The ToolPortal.Web is accessed via a link in common web browsers such as Chrome, Firefox, Safari or Internet Explorer. After opening the webpage the user can find the login possibility in the top right of the screen:



*Figure 1: Language change and Login Button*

Here the user can either change the screen language or enter the system by entering the login credentials. Changing the language can result in the need for re-entering the user credentials (i.e. log in again).

After logging in, the user will be taken to the home page. This page is the starting point for working with ToolPortal.Web.

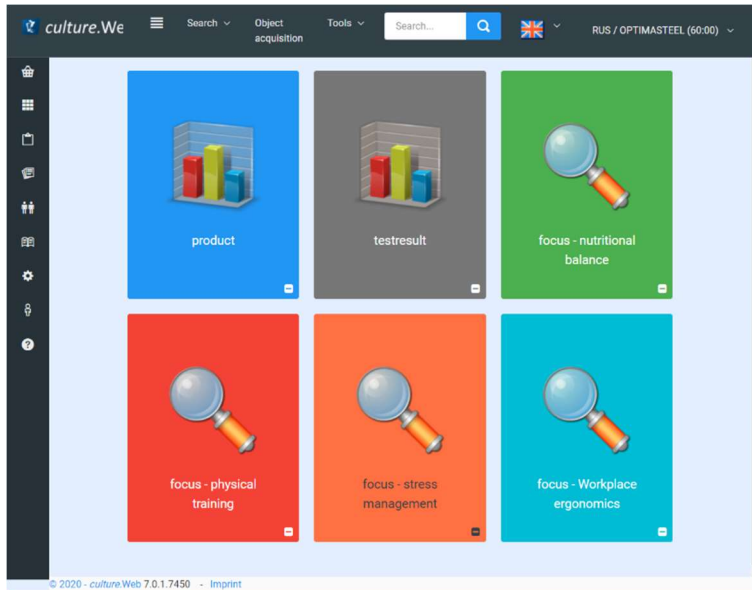


Figure 2: Home Screen

In addition to general functions - such as search and retrieval, data entry, full-text search and profile settings, which can be found in the menu bar at the top of the screen, the function bar appears on the left-hand side. Here the user will find options such as list management, system administration, user rights assignment and similar. The available options depend on the rights of the current user.

The centre of the screen is formed by quick access buttons (so-called tiles), which allow the user to call up individual system functions very quickly. The functions displayed here - comparable to favourites in other systems - can be set user-dependently. In this way, the access can be adapted for each user and designed very clearly.

To delete favourites from the home screen just click on the little minus (-) on the right bottom. To create favourites, click on the little yellow stars whenever they appear. E.g. if the user clicks on "saved searches" all saved search criteria combinations are displayed.

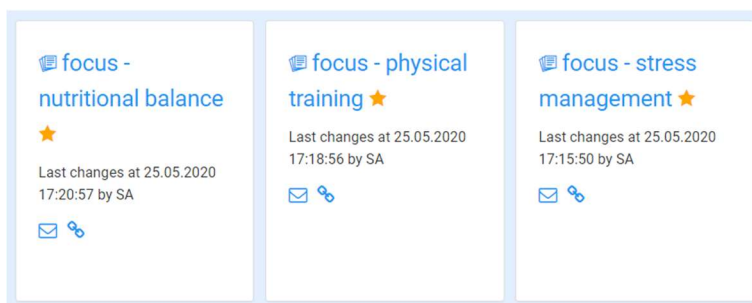


Figure 3: Create favourites

By clicking the yellow star, the user declares this special saved search as favourite. If the user changes to the home screen (s)he then can directly use the favourite.

There are two menu bars included in the screen of the portal. The menu bar at the left contains general functions as administration, master data, thesaurus edit, and similar. The menu bar at the top differs depending on the detail functions and features that have been selected by the user.

#### 4.1. Menu bar on the left

By clicking on the button  the user can fold or unfold the description of the menu bar.

