



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

Report on use cases and the specification of the platform



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 894514.

Project no. 894514

Project acronym: TRAIN4SUSTAIN

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

Call: LC-SC3-EE-3-2019-2020

Start date of project: 01.05.2020.

Duration: 30 months

Deliverable ID: D3.1

Due date of deliverable: 31 March 2020

Organisation name of lead contractor for this deliverable: Geonardo

1. table

Name of Author(s)	Organization(s)
NAME OF AUTHOR	NAME OF ORGANIZATION
Bese Pál	Geonardo
Peter Gyuris	Geonardo

2 table

Dissemination level		
PU	Public	X

3. table

Document history			
Version	Date	Reason	Revised by
01	02/02/2021	ToC	Geonardo
02	30/03/2021	Draft	Partners
03	31/03/2021	Final	Geonardo

Table of Contents

1	Summary	5
2	Introduction	6
2.1	Purpose of this document.....	6
2.2	Scope of the development project.....	6
2.3	References	6
3	Definitions, acronyms and abbreviations	6
4	Functional specification	8
4.1	Overview	8
4.2	User roles and access rights	8
4.3	User stories	9
4.3.1	Comparing qualification schemes.....	9
4.3.2	Mapping existing qualification schemes	9
4.3.3	Setting up user profile.....	11
4.3.4	Evaluating achieved national qualifications	13
4.3.5	Searching for qualified experts	13
4.3.6	Contacting experts from the registry	14
4.3.7	Publishing projects.....	14
4.3.8	Listing published projects	14
5	Software architecture	15
5.1	Overview	15
5.2	Layers and responsibilities	15
5.3	Technology	15
5.4	Dependencies	16
6	Modules	16
6.1	Overview	16
6.2	CQS module.....	17
6.3	MatchMaking module.....	17
6.4	e-Inventory module	17
6.5	Europass module.....	18
6.6	BuildUpSkills module.....	18
7	Interoperability	18

8	Data storage	18
8.1	Technology	18
8.2	Data schema	19
8.3	Processes.....	19
8.4	Interfaces	19
8.5	Data security	19
9	Server architecture	20
9.1	Operating system	20
9.2	Hardware	20
9.3	Network	20
9.4	Domain settings	20
10	Operations support capabilities	20
10.1	Configuration	20
10.2	Monitoring	20
10.3	Troubleshooting	21
11	Appendix	22
11.1	Data model	22
11.1.1	CQS	22
11.1.2	MatchMaking.....	25
11.1.3	EInventory.....	26
11.1.4	BuildUpSkills.....	27
11.2	Database schema	29
11.3	Best practices in Member States	30
11.3.1	Spain	30
11.3.2	France.....	40
11.3.3	Italy.....	58
11.3.4	Germany	69
11.3.5	Hungary	73
11.4	Best practices in Neighbouring countries	76
11.4.1	Ukraine	76

1 Summary

The TRAIN4SUSTAIN project platform will serve multiple users with multiple functions that were gathered during the project implementation so far. Taking stock of the best practices in Member States and European projects, the consortium has been translating examples and experience to allow the European Skill Registry, matchmaking etc. functions to make the best use of them. Ongoing and past European R&D project examples (PROF-TRAC, BUS advisor app etc.) are pointing out the scope of a multinational, multipurpose IT facility. Therefore, the conceptualization of the TRAIN4SUSTAIN platform did not start from scratch. The aim is to exploit the knowhow and experience of skilled construction workers and professionals. These tools and functions are essential both from a top-down approach of the Commission to stimulate demand for sustainable energy skills, and on a market level to facilitate the "cooperation" between demand and supply side.

As mentioned above studying the existing projects, in addition to the priorities of the political agenda, the project needs to deliver complex solutions to support building managers, owners and real estate developers with well-structured information on skilled workforce. Next to this it must be an industry priority to supply the demand (to high quality reconstruction and new buildings) with qualified professionals and make progress towards a more sustainable building sector.

We found that existing services of craftsmen portals, building professionals (e.g. online catalogue of engineers) are "rigid" in describing professions in relation to specialization, for example plumbing or shading and insulation. The users (demand side) of these sites will not get much support and valuable information about what could be the actual scope of the work (e.g. better energy management, use of sustainable materials etc.). On the other hand, European project platforms are very complex for an "average user" to find solutions for a specific problem, should that be refurbishment or a newly built system. The challenge in the conception of the TRAIN4SUSTAIN platform is to combine the provision of skills and knowledge of construction specialists (including registration and evaluate skill levels) and match with demand side requirements, for instance in case of green public procurements.

Therefore, the base for this specification was not only to study best practice (services) and try to improve them, but better structure and create functions that effectively serve the market to function towards a more sustainable built environment. Ultimately, the platform could help procurers, building owners, SMEs and professionals to match needs with solutions available for the market based on state of the technologies and cutting-edge know-how.

With the current specification and definition of basic use cases we aim at delivering most of the essential tools and functions to be implemented in the coming task (Task 3.2, 3.3). However ongoing work in WP2, e.g., Task 2.3 mapping and evaluation of qualification scheme will contribute to the development and finalization of the platform with useful inputs.

2 Introduction

2.1 Purpose of this document

This document describes the main features, characteristics and implementation details of the TRAIN4SUSTAIN platform, including the European Skills Registry, the Skills Passport and the Match-making Hub, developed by Geonardo.

2.2 Scope of the development project

The TRAIN4SUSTAIN platform will be a web application hosting the European Skills Registry which will expose functions related to competences and qualification schemes based on the T4S Competence Quality Standard including the T4S Skills Passport, support stakeholders to find each other focusing on matching the required and achieved competences, as well as publish a database of national qualification courses, training materials and curriculum.

2.3 References

- [Office Open XML specification \(ISO 29500-1: 2008-2016\)](#)
- [YAML specification](#)
- [REGULATION \(EU\) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL](#)

3 Definitions, acronyms and abbreviations

API	Application programming interface
BUS	BuildUpSkills
CMS	Content Management System
CNAME	Canonical Name
CQS	T4S Competence Quality Standard
ESR	European Skills Registry
GDPR	General Data Protection Regulation
JSON	JavaScript Object Notation
LAMP	Linux, Apache, MySQL, PHP
LTS	Long Term Support
MVC	Model-view-controller
PDF	Portable Document Format
PRTG	Paessler Router Traffic Grapher
QR code	Quick Response code
REST	Representational state transfer
RSA	Rivest-Shamir-Adleman encryption algorithm
T4S	TRAIN4SUSTAIN
XLSX	Office Open XML

XML	eXtensible Markup Language
YAML	YAML Ain't Markup Language
cURL	Command line tool and library for transferring data

Table 1 Definitions and abbreviations

4 Functional specification

4.1 Overview

The application will support the following main activities:

1. *Skills Comparison Tool*: Comparing various qualification schemes and learning outcomes on the basis of the common competence quality standard
2. *Scheme Evaluation Tool*: Mapping existing qualification schemes and curricula in terms of learning outcomes
3. *Skills Passport*: evaluating achieved national qualifications of professionals in the field of sustainable energy skills
4. *Match-making Hub*:
 - Searching for qualified experts fulfilling certain criteria with regards to competences, comparing their qualification level to national standards and contacting them via the Platform's internal communication panel
 - Publishing projects that require experts with skills in the field of sustainable energy
5. *E-inventory*: Browsing national qualification courses, training materials and curriculum

4.2 User roles and access rights

The system will define different user roles to control accessibility of features provided by the application. The following roles will be used:

Role	Characteristics
Administrator	Those that are managing the application are the administrators. They have access to all features that the application.
Assistant	Assistants are allowed to manage the core databases (e.g. core database of CQS's dimensions, thematic fields, learning outcomes, etc., as well as their translations) but don't have access to the user database.
Scheme operator	Scheme operators are special users who can access the Scheme Evaluation Tool and add new qualification scheme to the registry.
User	Users have registered account on the Platform, can set up a profile and use the Match-making Hub's internal communication panel.
Visitor	Visitors are those users who don't have accounts yet or haven't logged in. They can only access publicly available content.

Table 2 User roles and access rights

4.3 User stories

4.3.1 Comparing qualification schemes

Comparison of qualification schemes will be done in two steps. First the user will select two or more qualification schemes from the list of existing ones by searching for them. A suggestion box will support the user to find the proper entry.

Below the search box all the learning outcomes of the selected schemas will be listed in a tabular layout. Each row will display a single learning outcome along with its details (area of expertise, stage, spatial scale, etc.).

Once a new scheme is added to the comparison table it will appear as a new column and all the previously missing learning outcomes will be appended to the table. Differences will be highlighted in colours,

Exp.	Learning Outcome	Scheme A	Scheme B
HL1	Understand the importance of limiting soil consumption	4	3
PP1	Evaluate the reduction of land use encouraging the reuse of the soil	2	2
AB3	Understand the importance of the accessibility to the public transport		4
PP1	Determine the accessibility to the public transport	1	

Figure 1 Comparing two or more qualification schemas

4.3.2 Mapping existing qualification schemes

Scheme operators will be allowed to use the Scheme Evaluator tool. Using it a new qualification scheme can be mapped to the *T4S CQS*'s areas of expertise.

After entering the name of the schema, the user can start adding learning outcomes to the it.

European Skills Registry

https://esr.train4sustain.eu

Home Skills Comparison **Scheme Evaluation** Match-making E-inventory Profile

Mapping qualification scheme

Schema name
Schema C

Learning outcomes of schema

Exp.	Learning Outcome	Stage	Scale	Level
HL1	Understand the importance of limiting soil consumption	Conceptual design	B/N	5
PP1	Evaluate the reduction of land use encouraging the reuse of the soil already compromised	Detailed design	N	3
AB3	Understand the importance of the accessibility to the public transport	Conceptual design	B/N	4
PP1	Determine the accessibility to the public transport	Detailed design	N	1

Add new LO

Figure 2 Mapping qualification scheme

Each learning outcome need to have a single-line summary or name, descriptions about the knowledge and skills. Area of expertise along with the associated level of competence will be required to be specified. Project stages, spatial scale and relevant professions will be available for selection as predefined dropdown lists.

European Skills Registry

https://esr.train4sustain.eu

Home Skills Comparison **Scheme Evaluation** Match-making E-inventory Profile

Add new learning outcome to qualification scheme

Description
Definition in concrete terms, described from the learner's perspective

Knowledge
Outcome of the assimilation of information through learning

Skills
Ability to apply knowledge and use know-how to complete tasks and solve problems

Project Stages: Select
Spatial Scale: Select
Professions: Select

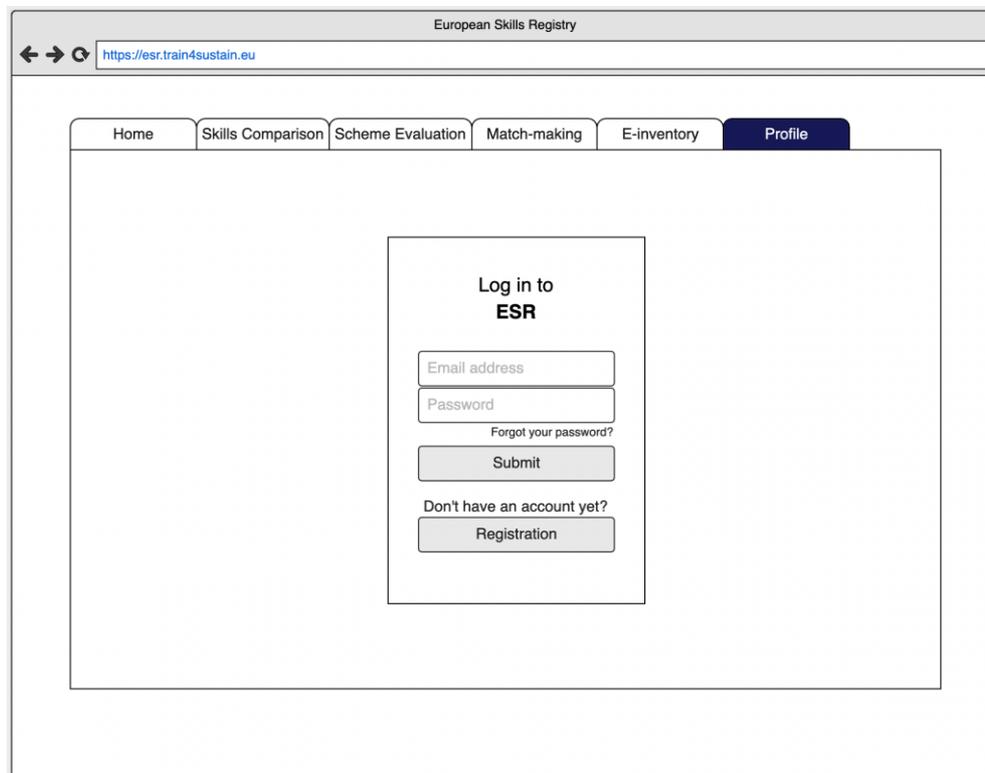
Area of Expertise: Select
Level of competence: 1 - 5

Save

Figure 3 Add new learning outcome

4.3.3 Setting up user profile

Users who have a registered account can set up their profiles. Registration will require only first name, last name and a valid email address to be specified. Further details can later be entered in the Profile section.



The image shows a web browser window titled "European Skills Registry" with the URL "https://esr.train4sustain.eu". The browser's address bar contains the URL. Below the address bar is a navigation menu with tabs for "Home", "Skills Comparison", "Scheme Evaluation", "Match-making", "E-inventory", and "Profile". The "Profile" tab is currently selected and highlighted in dark blue. The main content area of the page is a white box containing a login form. The form is titled "Log in to ESR" and includes the following elements: an "Email address" input field, a "Password" input field, a "Forgot your password?" link, a "Submit" button, a "Don't have an account yet?" link, and a "Registration" button.

Figure 4 Login window

Usual supporting features will also be available like password reset. If the user forgets the password a password reset token can be requested by entering the email address. An email will be sent to the specified address (if exists in the user database) with a link that can be used for a limited time for entering a new password.

Figure 5 Profile editor

Under the profile section users will be able to add detailed information about their education, training and work experience.

