



Establishing future-oriented training and qualification quality standards for fostering a broad uptake of sustainable energy skills in the European construction sector

D3.3 Inventory database and eLearning facility report



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1 Introduction

The current deliverable details the background, objectives and the results of the development process in relation to the E-inventory of TRAN4SUSTAIN ESR platform and related features. As a result of the project workplan a significant amount of information has been produced in WP2 and in WP3 (Task 2.1 and 3.1 respectively) about the available courses throughout EU Members States in project partner countries: Spain, France, Italy, Germany and Hungary.

The task 3.3 aimed at managing and transforming the accumulated information into an online available database of discovered courses, linked with Qualification Schemes. The management and display of such collected courses linked with Qualification Schemes opens up potential to promote sustainable energy skills of construction professionals and stimulate the market penetration of skilled professionals.

This deliverable is describing how the inventory database is organized purely starting from the available information about the collected courses and how the link can be made between courses and Qualification Schemes, ultimately with Learning Outcomes. This part of the European Skills Registry (ESR) platform serves as a knowledge base that can be grown in the future to be more complete and up to date (information details of the stored data).

Registered users of the facility will be able to access tutorial and e-learning materials e.g.: video tutorials and best practices once the project interacts with end-users and collect the feedbacks from them on the platform features i.e. the E-inventory. Support is also provided for the facility, in a format of a help desk, thus the proper and natural use of the platform is secured.

In the outlook section of the deliverable the summary of the exploitable results and next steps are detailed.

2 The development process of the TRAIN4SUSTAIN e-inventory

E-inventory is an integrated part of the ESR Platform. This integration is not only appearing in a logical level, but also true speaking in technical terms. Since the Course database - that is the basis of the e-inventory - has important relations to other entities within the Platform, it came as a natural decision that it would be using the same storage, CMS application (nGrosser) and codebase as the Platform itself. Further details about these can be found in [Report about the ESR Platform, in deliverable D3.2].

2.1 Link with other modules

The Courses in E-Inventory are directly linked with Qualification Schemes (Qs). This relation is one layer that ensures that Courses can be advised to Experts based on the differences of their Passports and certain Qs.

At a deeper level of the hierarchy Courses can also be linked with individual Learning Outcomes (LOs), which gives the option to further sophisticate the relevance of Courses advised to Experts.

Course-LO relation is also the basis of filtering the Courses within E-Inventory (see: 3.1.2.2), where filtering on Thematic Fields (TFs) and/or Expertise will result in a filtering based on related LOs under the hood.

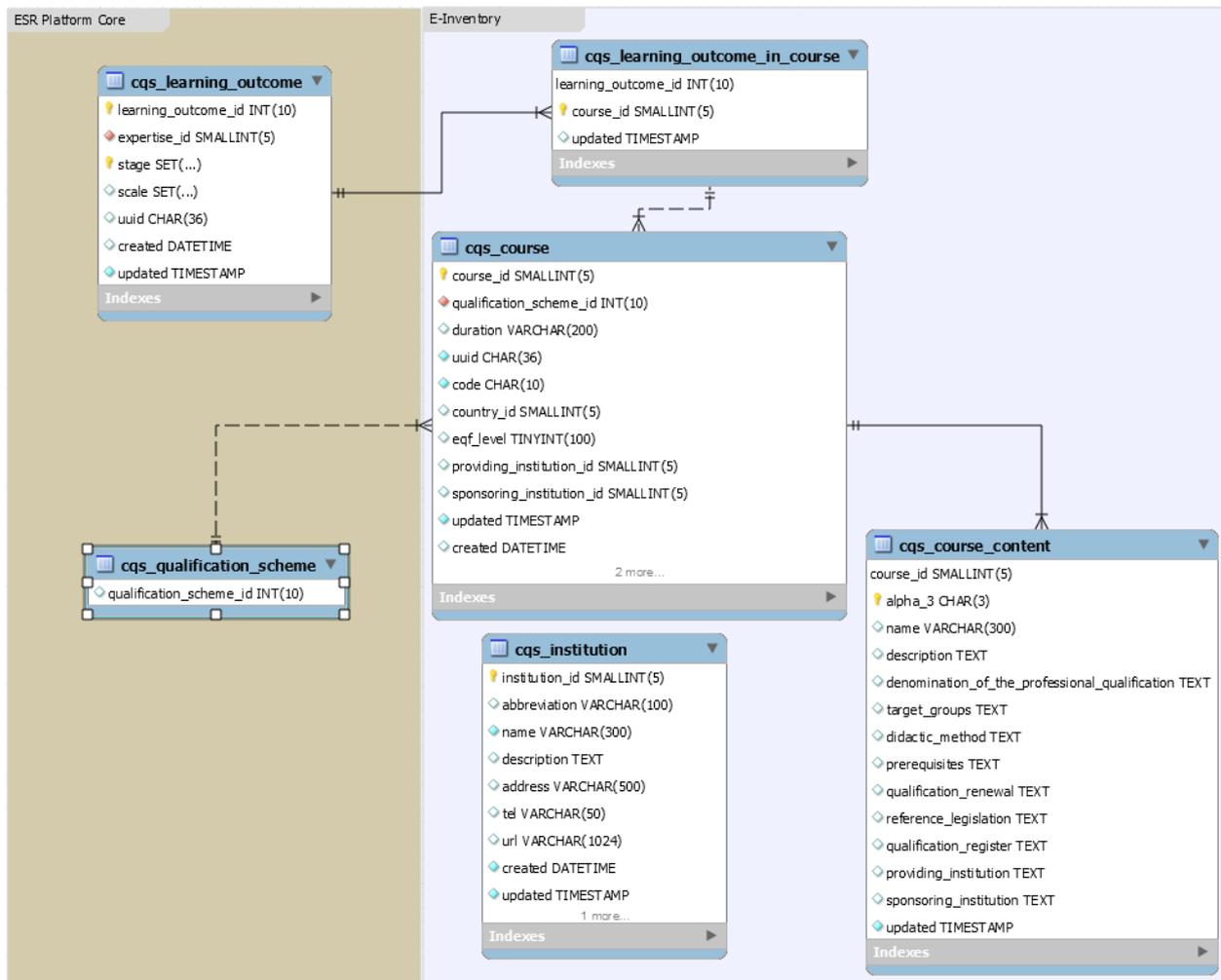
In order to make these connections available, the underlying database structure has to define the relations between Course and other entities, as described in the next part.