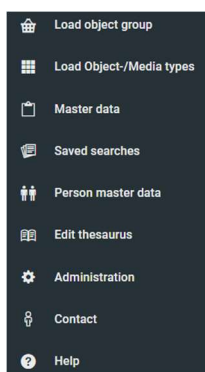


Figure 4: Left menu bar unfolded

The following table gives an overview of the functions.

Table 1: Functions overview

Function	Description
Load object group	After a search for objects the user can create a kind of “basket” combining the retrieved found object datasets. With this button (s)he can reload these combinations of datasets.
Load object/media types	Object type is a basic, initial classification of the objects that are stored in the database. Using the master data "Object data/Object types" the user can define their own additional classifications in order to classify and document their holdings individually. In OptimaSteel we use “products” and “testresults” as first classification.



	<p>To get a first overview on the object, the user just needs to click on the button in the menu bar and then on the object type (s)he wants to load. The result will be a list of all object datasets in the database classified under this object type.</p> <p>As the user can also enter different media types – such as images, documents, videos... these data objects are also categorized into different media types.</p>
Master data	Master data is understood to be simple lists of terms, which serve to facilitate simple, rapid and uniform recording. examples: Input types, colors, focus
Saved searches	Displays a list of all private and public (created by another user and stated as public) search criteria combinations which have been saved for convenient quick access.
Person master data	Person data is a special form of master data with especially created fields and forms.
Edit thesaurus	Thesaurus data are lists of terms within which terms are related to each other. This relationship can take the form of hierarchy levels, for example. This means that a term can have a generic or subordinate term. Example: Lists of places, which are arranged hierarchically according to the official calendar.
Administration	This link leads to the administration features of the system, like user and rights management.

## 4.2. Object group

Object selection is the saved result of a performed search. This means that the objects that were determined as the result of a search are grouped together as a small "subset" of the dataset (a kind of “basket”) and this list is saved under a separate name.

To create an object selection, the user has to mark the object datasets (s)he wants to group in the object list by clicking in the very first column.

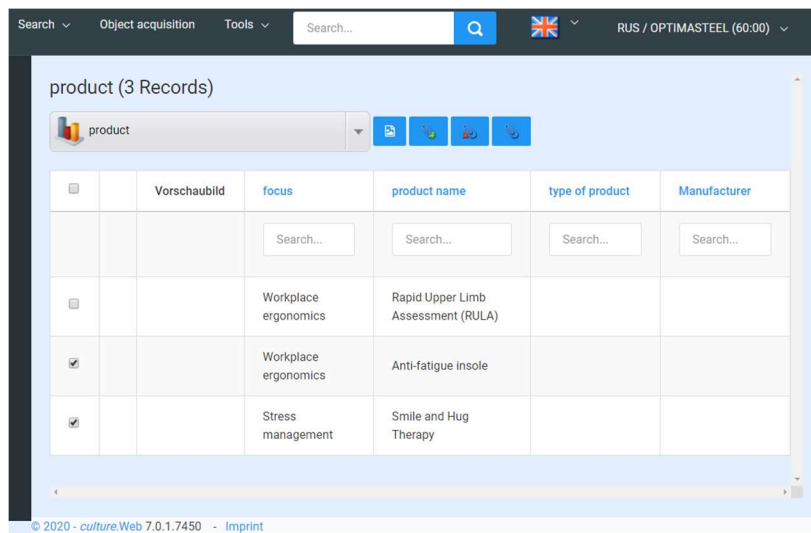


Figure 5: Marked datasets for creating an object group

Then selects the menu “marked data records for object selection ...” and enters a name that will be used later on for reloading the object list.

The user will find all saved object groups under “Load object group”.


### 4.3. Master data



Master data is understood to be simple lists of terms, which serve to facilitate simple, rapid and uniform recording i.e. Input types, colors, focus.

If certain object-independent data is managed separately from the object data, this means that this data only has to be entered once. When objects are documented, only links to this master data are created. The selection of master data during object entry is made using list boxes. A separate master data entry also has the advantage of a consistent notation of the master data and thus the possibility of statistical evaluations (e.g., how many products are classified with the focus “stress management?”).