The Platform will support Europass CV format and will be able to extract data from its *XML* attachment. This will allow users to upload their CV and all the relevant information (like education and work experience) will be read from it and stored in the profile.

Users will also be able to select qualifications they have achieved from a list of qualification schemes that are already mapped to the CQS.

By selecting a single or multiple achieved qualifications one can combine a custom set of achieved learning outcomes which is represented by the Skills Passport that is automatically available once the user's competences are set up.

Each profile will have its Skills Passport available under a unique and public address which can be encoded as a *QR code* and embedded to the passport's *PDF* version.

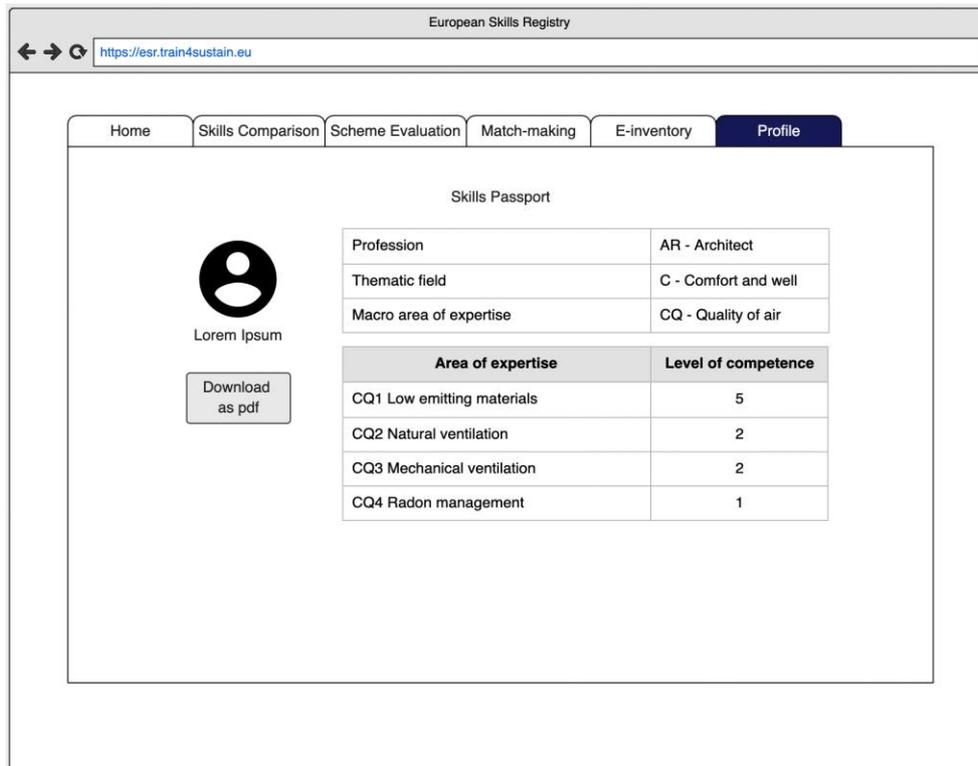


Figure 6 Skills Passport

4.3.4 Evaluating achieved national qualifications

Users, who have already set up their profile and their Passport, can compare their competences to existing qualification schemas. The procedure will be similar to the Skill Comparison function: the user selects a qualification scheme which then will be displayed in a tabular layout as a learning outcome breakdown mapped to the Passport. Areas of expertise that are missing for achieving the qualification will be highlighted in colour and relevant entries from the E-inventory will be suggested.

4.3.5 Searching for qualified experts

The Platform will provide search functions on the Match-making Hub. Visitors will be allowed to list experts based on the following criteria:

- keyword: search result will contain hits where the given keyword matches to any of the profile's texts
- expertise: a profile will match to the criteria if its passport contains the selected area of expertise
- qualification: profiles that have the selected qualification associated to, will match

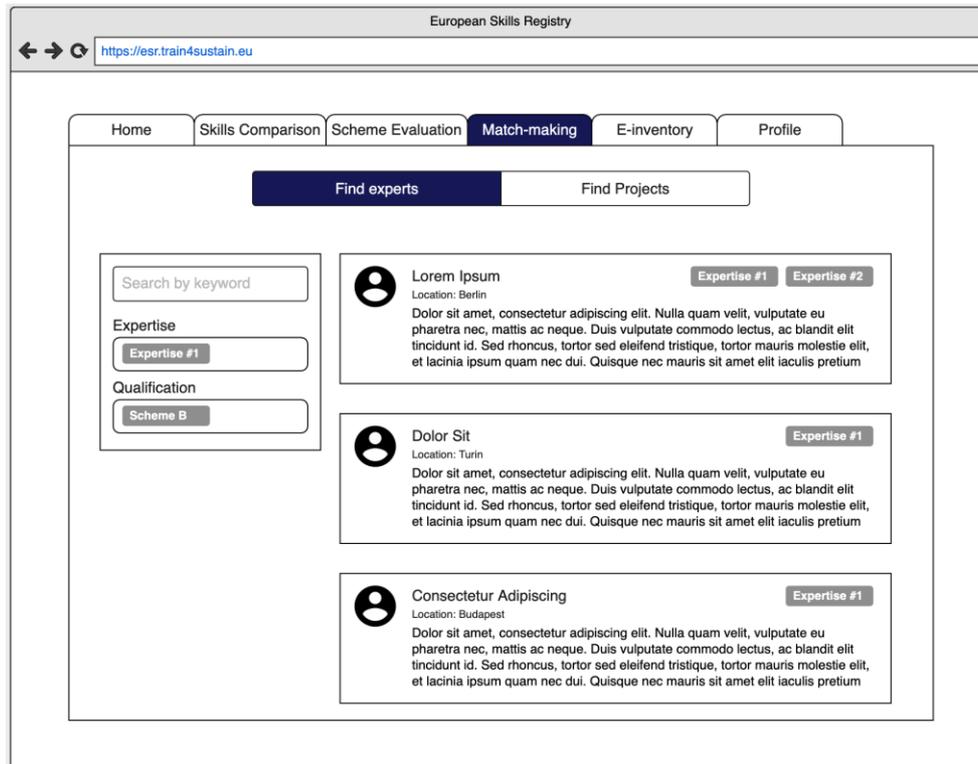


Figure 7 Searching for experts

4.3.6 Contacting experts from the registry

An internal communication panel will be integrated to the Match-making Hub. This tool will allow users to make email-based discussions. All messages will be sent by the system from the address of esr@train4sustain.eu with a token identifying the conversation. Recipients would need to reply directly to the system which then would deliver the answer to the email address registered to the account of the user, who originally submitted the message, without disclosing sender information and will handle responses to that as well.

4.3.7 Publishing projects

Users (e.g. public authorities) will be able to publish projects that requires experts in certain fields to apply. In the Match-making Hub projects can be submitted after entering its name, description and the competence criteria applicants need to meet. These criteria can be

- having certain achieved qualifications or equivalent set of level of competence
- specified level of competence in selected areas of expertise

Projects can also be tagged making it easier to classify and find them.

4.3.8 Listing published projects

On the dedicated section of the Match-making Hub users will be allowed to browse published projects and filter them in the similar way expert profiles can be filtered:

- keyword: search result will contain hits where the given keyword matches to any of the project's texts
- expertise: a project will match to the criteria if it is marked with the selected area of expertise
- qualification: projects that are marked with the selected qualification, will match

Those users who completed their profile and have a Passport will be able to filter projects based on it: when this filter is on, only those projects will be listed of which competence criteria is fulfilled by the user's Passport.

5 [Software architecture](#)

5.1 Overview

The Platform will be based on *nGrosser*, which is the *CMS* solution running on the *nJinn* framework. *nJinn* is a PHP-based, lightweight, high-performance, general purpose application programming framework developed by Geonardo. It supports the role-based user management and access rule evaluation, data abstraction, contains libraries for process standard protocols and data formats, resources required for the *MVC* software design pattern.

Specific features of the Platform will be implemented as extension modules.

5.2 Layers and responsibilities

The system consists of the following three main architectural layers:

Architectural layer	Description
Database	This layer is responsible for storing the application's status, user data, reference. This layer also implements some of the low-level calculations.
Back end	Back end is the layer (application layer) which protects the data, evaluates access rights, runs complex calculations and publishes the application's features via the <i>RESTful API</i> .
User interface	Users will be able to interact with the system through a web interface. This layer is responsible for displaying raw data, evaluation results and give the users access to functions.

Table 3 Architectural layers and their responsibilities

5.3 Technology

The application runs on *LAMP* environment; currently running the following software:

Software	Version
----------	---------

Ubuntu Linux	20.04
Apache	2.4
PHP	7.4
MySQL	5.7

Table 4 Software versions

5.4 Dependencies

The TRAIN4SUSTAIN platform will use some third-party, open-source libraries.

- jQuery
jQuery is a fast, small, and feature-rich JavaScript library.
<https://github.com/jquery/jquery>
[MIT license](#)
- FontAwesome
Font-based vector icons and social logos
<https://github.com/FontAwesome/Font-Awesome>
[Free license](#)
- Popper.js
Tooltip & Popover Positioning Engine
<https://github.com/popperjs/popper-core>
[MIT license](#)
- EuropassParser
The Europass Parser Javascript Library gives the possibility to developers to parse quickly into their HTML forms a Europass *PDF+XML* CV created from users through the Europass site.
<https://github.com/europass/europasscv-parser-js>
[MIT license](#)
- chillerlan/php-qrcode
A PHP 7.4+ QR Code library.
<https://github.com/chillerlan/php-qrcode>
[MIT license](#)
- TCPDF
PHP PDF Library
<https://github.com/tecnickcom/TCPDF>
[GNU Lesser General Public License](#)

6 Modules

6.1 Overview

In the context of the Platform's framework, each module defines a specific set of data models, business rules or standards.

6.2 CQS module

CQS module will define data models for representing elements of the structure of T4S Competence Quality Standard (Dimension, ThematicField, MacroArea, Expertise, LearningOutcome, Profession, WorkField).

This module will also define models for the Skills Passport and services implementing the comparison and evaluation methods as well as generation of *QR codes*, electronically signed *PDF* version of the Passport.

Service	Description
Comparison	Collection of methods for comparing two or more qualification schemas.
Evaluation	Methods for matching competence criteria or qualification scheme to a Passport on the level of learning outcomes.
SkillsPassport	Service implementing creation, export and validation of the Passport

Table 5 Services published by CQS module

6.3 MatchMaking module

MatchMaking module will implement the core functions of the Match-making Hub. It will define the interface of the search methods and coordinates the communication between users of the Platform.

Service	Description
EmIMessage	Service for preparing messages with a token identifying the conversation and disclosing the original recipient email addresses.
ImapSync	Service managing email messages in the ESR's IMAP account.
MessageDispatcher	Handles incoming and outgoing messages
Token	Stores and retrieves tokens
ExpertSearch	Retrieves profiles from the storage based on the given filtering criteria
ProjectSearch	Retrieves projects from the storage that match to the given criteria

6.4 e-Inventory module

e-Inventory module will manage training material, curricula, qualification courses and e-material. Course and TrainingMaterial models will be defined. Both structures will be able to be associated to certain elements of the *CQS* (e.g., area of expertise) making it possible to give suggestions to users based on their missing competences.

Service	Description
Suggestion	Service that takes results of CQS.Evaluation (e.g., matching a Passport against a qualification scheme) and returns

	courses and materials that can cover subject of the missing expertise.
Search	Retrieves courses and materials from the storage that match to the given criteria

6.5 Europass module

Europass module will publish features that can process standard CVs and map them to the *T4S* profile. Documents will be parsed on client side and only the relevant data will be sent to and stored on the server.

6.6 BuildUpSkills module

BuildUpSkills module will host the implementation of the *BUS API* client. Scheduled task will be regularly performed that downloads profession, specialism and course data using the unsecured section of BuildUpSkills API available on <https://api.buildupskillsadvisor.eu>

Service	Description
BusApiClient	cURL-based API client for the BUS service
Mapper	Functions that can map BUS models to the models of EInventory module

7 Interoperability

A PHP implementation of the *API* client for the *ESR* will be published on GitHub under the repository of [T4S-ESR-Client](#). This client will expose the following public endpoint groups:

- CQS structure: traversing and accessing the hierarchy of the CQS
- CQS methods:
 - comparisons of qualification schemas,
 - evaluation of passport against a qualification schema
 - download and validate passports
- e-Inventory: listing and searching for courses and materials stored in the system's database.

8 Data storage

8.1 Technology

The central data storage is a relational MySQL database.

8.2 Data schema

The database schema will represent the application models using the following mapping:

Model	Table
Dimension	cqs_dimension, cqs_dimension_content
ThematicField	cqs_thematic_field, cqs_thematic_field_content
MacroArea	cqs_macro_area, cqs_macro_area_content
Expertise	cqs_expertise, cqs_expertise_content
LearningOutcome	cqs_learning_outcome, cqs_learning_outcome_content
Profession	cqs_profession
WorkField	cqs_work_field

Relations between tables are summarised in the section of Database schema

8.3 Processes

For ensuring data consistency and high efficiency low-level data management and calculations will be implemented on the database as stored procedures.

8.4 Interfaces

The database does not allow connections from external sources, will only be available by the application and the service monitoring tools.

8.5 Data security

Since the database will not store highly sensitive data, no encryption will be applied. However, the application will only be available through encrypted (HTTPS) network protocol. The users' session information is stored in cookies using 256-bit *RSA* encryption.

Personal data will be protected in line with the *GDPR*. Users will have access to a specific area dedicated to *GDPR* related functions under their account where they will have the possibility to download all their personal data, that the system manages, in *JSON* data format. In this section one will be allowed to request their account to be removed and all their personal data to be deleted from the system.

The system will manage the following personal data:

- Required
 - First and last name
 - Email address
- Optional
 - Profile picture
 - Preferred location (country, region, locality)

- Short biography
- Education, training and work experience
- Knowledge of languages

9 Server architecture

9.1 Operating system

The hosting environment runs Ubuntu Linux 20.04 and will always be updated to the latest *LTS* version.