2.2 Data Layer

2.2.1 Storage

E-Inventory related data is stored in the same relational MySQL database as other data related to the Platform.

2.2.2 Entities



2.2.2.1 Course

Course is the main entity within e-inventory. To make internationalization (i18n) possible, it is represented with 2 tables in the database (*cqs_course* and *cqs_course_content*), that are connected via *cqs_course_id* field, which is also the primary key of the course entity.

2.2.2.2 Institution

Institutions can be related to Courses in two cases. As Providing and as Sponsoring institutions. Separating them into *cqs_institution* table ensures easier management of these entities and relations while reduces redundancy in the stored data.

2.2.2.3 Learning Outcome

Not strictly part of the e-inventory data structure, rather the Platform's core data structure. *cqs_learning_outcome* table appears here so that the n:m relation between Courses and LOs to be presentable.

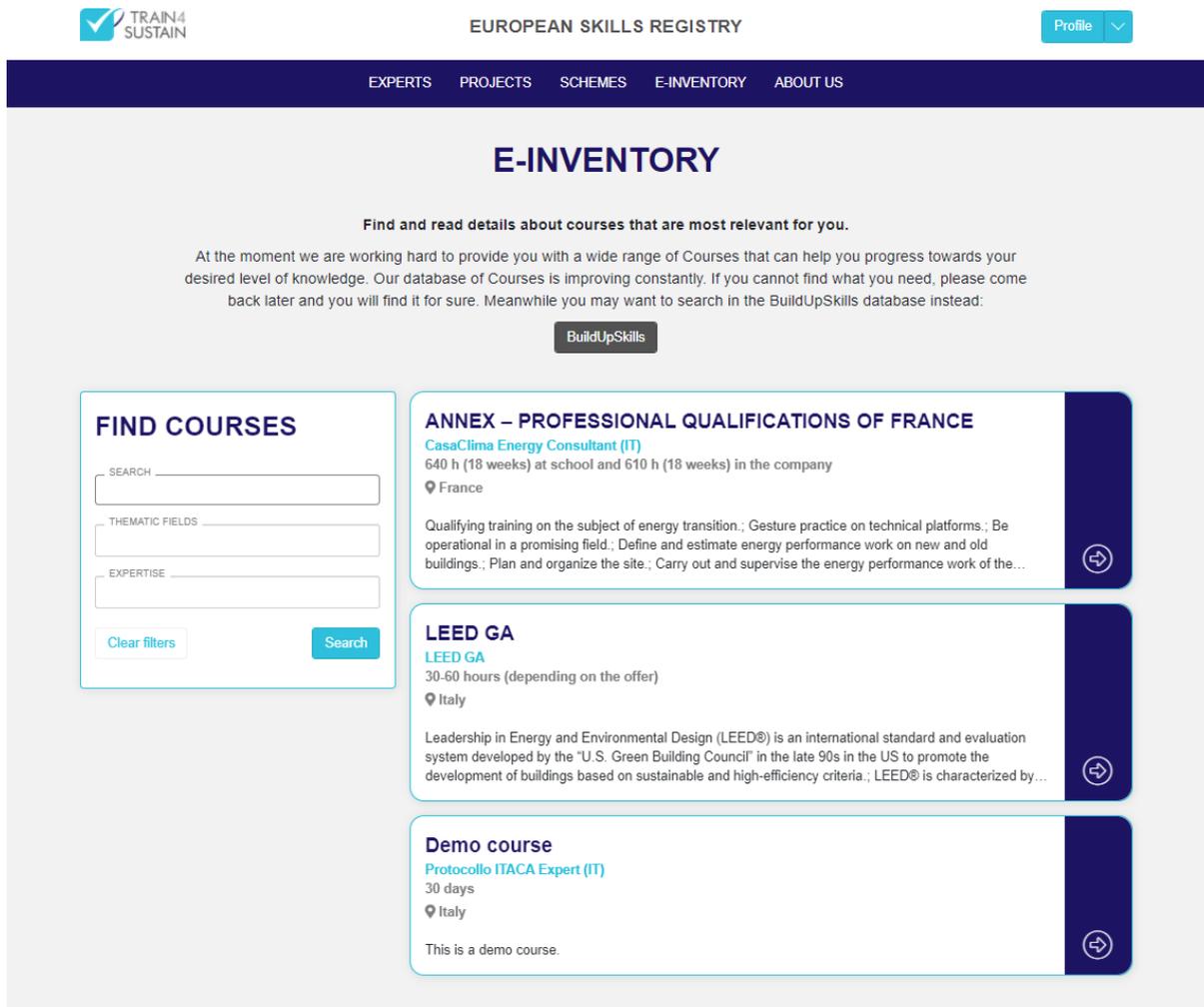
2.2.2.4 Qualification Scheme

Not strictly part of the e-inventory data structure, rather the Platform's core data structure. *cqs_qualification_scheme* table appears here so that the 1:n relation between Courses and Qs to be presentable.

3 TRAIN4SUSTAIN e-inventory in the ESR

Users can access and interact with the data stored e-inventory on the <https://esr.train4sustain.eu/e-inventory> url.

3.1 Course list/search page



TRAIN4 SUSTAIN EUROPEAN SKILLS REGISTRY Profile

EXPERTS PROJECTS SCHEMES E-INVENTORY ABOUT US

E-INVENTORY

