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Education for Digitalization of Energy

Deliverable 3.3

Strategic Network

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Abstract:

This deliverable defines a network of strategic partners and stakeholders for the successful implementation and sustainability of the EDDIE's Blueprint Strategy for the Digitalisation of the European Energy Sector.

Keywords:

Blueprint, Network, Strategic stakeholders, University Hub

DISCLAIMER

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04	FOSS Research Centre for Sustainable Energy – U. of Cyprus	FOSS	Cyprus
05	Politecnico di Milano – METID	POLIMI	Italy
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Executive Summary

Stakeholders are all the people that EDDIE has an impact on or connection to. This could include end users, beneficiaries and supporters of the Blueprint Strategy. The range of different stakeholders has been already presented in the Mapping of deliverable D3.2.

The relationships with stakeholders are of paramount importance in relation to the success of the Blueprint. EDDIE will need to develop relationships with potential stakeholders and also to demonstrate a strong network and dialogue with beneficiaries and other key stakeholders in order to build credibility. In this context, this section discusses issues concerned with building a stakeholders' network and developing stakeholder relationships.

The aim of Deliverable 3.3 is to define a network of strategic partners and stakeholders that will be pivotal for the implementation and success of the Blueprint for the Digitalisation of the European Energy Sector (BSDE). The deliverable will also define the so-called "University Hub": a local coordination structure set between key University partners and other stakeholders, for the synergic local action on the different educational levels targeted by the project. The University Hub will support a quick transfer of knowledge from the university to the other educational entities, including high school level, thus representing the pillar on which to build a strong cooperation at European level.

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1. Introduction

The success of Digitalization calls for a big effort from all parties involved as well as for big investments as stakeholders of the energy sectors are still far away from the needed digitalisation levels. Actions are needed not only on operational digitalisation but also on the transformation of the whole value chain, including market operation and internal information flow within companies. Strategic stakeholders that should advice on, or even adapt, education targets are, firstly, organisations and businesses in need of new personnel with new skills and/or of retraining of their existing personnel in order to adapt their workflow and business activities. In the Energy sector, these are represented by Transmission System Operators (TSOs), Distribution System Operators (DSOs) and companies in renewable energy sources, in flexible thermal generation, or in other energy carrier networks interfacing with the electricity networks, such as gas, heating and cooling, as well as and the transport sector. Moreover, providers of new business services based on top edge technologies (storage technology, renewables and services providers, energy and information system equipment manufacturers and suppliers, information and communication technology, cyber security and software providers) represent new actors that require state of the art knowledge of technology, legal frameworks, regulatory issues, business models and so on. Also, decision-makers such as regulators and national representatives, European and national energy system policy makers are a third category of key stakeholders of the sector in transition and their needs have to be addressed.

On the other side of the sector skill context, there are the providers of education, research centres and academia, Vocational (Continuing VET or “C-VET”, Initial or “I-VET”) and Professional training providers that need to find the skill gaps in order to match the industry needs.

In this context, this deliverable, “D3.3 Strategic Network”, aims specifically at defining the network of strategic partners and stakeholders that will be pivotal for the implementation and success of the Blueprint for the Digitalisation of the European Energy Sector (BSDE). The deliverable also defines the so-called “University Hub”: a local coordination structure set between key University partners and other stakeholders, for the synergic local action on the different educational levels targeted by the project. Goal of the University Hub is to support the transfer of knowledge from university to the other educational entities, building cooperation at European level.

The remaining of the document is structured as follows:

- Chapter 2 presents the stakeholders network that builds upon the Stakeholders database.
- Chapter 3 describes the strategy for network building and stakeholders’ engagement.
- Chapter 4 presents the University Hub as the core element for long-term sustainability of the EDDIE Blueprint.
- Chapter 5 provides the conclusions.

2. Stakeholders' network

2.1 Database design and development

2.1.1 Data structure design

Through the analysis of data previously gathered in the initial stakeholder database, a new database structure was developed in order to store information in a more organic way, best suited to be used everywhere when needed and easier to be managed. Three main entities have been identified:

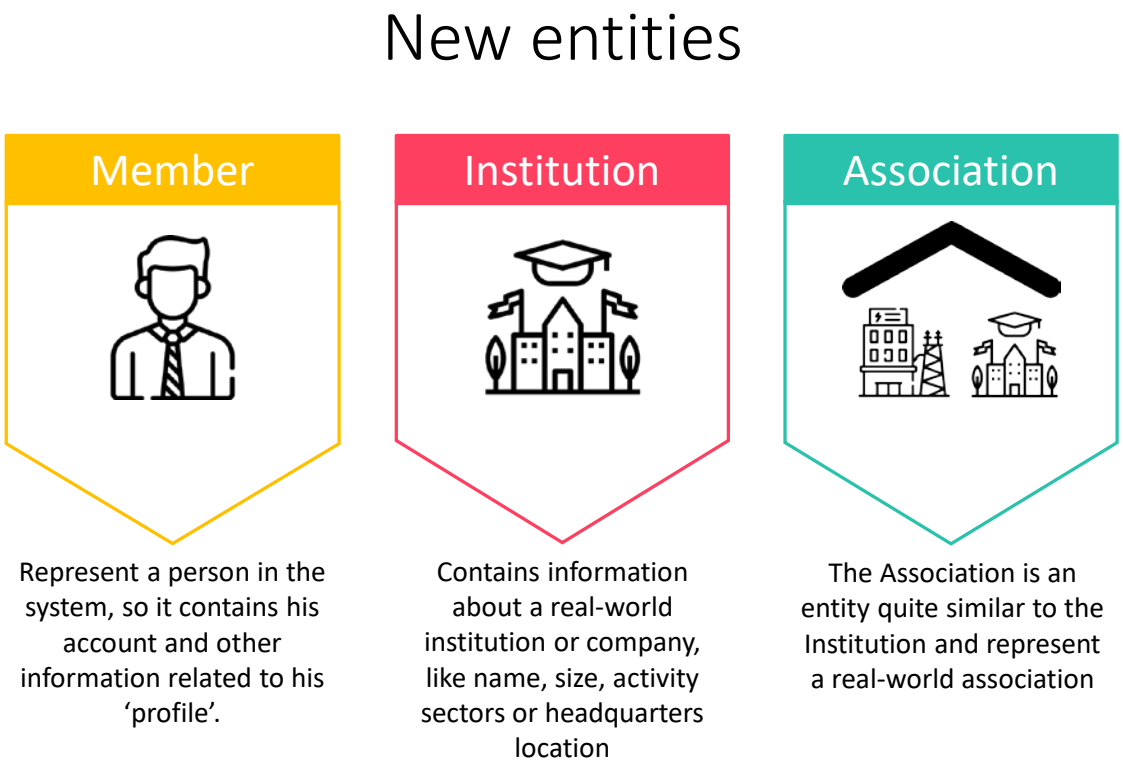

Figure 1: EDDIE database entities explained

It is important to note that "Accounts" on EDDIE Database are only assigned to Members, not to Institutions or Associations.

