# PROMETHEUS: A NEW WAY TO SUPPORT ENTREPRENEURSHIP IN HIGHER EDUCATION INSTITUTES IN EUROPE

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*Research full-length paper*

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## Abstract

*This paper, first stresses the lack of engagement activities, knowledge exchange and international collaboration of the European HEIs based on Innovation and Entrepreneurship and the importance that these activities have in the evolution of HEIs as a whole. Moreover, the innovative acceleration platforms in EIT ecosystem are examined and presented in a comparative way. The comparison of existing entrepreneurship acceleration platforms provides the groundwork for the presentation of the PROMETHEUS solutions and systems. The elements that the proposed solutions and systems are dispensed, will set the framework for the reform of the European HEIs based on Innovation and Entrepreneurship in areas with major societal impact, such as Circular Economy, Climate Change, Environmental Protection, and Sustainable Development.*

*Keywords: Digital Transformation, Innovation & Entrepreneurship, HEIs transformation, Entrepreneurship Acceleration Platforms.*

# 1   Introduction

Innovation and Entrepreneurship, especially in the domain of Digital Transformation has become a "burning issue" for European Higher Education Institutions (HEIs). Despite the presence of some champions, capable of collaborating and being visible in key international networks, many European HEIs still score relatively low in engagement activities, knowledge exchange and international collaboration. Even if the importance of knowledge exchange and collaboration with external stakeholders is well understood by some faculty members, especially in those disciplines where collaborations are essential to develop research and teaching, it is rarely set as a formal priority in universities' strategies. This lack of institutional support certainly does not help the sustainability of even promising initiatives. (Mohamed H. et. al, 2022)

These limits in the strategic nature of entrepreneurial engagement activities are also mirrored by a lack of strategic relationships between HEIs and external stakeholders – public entities or private firms. Such stakeholders may be represented in the Administrative Board of Universities and play a compulsory role in design and revision of educational programmes, but such structured relations often do not focus enough on engagement activities or are not sufficiently close-knit to do so. Furthermore, in a situation where there are strong budget constraints, choosing knowledge exchange as a strategic priority is not enough. (De Waal G. A. et. al, 2022) HEIs need to have the capacity to provide support to faculty members, staff and students to engage in knowledge exchange and collaboration and in particular to develop long-lasting relationships with external stakeholders. In parallel, there is a growing demand for new interventions and startup endeavours in non-classical entrepreneurship domains with high societal impacts, such as the areas of Circular Economy, Climate Change, Environmental Protection or Sustainable Development. (Barzman M. et. al, 2021)

Despite the constraints that European HEIs are facing in supporting entrepreneurial engagement activities, there are various initiatives, ambitions and policies set forward by European Union stakeholders during the last years that motivate the transformation of the European HEIs.

Some of those initiatives, ambitions and policies are:

- **The EIT HEI initiative**, this program is a joint EIT Community activity and a valuable component for the European Institute of Innovation and Technology (EIT) in its new strategy, the EIT Strategic Innovation Agenda 2021-2027. The program intends to provide knowledge and coaching, as well as access to the EIT innovation ecosystem and finance, to higher education institutions, allowing them to design innovative action plans that suit the needs of particular higher education institutions. (EIT HEI Initiative, n.d.)

- **The HEInnovate initiative**, a program of the European Commision DG Education and Culture in partnership with the OECD that allows HEIs to analyze a variety of factors relevant to their entrepreneurial activity, including leadership, staffing and links with business while also provide training activities for supporting the continued growth of HEIs. (HEInnovate, n.d.)

- **The European Reform University Alliance vision (ERUA)** is a European University Initiative that provides students with a rich and diverse environment, as well as a shared teaching style that emphasizes project-based learning, societal challenges and critical thinking. (ERUA, n.d.)

- **The innovation reform agenda of the European Institute of Innovation and Technology** and especially its **EIT Manufacturing KIC** gathering more than 130 industrial and academic partners in its network.

- **The new EU industrial strategy to address the twin challenge of green** (EUR-Lex-52020DC0067, n.d.) **and digital transformation** (EUR-Lex - 52019DC0640, n.d.). Europe aims to leverage on the potential of digital transformation, as a key enabler for reaching the Green Deal objectives. Additionally, a new circular economy action plan will help modernise

the EU's economy and draw benefit from the opportunities of the circular economy domestically and globally.

- The studies on **"The EU 2030 Vision on the Future of Universities"** (Whittle M. et al., 2020), which sets an overall framework of targets to assist the future of HEI's, and on "Knowledge ecosystems in the new ERA", which makes a significant contribution to the integration of the ERA Communication and its strategic priorities.