Find and read details about courses that are most relevant for you.

At the moment we are working hard to provide you with a wide range of Courses that can help you progress towards your desired level of knowledge. Our database of Courses is improving constantly. If you cannot find what you need, please come back later and you will find it for sure. Meanwhile you may want to search in the BuildUpSkills database instead:

[BuildUpSkills](#)

FIND COURSES

SEARCH

THEMATIC FIELDS

EXPERTISE

[Clear filters](#) [Search](#)

ANNEX – PROFESSIONAL QUALIFICATIONS OF FRANCE

[CasaClima Energy Consultant \(IT\)](#)
640 h (18 weeks) at school and 610 h (18 weeks) in the company
📍 France

Qualifying training on the subject of energy transition.; Gesture practice on technical platforms.; Be operational in a promising field.; Define and estimate energy performance work on new and old buildings.; Plan and organize the site.; Carry out and supervise the energy performance work of the...

➔

LEED GA

[LEED GA](#)
30-60 hours (depending on the offer)
📍 Italy

Leadership in Energy and Environmental Design (LEED®) is an international standard and evaluation system developed by the "U.S. Green Building Council" in the late 90s in the US to promote the development of buildings based on sustainable and high-efficiency criteria.; LEED® is characterized by...

➔

Demo course

[Protocollo ITACA Expert \(IT\)](#)
30 days
📍 Italy

This is a demo course.

➔

This is the main entry point for users to Courses and the data stored in the e-inventory module of the Platform.