These three entities are connected to each other through relationships as described in the following scheme:

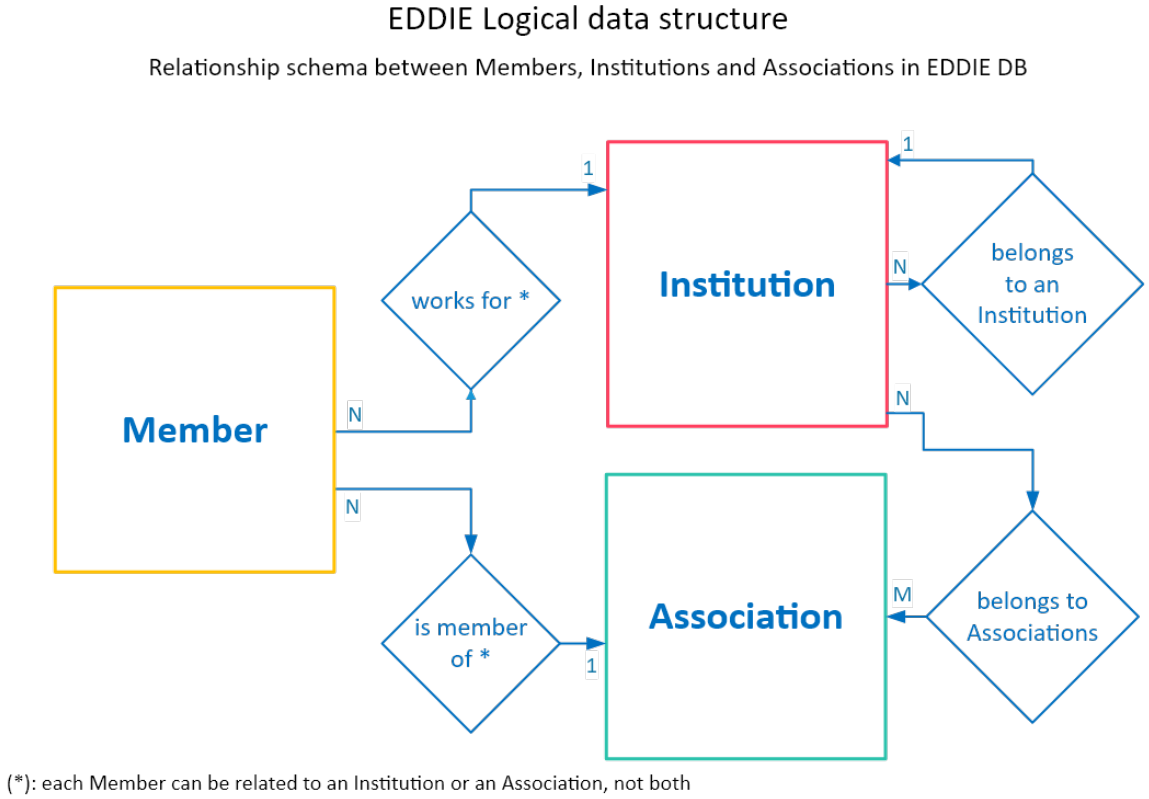

Figure 2: EDDIE Logical data structure

This structure allows the storage of information once, avoiding useless redundancies whilst also simplifying maintenance activities. It also guarantees the possibility to extend it in the future.

2.1.2 Data structure implementation

In order to use or all the benefits and facilities offered by the WordPress CMS, , an advanced feature called “Custom Post Type” has been used to implement the abstract structures described above. Three new post types have been created:

- Individual
- Institution
- Association

The Member entity consists of two elements, the "Individual" post type and the already existing User Account provided by the CMS. A one-to-one relationship connects each User Account in the Database with the proper Individual entry. The following diagram illustrates this:

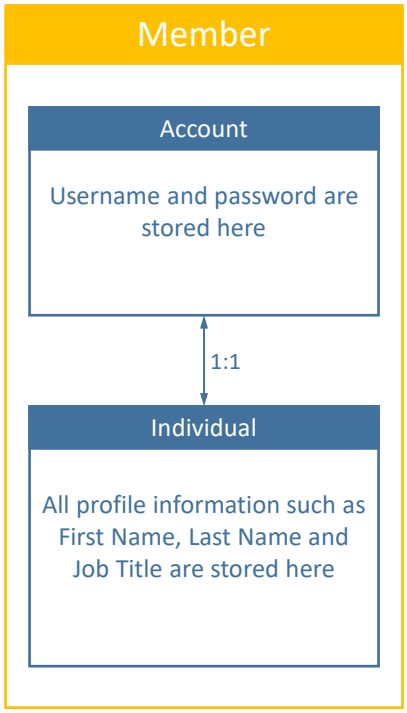

Figure 3: Member accounts explained

The choice to implement the 'Member' entity into two separate structures connected together comes from the need to keep the User Account as clean as possible, moving all the other user data to a separate container.

All the information details defined for these post types are saved in so-called Custom Fields. For example, the first and last name of a person are stored in two specific custom fields. The same for number of employees in an Institution, or the countries of operation in an Association. Each post type can be configured with its own number and type of Custom Fields based on the contents to store, just like a table in a DB can be defined with any number of fields.

The following table lists custom fields defined for each post type and it contains information entered by the user:

Individual	Institution	Association
• First Name • Last Name • Email Address • Job Title/Position • Password • Personal Twitter • Personal LinkedIn • Personal Website • Photo	• Institution name • Size of the Institution • Main Activity Sectors • Country of Headquarters • Continents of Operation • Countries of Operation • Institution Email Address • Institution Website • Institution Twitter Page • Institution LinkedIn Page • Logo • belong to any Association/s • belong to any other Institution	• Association name • Size of the Association • Main Activity Sectors • Country of Headquarters • Continents of Operation • Countries of Operation • Association email address • Association Website • Association Twitter Page • Association LinkedIn Page • Logo

Other Custom Fields are defined for each post type. Theyare used to store service data, for example information that are not directly entered by the user, but which are still necessary for other functions, i.e.allowing the system to use the submitted data or to save connections between entities.

