Engineers Europe: Multi-Stakeholder Cross-Fertilization to Ensure Future and Better Equipped European Engineers

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Abstract

FEANI – being a French acronym for the "European Federation of National Engineering Associations" was founded in 1951 with the mission to be a single voice for the engineering profession in Europe, "to facilitate the mutual recognition of engineering qualifications in Europe and to strengthen the position, role and responsibility of engineers in society." It unites National Member Associations of 33 countries, representing some 6 million engineers. To be member of FEANI gives the opportunity to have access to a European network and to participate at the Annual FEANI Conference and National Members Forum (NMF) which are key networking events to benchmark ideas with academia, industry, employers, politicians and other national members. FEANI also enables National Members to increase the influence and the role of engineers in today's society, by giving them access to European Union (EU) Organizations.

FEANI has become the authoritative voice of engineers in Europe and therefore connects systematically with other European stakeholder networks and umbrella Organizations. To this end, FEANI established in September 2018 the "Engineers Europe Advisory Group" (EEAG) which gathers stakeholders from professional Organizations, academia, and industry/employer Organizations.

The objectives of the EEAG consist in identifying and promoting common themes and work items towards a closer understanding between the stakeholders. This relates to general issues about the engineering profession, educational issues, political and societal issues. This cooperation should allow the EEAG to become the principle contact for the EU as the single voice of engineers in Europe with more institutional weight. It could also induce participation as project partner in EU projects and increase the number of FEANI "Associated members".

17 Organizations have now joined the EEAG. It is composed of key officers of FEANI together with one or two representatives of the various stakeholder Organizations. At least two meetings of the consortium p.a. are targeted.

As such, FEANI is moving from "access and relationships" to "influence, substance and impact on society" and ensures that the Engineering Profession in Europe speaks with a more coherent voice and a stronger policy outreach. This will generate individual membership value. It is also a plan for repositioning the Organization and for its future rebranding. It is for FEANI - as the leading European Engineering Organization - legitimate to take the leadership in this EEAG and to play a pivotal role in it.

The development of this plan has been an ongoing effort of restructuring, allowing FEANI to reach out widely and inclusively. FEANI will reach out to numerous other stakeholders and networks which have links with the engineering profession. This Advisory Group is to become an important instrument in providing expert advice to the Executive Boards of various involved stakeholders in many policy matters related to the engineering profession. A Communication and Marketing Agency Hill+Knowlton was hired for the initial development work which helped building a business case and finding consensus. It helped to map and determine where, if and with whom there was "common ground" for potential cooperation. There is common ground for universities, employer and industry associations and professional Organizations alike to work together and try to narrow the skills gap that is often underlined.

The EEAG was officially inaugurated on 11 September 2018. The overall goal is to establish better policy mechanisms for the engineering profession at European level thanks to a multi-stakeholder engagement with decision-makers and influencers.The 17 Organisations that have signed the Letter of Intent of the EEAG expressed their commitment in fostering stronger relations between academia, profession and industry, reinforcing the branding and visibility of the engineering profession and emphasizing the digital dimension connecting these areas. The ambition is to set up Working Groups (WGs) with representatives of the various interested stakeholders along a limited set of generic or specific subject matters. The recommendations of the WGs shall provide an official input to the EEAG.

Setting up this consortium implies changing FEANI's identity from a traditional collective body towards a more business-like identity, thereby responding to the needs of modern professionals. The required adaptation may be possible through "market segmentation" to focus on niches and create centres of excellence.

The EEAG initiative seeks to build strategic alliances rather than foster a competitive environment. It requires stakeholder-competitors to carefully assess their strategy and position themselves as a player. We operate in a market which is intrinsically highly interconnected, and the challenge will be to find the space where competition and collaboration go hand-in-hand to potentially create best practice and win-win situations for all involved. FEANI will actively participate in the shaping of this new consortium, in further developing its influence and in steering the decision-making processes.