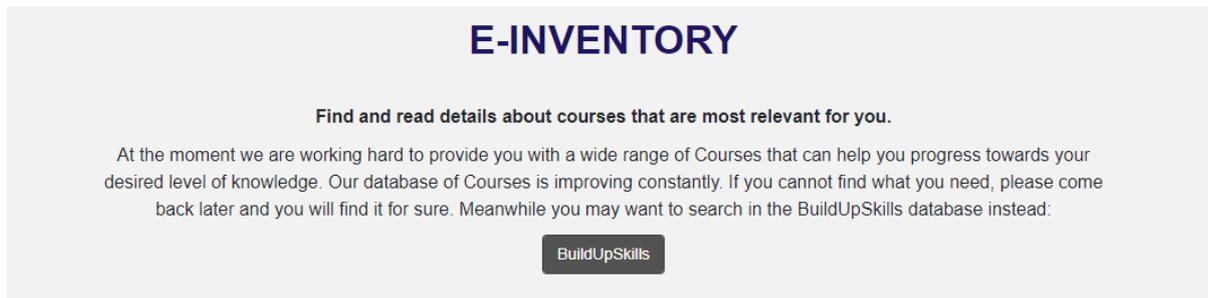
Besides a description of what e-inventory is, one can find a filterable list of Courses on the page, from where there are options to navigate further for more detailed information on the entities of their interest.

3.1.1 Access rights

The data represented in e-inventory is accessible for every visitor, without the requirement to be registered on the Platform.

3.1.2 Elements

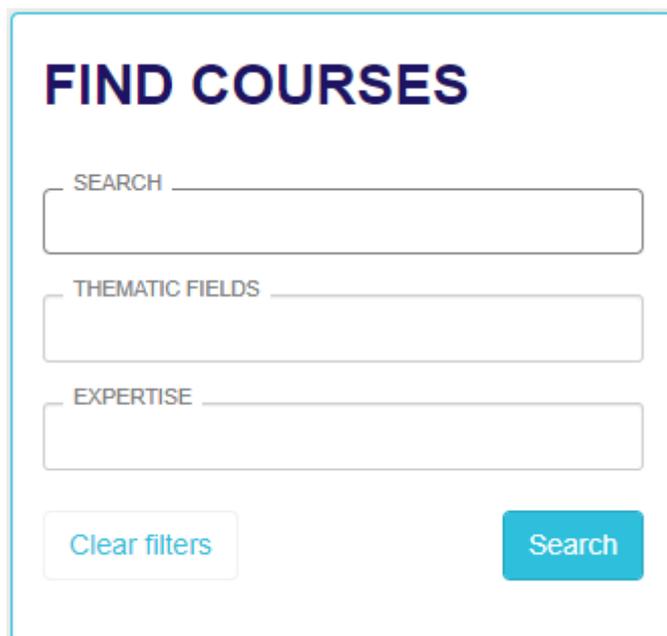
3.1.2.1 Main article



An at the top of the page with the purpose of explaining the visitors what they can find in the e-inventory, what it can be used for and how they can use it. Part of this section is a button that navigates the user to the *BuildUpSkills search page* integrated into the Platform (see: [section link]).

The main article can be customized and edited from the Control Panel by users with at least Assistant rights. Read more on this in section 3.3.

3.1.2.2 Course filter



FIND COURSES

SEARCH

THEMATIC FIELDS

EXPERTISE

[Clear filters](#) [Search](#)

This element is a form at the left side of the page that makes filtering of the Course list possible.

It consists of three fields, each of which representing different aspect of filtering the results. The relation between the conditions set by the different fields is an AND type of relation, which means that in case at least two of the fields are filled, each of the conditions must match on a single entity for that entity to show up in the result list.

The filtering options are as follows:

3.1.2.2.1 Search

A free text field, that - if being filled - will result in a keyword search within the textual content of Courses. These include: *name, description, denomination of the professional qualification, target groups, didactic method, prerequisites, qualification renewal, reference legislation, name of related qualification scheme, country.*

In case the Search field contains a phrase, the filtering will occur on the complete phrase, and not on the words separately.

3.1.2.2.2 Thematic Fields

A customized multi-select dropdown, where users can choose one or more from all the Thematic Fields existing in the Platform. Having a value will result in filtering the Courses based on TFs related to them either via a QS or individual LOs.

In case multiple TFs are selected all Courses will be part of the result list that have a relation to at least one of the TFs represented in the filter (provided no conditions set by the other 2 filters are preventing this). This is because the relation between filter values within this field is an OR type of relation.

3.1.2.2.3 Expertise

A customized multi-select dropdown, where users can choose one or more from either all the Expertise existing in the Platform, or - in case *Thematic Fields* filter has a value - a list of Expertise that are filtered based on the TFs selected in the *Thematic Fields* filter. Having a value will result in filtering the Courses based on Experiences related to them either via a QS or individual LOs.

In case multiple expertise are selected all Courses will be part of the result list that have a relation to at least one of the expertise represented in the filter (provided no conditions set by the other 2 filters are preventing this). This is because the relation between filter values within this field is an OR type of relation.

The values of the filter fields can be cleared with the *Clear filters* button.