This paper analyses the PROMETHEUS initiative that contributes toward the development and sharing of innovative and entrepreneurship support capabilities in the area of digital transformation related to circular economy, climate change, and sustainable development. Such capabilities could foster institutional engagement and change to develop innovative and sustainable services and programs in HEIs to impact "Innovation and Entrepreneurship in a Circular Economy", these initiatives strengthening the movement towards the University of the Future.

More specifically, and with respect to its above mentioned scope, PROMETHEUS intends to enhance entrepreneurial skills of youth in 'modest' and 'moderate' innovation ecosystems by supporting entrepreneurial education through programmes/activities designed in close collaboration with the private sector and business acceleration entities, thematically targeting digital transformation & sustainable development. The solutions described in the "Existing Solutions" section are the ones that inspire the PROMETHEUS initiative from the EIT ecosystem.

The rest of this paper goes as follows: Section 2 presents some of the most innovative acceleration platforms in the EIT ecosystem and a comparative platform analysis between those platforms. Section 3 provides the methodology that this paper has followed to present a new way to support entrepreneurship in higher education institutes in Europe. Moreover, Section 4 includes the PROMETHEUS systems and tools by presenting their features and functionalities. Finally, Section 5 presents the conclusion of the paper and some further steps.

## 2  State of the Art

As globalization has moved forward, the economies and societies are affected by various organizations, including HEIs. Many universities worldwide seek and implement innovative material/methods, targeting to increased development as well as social and economic commitment. The adaption and engagement of solutions for higher attraction of students and knowledge transfer is of great importance. In order to assess the current level of entrepreneurship and innovation of each HEI, concerning their integrated methods in both teaching and learning, a self-assessment has to be performed, targeting at evaluating the eight dimensions of: (1)Leadership and governance, (2) Organisational capacity: Funding, People and Incentives, (3)Entrepreneurial teaching and learning, (4)Preparing and supporting entrepreneurs, (5)Digital transformation, (6)Knowledge exchange and collaboration, (7)The internationalised institution, (8) Measuring impact (Paiva T. et. al, 2019; Hofer A. et. al, 2018).

According to the aforementioned dimensions, a wide range of evaluation perspectives is presented for the entrepreneurial and innovative strategies of HEIs. Additionally, the HEIs achievements can be reviewed while the weak areas, which need improvement, are identified. Stakeholders such as academic and administrative staff or key partner organizations are able to be also involved.

Knowledge of an academic topic is no longer adequate for a fresh graduate in the current economic times. Students are being expected to possess a greater range of employability-enhancing skills, including those related to information processing, communication, planning, and problem-solving, as well as social interaction and growth. (Boldureanu G. et. al, 2020) Individuals who get entrepreneurial education and training gain the self-confidence, knowledge, and abilities to seize economic possibilities. It covers lessons on spotting opportunities, commercializing ideas, managing resources, and starting businesses. (Grecu V. et. al, 2017)

Entrepreneurship and Innovation in HEIs is currently associated not only with technology transfer or business (e.g. start-ups), but also with structures/elements which are about to make more creative, opportunity oriented and innovative students. Motivated and engaged students are able to create value for the common good, based on their acquired knowledge. Such a venture is at the core of entrepreneurship while it is characterized as an increasingly citizen need for the societies, regardless the career choice. (Lackéus, 2015)

## 2.1    Existing Solutions

The existing solutions that presented below are some of the most innovative acceleration platforms in the EIT ecosystem, which aid startups in making the right decisions, as well as offering them support in various ways to enable them to become prosperous. The European Institute of Innovation and Technology (EIT) harbors platforms that are helpful to many organizations in the world. Comparing different entrepreneurship acceleration platforms for startups, is essential to establishing a better proposal for recommending business ventures, like the one developed by PROMETHEUS, the PROMETHEUS Entrepreneurship Acceleration Platforms (PEAP).

The EIT is an independent EU body with a mission to increase Europe's competitiveness, its sustainable economic growth and job creation and to power innovation and entrepreneurship in Europe by creating environments for creative and innovative thoughts to thrive. There are currently eight Innovation Communities and each focuses on a different societal challenge: (1) EIT Climate-KIC, (2) EIT Digital (3) EIT Food, (4) EIT Health, (5) EIT InnoEnergy, (6) EIT Manufacturing, (7) EIT Raw Materials, and (8) EIT Urban Mobility (EIT, 2020). Platforms developed within these KICs can be found below:

**InnoEnergy**: InnoEnergy is one among the many platforms in EIT that represents the organizations that concentrate on the energy sector of the economy. InnoEnergy is pivotal to the activities that take place in the energy sector because it brings together industry players, innovators, employers, investors, graduates, and entrepreneurs to work on matters that relate to energy (InnoEnergy, n.d.). The platform focuses on the acceleration of sustainable energy in society. The energy industry needs to be sustainable because of the critical use of the resource (Markovska N. et al., 2009).