After clicking on the button “master data”, the user will get a list of all master data lists available in the database. Here he also can enter new entries e.g. under “focus” fulfilling the following steps:

- 1) Start typing “focus” in the search field “Search for master data”. The list of fitting entries is filtered by entering more and more letters.
- 2) Click on “focus”.
- 3) On the right side, the entry mask for focus is shown.

To enter new datasets in master data the user has to click on the button . A new empty line is created and the data can be filled in the corresponding columns.

To save the data click on , to cancel the action click the button .

#### 4.4. Administration

In the user administration the rights to masks, functions and prints are assigned. This is done via the menu item "USER ADMINISTRATION". This is only possible for those users who also have the right to change user rights (mainly the system administrators).

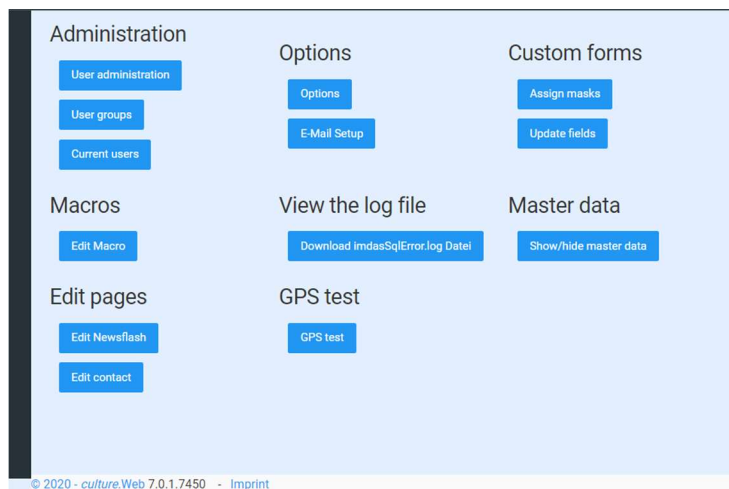


Figure 6: Administration

Frequently required individual rights can be combined into a group in order to assign group rights instead of individual rights to users who have the same rights. This enables an efficient assignment of rights and rights modification.

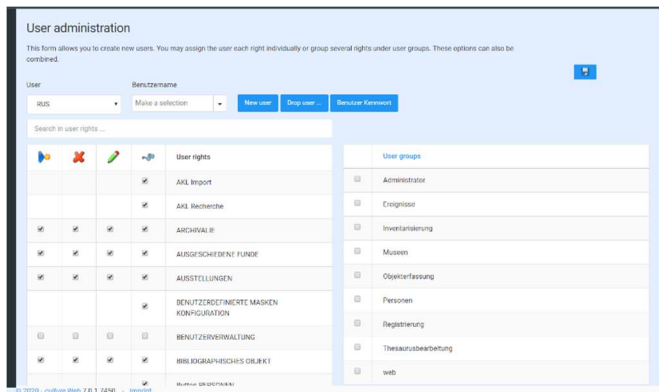


Figure 7: User administration

The user rights *enter data*, *change data*, *delete data*, *read data* can be assigned per entry mask.

## 5. Data entry

Data acquisition is carried out via forms (input masks), which are adapted to the specific requirements of the user via an integrated mask editor. By clicking on a tile, the user can directly access the respective data acquisition area in the system.

The use of defined word lists (master data and thesaurus) ensures that the description of the applications is uniform. This leads to a significantly improved findability of information in the database. Word lists are managed centrally in the database and should be maintained by an administration team at the user's site. In this way, the uniformity of spellings and meanings can be guaranteed.

In addition to general metadata, images and documents can also be linked to a record.