An EU-project proposal under Erasmus+ "Knowledge Alliances" is currently being developed with many of the EEAG signatories, entitled "Engineers for Europe", or E4E. Ten partners have joined FEANI in this project for the purpose of bridging the gap between the academic world and the world of business. The E4E project will start with an Engineers Europe Monitor, which will be an online platform reflecting engineering professionals' inputs with an updated source of information for university-business interaction. Through this monitor, reform in education will be accelerated and innovation will be fostered in engineering careers. An Engineers Europe Education Reform Accelerator will be built to bridge de gap between education and practice and finally, the Engineers Europe Career Development Services will ensure that engineering professionals can put their competences at the service of society and innovation.

Keywords - European network, Institutional weight, Skills gap, Multi-stakeholder, Expertise

I. Introduction

FEANI – being a French acronym for the "European Federation of National Engineering Associations" was founded in 1951. Its mission since then relates to being a single voice for the engineering profession in Europe, "to facilitate the mutual recognition of engineering qualifications in Europe and to strengthen the position, role and responsibility of engineers in society."

As a European Federation for the profession of Engineer, FEANI unites National Member Associations for the Engineering Profession of 33 countries, representing some 6 million engineers in Europe. All member countries belong to the European Higher Education Area (EHEA). These members are in themselves national umbrella Organizations for the various engineering disciplines. These National Members (NM), such as the Royal Netherlands Society of Engineers - KIVI, the Association of German Engineers - VDI, the Engineering Council in the United Kingdom, Ordem dos Engeinheiros in Portugal, etc. recognize the added value in being member of FEANI in having access to a European Network (Brussels is the place where strategic and political decisions are made) and in the possibility to participate at the Annual FEANI Conference and National Members Forum (NMF) which are key networking events to benchmark ideas with academia, industry, employers, politicians and other national members. In the light of this cross-fertilization, FEANI developed a "European Engineering Education Database" [a] which lists all engineering programmes being offered in Europe. It is an important tool for students, future students, universities and employers. Finally, being a national member of FEANI enables the National Members to cooperate with other European Union (EU) Organizations and Institutions to increase their influence and amplify the role of engineers in today's society.

The structure of FEANI consists of the General Assembly, an Executive Board, a National Members' Forum (NMF), a European Monitoring Committee (EMC), a Central Secretariat and a "European Engineers' Day" event which is held every two years. In all these bodies, representatives from academia as well as industry and professional Organizations cooperate to ensure involvement and knowledge transfer. (Fig.1 Structure Chart)

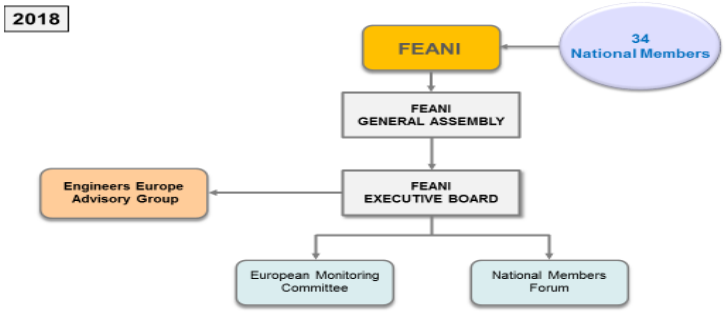

Fig. 1 Structure Chart

FEANI has become the authoritative voice of engineers in Europe and therefore - as the largest European network for the engineering profession - connects systematically with other European stakeholder networks and umbrella Organizations. To this end, FEANI established in September 2018 - together with other stakeholders - the "Engineers Europe Advisory Group" (EEAG). Stakeholders which are involved and subscribed the "Letter of Intent" are other professional Organizations in the engineering field, academic Organizations and industry/employer Organizations. An overview of some specific Organizations that have been and will still be contacted in the future (without being exhaustive) is outlined in Fig. 2 Process Chart. The Letter of Intent is added to this presentation.