The search of Courses can be initiated either with clicking on the *Search* button or hitting *Enter* key on the keyboard. The list of Courses found by the search operation will appear at the main section of the page.

3.1.2.3 Result list

FIND COURSES

SEARCH

THEMATIC FIELDS

EXPERTISE

Clear filters
Search

Specialized Master® Project Management; Construction - Sustainable Construction

TBA
1 year
📍 France

Manage construction projects over the entire life cycle by ensuring technical, economic, legal; and regul acceptance (standards and labels), energy and environmental efficiency.; Manage a sustainable or intel construction or renovation operation.; Reflect on the scale of the building and the scale of urban plannir Leading multicultural men and teams; ; <https://catalogue.cesi.fr/mastere-specialise-management-de-proj-contruction-bim-1602302-2020/>; ;

Sustainable energy and building project manager

TBA
12 months. 6 months of lessons and 6 months of internship in a company
📍 France

Have a global vision of the energy and sustainable building sector.; Recommend technical solutions to re energy consumption.; Use renewable energy.; Reduce the impact of the building on the environment dur construction phase - construction / renovation, use and; end of life.; Raise awareness of the energy trar by supporting the projects of different actors (individuals, communities, companies, etc.) and at different (building, neighborhood, territory ...); ; <https://www.asder.asso.fr/je-recherche-une-formation/formations-certifiantes/formation-charge-de-projet-energie-batiment-durables/>

CasaClima Energy Consultant (IT)

CasaClima Energy Consultant (IT)
120 hours + final exam
📍 Italy

The CasaClima Consultant is a professional figure who has the knowledge to answer all questions regarding new buildings and energy restoration. The CasaClima Energy Consultant is a professional figure who carries out consultancy activities in the construction of CasaClima buildings, autonomously...

Appearing at the main section of the page, this is a list of Courses represented as Course Cards (see: 3.1.2.4). The list contains the Courses that are satisfying the filter conditions set in the Course filter form, not showing more than 50 of them upon first load. There is option to make another 50 Courses visible using the Load more button residing below the list.

3.1.2.4 Course Card

CasaClima Energy Consultant (IT)

CasaClima Energy Consultant (IT)
120 hours + final exam
📍 Italy

The CasaClima Consultant is a professional figure who has the knowledge to answer all questions regarding new buildings and energy restoration. The CasaClima Energy Consultant is a professional figure who carries out consultancy activities in the construction of CasaClima buildings, autonomously...

10

A Course Card is the most basic element of the Result list. It is representing the most important information stored about a Course within the e-inventory in an organized and condensed form.

This information consists of the following properties:

- Name of the Course
- QS related to the Course
- Duration of the Course
- Location of the Course by Country
- A segment of the Description of the Course

Besides providing the basic information, the Course Card also provides access to detailed information on the Course and the QS related to it after different user interactions.

Clicking on the Name of the Course, or the arrow at the bottom of the Card's right section () will open the dedicated page of the Course represented by the Card in a separate tab. (see: 3.2).

Clicking on the name of the QS related to the Course will open the dedicated page of the QS in a separate tab.

3.2 Course page


EUROPEAN SKILLS REGISTRY
Profile 

EXPERTS PROJECTS SCHEMES E-INVENTORY HELPDESK

CASA CLIMA ENERGY CONSULTANT (IT)

The CasaClima Consultant is a professional figure who has the knowledge to answer all questions regarding new buildings and energy restoration. The CasaClima Energy Consultant is a professional figure who carries out consultancy activities in the construction of CasaClima buildings, autonomously and independently. It supports the private individual, the designer and the builder in the design choices, concerning both new buildings and renovation. The CasaClima Consultant follows the entire certification process, from the design to the construction of the CasaClima.

Location :	Italy
Denomination of the professional qualification :	CasaClima agent
Target groups addressed :	architects, engineers, surveyors, thermotechnics
Didactic method :	The process of training to become energy consultant ClimateHouse, only by those with a degree in technical field, has three levels which are divided into 16 hours of basic course, 40-hour advanced course and 120 hours of study consultant.
Duration of course :	120 hours + final exam
Prerequisites :	attendance of BASIC and ADVANCED CasaClima courses for designers
Qualification renewal :	1 year
Qualification register :	https://www.agenziacasaclima.it/it/rete-casaclima/consulenti-casaclima-1371.html
Reference legislation :	https://www.agenziacasaclima.it/it/direttiva-tecnica-nuovi-edifici-settembre-2017-10-1205.html

PROVIDING INSTITUTION

Agenzia per l'Energia Alto Adige

Agenzia per l'Energia Alto Adige – CasaClima

 Via A. Volta 13^a, 39100 Bolzano

SPONSORING INSTITUTION

Agenzia per l'Energia Alto Adige

Agenzia per l'Energia Alto Adige – CasaClima

 Via A. Volta 13^a, 39100 Bolzano

The main purpose of this page is to provide detailed information about a Course that can be found in the e-inventory. The content of this page is always representing one Course, and each Course within the database can be presented in the form of a Course page.