9.2 Hardware

The server, which will host the virtual machine running the application at the beginning, is equipped with 192GB RAM, 55GHz CPU and 12TB storage capacity. Additional resources will be dedicated as the system requires more hardware capacity.

9.3 Network

Geonardo's server park is located in Budapest and has 500 Mbit/s dedicated bandwidth.

9.4 Domain settings

The application will be published under the subdomain of <https://esr.train4sustain.eu>. Other domains can refer to it as *CNAME*.

10 Operations support capabilities

10.1 Configuration

Configuration settings are stored in *YAML* configuration files making it possible to change settings while the system is running.

10.2 Monitoring

On the infrastructural level, network availability and server operation are constantly being monitored using *PRTG* Network Monitor which notifies the system administrator in case of irregular behaviour or service unavailability.

Server level logging of the network traffic and service errors is set up. The Platform will provide application-level logging of activities and a notification system that can send messages to the administrators when needed.

10.3 Troubleshooting

Daily differential backup of the database and the application's folder is stored on a separate server from where the system can be restored.

11 [Appendix](#)

11.1 Data model

11.1.1 CQS

11.1.1.1 *Dimension*

Property	Type	Description
dimensionId	int	Unique ID
alpha3	string	ISO-639-1 language code
name	string	Name of the dimension
description	string	Description of the dimension
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.1.2 *ThematicField*

Property	Type	Description
thematicFieldId	int	Unique ID
dimensionId	int	Identifier of the related dimension
dimension	string	Name of the related dimension
code	string	Single character code of the thematic field
alpha3	string	ISO-639-1 language code
name	string	Name of the thematic field
description	string	Description of the thematic field
rank	int	Custom ordering position

created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.1.3 MacroArea

Property	Type	Description
macroAreald	int	Unique ID
thematicFieldId	int	Identifier of the related thematic field
thematicField	string	Name of the related thematic field
letter	string	Single character code of the macro area
code	string	Generated code of the macro area
alpha3	string	ISO-639-1 language code
name	string	Name of the macro area
description	string	Description of the macro area
rank	int	Custom ordering position
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.1.4 Expertise

Property	Type	Description
expertiseld	int	Unique ID
macroAreald	int	Identifier of the related macro area
macroArea	string	Name of the related macro area
alpha3	string	ISO-639-1 language code
name	string	Name of the expertise

description	string	Description of the expertise
rank	int	Custom ordering position
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.1.5 *LearningOutcome*

Property	Type	Description
learningOutcomeld	int	Unique ID
expertiseld	int	Identifier of the related expertise
expertise	string	Name of the related expertise
alpha3	string	ISO-639-1 language code
name	string	Name of the learning outcome
knowledge	string	Description of knowledge
skill	string	Description of skills
stage	string	Project stage
scale	string	Spatial scale
levelOfCompetence	int	Level of competence measured on the scale from 1 to 5
professionIds	array	List of related profession identifiers
professions	array	List of related profession names
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.1.6 *Profession*

Property	Type	Description
----------	------	-------------

professionId	int	Unique ID
workFieldId	int	Identifier of the related work field
workField	string	Name of the related work field
code	string	Unique code of the profession
alpha3	string	ISO-639-1 language code
name	string	Name of the profession
description	string	Description of the profession
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.1.7 *WorkField*

Property	Type	Description
workFieldId	int	Unique ID
alpha3	string	ISO-639-1 language code
name	string	Name of the work field
description	string	Description of the work field
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.2 MatchMaking

11.1.2.1 *Project*

Property	Type	Description
projectId	int	Unique ID
name	string	Name of the project

description	string	Description of the project
tags	array	List of tags linking the relevant thematic fields/area of expertise/etc.
qualifications	array	List of required qualifications
location	Address	Geolocated address where the project will be located
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.3 EInventory

11.1.3.1 Course

Property	Type	Description
courseId	int	Unique ID
name	string	Name/title of the course
description	string	Short description of the course and its curricula
languages	array	List of ISO-639-1 language codes representing the available languages
tags	array	List of tags linking the relevant thematic fields/area of expertise/etc.
url	string	URL to the online course
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.3.2 TrainingMaterial

Property	Type	Description
trainingMaterialId	int	Unique ID
name	string	Name/title of the training material
description	string	Short description of the content

languages	array	List of ISO-639-1 language codes representing the available languages
tags	array	List of tags linking the relevant thematic fields/area of expertise/etc.
uri	string	Relative URI to the stored training material
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.4 BuildUpSkills

11.1.4.1 Profession

Technical model used for synchronising courses

Property	Type	Description
treeld	int	Unique ID
title	string	Name/title of the profession
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.4.2 Specialism

Technical model used for synchronising courses

Property	Type	Description
specialtyId	int	Unique ID
title	string	Name/title of the speciality
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.1.4.3 Course

Property	Type	Description
id	int	Unique ID
naam	string	Name/title of the course
url	string	URL of the course details
type	string	<i>BUS</i> classification of the course
created	datetime	Date when the record was created
updated	datetime	Date when the record was last updated

11.2 Database schema

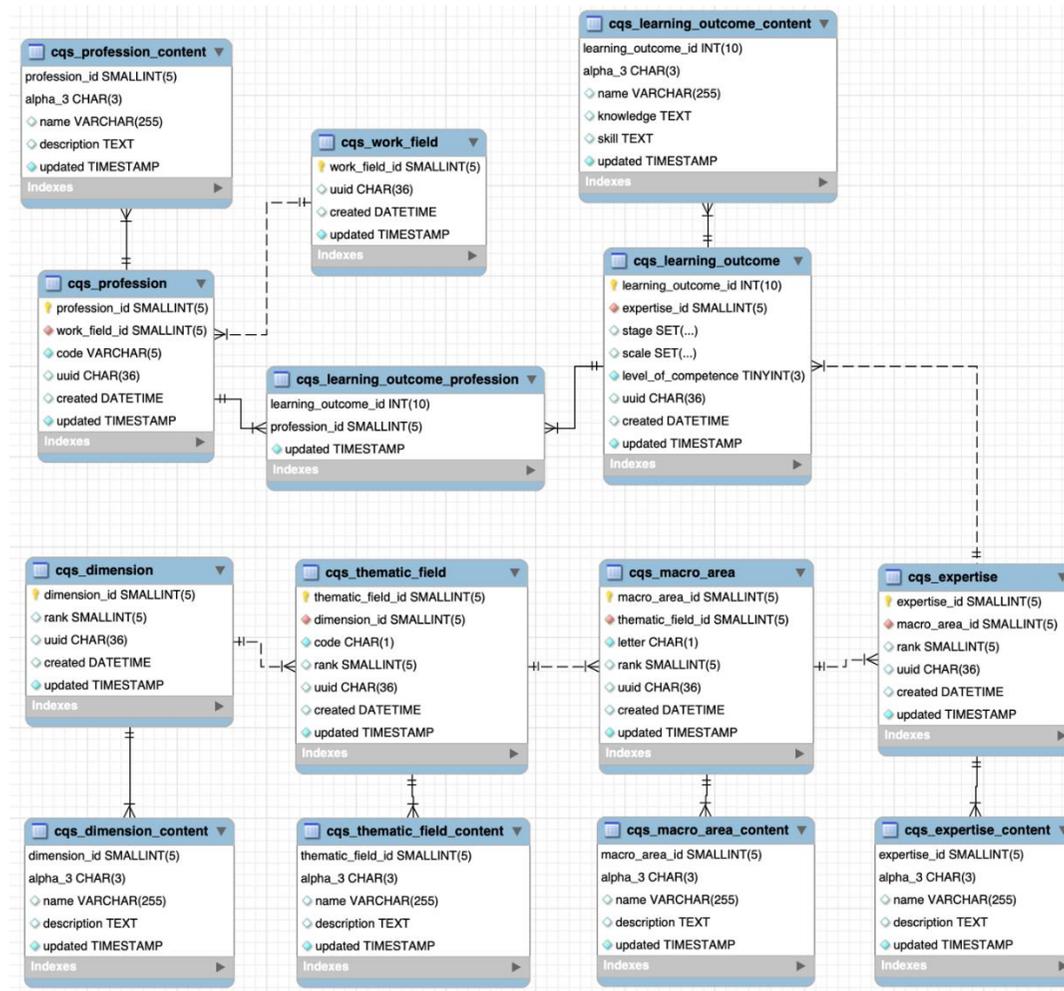


Table 6 Database schema (selection of tables modelling CQS)

11.3 Best practices in Member States

11.3.1 Spain

1. Online craftsman portals

- <https://www.oficioyarte.org/>

Oficio y Arte, is the Organization of the Craftsmen of Spain, the professional association that groups and represents the craftsmen workshops of Spain.

This organization is the meeting point for all those interested in the crafts and culture of the crafts.

Can find information about the activities of the sector, its directory, document centre and related links.

Oficio y Arte promotes workshops, magazines, connection with craftsmen from Spain and South America.

Target group: interested in the crafts and culture of the crafts.

- <https://observatorioartesanal.org/>

The Observatory of Craftwork Value (OVA) brings together researchers from different disciplines who aim to generate a space for discussion and production about crafts, communities of craftsmen, and their possibilities in shaping craftwork value in the face of new opportunities for production, circulation and consumption of these cultural goods.

The *OVA* seeks to be a space for debate and production of knowledge that understands the analysis of artisan culture in a broad way, in relation to social, economic, and political processes that stress specific productions and their representations. In this sense, it is not restricted to a specific sphere of craft production, but rather to a look at the symbolic world in which it is expressed and the way it operates in systems of social hierarchy, systems of exchange, production of value and specific goods, processes of socio-cultural change, the relationship between knowledge, as well as the production of knowledge itself in these areas.

The *OVA* proposes to generate work tools that manifest the voices and experiences of the artisan subjects, raising the difficulties and potentialities present in the artisan sector, actively incorporating the ways of thinking and the actions proposed from the meeting with the communities. In this sense, we will focus on researching and analysing the artisan value chain, the problems of access to raw materials, authorship (collective or individual), price formation, marketing methods, intermediation, intangible cultural heritage, the forms of transmission of knowledge and ways of legitimizing the artisans.

Target group: Craftsmen and artisan sector.

- <https://www.eoi.es/es/conocenos/fundesarte>

Since 1981, *Fundesarte* is the reference organization in the promotion and development of the Spanish artisan companies. It is a priority of our programs to promote value and communicate the quality of the artisan product and the sustainability of its elaboration processes.

Currently *Fundesarte* is part of the *EOI Foundation (School of Industrial Organization)*, an entity linked to the *Ministry of Industry, Trade and Tourism (MINCOTUR)* of the Spanish Government.

Fundesarte works to improve the economic and social relevance of the craft sector in Spain with different actions that focus on two areas of action: the promotion and enhancement of Spanish crafts, and support for competitiveness.

"The National Craftsmanship Awards" are the main activity for the promotion of craftsmanship at the national level. In addition, *Fundesarte* manages the *"European Crafts Days"*, an annual initiative whose aim is to bring the world of heritage and creation closer to the public, by offering events for all audiences around the craft sector.

Among its promotional activities, it has also organized various exhibitions that have toured Spain and countries such as France, Portugal, Morocco, Algiers, India, USA, Peru and Mexico.

On the other hand, reports are elaborated to know the reality of the artisan sector, like the last study published *"Situation of the crafts in Spain. Report on competitiveness and main economic variables"* and training and dissemination activities are carried out to bring the latest trends to the Spanish crafts sector.

The following data can be consulted for each region in Spain:

- A. Administration with competence in craftsmanship
- B. Other entities working in the crafts sector
- C. Socioeconomic data
- D. Other relevant information: prize-winning craftsmen and finalists of the national craftsmanship awards

E. Schools of arts and crafts

F. Technology and design centres and institutes

Target group: people who are dedicated to crafts or who decide to start a business in the crafts sector.

2. Skills registers (and/or matchmaking portals)

- <https://www.fundacionlaboral.org/>

Construction Labour Foundation works since 1992 to provide companies and workers with the resources that make possible a more professional, safe, trained and future-oriented sector. A sector that today works more united and connected to each other than ever before, with society and with the rest of the sectors, to face the challenge of the new times.

Construction Labour Foundation works to ensure that occupational risk prevention, training, innovation, sustainability and new technologies help us to continue building this sector of progress that we all believe is possible.

It has 50 of its own Training Centres, an offer made up of more than 200 training actions, the collaboration of more than 1.400 teachers throughout Spain, and the elaboration and constant updating of more than 140 of its own manuals on different subjects of the sector.

Training courses:

- Rehabilitation and sustainable construction:

- Energy certification with CE3X and CE3 for residential and small tertiary

- Unified Leader-Calener tool (HULC)
 - CTE-HE 2013: Compliance with the Basic Document on Energy Saving and Energy Certification of Buildings
 - Building Evaluation Report (BER)
 - Profitability of rehabilitation and energy efficiency actions in building
- Resources, equipment and auxiliary techniques
- Machinery
- Machine Operator Certification
- BIM environment
- Road Maintenance and Operation (COEX)
- Technical Office
- Health and Safety
- Crafts:**
- Layout of photovoltaic solar installations
 - Auxiliary activities in nurseries, gardens and garden centres
 - Urban and industrial waste management
 - Assembly and maintenance of solar thermal installations
 - Assembly and maintenance of photovoltaic solar installations
 - Feasibility studies for solar installations

Target group: companies and workers.

- <https://www.eoi.es/es>

The School of Industrial Organisation (EOI) is the meeting place for all those professionals, current and future, whose work is oriented towards the real economy, innovation and service to society, giving priority to personal effort, tolerance, mutual respect, ethics and excellence at work.

EOI inspires its actions and aspires to the achievement of equity, which is the principle that recognizes the equality of all citizens in rights and obligations.

Mission:

- To train current and future professionals in a new model of collaborative leadership that combines entrepreneurial capacity, creative and innovative spirit and willingness to cooperate.
- Identify and generate opportunities for collaboration between the public sector, the business community and society.
- To anticipate the training needs and skills of the professional of the future in a global environment.
- Accommodate students, preferably university students, offering a climate of coexistence, study and values, promoting cultural, scientific and humanistic training for schoolchildren.