II. Engineers Europe Advisory Group (EEAG)

A. Objectives

The objectives consist in identifying and promoting common themes and work items towards a closer understanding between the stakeholders from academia, professional Organizations and employer associations. This relates to:

- General issues: future job prospects and requirements, professional roles of engineers in society, engineers as a liberal profession, etc.
- Educational issues: STEM, curriculum development, CPD, LLL, VET[b], accreditation, etc.
- Political issues: preparation of common positions regarding forthcoming EU regulation, etc.
- Societal issues: digitalization, industry 4.0, artificial intelligence, green economy, etc.

[a] https://www.feani.org/european-engineering-education-database/eeed-database

[b] STEM: Science, Technology, Engineering, Mathematics; CPD: Continuous Professional Development, LLL: Life Long Learning; VET: Vocational Educational Training

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B. Goals

- Through cooperation with academia, industry and other stakeholders a single voice of engineers in Europe will be ensured, being heard by the EU and obtaining institutional weight as a profession and an Organization (become the principal contact for the EU regarding engineering topics).
- Pro-active involvement of European policy makers (Members of the European Parliament - MEPs) will increase the impact of common statements and provide input and know-how to the network of National Members.
- A side effect may result in participation as project partner or project coordinator in EU-funded projects (ERASMUS+, HORIZON 2020) and/or in an increased number of FEANI "Associated" Members. At present, a FEANI project proposal under "Knowledge Alliances" (ERASMUS+) is being considered by the EU and attached to this presentation.

C. How?

The name amplifies that not merely the input from industry is being looked for but also those of other valid stakeholder groups, as mentioned. Screening and inventorying the agenda items with the highest priority of the other stakeholder groups, has enabled the identification of several major work items to get started with (i.e. a "pull" rather than "push" approach).

D. Meetings and Membership

Number Membership of this EEAG consists of the key officers of FEANI (President, Vice, Treasurer, Secretary General and NMF-Chair) together with one or two representatives of the various stakeholder Organizations who wish to engage (totalling a consortium of some 20 to 30 participants). At least two meetings p.a. are targeted. Depending upon the subject matters identified, work may continue in smaller sub-groups and involve other FEANI NM representatives on a volunteering basis.

As such, FEANI is moving from "access and relationships" to "influence, substance and impact on society" and ensures that the Engineering Profession in Europe speaks with a more coherent voice and a stronger policy outreach. This will generate individual membership value and require a different kind of energy and dynamics for which external expertise in the initial stages will be paramount. It is also a plan for repositioning the Organization and for its future rebranding.

E. Format

Step 1 - Internal buy-in to the structure (Q4-2017) : the development of this plan has been an ongoing, almost continuous effort of amending, editing, restructuring, modifying, rephrasing and completing its building blocks in order to take into account many concerns and comments, also from other involved parties. In this way, FEANI was able to reach out widely and to satisfy many parties involved. Being very aware that the intentions and the plan are ambitious, it is for FEANI - as the leading European Engineering Organization - legitimate to take the leadership in this "Engineers Europe Advisory Group" and to play a pivotal role in it.

Step 2 – Internal buy-in to the process: with the establishment of this EEAG, FEANI humbly reaches out inclusively to more stakeholders and focuses on other societal issues than merely on engineering education. This Advisory Group is to become an important instrument in providing expert advice to the Executive Boards of various involved stakeholders in many policy matters related to the engineering profession. As can be seen FEANI will reach out to numerous other stakeholders and networks which have links with the engineering profession. They can be grouped in four different areas or colleges: academia, professional bodies, employer associations and policy makers. (Fig.2 Process Chart)

FEANI National Members already have a lot of expertise to offer - to a variable degree - with many issues and subject matters that we may address over the following years. This expertise will be required and valued in the Working Groups (WGs) which will be set up and in which volunteering National Members will be welcomed. However, "expertise" does not easily get mobilized to the required degree, especially if it implies undertaking and engaging in work on behalf of the Organization, in addition to one's existing work at national level. The particular project of developing the "European Engineering Education Database" also indicates – in addition