Users can access the page using the direct url (eg. <https://esr.train4sustain.eu/e-inventory/course/5>) - which requires the knowledge of the courseID of the Course one would like to get detailed information on - or navigating there from a Course Card (see: 3.1.2.4) on the Course list page (see: 3.1)

The page consists of three sections.

3.2.1 Description

Qualifying training on the subject of energy transition.; Gesture practice on technical platforms.; Be operational in a promising field.; Define and estimate energy performance work on new and old buildings.; Plan and organize the site.; Carry out and supervise the energy performance work of the building.

The complete description of the Course as it is provided in the Control Panel.

3.2.2 Course properties

Location :	France
Denomination of the professional qualification :	Building Energy Performance Team Leader
Target groups addressed :	Job seekers, employees, young apprentices
Didactic method :	Theoretical classes; Gesture practice on technical platforms; Company internship
Duration of course :	640 h (18 weeks) at school and 610 h (18 weeks) in the company
Prerequisites :	EQF 3 in building (mason, carpenter ...) or experience
Qualification register :	Level IV Low Consumption Building Technician Certification (high school graduate) registered with RNCP (National Register of Professional Certifications)

The complete list of properties that are describing the Course.

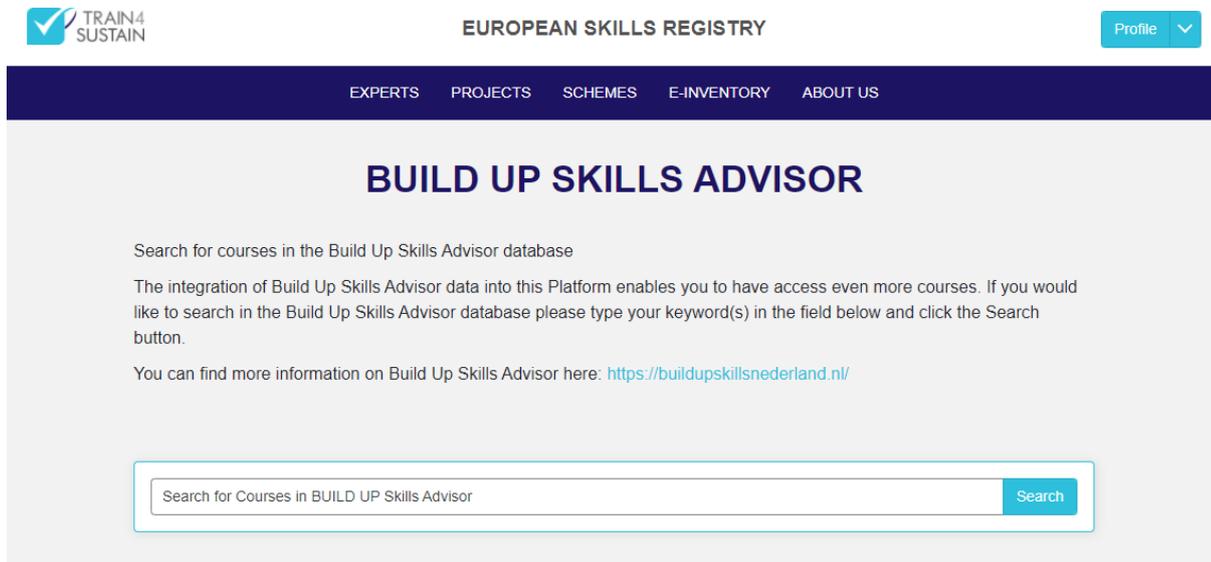
3.2.3 Related institutions

PROVIDING INSTITUTION	SPONSORING INSTITUTION
<p>Institut National de l'Energie Solaire INES</p> <p> 04 79 26 44 30  https://www.ines-solaire.org/</p>	<p>Institut National de l'Energie Solaire INES</p> <p> 04 79 26 44 30  https://www.ines-solaire.org/</p>

This section presents the institutions that are related to the Course. The information about the institutions is presented in card format. Each card represents one institution, and shows basic features of that entity (name, abbreviation, contact data) besides allowing the user interaction to make contact (via phone or email) if such

details are present and access to further details with opening the website of the given institution in a new tab (in case the url is stored in our database).