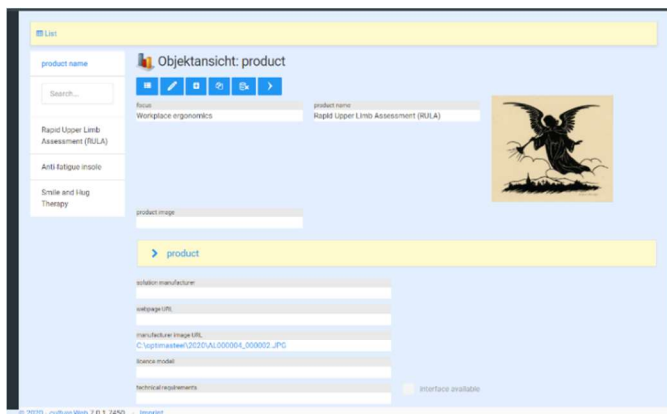


Figure 8: Input mask for products

The input mask can be divided into three areas.









On the top – the yellow bar “list” – is shown as breadcrumb list in order to be able to step back in the work process.



On the left the user will be able to see the result list of their last search to easily navigate via the list of objects without changing to the complete list.

The main area is the data entry area with different data fields. It consists of a button line and the data fields. The yellow bar in the middle of the form (here “product”) offers the possibility to have the data fields combined especially in the case that many metadata fields should be available. In this case the administrator of the system can group metadata field in separate masks. By clicking on the link the list of possible masks opens and the user can easily change to other masks.

The following table gives an overview of the function buttons available in the entry mask.

Table 2: Buttons and their functions

Button	Description
	The table with the results on the left can be hidden.
	Start the modification modus to change metadata entries.
	Enter a new data set. The input mask is cleared.
	Similar data sets can be copied so that not every field has to be entered again.
	Delete a record.
	Change to the following record in the list.
	Change to the previous record in the list.
	Change to the very first record in the list.

Once the user changes to the entry or modification modus the status is displayed as well by  or .

There are different types of data fields, which are going to be explained here:

List fields: The data selected within these fields come from the master data tables in the system.

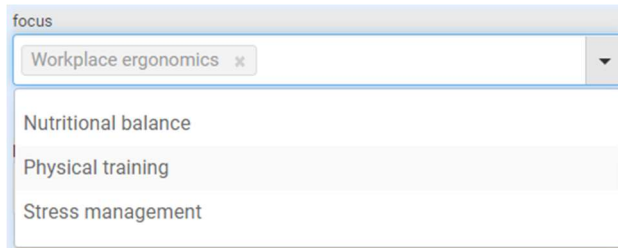


Figure 9: List field "focus"

Clicking into the field opens the list of possible entries. By clicking on a term the user can select the term. The term is shown in the data field in the mask.

Option fields: This field represents either "yes" or "no".

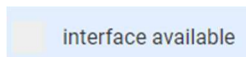



Figure 10: Option field "interface available"

File name – here manufacturer image URL: The user can upload e.g. images or documents to a data set.



Figure 11: Field file name

A click on  opens the upload dialog. selecting a file, the filename is displayed in the data field and uploaded to the storage location the system administrator has defined. The image can afterwards also be displayed on the mask so that the user can get a quick first impression of the product.

## 6. Search and retrieval

The search in once collected data both in the context of data collection but especially in the area of data processing and further use, for example for data analysis, is a very important part of

electronic inventory and documentation. Especially in the area of data research, electronic administrative media represents an enormous relief for the user.

Searching in the portal does not simply mean "searching for an object", but offers the user a variety of different ways to access information beyond pure object information. Despite different search modes, the user always uses the same input mask for data searches, which brings great advantages in terms of familiarity with the functionality and handling, but also in terms of evaluating the search result.

After clicking on the menu "Search", the search mask opens, whose functions and possibilities are explained in the following.

The menu item "Search" takes the user to the search mask, where any search criteria can be combined with each other, thus providing precise results. In addition to a full-text search - comparable to a search in search engines - individual data fields can also be searched to narrow down search results.