Every Custom Field has its own properties, such as the input type, the display mode, if the content is a single or multi value, etc. This allows the tailoring of each field, based on the type of information it will accept, guiding the user during the registration fulfillment.

As an example, the following snapshot shows the properties for the field "first_name":

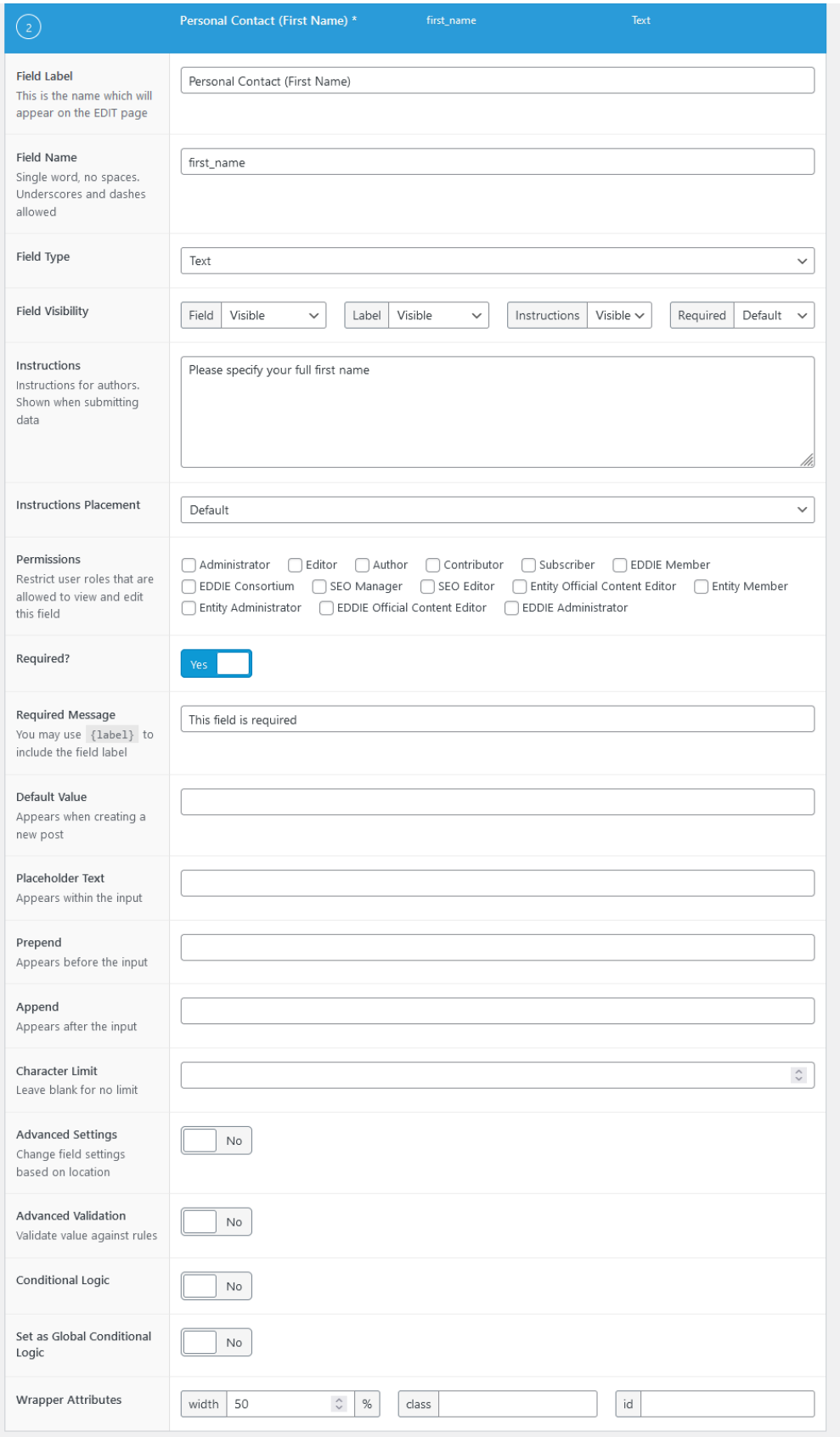

Figure 4: Field First Name

Some of the most important properties are:

- Field Name: used to read and write the data stored in it.
- Field Type: defines the type of information it can contain and how the field will be displayed to the user.
- Required: determines whether a field is mandatory or optional. Should the field be optional, the user can leave it empty.

2.1.3 Registration form design

The process of creating and configuring custom posts and their custom fields is strictly connected to the design of the registration form. The aim is to find the right tradeoff between two items:building a form with all the fields necessary to have a complete user profile and making it as simple as possible for the user to understand and use.To support a user-friendly experience, a brief description for every field has been added (see screenshot below). Moreover, other details have been added: if data maight be shared in the public domain, whether it is required/mandatory or not, and if a single or multiple value is accepted.