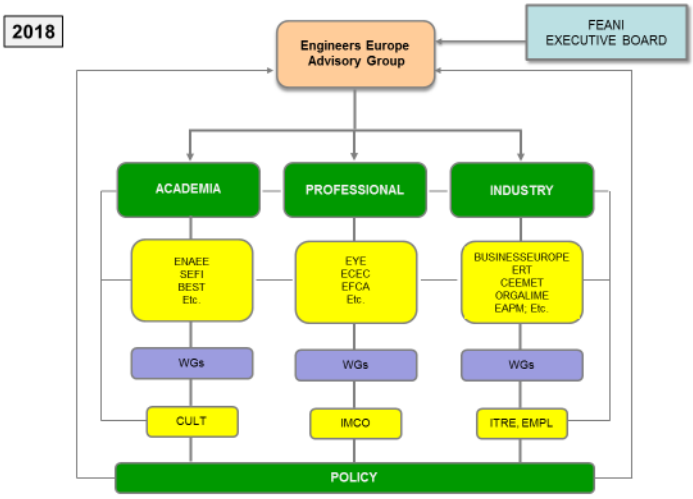

Fig. 2 Process Chart

to the existing expertise at national level – that there are indeed already established links and alliances in place at European level with other Organizations (in cooperation with ENAEE), such as also the common Organization of the "European Engineering Day" indicates (in cooperation with the European Engineering Chambers).

Step 3 - External buy-in (Q1-2018): whereas it was by no means the intention to "impose" anything to anyone, nor to disregard the knowledge available within the National Members, the Organization must be bold. In order to navigate the European, Brussels based media and policy scenes, the initial development work was subcontracted to Hill+Knowlton (H+K), a Communication and Marketing Agency of international standing. The engagement and involvement of an unbiased and independent agency which engaged without prejudices was quite beneficial for the Organization in building a business case and finding consensus. Its work initially consisted in desk research to reveal and summarize the strategic priorities and agenda which the other stakeholders were pursuing, i.e. to find out if there was a feasible interest. This helped in order to map and determine where, if and with whom there was "common ground". Subsequently, surveys and interviews were conducted with valid stakeholders to reveal how the engineering profession in general - and FEANI in particular - were perceived, how we were positioned, and if there was potential for cooperation.

Step 4 – Agenda-setting and getting started (Q2-2018) : by doing this, we acquired a better insight of topics and subject matters on which we could work together in WGs, we developed an alliance and a coalition with these other stakeholders and obtained a more systematic access to their network (whereas they inevitably get access to ours, i.e. win-win). It also enables us to demonstrate our relevance to third parties through more interactions. Clearly, as the plan was ambitious, we were careful not to over-sell, over-pitch or over-promise. It is, however, paramount that with topics related to LLL, CPD, VET, STEM, apprenticeships, etc. there is common ground for universities, employer and industry associations and professional Organizations alike to work together. Universities claim that 74% of the graduates they deliver are ready to enter the market, whereas employers claim that for merely 35% this is really the case. Together, in co-operation and with mutual understanding we can try to narrow the gap. There clearly is a role to play here for professional Organizations.

Step 5 – Launch (Q3-2018): the inauguration and launch of the EEAG happened on 11 September 2018 and provided evidence of the "camaraderie" between the various stakeholders, including various EU-officials as guest speakers. Policy Makers are not likely to physically participate in WGs, but MEPs have an interest in providing input to it and they surely have an interest in the common output. This also implies that the WGs can practice pro-active lobbying with regard to the development of new or revised regulations and directives of interest to the engineering profession.

Step 6 – Further development and widening of initiatives (Q3-2018 – Q4 2019):

The overall goal of the plan is to establish better policy mechanisms for the engineering profession at European level and to create value for the current and future individual engineers. The traditional separation between public affairs, corporate communication and public relations no longer exists: effective stakeholder engagement must be and will be multi-stakeholder. By widening our networks and making our agenda broader, the participating stakeholders will enhance their reputation, they will ensure and co-operate towards more transparency and an improved frequency of communications: levels of engagement with decision-makers and influencers will result from that. The Letter of Intent was signed on 11 September 2018 by 12 stakeholder Organizations and meanwhile (January 2019) increased to 17.