3.3 Build Up Skills Advisor search page



The screenshot shows the 'BUILD UP SKILLS ADVISOR' search page. At the top, there is a navigation bar with the 'TRAIN4 SUSTAIN' logo on the left, the text 'EUROPEAN SKILLS REGISTRY' in the center, and a 'Profile' dropdown menu on the right. Below the navigation bar, there is a dark blue header with the following menu items: EXPERTS, PROJECTS, SCHEMES, E-INVENTORY, and ABOUT US. The main content area has a light gray background and features the title 'BUILD UP SKILLS ADVISOR' in large, bold, dark blue letters. Below the title, there is a paragraph of text: 'Search for courses in the Build Up Skills Advisor database. The integration of Build Up Skills Advisor data into this Platform enables you to have access even more courses. If you would like to search in the Build Up Skills Advisor database please type your keyword(s) in the field below and click the Search button. You can find more information on Build Up Skills Advisor here: <https://buildupskillsnederland.nl/>'. At the bottom of the page, there is a search form with a text input field containing the placeholder text 'Search for Courses in BUILD UP Skills Advisor' and a blue 'Search' button.

The page gives the ability for visitors to search courses in the Build Up Skills Advisor (BUS) database. It is important to understand that the data can be accessed here is not related to the CQS in terms of the courses listed on this page do not have a relation built with any of the QSS-s or the LOs stored in the CQS database. The reason of this is that this information is not provided by the BUS api that we are using to get access to the details of these courses.

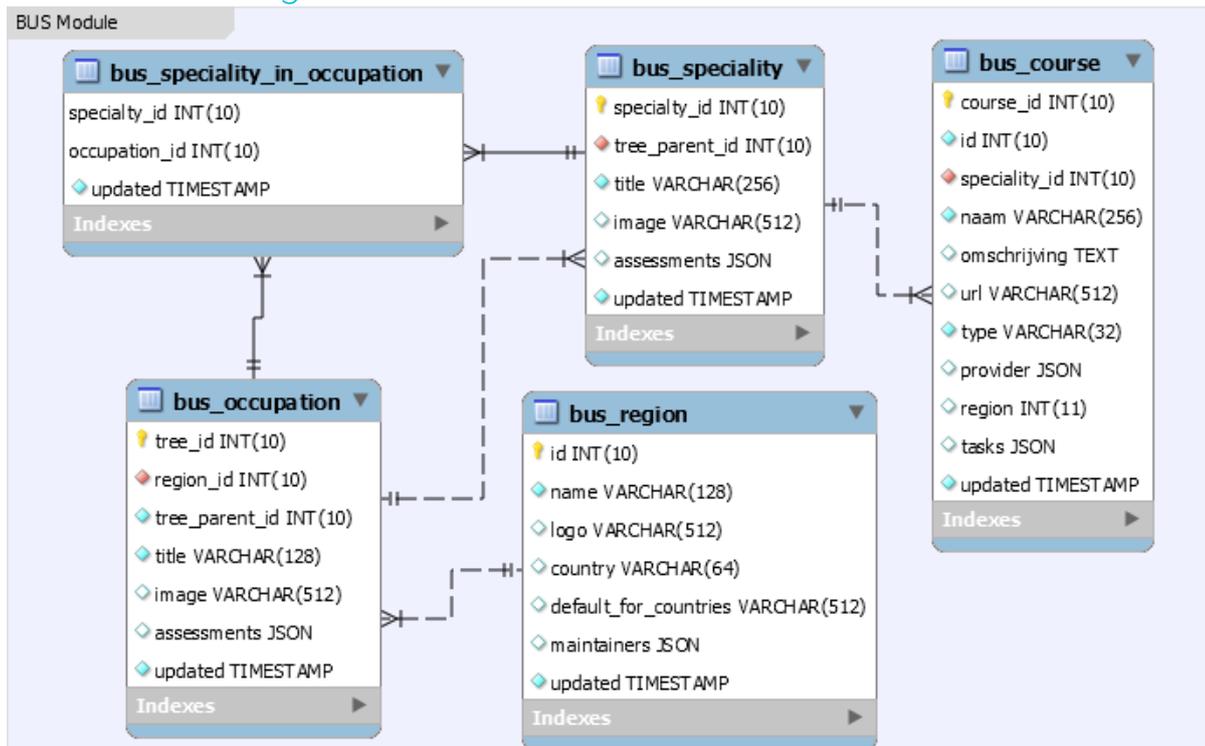
3.3.1 The BUS api integration

The data of courses presented on BUS search page are gained through the api provided by the BUS platform, although they are cached and stored within ESR Platform database to increase search performance and prevent overloading the api with requests.