Training courses:

- MBAs and Masters:

- Master's Degree in Renewable Energies and the Energy Market (MERME)
- Master in Engineering and Water Management (MAGUA)
- Master in Environmental Engineering and Management (MIGMA)

- Executive Programmes:

- Executive Programme in Renewable Energies and Energy Transition: Wind and Solar Photovoltaic Energy

- Focused Programmes:

- Focused Programme on Energy Transition: Energy Saving and Renewable Energy

- Courses, workshops and seminars:

- Digital Leadership
- Business Management
- **Environment**

Target group: university students and professionals.

- <http://construye2020plus.eu/>

Construye 2020+ works to boost 'green' employment in the construction industry by promoting professional training and accreditation in Energy Efficiency (EE), Renewable Energy Systems (SER) and Near Zero Energy Buildings (NSEC).

Eco courses:

Specialized training in energy efficiency, renewable energies and EECN, for workers and middle management.

Eco label:

Recognition of the 'eco' skills of the professionals trained on the *Construye 2020+* courses.

Energy auditor:

Qualification proposal for the 'Energy Auditor' speciality.

Five Helix Methodology:

Dialogue between professionals in the fields of politics, economics, education, culture and the environment.

Construye 2020+ Forum:

Meeting point for sharing perspectives on sustainable construction and skills improvement.

Training courses:

- **Energy efficiency for operators**
- **Energy efficiency for middle management**
- **Geothermal works**
- Aluminium and PVC carpentry
- Thermal insulation
- **Biomass systems**
- Heating and hot water systems
- **Profitability of energy efficiency in buildings**

Target group: professionals.

3. Matchmaking portals

- <https://www.habitissimo.es>

Habitissimo is a clever match-making process to find reliable professionals. At Habitissimo you will find detailed information, budgets and opinions about professionals and companies in the fields of construction, architecture and interior design.

Meet professionals from:

- Architects
- Housing reform
- Painters
- Bricklayers
- Carpenters
- Plumbers
- Electricians

If you are a professional in the construction sector, contact people in your area who are looking for experts in construction, reforms, installations, removals, architects, etc.

Target group: General public, blue collar workers.

- <https://www.construfy.com/>

Construfy is the social network of construction.

This platform is a clever match-making process to find reliable professionals and for professionals in the construction sector to hire other professionals.

Meet professionals from:

- Architects
- Bricklayers
- Painters
- Carpenters
- Plumbers
- Electricians

Target group: General public, blue collar workers.

11.3.2 France

4. Online craftsman portals (and other professionals)

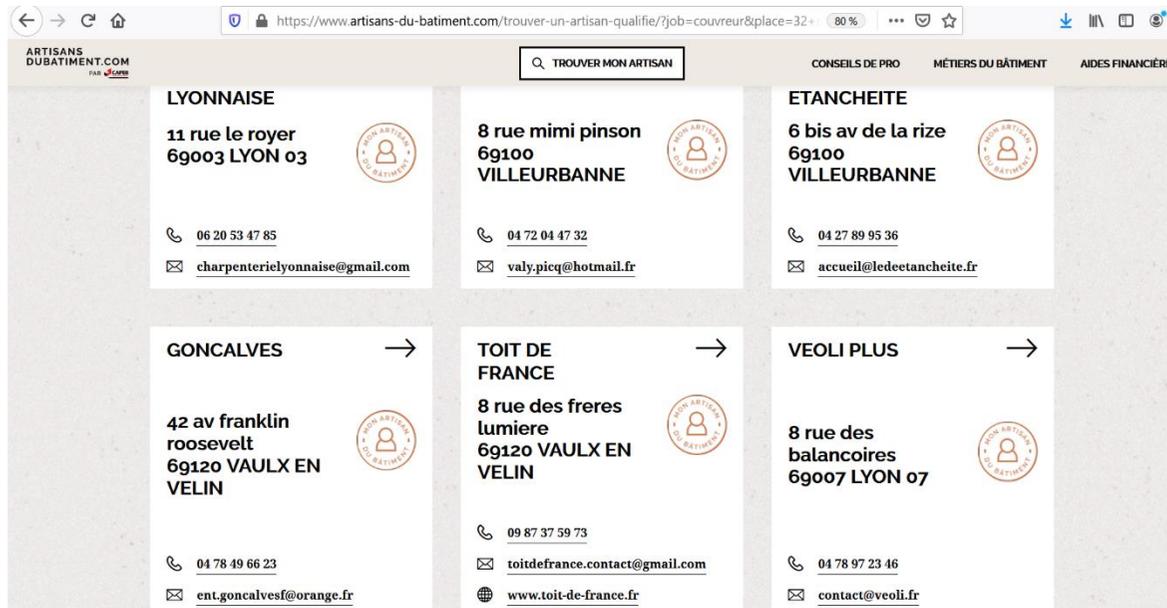
- <https://www.artisans-du-batiment.com/>



The platform provides filters (type of work, address) in order to find the craftsman, members of the CAPEB (craftsman professional organisation in France) near you.

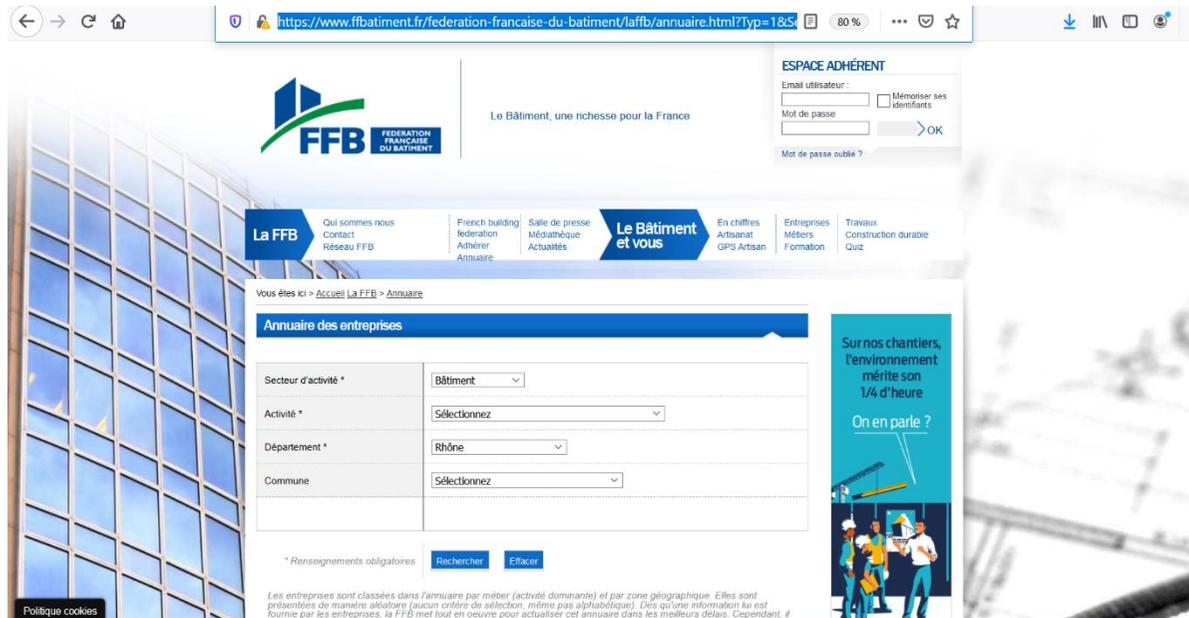
You get immediately a list of craftsman names and contacts (email and phone).

Free, easy (no logging, no register, no personal information) and simple. But no information on specific skills of training.



Target group: General public

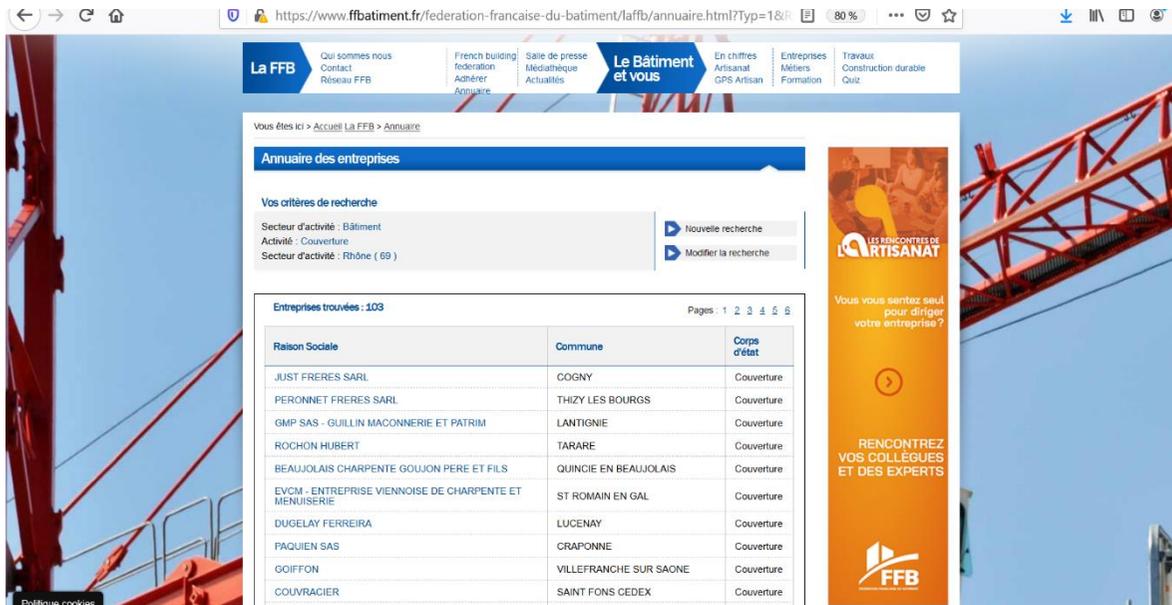
- <https://www.ffbatiment.fr/federation-francaise-du-batiment/laffb/annuaire.html?Typ=1&SecteurActivite=B%c3%a2timent&Rs=&Dep=69>



The platform provides filters (type of work, address) in order to find the craftsman and companies, members of the FFB (craftsman and companies professional organisation) in your department.

You get immediately a list of companies names and contacts (email and phone).

Free, easy (no logging, no register, no personal information) and simple. But no information on specific skills of training.



Vous êtes ici > Accueil La FFB > Annuaire

Annuaire des entreprises

Vos critères de recherche

Secteur d'activité : Bâtiment
 Activité : Couverture
 Secteur d'activité : Rhône (69)

Entreprises trouvées : 103 Pages : 1 2 3 4 5 6

Raison Sociale	Commune	Corps d'état
JUST FRERES SARL	COGNY	Couverture
PERONNET FRERES SARL	THIZY LES BOURGS	Couverture
GMP SAS - GUILLIN MACONNERIE ET PATRIM	LANTIGNIE	Couverture
ROCHON HUBERT	TARARE	Couverture
BEAUJOLAIS CHARPENTE GOUJON PERE ET FILS	QUINCIE EN BEAUJOLAIS	Couverture
EVCM - ENTREPRISE VIENNOISE DE CHARPENTE ET MENUISERIE	ST ROMAIN EN GAL	Couverture
DUGELAY FERREIRA	LUCENAY	Couverture
PAQUIEN SAS	CRAPONNE	Couverture
GOIFFON	VILLEFRANCHE SUR SAONE	Couverture
COUVRACIER	SAINT FONS CEDEX	Couverture

LES RENCONTRES DE L'ARTISANAT

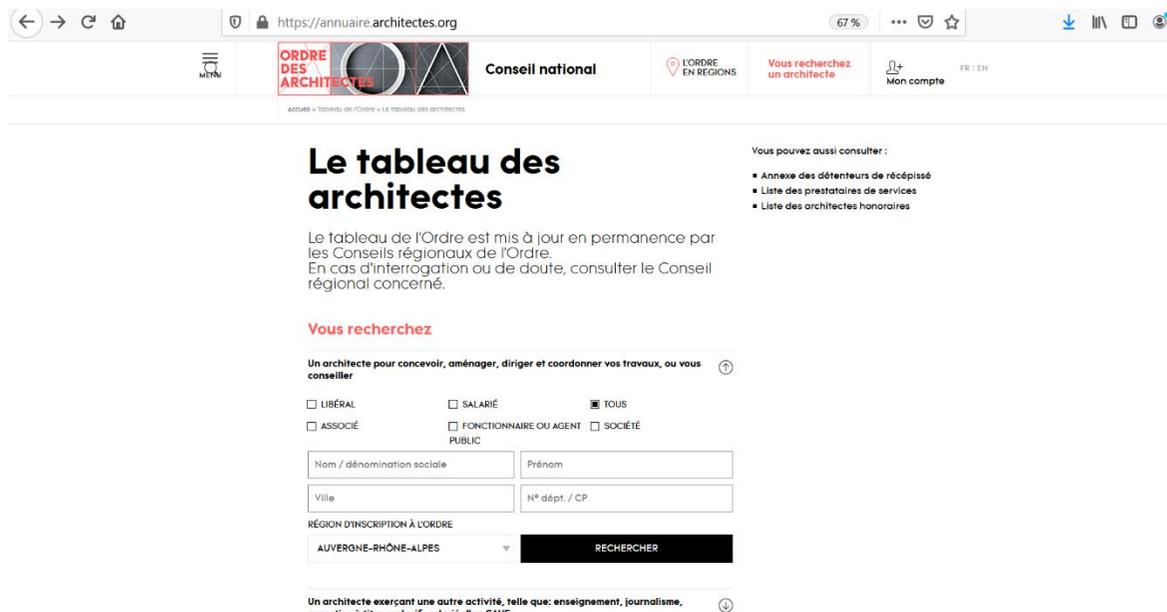
Vous vous sentez seul pour diriger votre entreprise ?