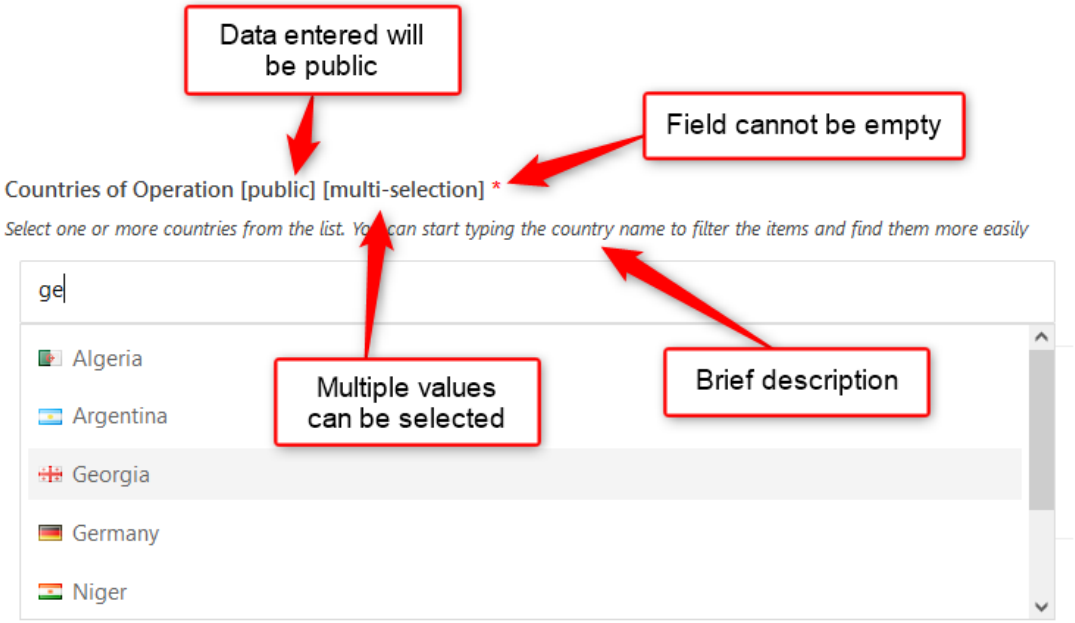

Figure 5: Registration form design example

Particular attention has been given to display the list of “activity sectors” which is hierarchical, and only the items in the last level (leaves) can be selected. A detailed taxonomy has been elaborated, identifying the main categories of sectors and sub-sectors, where stakeholders could be of interest towards the process of building a strategic network alliance in the context of the digitization of the energy sector. A smart layout was necessary, to display all the possible items in a single view, if necessary, but also to remain compact.

The solution was the combination of layers corresponding to stages, with a two-columns layout. At the first stage, only the sectors of the root level are visible:

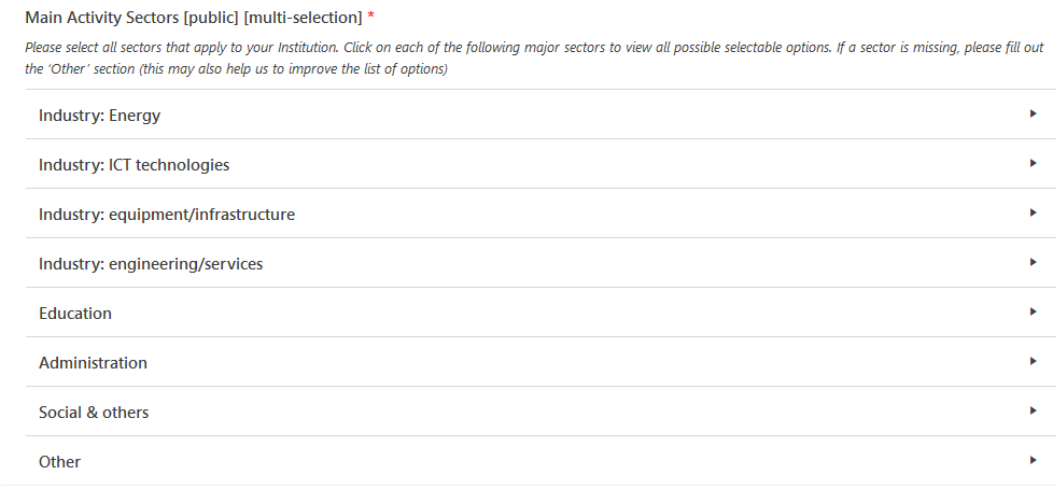

Figure 6: Main activity sectors

By clicking each of them, the sub-sectors appear, allowing the user to select those he considers pertinent:

Figure 7: Main activity sectors, expanded

2.2 Database registration

2.2.1 Form Compilation

The registration process is mandatory to become a part of the EDDIE Stakeholders Database. After various internal discussions, we decided to re-model the old version of the registration form in order to ensure a more user-friendly process.

The registration process is divided in two separate sections:

1. The first section contains all the personal data needed to define the user, such as first name, last name, email address, password and more.
2. The second section contains all the information related to the entity the user is employed in.

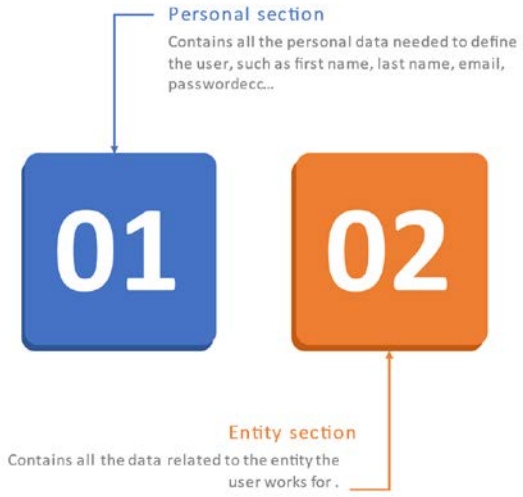

Figure 8: Registration process

2.2.2 Fields description

Name	Type	Description
First Name	Text	The user first name
Last name	Text	The user last name
Email address	Email	The user email
Job title/Position	Text	The position the user cover inside his company
Password	Password	The user password
Personal Twitter/LinkedIn/Website	URL	The user's socials links
Photo	Image	The user's personal photo
Entity selection Cases: 1. Belongs to	Radio button	The user needs to select if he belongs to an already existing

2. Create new 3. Freelancer		entity, if he needs to create a new one, or if he is a freelancer
Privacy & Terms of Use	Checkbox	The conditions the user needs to accept to register in the Database
Informational emails	Checkbox	The consent the user needs to give to receive informational emails

Case 1: The user belongs to a registered Entity

Name	**Type**	**Description**
Institution or Association	Select	The user needs to select the entity he belongs to

Case 2: The user does not belong to a register Entity. Creation of a new Entity

Name	**Type**	**Description**
Name of Institution/Association	Text	The name of the entity, independent from the type
Size of the Institution/Association	Number	The number of employees the entity counts
Main activity sectors	Group	These are the main areas of operation of an entity
Country of HQ	Country	The country of the entity's headquarters
Continents of Operation	Select	The continents where the entity operate
Countries of Operation	Country	The countries where the entity operate
Institution/Association email address	Email	The entity email address
Website/Twitter/LinkedIn	URL	Entity's social links
Logo	Image	Entity's logo
Institution belongs to another Institution	Post Object	Select another Institution to the created one belongs to
Institution belongs to any Association/s	Post Object	Select any Association/s to the created one belongs to

Case 3: Freelancer

Name	**Type**	**Description**
Type of employment	Radio button	Select the type of the employment

Organization/Association name	Text	The organization/association name which the user works for
Organization/Association/Freelance website	URL	The website of the user organization/association
Main Activity Sectors	Group	The main areas of the Freelancer operation

2.2.3 Activation process

Figure 9: Activation Process

After completing the registration, the user receives an e-mail notification with an activation link. By clicking on it, the account is placed in a pending review status, which means that an administrator (Entity administrator or EDDIE administrator) will then have to review the access request. Simultaneously:

- an email is sent to the administrators notifying them that a new registration needs to be approved;
- the user receives a notification telling him that his account is currently under review.