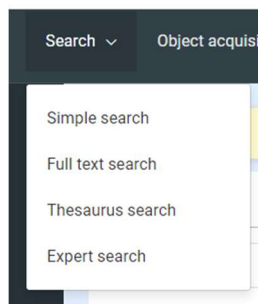


Figure 12: Search menu

## 6.1. Simple Search

The easiest way of search in the tool is the "simple search".

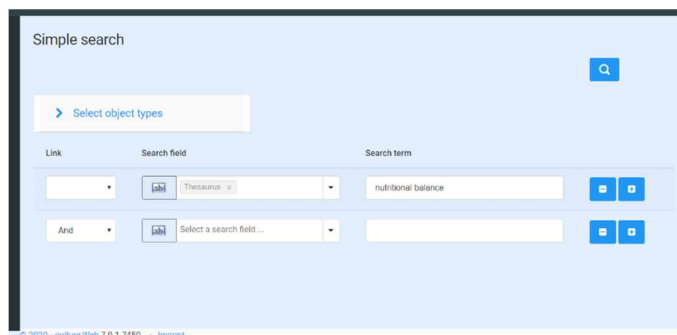




Figure 13: Simple Search

Each line corresponds to a single search criterion. The user can choose a field to use for the search in the column “search field”. Once the cursor is in the field the user could either start entering letters to get a suggestion of fitting fields or click the little black arrow to get a list of available fields in the portal.

The user should enter the term (s)he is looking for in the column “search term”. After entering three letters and waiting for a little while a list of suggested terms that are found in the selected search field will be shown. The number gives an overview of the number of results if the user was to enter these terms.

The user can add further search criteria by using the button . This means that additional filters will be used for the search and the result list will be shortened and more concrete.

By clicking on  the search will be executed. The search results are displayed in an object list whose columns can be flexibly adjusted on-the-fly as required. These settings can be made user-dependently in order to also map internal necessities and work processes.

## 6.2. Full text search

A second kind of search is the full text research.

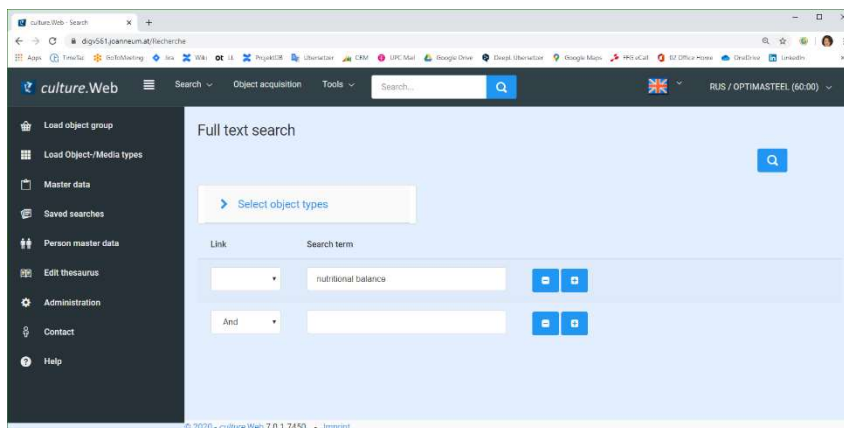


Figure 14: Full text search

Using this search means that the user doesn't have to specify search fields. The user just has to enter different search terms with the option of adding additional ones via the plus button.



### 6.3. Saved searches

In order to memorize especially complicated filter combinations, it is possible to save search criteria combinations. When the user enters the search and filter criteria in the search form, s(he) can use the menu “save search” under the menu “Tools”.