RENCONTREZ VOS COLLÈGUES ET DES EXPERTS

FFB

Target group: General public

- <https://annuaire.architectes.org/>



[←](#) [→](#) [🏠](#) [🔒](#) https://annuaire.architectes.org 67% [🌟](#) [📄](#) [🖨️](#) [📱](#)


Conseil national

L'ORDRE EN RÉGIONS **Vous recherchez un architecte** [Non compte](#) FR | EN

accueil » Tableau de l'Ordre » Le tableau des architectes

Le tableau des architectes

Le tableau de l'Ordre est mis à jour en permanence par les Conseils régionaux de l'Ordre. En cas d'interrogation ou de doute, consulter le Conseil régional concerné.

Vous recherchez

Un architecte pour concevoir, aménager, diriger et coordonner vos travaux, ou vous conseiller

LIBÉRAL SALARIÉ TOUS
 ASSOCIÉ FONCTIONNAIRE OU AGENT PUBLIC SOCIÉTÉ

Nom / dénomination sociale Prénom
 Ville N° dépt. / CP

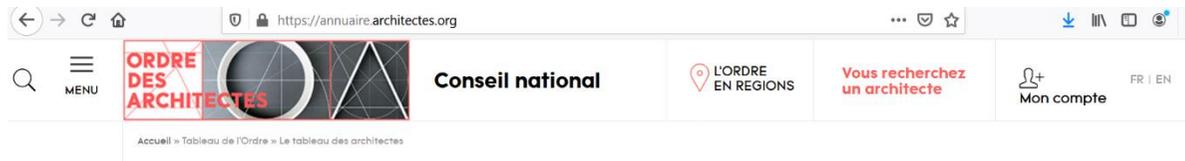
RÉGION D'INSCRIPTION À L'ORDRE
 AUVERGNE-RHÔNE-ALPES **RECHERCHER**

Un architecte exerçant une autre activité, telle que: enseignement, journalisme,

The platform provides the name and contact of the architect in your area.

You get immediately a list of companies names and contacts (email and phone).

Free, easy (no logging, no register, no personal information) and simple. But no information on specific skills of training.



Le tableau des architectes

Nouvelle recherche

Architectes habilités à établir des projets architecturaux pour des demandes de permis de construire : 157 résultats

Architectes libéraux ou sociétés

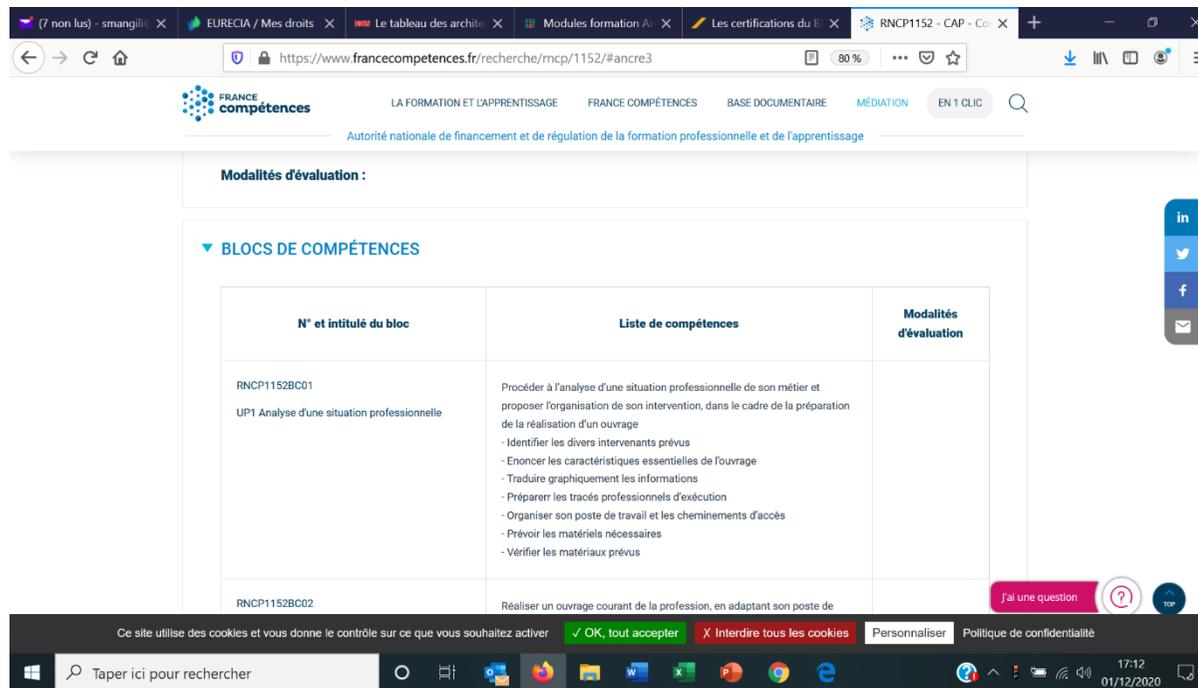
Ils interviennent sous leur propre responsabilité et justifient d'une assurance professionnelle personnelle.

042815	AL HAKIM THOMAS	69003	LYON
076109	ANDRE SARAH	69003	LYON
077296	ASSARI-CELLIER FELLA	69003	LYON
087878	BARBRY LISE	69003	LYON
038159	BERBERIAN SOPHIE	69003	LYON
072860	BREVET CLAIRE	69003	LYON
040246	BRUNET NOEL	69003	LYON
074684	RUI DRINI JUI IFN	69003	LYON

Target group: General public

5. Skills registers (and/or matchmaking portals)

- <https://www.metiers-btp.fr/entreprise/entreprise/les-certifications-du-btp/>



The screenshot shows the website <https://www.francecompetences.fr/recherche/rncp/1152/#ancr3>. The page is titled "Modalités d'évaluation :" and features a section "BLOCS DE COMPÉTENCES". Below this, there is a table with three columns: "N° et intitulé du bloc", "Liste de compétences", and "Modalités d'évaluation".

N° et intitulé du bloc	Liste de compétences	Modalités d'évaluation
RNCP1152BC01 UP1 Analyse d'une situation professionnelle	Procéder à l'analyse d'une situation professionnelle de son métier et proposer l'organisation de son intervention, dans le cadre de la préparation de la réalisation d'un ouvrage - Identifier les divers intervenants prévus - Enoncer les caractéristiques essentielles de l'ouvrage - Traduire graphiquement les informations - Préparer les tracés professionnels d'exécution - Organiser son poste de travail et les cheminements d'accès - Prévoir les matériels nécessaires - Vérifier les matériaux prévus	
RNCP1152BC02	Réaliser un ouvrage courant de la profession, en adaptant son poste de	

At the bottom of the page, there is a cookie consent banner with options: "OK, tout accepter", "Interdire tous les cookies", and "Personnaliser". The system tray shows the date as 01/12/2020 and the time as 17:12.

Very informative for a professional of future professional to find all the details of a qualification. But it's definitely not a matchmaking portal.

Target group: professional and future professional

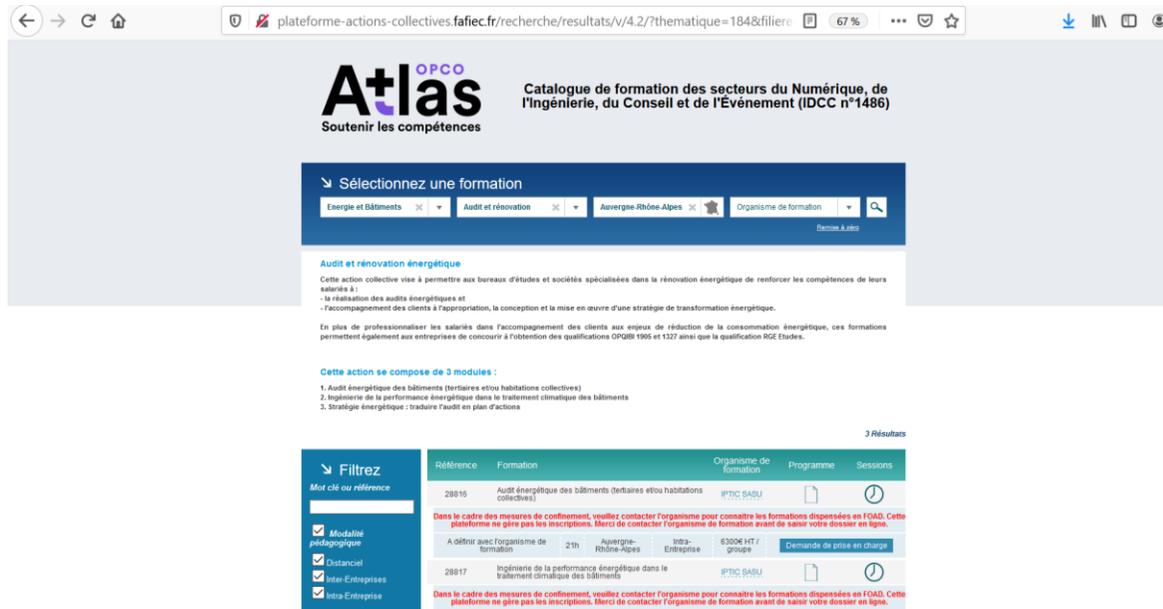
- <http://plateforme-actions-collectives.fafiec.fr/index/index/v/4.2/#>



Online platform to find building qualification scheme. You can select your area and the training bodies that can provide the qualification.

You can get all information on the training bodies, the duration and cost of the training.

You can also complete directly a public grant application form!



Atlas OPCO
Soutenir les compétences

Catalogue de formation des secteurs du Numérique, de l'Ingénierie, du Conseil et de l'Événement (IDCC n°1486)

Sélectionnez une formation

Energie et Bâtements x | Audit et rénovation x | Auvergne-Rhône-Alpes x | Organisme de formation x

Audit et rénovation énergétique

Cette action collective vise à permettre aux bureaux d'études et sociétés spécialisées dans la rénovation énergétique de renforcer les compétences de leurs salariés à :

- la réalisation des audits énergétiques et
- l'accompagnement des clients à l'appropriation, la conception et la mise en œuvre d'une stratégie de transformation énergétique.

En plus de professionnaliser les salariés dans l'accompagnement des clients aux enjeux de réduction de la consommation énergétique, ces formations permettent également aux entreprises de concourir à l'obtention des qualifications OPGRI 1905 et 1327 ainsi que la qualification RGE Etudes.

Cette action se compose de 3 modules :

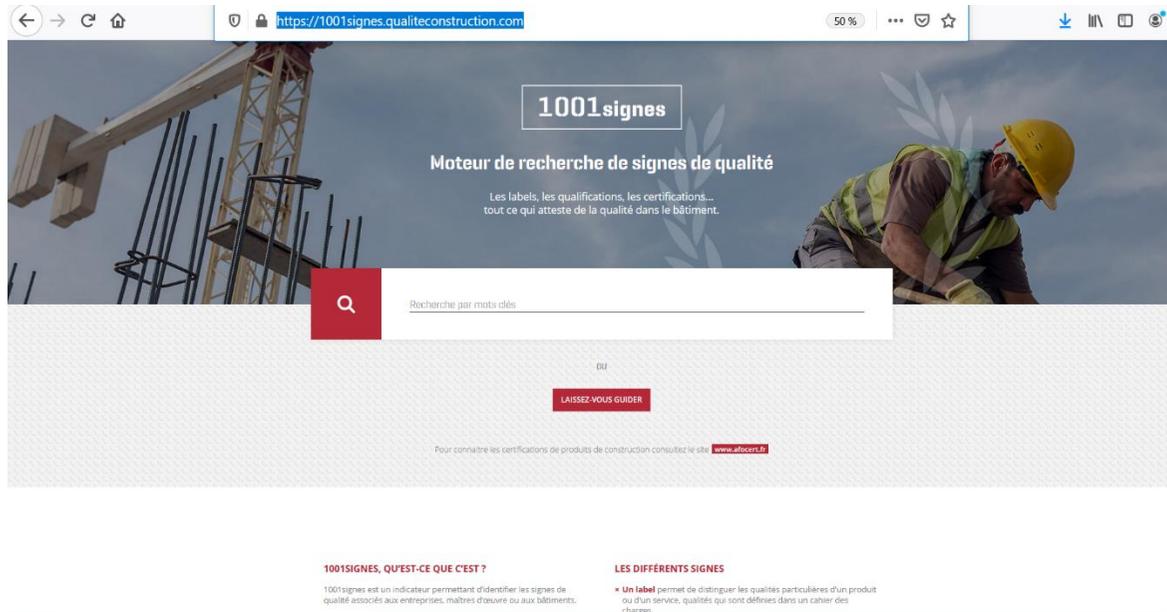
1. Audit énergétique des bâtiments (tertiaires et/ou habitations collectives)
2. Ingénierie de la performance énergétique dans le traitement climatique des bâtiments
3. Stratégie énergétique : traduire l'audit en plan d'actions