If the user belongs to a selected or created entity, the Administrator approves him. Another email is then sent to the user notifying him that the account has been approved and is fully active.

2.2.4 Login

Once the user is approved, he can proceed to login into the website by entering the email and the password he provided during the registration. Logged in users have access to a restricted area in the database, whereby they can edit their profile data, and depending on their role they can edit other user's roles or change their status.

2.2.5 User roles

Users have different possibilities based on their roles. Currently there are 3 different active roles:

- Entity Member
- Entity Administrator
- EDDIE Administrator

All other roles in the database will be studied and modeled according to future needs.

Entity Member: This is the default role that is set to a regular user that connects the account to an already existing entity. He can only edit his personal information in the profile section.

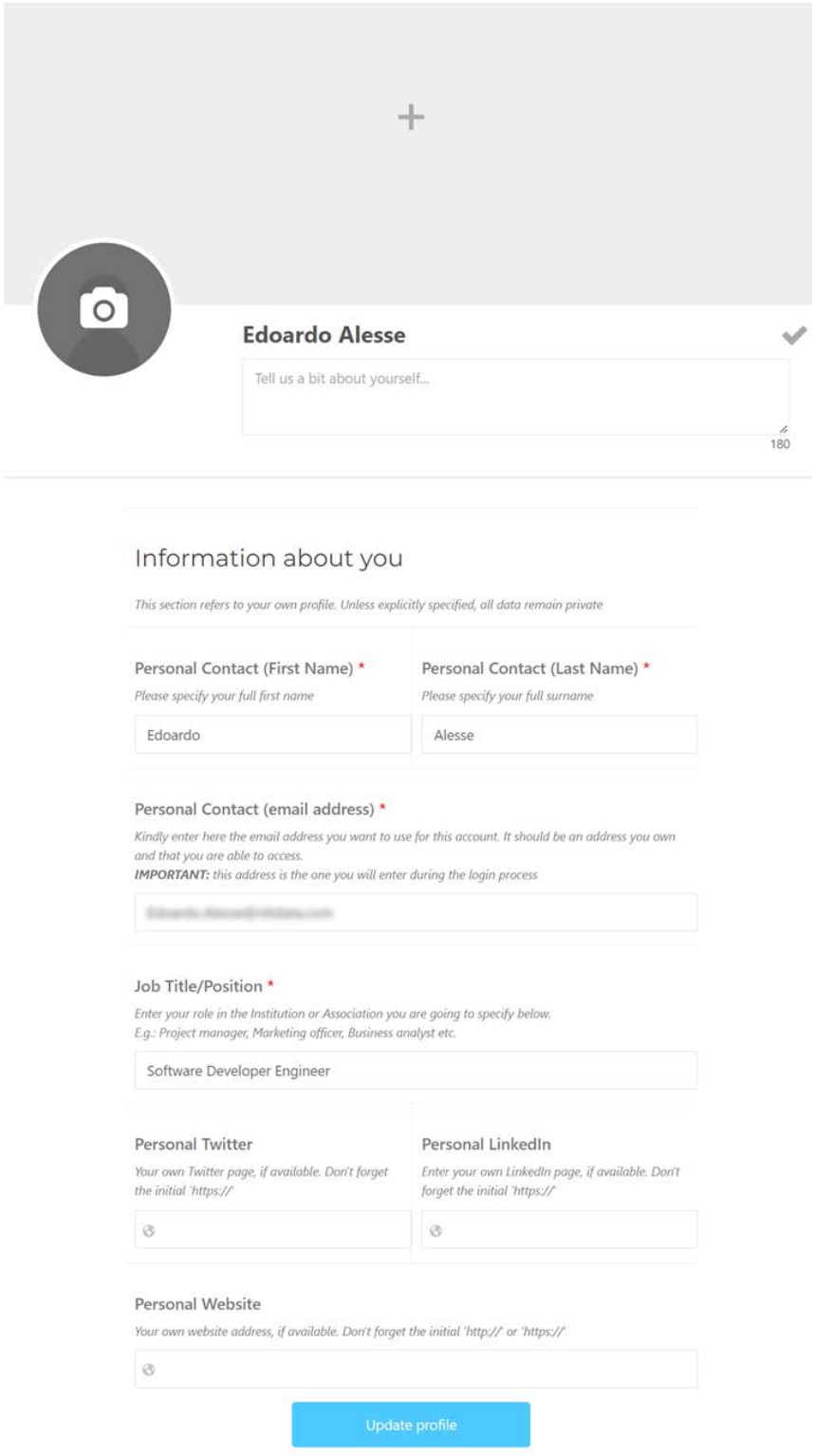

Figure 10: Entity Member page

Entity Administrator: This role is assigned to a person that registers a new entity. People with this assigned role can:

- edit their personal information (see above)
- can edit other member's role and status, should they be related to the same entity.