Step 7 – Alignment and Harvesting (2020 and beyond):

With this plan, FEANI will create a new foundation which implies more than a few shifts in its agenda, it is a much broader project, creating a leverage for the many other targets and objectives that it is capable of realizing. By putting this plan on the table and in sharing it with others, FEANI already made a big step forward, because it shouldn't be controversial. This is not a "matter of calendar" nor of "timing", but a broader ambitious project, taking us beyond the one-sided focus on mobility. FEANI aims with the EEAG that many eyes look for the correct answer in a concerted way. Our goal must now be that on a European level, we come to terms more easily to ensure we obtain international *renommée*. This "repositioning" of FEANI may ultimately require "rebranding" and could imply a revision of its membership categories (Fig. 3: Network Chart).

F. Narrative

- H+K was used as a door-opener to address mainly the intended stakeholders in the "Industry" and "Policy" Pillar.

- Secondly, the launch of a new FEANI-website end November 2017 (www.feani.org) and the integration of the "European Engineering Education Database" therein, ensured a more up-dated corporate appearance.

- Thirdly, a number of potential stakeholders – mainly in the "Academic" and "Professional Organizations" Pillar – have signed up such as BEST (Board of

European Engineering students), EYE (European Young Engineers), EFCA (European Federation of Engineering Consultancy Associations), ENAEE (European Network for Accreditation of Engineering Education), the EU STEM Coalition, etc. A list of all (17) signatories to the Letter of Intent is added under Fig. 4.

- An assessment of the likelihood to qualify for EU-funding has been conducted by Schuman Associates and an EU-project proposal under "Knowledge Alliances" is currently being developed (within the existing EU-programme of Erasmus+).

- Potential stakeholders that were addressed were invited to understand the intention of FEANI (not necessarily agree to it) and to consider the likelihood of their future involvement while having a say in the agenda setting of the EEAG. Overall, the ambition is to set up WGs with representatives of the various interested stakeholders along a limited set of generic or specific subject matters (3 to 4) such as STEM, Digital Agenda, etc. Potential stakeholders were therefore invited to formulate which agenda-items are of primary importance to them and to assess where cooperation would be sensible. This exercise is required to define and formalize the *Terms of Reference* of the EEAG.

- FEANI ensures the administrative and organizational leadership of these WGs in terms of membership, organization, setting meeting dates and venues, preparation of documents, etc. (i.e. the secretariat), whereas the Chairmanship of the WGs can possibly be in the hands of any interested or volunteering stakeholder.

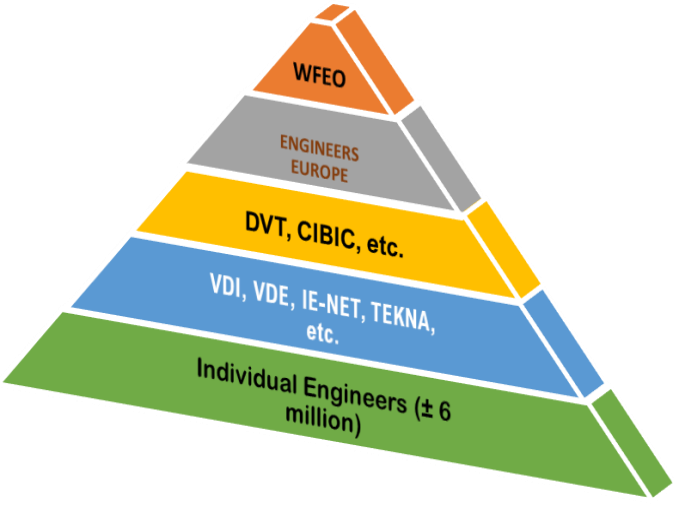

Fig. 3 Network Chart

"VISION IS THE ART OF SEEING THE INVISIBLE"
(Jonathan SWIFT)