3 Résultats

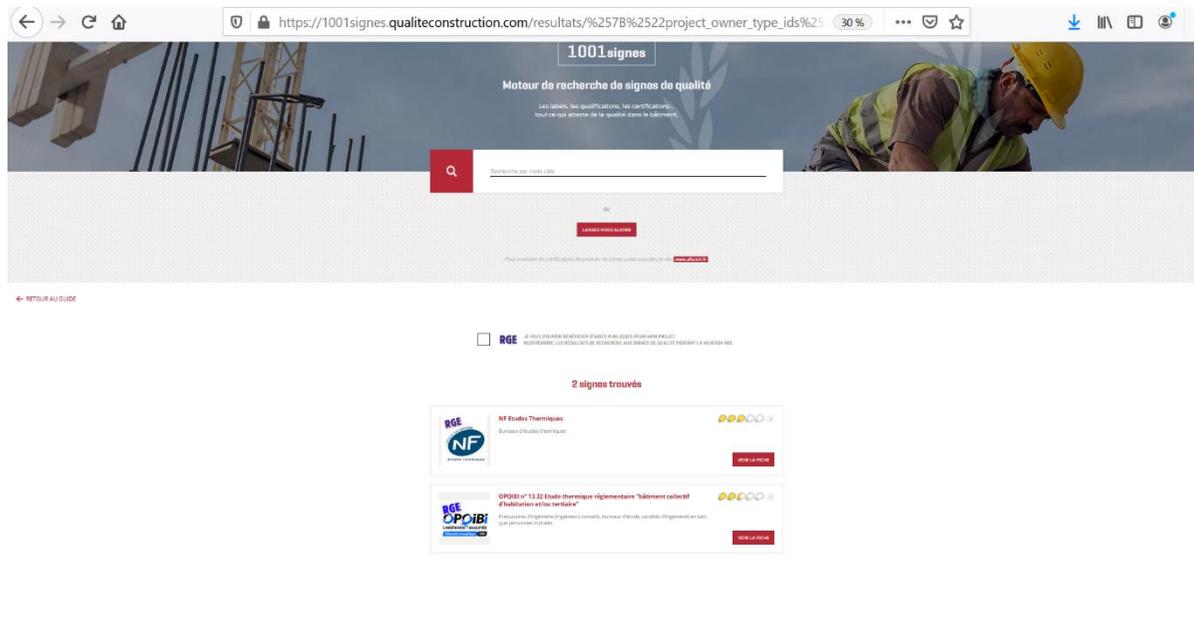
Référence	Formation	Organisme de formation	Programme	Sessions
28816	Audit énergétique des bâtiments (tertiaires et/ou habitations collectives)	IFTC BASU		
<p>Dans le cadre des mesures de confinement, veuillez contacter l'organisme pour connaître les formations dispensées en FOAD. Cette plateforme ne gère pas les inscriptions, merci de contacter l'organisme de formation avant de saisir votre dossier en ligne.</p> <p>A définir avec l'organisme de formation</p> <p>Auvergne-Rhône-Alpes Intra-Entreprise 3306 HT / groupe Demande de prise en charge</p>				
28817	Ingénierie de la performance énergétique dans le traitement climatique des bâtiments	IFTC BASU		
<p>Dans le cadre des mesures de confinement, veuillez contacter l'organisme pour connaître les formations dispensées en FOAD. Cette plateforme ne gère pas les inscriptions, merci de contacter l'organisme de formation avant de saisir votre dossier en ligne.</p>				

Target group: professional

- <https://1001signes.qualiteconstruction.com/>



Very interesting platform, where you can find, directly - or in answering a couple of questions in order to help you - the qualification you need or the qualification you have to ask to the professional for your project.

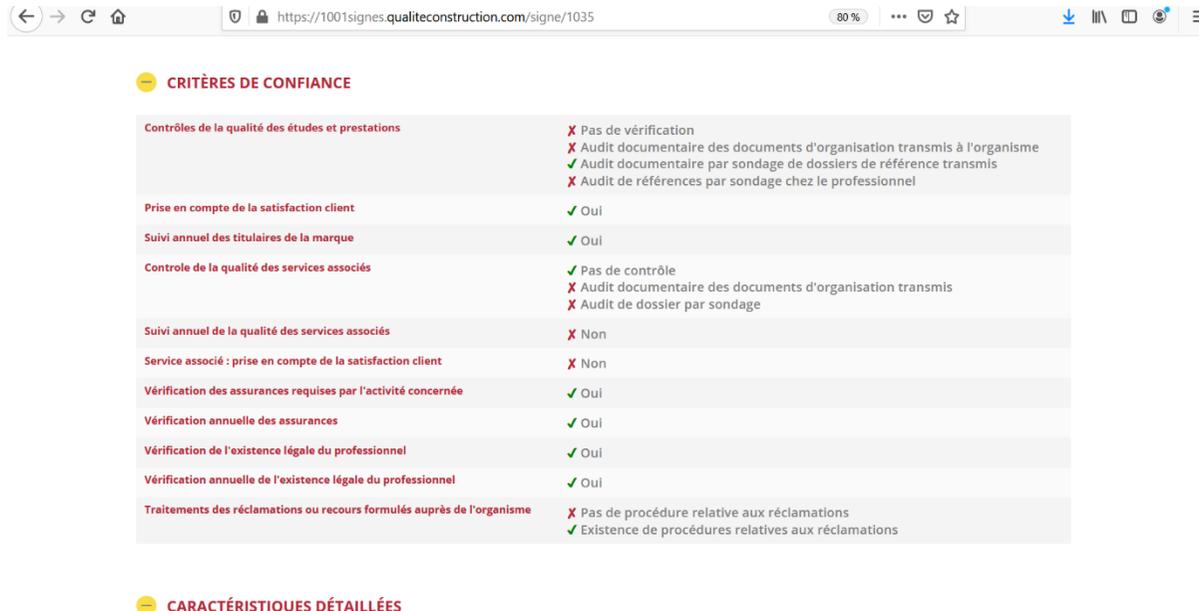


You get several proposition of qualification bodies classified with a system of “yellow helmets”. More “yellow helmets” you have more confidence you can have in the qualification.

Confidence criterions are :

- Quality control of studies and services
- Taking into account customer satisfaction
- Annual monitoring of brand owners
- Quality control of associated services
- Annual monitoring of the quality of associated services
- Associated service: consideration of customer satisfaction

- Verification of the insurance required by the activity concerned
- Annual insurance audit
- Verification of the legal existence of the professional
- Annual verification of the professional's legal existence
- Processing of complaints or appeals made to the organization



CRITÈRES DE CONFIANCE	
Contrôles de la qualité des études et prestations	<ul style="list-style-type: none"> X Pas de vérification X Audit documentaire des documents d'organisation transmis à l'organisme ✓ Audit documentaire par sondage de dossiers de référence transmis X Audit de références par sondage chez le professionnel
Prise en compte de la satisfaction client	✓ Oui
Suivi annuel des titulaires de la marque	✓ Oui
Contrôle de la qualité des services associés	<ul style="list-style-type: none"> ✓ Pas de contrôle X Audit documentaire des documents d'organisation transmis X Audit de dossier par sondage
Suivi annuel de la qualité des services associés	X Non
Service associé : prise en compte de la satisfaction client	X Non
Vérification des assurances requises par l'activité concernée	✓ Oui
Vérification annuelle des assurances	✓ Oui
Vérification de l'existence légale du professionnel	✓ Oui
Vérification annuelle de l'existence légale du professionnel	✓ Oui
Traitements des réclamations ou recours formulés auprès de l'organisme	<ul style="list-style-type: none"> X Pas de procédure relative aux réclamations ✓ Existence de procédures relatives aux réclamations
CARACTÉRISTIQUES DÉTAILLÉES	

You also get all information on the qualification bodies (website,...). Some of these websites list the companies that passed the training. So it can be considered - a very indirect - matchmaking hub...

Target group: professional and general public

6. Matchmaking portals

The 3 match-making portals are quite similar. There are all commercial website or linked to an energy provider (for energy savings certificates reasons). You need to login and provide your personal information of course.

How it works:

1. Post a job or contact a tradesman to help you in your project
2. Tradesman or directly Craftsman will contact you or send you a quotation
3. You can leave feedback

Target group: General public

- <https://www.mesdepanneurs.fr/travaux-embellissement>



On this website everything is done with a tradesman, you don't have the choice of the craftman.

- https://www.travaux.com/?gclid=CjwKCAiA8Jf-BRB-EiwAWDtEgllxCMuS3nOnIM8ftzmHXw5uFOTZnKI2SRbWt02xTDvp_FJR1zLDtBoC7JwQAvD_BwE

Travaux.com

Publier un projet Connexion S'inscrire en tant que professionnel

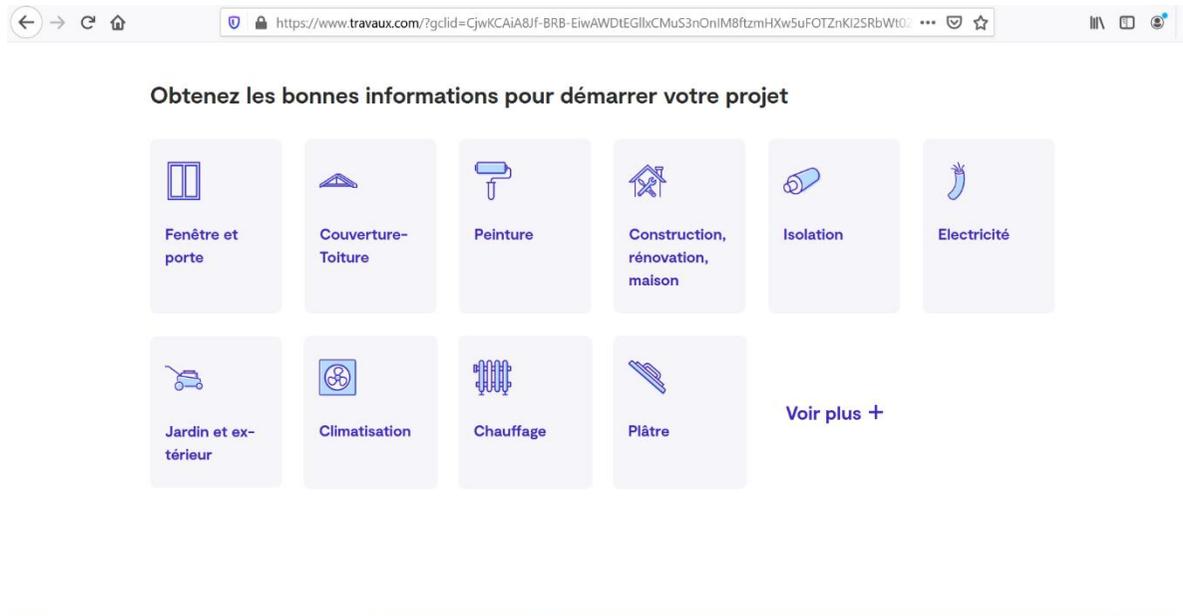
Trouvez un artisan près de chez vous

Saisissez votre projet

Par exemple : Peinture

Trouver un artisan

S'inscrire en tant que professionnel



On this website you define your project and you get direct answers from craftsman. You can then choose. Simple approach by logo help you to define your project...

- https://www.illico-travaux.com/?utm_source=adwords-2018-search-travaux-de-renovation-payant0&utm_medium=sponsorisation-mots-clefs&utm_campaign=adwords-2018-search-travaux-de-renovation-payant-google-adwords201811503180&utm_content=google0&utm_term=&gclid=CjwKCAiA8Jf-BRB-EiwAWDtEGnFvOhO8nCgbJLw6ht2RZyU-1705Bz0CorhzRQ6l_VcqjZbhvTv-AxoCUxIQAvD_BwE

← → ↻ 🏠 https://www.illico-travaux.com/?utm_source=adwords-2018-search-travaux-de-renovation-payant0&utm_med... 📄 📱 🌐

Extension maison Rénovation maison Estimation Travaux Guide Prix Rénovation Rénovation par Ville

illico travaux **20 ANS** GROUPE HEXAÇH AGENCES SERVICES RÉALISATIONS **DEVIS TRAVAUX** DEVENIR FRANCHISÉ 🔍

🏠 Travaux de rénovation 🏠 Agrandissement et extension 📄 Aménagement 🏢 Locaux professionnels

illico travaux vous accompagne dans vos travaux de rénovation et d'extension de maison depuis 20 ans.
Quand vous pensez travaux, pensez illiCO !

Contactez votre agence locale CP ou ville 🔍 **Autour de moi**

9.2/10
★★★★★
161 avis clients

**Un projet de travaux ?
Demandez vos devis en 2 étapes**
illiCO travaux s'engage à vous contacter sous 24h.

Sélectionnez vos travaux * Plusieurs choix possibles

<input type="radio"/> Travaux de rénovation	<input type="radio"/> Aménagement intérieur
<input type="radio"/> Agrandissement, extension	<input type="radio"/> Aménagement extérieur
<input type="radio"/> Locaux professionnels	<input type="radio"/> Autres

Décrivez votre projet en quelques mots *

Étes-vous propriétaire ? Oui Non

Pour quel type d'habitation ?

11.3.3 Italy

7. Online craftsman portals

- ProntoPro

<https://www.prontopro.it/>

The platform ProntoPro allows to search for a list of experts and professionals of a specific sector, available in the geographical area of reference. The platform guides the customer to the list of professionals that fit better its requests, through a series of questions dealing with the type of work, its length, the characteristics of the buildings etc. After this first step, the customer will also receive several estimates for free.

ProntoPro offers support for more than 500 services or professional sectors, and more than 600.000 professionals and enterprises are registered on the website.

The target group is the general public.

ProntoPro Il portale dei professionisti n° 1 in Italia

Come funziona Accedi [Iscriviti come professionista](#)

Troviamo il **professionista** che stai cercando.
Confronta preventivi in poche ore, gratis e senza impegno.

Cosa stai cercando? [Cerca](#)

Casa Eventi Lezioni Giardinaggio Fotografia Musica Wellness Altro

Servizi per la casa [Visualizza tutti i servizi per la casa >](#)

- Ristrutturazioni
- Imbianchini
- Idraulici
- Aria condizionata
- Piscina interrata

8. Skills registers (and/or matchmaking portals)

- Casaclima

<https://www.agenziacasaclima.it/it/rete-casaclima-1535.html>

Casaclima is an institution of the autonomous Region of Bolzano, whose focus is on the mandatory energy efficiency audits. It has a considerable training offer for experts and auditors, and has an informative role in the local communities.

On the platform it is possible to find the list of the Casaclima experts and advisors, divided into categories according to the field of competence: energy audit, blower door technicians, craftsmen, joiners etc. In this register, users can find name of the professional and of the company he/she belongs to, and its contacts.

Target group: general public and companies

DIVENTA CONSULENTE ENERGETICO CASACLIMA

I "Consulenti Energetici CasaClima" hanno superato l'esame "Consulente Energetico CasaClima". La finalità è di formare una figura professionale che svolge la sua attività di consulenza in modo autonomo e indipendente affiancando il privato, il progettista o il costruttore nella scelta delle soluzioni più efficaci per il risparmio energetico, sia per le nuove costruzioni che per il risanamento. I tecnici elencati possono utilizzare il marchio/logo CasaClima.