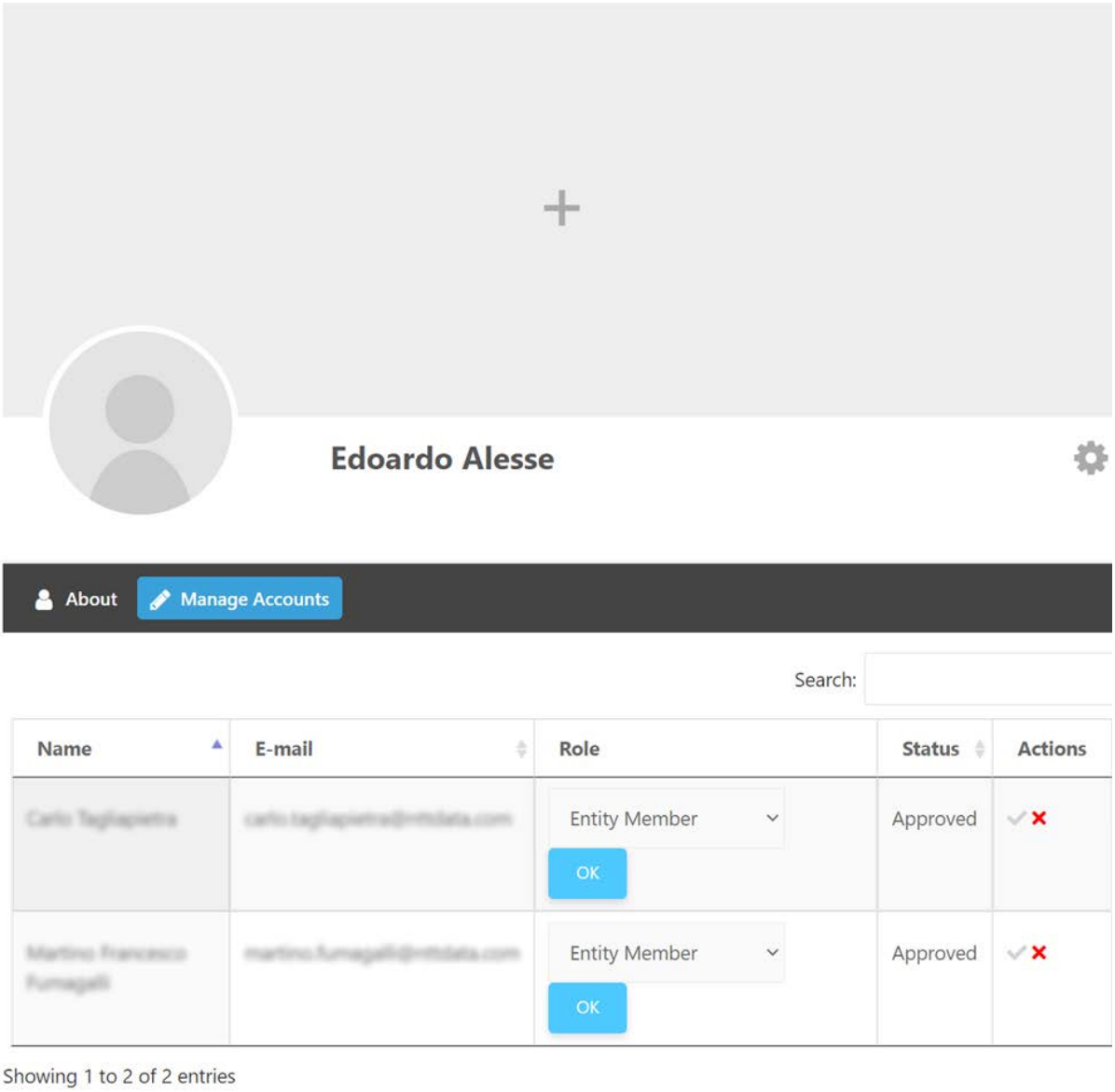

Figure 11: Entity Administrator page

EDDIE Administrator: This role is assigned to the main database administrator. This role has full power: he can edit both his own personal data and the role or status of other entity users, even if they are related to other entities, possibly filtering them among the list of all the approved entities. He can also edit entities status, approving or rejecting them.