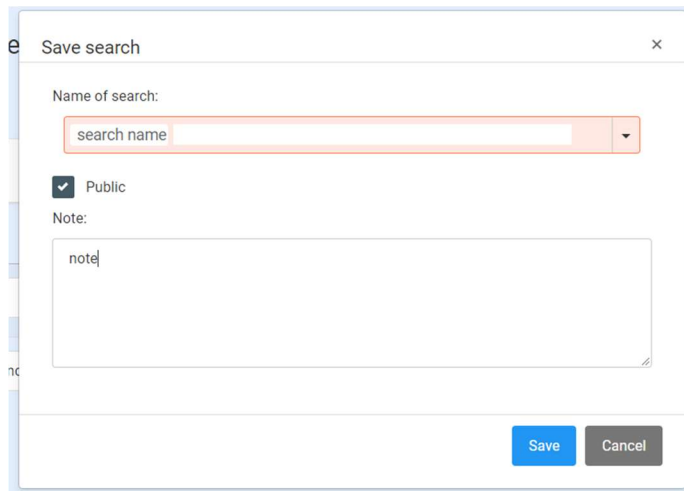
A screenshot of a 'Save search' dialog box. The dialog has a title bar with 'Save search' and a close button. Inside, there is a label 'Name of search:' followed by a text input field containing 'search name' and a dropdown arrow. Below this is a checkbox labeled 'Public' which is checked. Underneath is a label 'Note:' followed by a large text area containing the word 'note'. At the bottom right are two buttons: 'Save' (blue) and 'Cancel' (grey).

Figure 15: Save search dialog

The user enters a name for hers/his search in the red marked field and uses the option field “public” to let other users of the system also use these search criteria. In “note” an additional explaining text may entered.

If the user selects an already existing name, then the previously saved search is updated.

Loading a saved search is done by using the menu “saved searches” in the left menu bar.

## 7. Object list

The object list is always the list of results of a search. It can either be a list of specific object types (which is a search for objects with a special object type) or the result of a specific user defined search. Either directly entered or executed via saved searches.

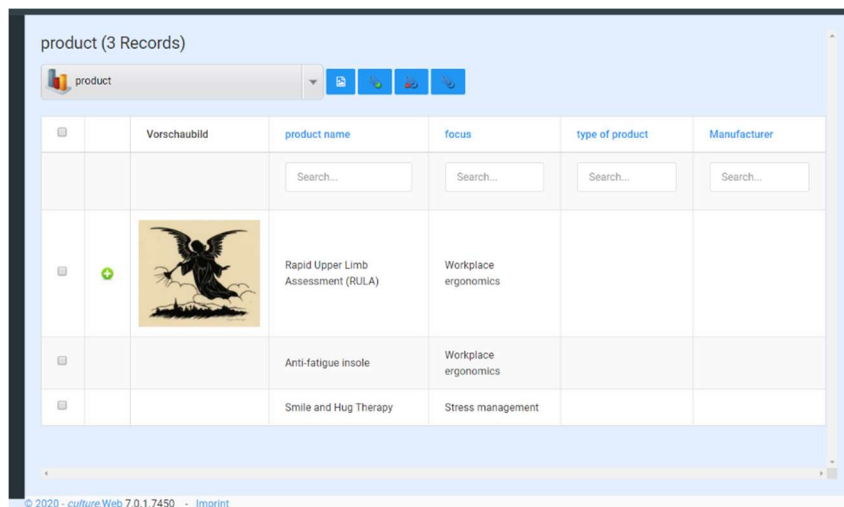


Figure 16: Result list

Each user can select the columns that are available in the portal. Of course, there are default field selections so that right from the start useful results are displayed. For selecting personalized field combinations the menu “field selection” under “Tools” is used.