✓ Diventa Consulente Energetico CasaClima - FORMAZIONE CASACLIMA

NUOVO ELENCO CONSULENTI ENERGETICI 2020

✓ ISCRIZIONE ALL'ELENCO CONSULENTI ENERGETICI CASACLIMA ACCREDITATI - 2020

✓ Richiesta collegamento profilo Consulente ad un edificio certificato

 <p>Bruno Stefano Arch. Ahora Architettura</p> <p>☎ 3943632379 ✉ info@ahoraarchitettura.it 📍 Piazza Martiri della Libertà 1 10040 Almese</p> <p>→ LEGGERE DI PIÙ</p>	 <p>Abagnale Lorenzo Arch.</p> <p>☎ 395/8198020 ✉ lorenzo.abagnale@tiscali.it 📍 Vicolo Simonia 10 28057 Santa Maria Maggiore</p> <p>→ LEGGERE DI PIÙ</p>	 <p>Acciai Enrico Ing.</p> <p>☎ 0187/933153 ☎ 331/3035342 ✉ info@enricoacciai.it 📍 Piazza 4 Novembre 29 19020 Bolano</p> <p>→ LEGGERE DI PIÙ</p>	<p>FILTRA SECONDO</p> <p>Docente CasaClima</p> <p>Imprese di costruzione</p> <p>Tecnici termografia</p> <p>Tecnici Blower-Door</p> <p>Esperti per il montaggio di porte e finestre</p> <p>Consulente ComuneClima</p> <p>Consulente Sostenibilità</p> <p>CasaClima Open Studio</p> <p>FILTRA SECONDO</p> <p>Titolo <input type="text"/></p> <p>Regione <input type="text"/></p> <p>Provincia <input type="text"/></p>
 <p>Adami Marco Arch.</p> <p>📍 Via Mantoni 25 35030 Selvazzano Dentro</p> <p>→ LEGGERE DI PIÙ</p>	 <p>Agliardi Giovanni Arch.</p> <p>☎ 0363 202707 ☎ 395 6712570 ✉ giovanni.agliardi@gmail.com 📍 Viale Lodovico Ariosto 5 24047 Treviglio</p> <p>→ LEGGERE DI PIÙ</p>	 <p>Agostini Davide Dott. Geom.</p> <p>☎ 049 9461318 ☎ 3398397173 ✉ dott.agostini.davide@gmail.com 📍 Via Milano 20/A 35018 San Martino di Lupari</p> <p>→ LEGGERE DI PIÙ</p>	
 <p>Agus Elena Ing.</p> <p>☎ 340/2741020 ✉ elena.agus@tiscali.it 📍 Via XXV Luglio 33 09036 Guspini</p>	 <p>Aiazzone Elisabetta Arch.</p> <p>☎ 3482682702 ✉ info@aiazzone.design.it 📍 Corso Saffi 29 16128 Genova</p>	 <p>Aichholzer Helmut Geom.</p> <p>☎ 0472/764062 ☎ 335/5612575 ✉ aichholzer.geom@idnet.it 📍 via Frundsberg 11 39049 Vipiteno</p>	

- ACCREDIA

<https://services.accredia.it/>

Accredia is the sole national accreditation body appointed by the Italian government in compliance with the application of the European Regulation 765/2008, attesting the competence, independence and impartiality of certification, inspection and verification bodies, as well as testing and calibration laboratories. Accredia is a recognized association which operates under the vigilance of the Ministry of Economic Development, which is the national reference authority for accreditation.

Accredia has three departments – Certification and Inspection, Testing Laboratories, and Calibration Laboratories.

Among the many activities that Accredia deals with, it also manages online databases which are the official source for finding the references of bodies and laboratories registered to this platform, in order to verify the validity of accreditation certificates and the content of the lists of accredited tests.

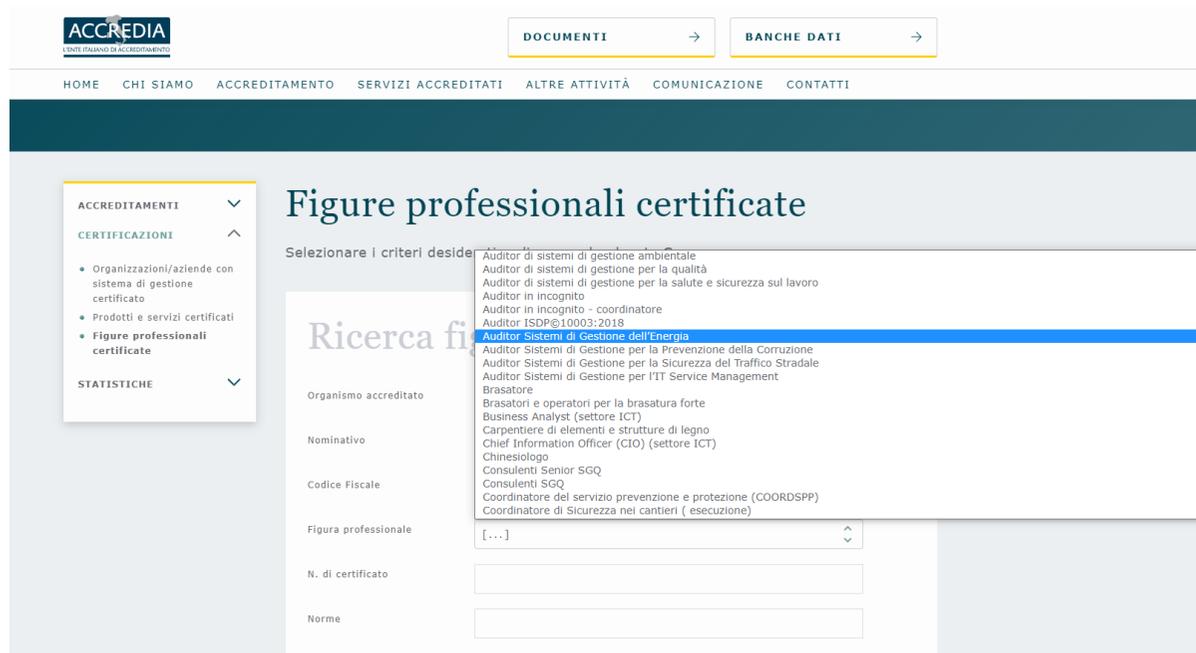
The data of certified professional figures, managed by Accredia directly or in connection with other institutional sources, are also accessible in the Databases section.

The aim of this database is to offer a complete and reliable information service of transparent communication for accredited CABs, accreditation bodies, national and international institutions, businesses and consumers which use accredited services.

In the **CERTIFIED PROFESSIONALS section**, the data of professionals in possession of a valid certificate issued by accredited certification bodies are published. The research can be performed using the appropriate query mask. Through the query mask it is possible to select the search results for: accredited body, name, tax code, profession, certificate number, certification standard.

The data of the professionals are uploaded to the Accredia website by the competent certification bodies which are responsible for the quality and updating of the information.

Target group: professionals, certification bodies, general public,



The screenshot shows the ACCREDIA website interface. At the top, there are navigation buttons for 'DOCUMENTI' and 'BANCHE DATI'. Below the navigation bar, the main heading is 'Figure professionali certificate'. A search filter menu on the left is open, showing 'Figure professionali certificate' as the selected option. The search results are displayed in a table with the following columns: 'Organismo accreditato', 'Nominativo', 'Codice Fiscale', 'Figura professionale', 'N. di certificato', and 'Norme'. The 'Figura professionale' column is currently expanded, showing a list of professional roles such as 'Auditor di sistemi di gestione ambientale', 'Auditor di sistemi di gestione per la qualità', and 'Auditor Sistemi di Gestione dell'Energia'.

- ODATECH

<https://www.odatech.it/>

Odatech is an Energy Qualification and Certification Body of the Autonomous Province of Trento. It has the task of enabling the certification bodies, as well as verifying the correct application and monitoring of energy certification in Trentino Region.

In addition, Odatech also manages the system for issuing energy plates, promotes specific and targeted training activities, and is the manager and coordinator of the ARCA Certification process - Architecture Comfort Environment - the first example in Italy of quality certification for wooden buildings.

Odatech is the result of a joint initiative proposed by relevant subjects of the Province of Trento: The Association of Artisans, the Industrial Association, the College of Surveyors, the Order of Industrial Experts, the Trentino Federation of Cooperation, the Order of Architects and the Order of Engineers.

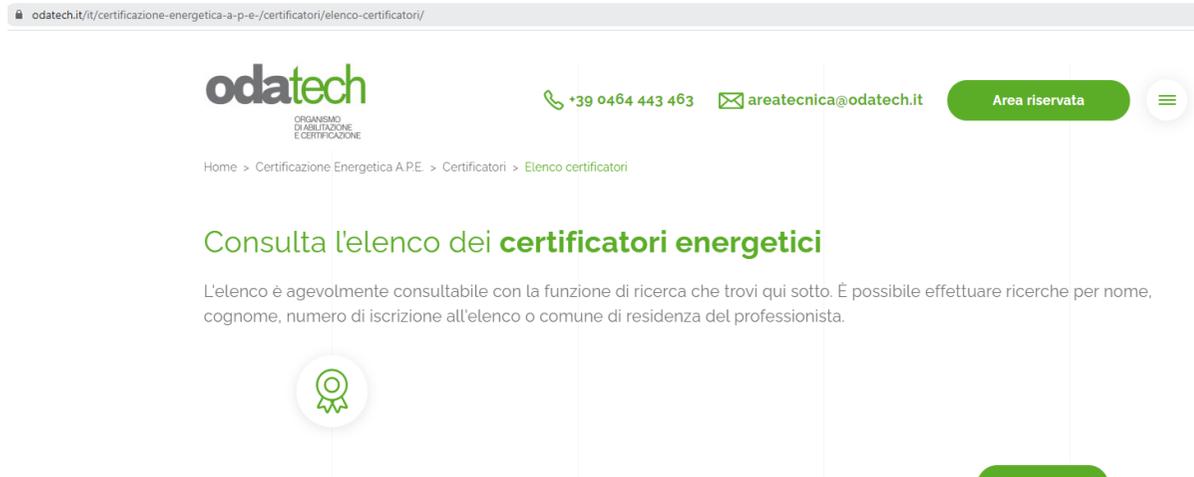
Odatech deals with:

1) professional qualifications required by law:

- qualification of energy certifying subjects for the Province of Trento
- management of the list of authorized certifying entities
- management of the system for issuing certificates and energy plates
- control over the energy certificates issued and control of the work of the certifying subjects
- promotion of training activities for obtaining the qualification complementary to training courses promoted by the Province or by other public and private entities and subjects.

2) certification of skills on voluntary schemes and coordination of activities related to the ARCA Certification process.

Target group: energy assessor, professionals, certification bodies, construction companies, general public.



- REGIONE EMILIA-ROMAGNA, ENERGY SECTOR

<https://sace.regione.emilia-romagna.it/ElencoSoggettiCertificatori.aspx>

The Emilia-Romagna Region has adopted a regional energy certification system for buildings, operational since January 2009.

The Energy Performance Certificate of buildings must be prepared and issued by an Energy Assessor (Technician or a Professional such as Engineer, Surveyor, Architect) accredited by the Region.

The Emilia-Romagna region has created a specific **database which contains the list of qualified energy assessors**.

Target group: energy assessor, professionals, certification bodies, construction companies, general public.

energia.regione.emilia-romagna.it/certificazione-energetica/certificazione-energetica-degli-edifici

Are tematiche ▾ Come fare per Leggi Atti Bandi ▾ Piani Programmi Progetti



Certificazione energetica

Certificazione energetica degli edifici

Condividi

Normative regionali in vigore.

Come previsto dalla [legge regionale n. 26 del 23 dicembre 2004](#) e in attuazione della [direttiva comunitaria 2002/91/CE](#), la Regione Emilia-Romagna si è dotata di un **sistema regionale di certificazione energetica degli edifici, operativo dal 1° gennaio 2009**. Recentemente, con la [legge regionale n. 7 del 27 giugno 2014](#) (Legge regionale comunitaria 2014), l'Assemblea legislativa regionale ha provveduto a modificare la legge 26/2004, in recepimento della [direttiva comunitaria 2010/31/UE](#) intervenuta nel frattempo in materia.

In seguito all'approvazione della [delibera di Giunta regionale n. 1275 del 7 settembre 2015](#) **Approvazione delle disposizioni regionali in materia di attestazione della prestazione energetica degli edifici (certificazione energetica)**, entrata in vigore il 1°

In questa sezione

- [Elenco certificatori](#)
- [Domanda di accreditamento](#)
- [Registrazione certificati](#)
- [Informativa al trattamento dei dati personali](#)
- [Accreditamento ispettori](#)

» **Elenco Soggetti Certificatori aggiornato al 02/12/2020**

I soggetti certificatori selezionati sono visualizzati in ordine alfabetico per cognome partendo da una lettera selezionata ad ogni accesso in modo random dal sistema. E' possibile ordinare alfabeticamente ogni colonna (Cognome, Nome, Titolo, Cap, Città, Provincia, Paese) dell'elenco cliccando sull'intestazione della colonna stessa.

Selezionare il tipo di ricerca che si desidera effettuare

- Ricerca Soggetti Certificatori per Province di Operatività tecnica
- Ricerca Soggetti per Nominativo

Clicca su una provincia per visualizzare i Soggetti Certificatori per provincia di Operatività Tecnica



9. Matchmaking portals

- [BLEN.it](#)

<http://www.blen.it/>

Borsa Lavoro Edile Nazionale is a national system which aims at easing the match-making between offer and demand in the construction sector. The purpose of the platform is to foster and improve the connection between who is offering his skills and knowledges and who is looking for a professional or expert.

The worker can publish her/his curriculum after registering on the portal.

Target group: general public, citizens, companies, workers, professionals, entrepreneurs.

BLEN.it

BORSA LAVORO EDILE NAZIONALE

IL PORTALE PER LO SVILUPPO DEL MERCATO DEL LAVORO IN EDILIZIA



MDL Edilizia
Glossario
News
Faq
Link
Contatti
Forum



? HELP
 LOGIN
 REGISTRATI

LA BORSA LAVORO EDILE NAZIONALE

Lo strumento delle parti sociali per la buona occupazione

BENVENUTI NEL SITO BLEN.IT

La Borsa Lavoro Edile Nazionale è un servizio nazionale di sistema, nato per facilitare l'incontro tra domanda e offerta di lavoro nel settore delle costruzioni, promuovendo e facilitando i contatti tra chi offre e chi cerca lavoro.