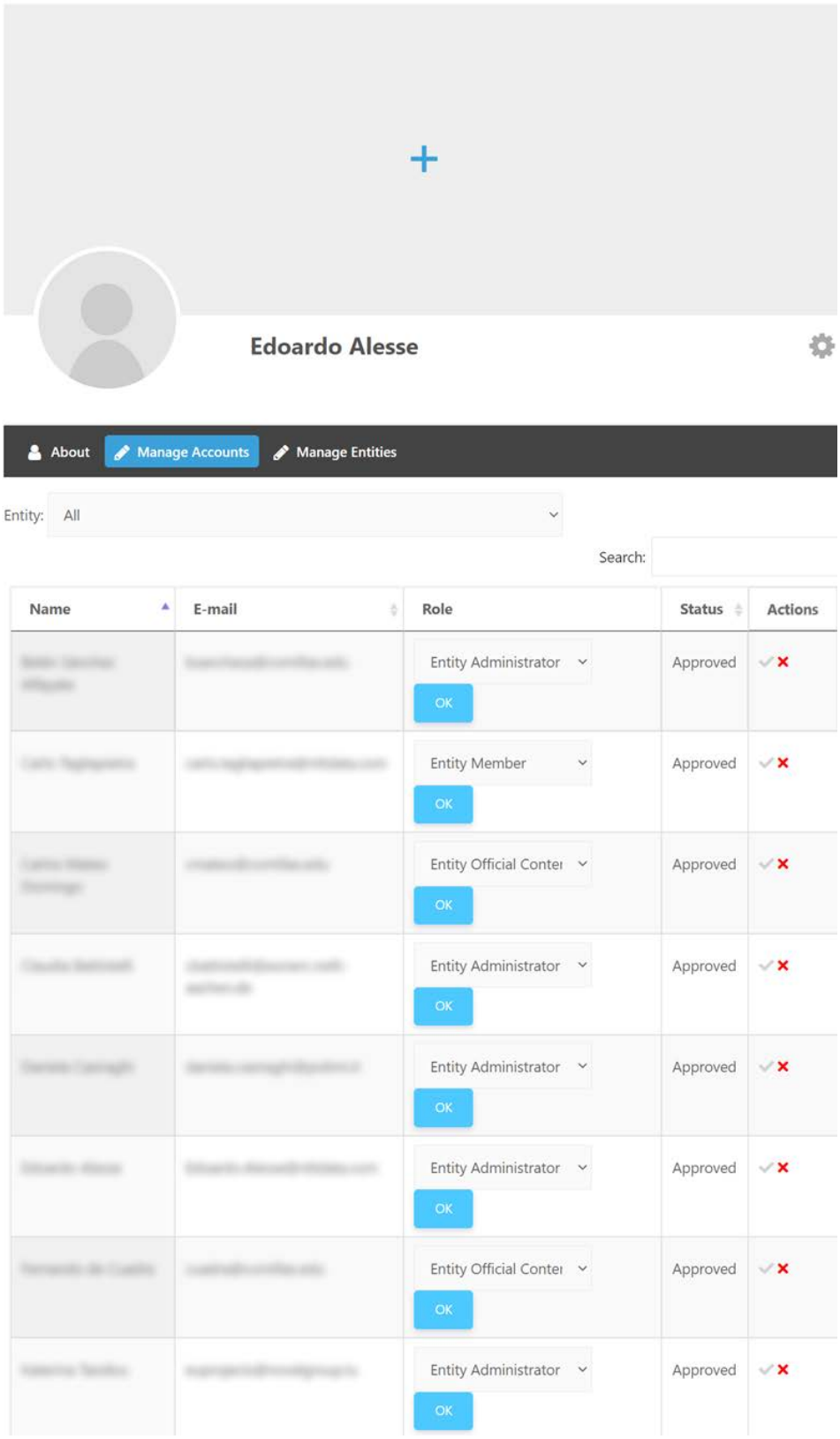

Figure 12: EDDIE administrator page

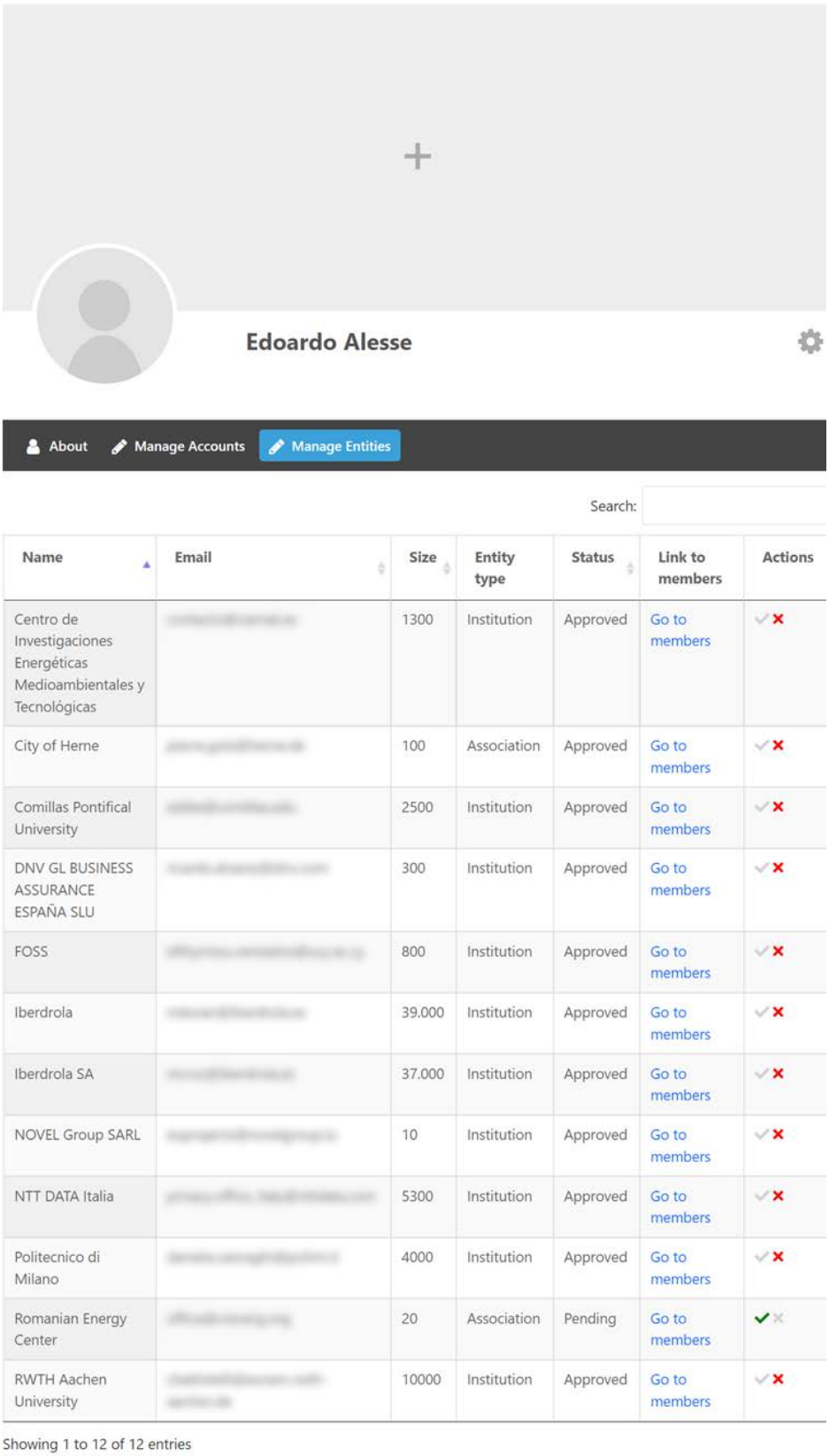

Figure 13: EDDIE administrator page

2.3 Stakeholders network built based on skills and job categories

The aim of deliverable D3.3 is to build a strategic network of EDDIE Stakeholders, upon the mapping presented in deliverable D3.2. Different stakeholder groups have been identified according to their average interest in the EDDIE project (measured against the average influence the consortium believes these same stakeholder groups have on the project): this in order to define, describe and indicate priorities for the improvement or the establishment of new qualifications (job profiles and skills needed) and of strategic network building with a strong industry-driven approach. It is worth of mention that the interest and influence of mapped in relation to the different marketplaces that are being analyzed in WP5, and that in the future could be provided as services by the Entity. Moving a step earlier to deliverable D3.1, the EDDIE project's approach was and is still based on the industry-driven moment, where future skills need to be identified and stakeholders of the sector play a major role. To identify the future skill needs, active research has been done by the EDDIE consortium in order to develop a relevant stakeholder list which covers the needs of the energy sector as a result of the energy transition. The accurate identification and possible membership of the identified stakeholders directly affects the future success of the project, as they are the potential users of the Eddie platform.

The question to address is: "How is this stakeholder network based on skills and job categories?" Starting from Deliverable 3.1, as explained above, the EDDIE consortium identified different stakeholder groups, which represent different skills and job categories that would be relevant to the EDDIE project. Stemming from Deliverable 3.1, Deliverable 3.2 designed the map of the EDDIE stakeholders, based on these very same stakeholder groups identified. Through the maps created in deliverable 3.2, Deliverable 3.3 describes the architecture of the stakeholder network, which is consequently based on skills and jobs categories.

The Stakeholder categories identified are the following:

- Industry Energy
- Industry ICT technologies
- Industry Equipment or infrastructure
- Industry Engineering
- Education
- Administration
- Social and others

Through the creation of the EDDIE database, the network can flourish with different stakeholders with various skill and job profiles, applying and contributing to the EDDIE project. As will be seen through this deliverable, it is important to ensure engagement with the relevant stakeholders in order to assure the future success and sustainability of EDDIE.

3. Strategy for network building and stakeholders' engagement.

EDDIE will involve target groups of stakeholders (see deliverable D3.2) in order to help maximising the use of project's results and set a strategy to foster communication with the target audiences. EDDIE has already identified target groups at geographical levels (local, regional, national, European) and in the Energy field (local authorities, organisations active in the same type of activity, networks, etc.), but will permanently updating the lists and mapping of stakeholders in order to expand and improve them in the relevant direction that will emerge during time.