3.3.1.1 Data collection

The course data is collected by a periodic background process, that sends a request to the BUS api once in every 30 days to ensure the data is kept up to date. The api response - which is a list of courses in the structure determined by the BUS api - is then transformed by the background process to match the data structure used by ESR Platform. After the transformation the data is stored in the Platform's database.

3.3.1.2 Data storage



The BUS course data is stored in a MySQL database in a normalized and relational form. This enables better performance in searching and filtering the courses.

3.3.2 Searching courses



Users can search courses provided by the BUS api using a free text search field. Clicking the search button after filling in the search field with a phrase will result in a keyword search within the textual content of courses. These include: name, type, description of the course, occupations and specialties related to the course, and the name of the provider institution.

The list of Courses found by the search operation will appear at the main section of the page.

3.3.3 Result list



Energiezuinige en luchtdichte constructies

cursus

Tijdens deze training leert de vakman hoe hij de juiste producten voor de juiste toepassing 'in één keer goed' kan verwerken. Hierdoor weet hij faalkosten te voorkomen, die onverantwoord hoog kunnen oplopen als de luchtdichtheidseis niet wordt gehaald.

Occupations: **Dakdekker**

Specialties: **Luchtdicht bouwen**



Luchtdicht bouwen voor de aannemer

cursus

Tijdens de training wordt o.a. duidelijk welke eisen er zijn, hoe je een goede luchtdichtheid kunt realiseren en hoe je de luchtdoorlatendheid kunt meten. Bovendien wordt inzichtelijk tegen welke praktische problemen we zoal aanlopen in de praktijk.

Occupations: **Dakdekker**

Specialties: **Luchtdicht bouwen**



Module: Milieuprestatieberekening

cursus

Tijdens deze module leer je over de theorie van de milieuprestatieberekening voor materialen en leer je omgaan met de tool. De antwoorden uit de tool kunnen rechtstreeks opgevoerd worden als bewijslast bij de betreffende credits.

Occupations: **Dakdekker**

Specialties: **Duurzame bouwmaterialen**

Appearing below the search field (see: 3.3.1.3), this is a list of courses represented as Course Cards (see: 3.3.1.5). The list contains the courses from the BUS database that are matching the keyword in the search field, not showing more than 50 of them upon first load. There is option to make another 50 Courses visible using the Load more button residing below the list.

3.3.4 Course Card



Energiezuinige en luchtdichte constructies

cursus

Tijdens deze training leert de vakman hoe hij de juiste producten voor de juiste toepassing 'in één keer goed' kan verwerken. Hierdoor weet hij faalkosten te voorkomen, die onverantwoord hoog kunnen oplopen als de luchtdichtheidseis niet wordt gehaald.

Occupations: **Dakdekker**

Specialties: **Luchtdicht bouwen**

A Course Card is the elementary entity of the Result list. It is representing the most important information stored about a course within the e-inventory in an organized and condensed form.

This information consists of the:

- Name of the course
- Type of the course
- The hosting country
- Logo of the course provider
- A segment of the Description of the course
- Occupations related to the course
- Specialties related to the course

Besides providing the basic information, the Course Card also provides access to detailed information about the course and gives option to contact the provider after different user interactions.

Clicking on the Name of the course, or the arrow at the bottom of the Card's right section () will open the web page of the course in a new tab.

Clicking on the paper plane icon at the top of the Card's right section () the user can contact the course provider with their built-in mailer application.

3.3.5 L10n

Since most of the courses imported from the BUS database are of a local interest of the country they are hosted in (mainly Netherlands), the descriptions are presented in that local language by the BUS api. However, this is foreseen to be changed in the future as the BUS api developers have the i18n of this content in their pipeline.

5 Outlook and future updates

At the moment, the TRAIN4SUSTAIN consortium is considering several roads to exploit the course database and the E-inventory module of the project platform. Obviously, there are a number of options ahead of us that can mean different outcomes in the medium and long maintenance of the module.

The consortium members are organizing bilateral chats with projects and data managers e.g. ISSO the lead partner behind the BUS advisor app, whom we might be able to cooperate on technical aspects (api) and who has great database on national and/or supranational level. We explore ways how is it sustainable to maintain or develop such service that the TRAIN4SUSTAIN e-inventory - combined with Qualification Schemes - provides for end-users (on supply side) and for scheme operators.

Naturally, every database is valuable if they are up to date and when there are efforts constantly or intermittently behind the tool and its interface. Until the end of the funded project we will develop and push the E-inventory concept to be adequate for the project purposes and be able to showcase all the platform features that are organic and adding value to the mutual recognition of qualification skills in the construction sector.