L'istituzione del portale BLEN.it è stata prevista dai CCNL Edili Industria e Cooperazione e Aniem - Confapi unitamente al CCNL artigiani 2008. Nel portale BLEN.it sono disponibili servizi per inserire i curricula e pubblicare le domande di lavoro. I servizi a disposizione dei cittadini e delle aziende sono gratuiti e per utilizzarli il primo passo è registrarsi.

La Borsa Lavoro Edile Nazionale è gestita dal Formedil in collaborazione con la Commissione Nazionale Casse Edili (CNCE) e dalle Scuole Edili territoriali aderenti.

Collegato a

News

28.04.2020 COVID-19 MISURE EUROPEE DI SOSTEGNO ALLE IMPRESE E AL MERCATO DEL LAVORO

+ details

28.04.2020 PROTOCOLLO CONDIVISO DI REGOLAMENTAZIONE PER IL CONTENIMENTO DELLA DIFFUSIONE DEL COVID - 19 NEI CANTIERI EDILI

+ details

16.03.2020 MERCATO LAVORO. ON LINE IL RAPPORTO 2019 (MINISTERO LAVORO, ISTAT, INPS, INAIL E ANPAL)

+ details

13.12.2019 MINISTERO DEL LAVORO: I RAPPORTI DI LAVORO IN EDILIZIA DALLE COMUNICAZIONI OBBLIGATORIE - TERZO TRIMESTRE 2019

I servizi offerti dal BLEN.it sono attivi su tutto il territorio nazionale e puoi accedere registrandoti.

Presso gli Sportelli BLEN.it, puoi inoltre trovare un supporto specialistico per l'utilizzo dei servizi a te dedicati e per approfondire le tue esigenze. Gli Sportelli BLEN.it sono al momento attivi presso le Scuole Edili di Milano, Bergamo, Brescia, Asti, Cuneo, Torino, Verbano-Cusio-Ossola, Trento, Venezia, Verona, Vicenza, Padova, Rovigo, Treviso, Belluno, Genova, Savona, Imperia, Parma, Bologna, Modena, Ravenna, Reggio Emilia, Arezzo, Firenze, Grosseto, Livorno, Lucca, Massa Carrara, Pisa, Pistoia, Prato, Siena, Perugia, Terni, Pesaro e Urbino, Roma, Frosinone, Latina, Teramo, Chieti, Pescara, L'Aquila, Bari (con competenza Bari, Barletta, Andria, Trani), Lecce, Taranto, Foggia, Brindisi, Avellino, Salerno, Caserta, Napoli, Matera, Cosenza, Reggio Calabria, Palermo, Agrigento, Messina, Catania, Enna, Siracusa, Ragusa, Caltanissetta, Trapani, Cagliari, Campobasso, Novara, Rieti, Viterbo, Sassari, La Spezia, Forlì-Cesena

Puoi altresì rivolgerti direttamente al Formedil contattando la mail formedil@blen.it

Lavoratori

Cerchi lavoro nel settore edile?

Con BLEN.IT puoi inserire il tuo CV, consultare le domande di lavoro delle aziende e accedere ad altri servizi a te dedicati.

Aziende

Cerchi personale per la tua azienda?

Con BLEN.IT puoi inserire le tue domande di lavoro e consultare i profili dei lavoratori disponibili.

11.3.4 Germany

1. Online craftsman portals (6)

- <https://www.my-hammer.de>

About: This portal provides craftsmen filtered on end-user's needs. Users can enter information of their location respectively postal code, the field of work to be done and the portal provides a range of available craftsmen. But the portal also works the other way round, as craftsmen can publish their offers. That way, craftsmen can compare their prices & skills. My-hammer is operating for more than 15 years now and seems to be the largest and best-known portal in Germany.

Target group: Private persons/ General public & craftsmen

- <https://www.blauarbeit.de>

About: Blauarbeit is a similar portal like my-hammer and provides a several available craftsmen based and filtered on the need of end-users. It includes several crafts like bricklayer and plumber. It says Blauarbeit includes more than 150,000 different craftsmen and companies. But it also works the other way round, that craftsmen can register and set up offers.

Target group: Private persons/ General public & craftsmen

- <https://www.check24.de/profis/handwerker/vergleichen/>

About: Check24 is portal for many kinds of facilities. It does not offer only a craftsmen portal, but also functions a portal comparing prices and offers for contracts of: Natural Gas/ Electricity/ DSL/ flights/ renting cars and many more. The platform offers 27 different fields of construction and furthermore moving companies & gardeners.

Target group: Private persons/ General public

- <https://www.handwerker-aufträge-finden.de/handwerkerportal>

About: This portal wants to bring consumers and craftsmen closer together and serves as a matchmaking portal. End-users can filter by their needs and location and can get in contact with craftsmen.

Target group: Private persons/ Craftsmen

- <https://www.doozer.de>

About: Compared to other match-making portals this portal is a little different, as you can log-in either as a craftsman, home-owner or building manager. Furthermore, doozer focus especially on renovation activities.

Target group: craftsmen, home-owners, building manager

- <http://deinehelfer24.de>

About: This portal provides craftsmen filtered on end-user's needs. Users can enter information of their location respectively postal code, the field of work to be done and the portal provides a range of available craftsmen. The end-user needs to choose the field of work to be done. Possibilities are: renovation/ painting/ floor/ tiles/ dry lining/ electric.

Target group: General Public

2. Skill registers (and/or matchmaking portals)

- <https://www.kursfinder.de/suche/handwerk-weiterbildung>

About: This is a platform offering a wide range of trainings and seminars especially for craftsmen. You can filter by your interests, date, kind of training and location and the platform offers you possible trainings.

Target group: Craftsmen

- <https://www.handwerkskammer.de>

About: The German Handwerkskammer (Chamber of craftsmen) is a national chamber where craftsmen can register, take part in trainings & education. Furthermore, on its website it informs for the local institutions. The website is the result of a nation-wide initiative and aims on synergies of the local chambers and being a strong institute to advocate the interests of craftsmen but also for organizational and administrative purpose.

Target group: Craftsmen

3. Matchmaking portals (2)

- <https://www.auftragsbank.de>

About: The order bank is a supra-regional B2B platform for the simple placing and search of orders, subcontractors and business contacts from Germany, Europe and the world. Every month there are over 1,000 new advertisements in the fields of trade, industry and services, which offer a wide variety of business opportunities.

Target group: Construction companies, Real estate owners, General contractors, craftsmen

- <https://www.ibau.de/auftraege-nach-branche/>

About: The order bank is a supra-regional B2B platform for the simple placing and search of orders, subcontractors and business contacts from Germany, Europe and the world. Every month there are over 1,000 new advertisements in the fields of trade, industry and services, which offer a wide variety of business opportunities.

Target group: Construction companies, Real estate owners, General contractors, craftsmen

11.3.5 Hungary

Online craftsman portals

- <https://ezermester.hu/>

The platform provides a filter which makes it easier for everyone to look for a skilled professional in specific area such as: Technology, carpentry, moto industry, security systems, painting, construction, engineering, metal working, electricity, plumbing, furnishing and installations.

Beyond the “usual” functions the portal has a unique comparison function that is able to list “next to each other” two for instance construction SME with their portfolio (the below panel on the right and the left show two general contractors and their services in two separate lists, bulletpoints):

 **Lakás Varázs**
Cég, vállalkozó

Tevékenységek (28)

- ◆ Belsőépítészeti tervezés
- ◆ Burkolás
- ◆ Bútorszerelés
- ◆ Építési generálkivitelezők
- ◆ Építkezés, építés
- ◆ Festés, mázolás
- ◆ Fűtészerezés
- ◆ Gázszerezés
- ◆ Gipszkarton szerelés
- ◆ Hangszigetelés
- ◆ Hidegburkolás
- ◆ Hőszigetelés
- ◆ Kéményseprő

 **Lits Energy Kft...**
Cég, vállalkozó

Tevékenységek (4)

- ◆ Ácsszerkezetek, ácsmunkák
- ◆ Bádogos
- ◆ Építési generálkivitelezők
- ◆ Lakászellőtető rendszerek tervezése, kivitelezése

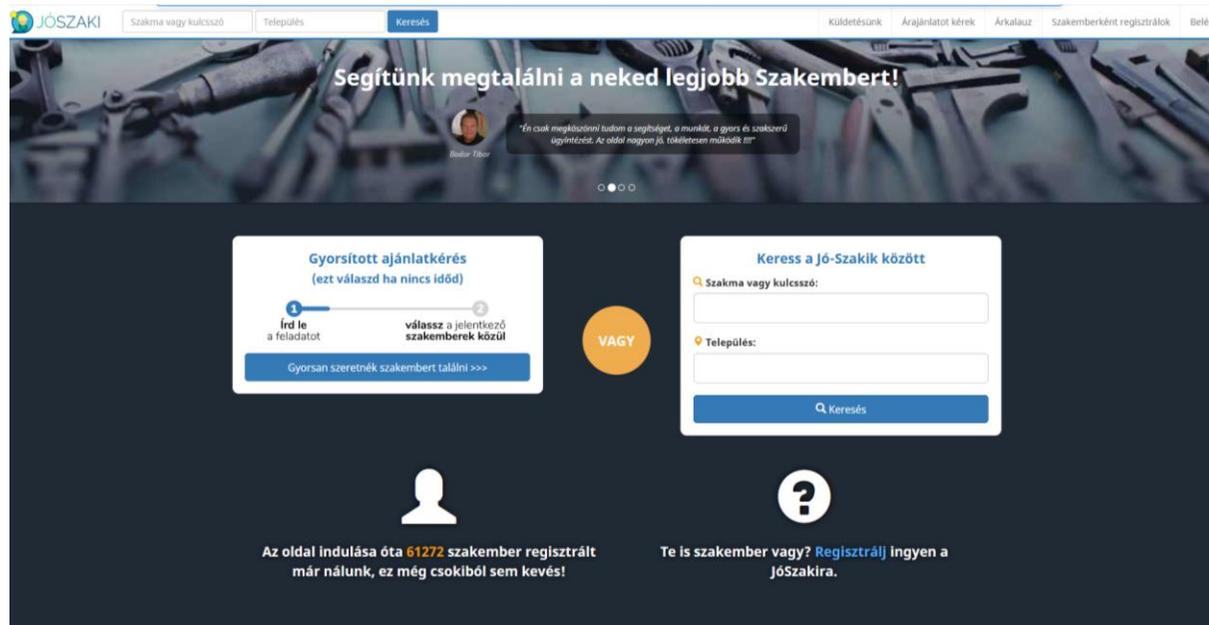
Once you filter out the service that you need assistance with, the platform will display a list of professionals and their offers. In order to contact them and find out more information, you have to be logged in.

Target group: General public

- <https://joszaki.hu/>

Józszaki is a portal where the user can search construction workers (painter, electrician etc.) by area and/or profession.

The site is very useful when the user wants gather “quick offers” from the registered workers via the portal by describing the concrete work to be done (by when, where, volume etc.) and in return of giving the email of the user the offers will land in the user’s mailbox.



Target group: General public, craftsmen

Skills registers (and/or matchmaking portals)

- <https://ec.europa.eu/energy/intelligent/projects/en/projects/build-skills-trainbud>

The aim of the project was to create a voluntary qualification system (quality labelling) based on the participatory strategy and actions of the Sustainable Construction Skill Alliance which was formed within the project from representatives of professional organizations, manufacturer companies and training institutions. This creates positive reinforcement for HVAC skilled workers to invest trainings to gain practical skills related to sustainable construction and provides homeowners with reliable information on the skills and qualities of construction workers.

This required double action:

- Reinforcing the up-to-date knowledge and appropriate skill base of construction workforce (especially HVAC skilled workers) in building energetics, energy efficient measures and use of renewable energy by developing a sustainable training programme.
- raising the awareness of property and homeowners in energy efficiency measures and emphasising the importance of proper examination, assessment and installation of such measures raise the demand for such qualified, skilled workers. While having a clear interest in coordinating the actions in European level this project was strictly based in Hungary, because of the strong links between demand management for skilled labour as the major incentive for undertaking the proposed trainings.

Target group: blue collar workers

11.4 Best practices in Neighbouring countries

11.4.1 Ukraine

Ukraine

1. Online craftsman portals

- <https://www.rabotniki.ua/>

About: This is a portal providing craftsman services. It is very simple to use - you create a tender for construction work or a tender for apartment renovation, and then the masters will find you and offer their services. Everything is convenient and simple. Plus, construction tenders are the best way to get the lowest price.

2. Skills registers (and/or matchmaking portals)

- <https://poslugy.ua/>

About: This is a matchmaking portal where an individual can either look for a craftsman or register their skills and become a certified craftsman and post their services.

The services that can be found there are: Apartment renovation, Plumber, Electrician, painter and many more.

- <http://masters.city/>

About: On this platform you can place your project through first, filling out a form describing what needs to be done: repair the house, apartments, install drywall or just services of a plumber or electrician. After that, your project will be published on the City of Masters portal in the "Projects" section and the offer will be sent to all registered construction companies, crews and craftsmen. Or you can immediately go to the "Masters" and choose a craftsman by yourself.

Once you placed your project you will get offers from craftsmen, crews and construction companies. You can compare the masters, evaluate their ratings, bargain the prices for construction work, set the deadlines, check the qualifications, review their work in the portfolio and make your own convenient choice.

- <http://servicedom.in.ua/ru>

About: This is a platform through which you can look for a master and call him at home, all you have to do is leave a request on the site and in 2 minutes the master will be found.

You only pay for the master's service and they search for the specialist you need for free.

If you have a smartphone, you can search for a master through installing their mobile application "SERVICE at home" and use it anytime and anywhere.

3. Matchmaking portals

- <https://kabanchik.ua/>

About: Kabanchik.ua is an online service for finding private specialists for solving household and business problems. The site brings together service customers who need to do some work, and competent professionals looking for a part-time job or additional income.