The process of network building will be based on activities and messages tailored to the category of audiences and target groups, including:

- recipients of the project activities and deliverables: Education entities and training bodies in the energy;
- industry including universities, High schools, Energy Sector representatives including TSOs, DSOs, specific;
- energy market actors, generators, suppliers, end users;
- stakeholders and experts in the Energy field, plus any other interested parties (e.g. Telecommunications, Mobility);
- decision-makers at local, regional, national and European level;
- press and media;
- general public.

The stakeholder engagement plan is a key component of the project management plan: it identifies the strategies and actions required to promote productive involvement of stakeholders in project's decision making and execution The EDDIE engagement strategy will allow the targeted groups and stakeholders to have the necessary flexibility to keep a proactive attitude and to become involved during the different stages of the project. This, in turn, will ensure that the project remains on track, in terms of area of knowledge requirements and planned activities. Active and constant participation of the identified target groups should in fact increase the value of the project as well as help to spread the news and foster the participation of other interested parties throughout Europe.

During the lifetime of the project, the impact on the identified target groups has been evaluated (ref. deliverable D3.2), and the different stakeholders will be more and more involved in view of identifying new areas and policies and transferring results to end users. Before the end of the project, a New Skills Alliance for Digitalisation of the Energy Sector will be activated and all the associations, social partners, companies, training providers, as well as the energy research institutions involved in EDDIE, will have the opportunity to be reached through the Stakeholders Database described in Chapter 2 of this deliverable.

The strategy will also consider a number of activities implemented in pilot sites and involving all the Consortium members next to the interested users, academic and regulating bodies. The activities, organised with an "on the job" approach (ref. deliverable D6.1 for details on the design of the piloting activities) will entail the following basic steps:

- Proposal of training Modules

- Coordination with Regulators, Grid Operators and Market Operators on the Modules content
- Agreement with Energy Actors on the Modules specifications
- Development of Modules
- Training of targeted groups
- Collection of feed-back
- Completion of the activity
- Dissemination of results to training bodies, universities, and operators.

In order to foster the project results, EDDIE will set up a complete plan of measures to maximise the scientific, professional, industrial and societal impact of the project. This will also entail carrying out other actions such as interviews, working session, bi-lateral meetings, events, etc.. The plan will be materialised into specific dissemination activities, including:

- creation of Website,
- preparation of Webinars and dissemination through social Channels
- consultations and debates to establish a forum for stakeholders representing the professional environment, the educational environment (university and pre-university) and policy makers in the field of learning and development and in the field of energy.

These measures will ensure that the new labour market opportunities related to the digitalization of energy are closely linked to the social and business sector.

The desired impact at international level is for policy makers, energy sector workers and citizen-prosumers of the future to facilitate the transition towards a low-carbon, secure, reliable, resilient, accessible, cost-efficient, and market-based pan-European integrated energy system supplying the whole economy and paving the way for a fully CO2-neutral and circular economy, while maintaining and extending global industrial leadership in energy systems during the energy transition.

4. Long-term Sustainability of BSDE and stakeholders network: The university Hub

EDDIE supports the realization of a concerted plan by the project partners and associated stakeholders to assemble a critical mass of local and international actors with the aim to support its efforts to build the higher education sector, expand the talent pool, or contribute to the knowledge economy. To this goal, the project Consortium aims at setting up a new type of education-oriented association focused on universities acting in each respective local and national context as point of contacts and collectors of the ideas and needs of other stakeholders (University Hub). Through a constant dialogue with all the stakeholders interested in the initiative, the University Hub will reach the goal of

improving the territorial competitiveness by delivering high-quality education to both international and domestic students. Through education and training, it will also provide a context for knowledge generation and innovation.

The development of the University Hub will directly serve the future strategies regarding the digitalisation of the energy value chain: after carrying out all the planned activities described in a communication masterplan the new information flows and feedback loops established among the project partners will help foster the dissemination of the Blueprint within the stakeholders network. This will be done to ensure the impact and visibility of the EDDIE Project and the EU funding as well as the delivering of new innovative curricula.

With a proper structure of the Blueprint, it will be possible to create a very large base of association in which several stakeholders will benefit from sharing digital tools and contents.

The process will start within the higher level of education and will expand to industry and then to vocational institutions. Improved provision of skills will be targeted, considering not only digital skills as a core of the digitalisation of the Energy value chain, but also soft skills. This, to combine technology and interdisciplinary skills such as social, entrepreneurial, managerial and green skills related to sustainability at social, economic and environmental level.

Moreover, the Blueprint Strategy will be conceived as a dynamic system as it will include adaptive correction mechanisms and reinforced interaction between practice, research and policy. This operative concept, together with the pre-design of educational programmes and training activities aimed at covering the skill gaps identified during the project, will ensure an increased use of learning outcomes through the definition of specific actions that will have high impact in students education, professionals training or social awareness about the potential of digital transformation especially regarding the energy sector (as per the work carried out in WP4).

Within technical and digital, green and soft skills will be met by the design of training activities at EQF levels 4 to 8, both for young profiles still to start their professional careers and for junior/senior professionals. These courses will make use of digital contents and online collaboration tools and will be delivered online thanks to the the establishment of an e-learning platform (as per the work carried out in WP6). The e-platform will represent a key deliverable that will allow long-term sustainability: the platform will be fed through the time with a very rich of set of educational tools and courses (such as the creation of MOOCs, Massive Open Online Courses) that could be exploited by all the members to improve the educational quality of the delivered programs.

5. Conclusion

Stakeholders' involvement and clear objectives are prerequisites for the success of the EDDIE project. D3.3: Strategic Network deliverable, has described the strategy and design of the network of strategic partners and stakeholders that will be pivotal for the implementation and success of the Blueprint for the Digitalisation of the European Energy Sector (BSDE).

The deliverable has also conceptually described the "University Hub", defined as a local coordination structure set between key University partners and other stakeholders, useful to support the synergic local action on the different educational levels targeted by the project.

This deliverable concludes the work of WP3 "Stakeholders mapping and strategic network building", and follows the preceding deliverables: D3.1, where the different stakeholder groups were identified and grouped based on skills and job categories relevant to the EDDIE project; and D3.2 that describes the mapping process. Deliverable D3.3 builds upon the outcomes of D3.1 and D3.2, proving the strategy for network building and stakeholders engagement.