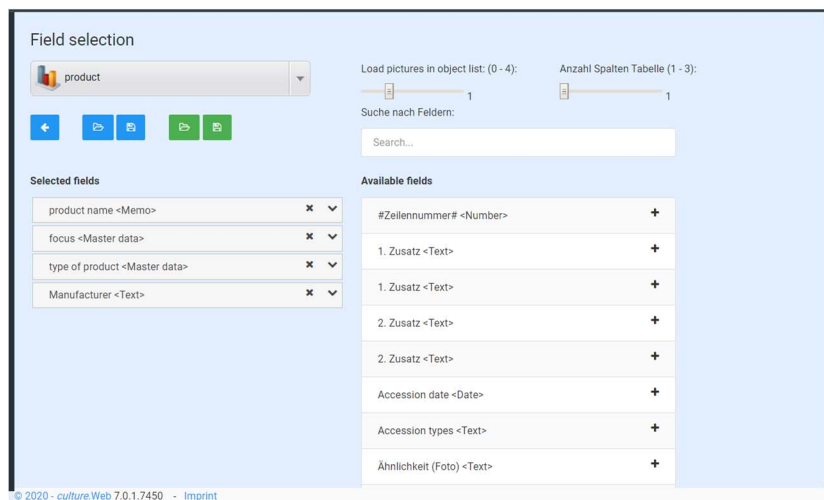


Figure 17: Field selection for object list

On the left side, the list of already selected fields is shown. By using the little “x” it is possible to delete fields from the selection. Using the “+” in the right list of data fields adds the selected field on the left side. After saving the selection, the result list will automatically be updated. There are also data fields available which are not specific to the OptimaSteel tool portal, but are presenting a number of other common data fields in contexts where this tool is also used.

The user can change the sequence of the rows by marking a line with the left mouse button, holding down the left mouse button and dragging the entry to the desired position.

## 7.1. Tools within the object list

The menu “Tools” contains different possibilities and features depending on the status of data manipulation within the portal.

Once the user has opened a result list the menu “Tools” contains:

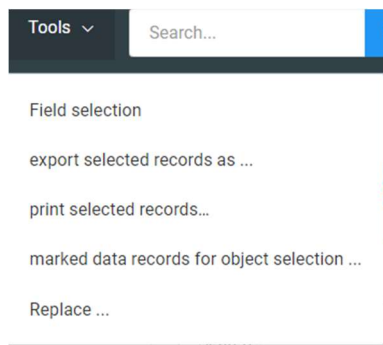


Figure 18: Tools in Object list

Table 3: Configure object list

Feature	Description
Field selection	Configure personal field list for results
Export selected record as	Export data to EXCEL, CSV or XML Before the user exports data sets s(he) has to select some records in the object list by marking the records in the very left column.
Print selected records	To be able to print records the user has to specify print layouts. Before exporting data sets the user has to select some records in the object list by marking the records in the very left column.
Marked data records for object selection	The marked records can be grouped and put into a kind of “basket”. The user can reload the records via “load group objects” in the left menu bar.
Replace	The user can use these features to replace text in columns via the result list.

## 8. Use of data

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The results list (see Figure 16: Result list) forms the centre for the further data use of the collected data.

The possibility of adapting the columns of the results list to the evaluation requirements provides almost unlimited possibilities for data use. The column selection is mask-controlled via a menu item. Via the menu item "Tools" functions can be called up such as: Field selection, sorting, search and replace, data export, printing.

By exporting in standardized formats, data - as well as questionnaire data - can be made available in other programs for evaluations at any time.

## 9. Flexibility and configuration

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The system is already in use in different application areas - e.g. culture, medicine, customer administration - and can be used for the administration of applications and questionnaires due to its flexible configuration.

Specific fields can be created by the administrator without additional programming and integrated into the existing data structure. This ensures that even with a specific configuration, data is integrated into the search structure and data usage and can be fully used.

In order to map in-house requirements precisely, it is also possible to adapt the entry masks per user to map specific work processes.

### 9.1. Configuration of home screen

The home screen of ToolPortal.Web can be configured according to the user's needs. E.g. the following "buttons" or functions can be activated for the start page:

- Object types: Separately collected data sets (e.g. applications, questionnaires, users)
- Search results list: Frequently used search result lists can be summarized and saved and recalled as a "basket"
- Research: Frequently used search criteria

### 9.2. Home page Reminder function

The reminder function is used to be reminded at a specific time to check records, to respond to requests, to be notified of overdue loan transactions, etc.

The reminder function is based on stored searches and a macro. Several saved searches can be combined in one macro and checked together. These configuration options make it very easy to configure reminder functions yourself. The reminder is displayed in the function bar on the left of the screen.