- The recommendations of the WGs, i.e. the outcome of their work, will be considered by the various stakeholder Boards in order to provide an official input to the EEAG. As the party who takes the initiative to the establishment of this "equal partnership consortium." All involved stakeholders aim to remain purposefully relevant. In the course of the previous months, potential stakeholders in the three main pillars were addressed. The main objective was to set up this consortium or EEAG with ideally two stakeholders in each category (Education, Professional Bodies, Industry) and to ensure they are actively involved from the beginning (October 2018). Initially, FEANI aimed at attracting six (6) partners to start off with, nine (9) were considered to be better, but ultimately twelve (12) signed up at the Inauguration. Today (January 2019), five (5) more Organizations have expressed their interest to sign up : AECEF – the Association of European Civil Engineering Faculties; EUREL – the Convention of National Associations of Electrical Engineers of Europe; IGIP – the International Society for Engineering Pedagogy; SEII – the European Society for Engineers and Industrialists and MEA – the Mechanical and Mechatronics Engineering Association.

- It must be assumed that the consortium will grow in number of stakeholders as time goes by. The ambition must be to evolve to a wide consortium. Those who wish to join up at a later stage, could be faced with an admission fee.

- Setting up this consortium implies changing FEANI's identity from a traditional collective body towards a more business-like identity, thereby responding to the needs of modern professionals, engaging at their level, across generations: this requires adaptation towards content development, appropriate for each membership segment.

- It may be possible through "market segmentation" to focus on niches within the greater thematic subject of engineering, to create centres of excellence focusing on specific thematic areas where FEANI does not necessarily need to have the lead but will have a say. Thereby we would eliminate a level of competition but work strategically together with destination partners. This could result in the creation of centralised services to a certain extent, where

appropriate and useful. Such a model may serve a greater multitude of individual members and possibly instil greater cohesion within our business.

- In being forward looking and seeking strategic alliances rather than fostering a competitive environment, we must at the same time obtain the support and involvement from the EU political scene to our endeavours and outcomes.

III. CONCLUSION

The first steps have been taken in setting up the EEAG as a consortium of meanwhile 17 European partner Organizations involved and interested in the engineering profession. This consortium will facilitate and necessitate potential "competitive stakeholders" to rethink their positions and hopefully lead to uniting their approach with ours for the greater good of the targeted audience. The competition that may exist between associations working in related fields, or who believe to offer similar content, must not be managed by this strategic project, but we can aim to decrease the "perceived" competitive pressure by creating "win-win" scenarios, especially as these so called "competitive dynamics" may have historical roots and not represent the desired future relationship(s).

Introducing and presenting this "engineering" consortium and claiming leadership for it, requires stakeholder-competitors to carefully assess their own position, assess their strategy and position themselves as a player in terms of content development and services. This is an ongoing process and the line between competition and collaboration may not always be very clear cut. It is important to be aware of this so that Executive Boards of the various stakeholders do not feel by-passed in the work that is intended or being done. We operate in a market which is intrinsically highly interconnected, and the challenge will be to find the space where competition and collaboration go hand-in-hand to potentially create best practice and win-win situations for all involved.

FEANI will actively participate in the shaping of this new consortium, in further developing its influence and in steering the decision-making processes. In any case will there be a need for managerial staff as decision makers, able to develop innovative solutions, offering flexibility to act in the interest of the Organization and to do so in an informed way, foreseeing potential pitfalls, leading with care and professionalism, anticipating future needs.

Today, we are at step 5 of the implementation plan and a first WG on the determination of a common project has been set up. Meetings were held on 12 December 2018, 16 January 2019 and 14 February 2019. The outline and ambitious project description are herewith attached.

ENGINEERS EUROPE
ADVISORY GROUP

LETTER OF INTENT

"As representatives of European Engineering Bodies, Industry and Business Associations we, the undersigned, have recognized the fundamental role of engineers in society and have set out to align our voices and express our strongest support towards the establishment of the "Engineers Europe Advisory Group."

We, the undersigned, recognize the importance of coordinating our endeavors and where possible and meaningful of working together on issues of common interest to achieve common goals and address common challenges. While we recognize the diversity of the engineering sector, we believe that we share interests and challenges and that joint action is fundamental for an overall reinforcement and recognition of the engineering profession and its essential contribution in fostering industry's competitiveness through innovation and technology in Europe.

We acknowledge that it is the ambition of the "Engineers Europe Advisory Group" to become the leading voice of European engineers. We aim at establishing an approach that will assist in the provision of effective solutions to the challenges of our European economies. In doing so, this also may successfully promote the interests of European engineers.

We support the intention of the Engineers Europe Advisory Group and trust that its activities will be based on inclusiveness and openness as it aspires to bring together all relevant stakeholders, from industry, profession and academia to engage with wider sectors of society.

We agree to support "Engineers Europe Advisory Group" in a meaningful way to better fulfill its role and vision, more specifically in three major areas:

1) Fostering stronger relations between academia, profession and industry including STEM

2) Reinforcing the branding of the engineering profession and increasing its visibility

3) Emphasizing the digital dimension as a common denominator connecting these areas

Therefore:

we believe that the "Engineers Europe Advisory Group" can offer fruitful ground for developing joint projects which multiply impact and benefits as its overarching goal will be to be project-driven and action-oriented."

Fig. 4 Engineers Europe Advisory Group: Signatories

ENGINEERS *FOR* EUROPE (E4E) KNOWLEDGE ALLIANCE

A. Work Package 1 - Build and roll out the European Engineers Monitor (EEM)

Aim of this Work Package

To construct and ensure the functioning of a comprehensive European Engineers Monitor which captures the rich diversity of the engineering profession and can be used to inform decision making by individuals, stakeholder Organizations, companies, NGOs, think tanks, universities, other training institutes and public authorities.

Description of the planned activities:

The following activities will be undertaken to achieve the expected results:

a) Bring together a task force of experts in labour market data collection and analysis (e.g. ROA Centre Maastricht University) and experts on educational/occupational profiling (ESCO, CEDEFOP, TUNING).

b) Define what features should be captured in the European Engineers Monitor.

c) Decide on a permanent survey methodology, including the use of social media and artificial intelligence.

d) Organize try-outs involving representative samples of engineers in six different countries

e) Roll out the data collection Europe-wide.

B. Work Package 2 - Engineers for Europe Education Reform Accelerator

Aim of this Work Package

Based on the rich data in the European Engineers Monitor and the permanent survey in place, Engineers Europe can develop a number of services for its respective constituencies. The first service to develop would be the Education Reform Accelerator, which will provide universities and other training institutes with up-to-date feedback and input to ensure that the programmes they deliver are up to speed and serve the best interest of their learners.

The following activities will be undertaken to achieve the expected results:

a) Provide sector, regional, national and European trends analyses on the needs of the engineering profession and employers in terms current and future competences.

b) Establish a permanent dialogue and short feedback loops between professionals and the higher education and training sector in view of developing and implementing new learning and teaching methods (like new multidisciplinary curricula, learner-centred and real problem-based teaching and learning).

c) Advise on the pertinence of online education and training material.

d) Organise an offer of dedicated Micro-credentials and Badges to reward and recognize specific skills valued by the labour market.

C. WP3 - Engineers for Europe Career Development Services

Aim of this Work Package

The engineering profession is evolving fast. The engineer of the future is likely to be more often female and migrant. The person may look for work in different sectors, on different hours, with different statutes. Digitalization and artificial intelligence will be omnipresent. Changing demographics may have a strong impact on the supply and demand of engineers. There are several reasons to rethink the career of the researcher, from training to recruitment, to working conditions, mentoring, mobility, promotion and demotion.

Based on the rich data in the European Engineers Monitor and the permanent survey, Engineers Europe could develop a series of career service facilities, services for the women and men in the engineering profession and their counterparts in industry and public service.

The following activities will be undertaken to achieve the expected results:

a) Offer online Engineers *for* Europe competence assessment tests

b) Set up an E4E Expert Portal to match supply and demand for secondments, temporary and permanent positions of qualified engineering professionals.

c) Facilitate an Engineers *for* Europe Mentorship programme among the profession at large.