The essence of examining InnoEnergy is to understand how it helps young businesses in the energy industry. The platform offers ideal help to start-ups and scale-ups to ensure that they make better steps forward in business. InnoEnergy ensures that start-ups receive the relevant knowledge, skills, and experience needed to undertake business through the energy industry as a new entrant in the market and industry. Consequently, the start-ups gain more experience with time, and because with the help of InnoEnergy the organizations make better decisions, the result is that they place themselves in a better position to become prosperous companies.

**ClimAccelerator**: ClimAccelerator is a platform that seeks to help start-ups venture into activities that can bring about solutions to the climatic problems existing in the world. The platform helps the start-ups introducing programs that catalyse, innovate and explore the potential that the start-ups have in terms of seeking solutions to the climatic problems that society faces (ClimAccelerator, 2021). The platform provides acceleration programs that extend beyond European countries since the problem of climate does not only affect Europe. Climate change has been a problem of the 21st century because most of the individuals and organizations existing in this era have gone against everything that could possibly guard the environment that provides the source of a good climate.

Startups that show the signs of prosperity and that they can influence positively on climate are the priority for the ClimAccelerator platform. It is essential to note that the organizations that venture in businesses related to climate stand a better chance of making an impact in the world by ensuring that there are better solutions to solve climate issues. The platform herein adopts the steps that many organizations and nations have done to ensure that climate change does not affect society negatively moving forward. An excellent example is the Paris agreement, which aimed at ensuring that global gas emissions reduce significantly (Streck C. et al., 2016). The same way, ClimAccelerator platform through its programs, is looking to support start-ups in providing sustainable solutions to climatic issues that affect society. For start-ups, working with ClimAccelerator is an opportunity to display the potential of the organization to provide solutions.

**EIT Health**: Examining the EIT health platform is essential in understanding how the entrepreneur-ship acceleration platforms work. For startup businesses in the health industry, support from existing firms is important because of the idea that new firms may not be well informed concerning investing in opportunities available for them. According to Bousquet J. et al. (2018), the EIT health constitute

more than 50 core partners in the health industry who support each other in different ways. The EIT health strengthens the corporation between the partners to ensure that they cope with the industry challenges moving forward. Consequently, startup organizations in the health industry benefit a lot from the interaction with other existing firms that have established themselves in the industry. In addition, the consortium of organizations in the EIT health platform concentrates on research activities that avail information useful for all the partners. Startups benefit from research in the sense that they acquired vital information that helps them in decision-making processes.

## 2.2 Comparative Platform Analysis

The primary comparative feature that exists between the entrepreneurship acceleration platforms with- in EIT and those that are international is that the former concentrate on eight innovation communities that address different challenges in society, while the latter focus on specific issues. The entrepreneurship acceleration platforms within EIT can deal with a wider range of business challenges because of addressing eight different issues, which touch on distinct industries. It is essential to note that being able to address many different issues is advantageous because many startups are likely to benefit since they will have different options.

However, it is worth noting that entrepreneurship acceleration platforms within EIT are the most effective and, therefore, preferable. Much can be improved to ensure that startups benefit more from the platforms. Despite offering help in eight different industries, entrepreneurship acceleration platforms within the EIT need improvements. Improvements could be done by advocating for the inclusion of real-time management activities. Startups would benefit if exchange programs that involve managers from experienced organizations taking over in the startups for a short period to ensure that the latter organizations experience management from experienced organizations. According to Wise & Valliere (2014), startups need direct management experience during the execution of accelerator programs that seek to boost such ventures. Hence, the significance of direct management experience is evident, meaning that managers from established corporations can play a big role in enhancing the survival chances of startups.

The above mentioned platforms within EIT and the comparative platform analysis provide the middle ground to understand the main purpose of this research, which is the presentation of an entrepreneurship acceleration platform developed by the PROMETHEUS initiative (PEAP) and the tools that frame this platform.

## 3 Methodology

PROMETHEUS aims at improving HEIs' capacity-building strategies by enabling spin-offs, startups, and scale-ups to achieve market success and mature the innovation excellence of high potential innovators by providing an excellence support programme and establishing a European-wide network of nodes that will enhance the competitivity of Universities and local innovation ecosystems.

An important instrument of the Knowledge Triangle (VET organisations, RTOs, SMEs and start-ups) engagement is the PROMETHEUS Community of Practice (CoP) aimed at creating a common online environment for academic and entrepreneurship stakeholders. CoPs are groups of people who share an interest in something they do and who interact regularly to learn how to do it better. Communities of practice define themselves across three dimensions: what they are about, how they function, and what capabilities they produce. CoPs have been used to explain learning and knowledge generation across a variety of work, organisational, and spatial settings and as such are often related to the concept of "knowing in action". The PROMETHEUS CoP is conceived as a dynamic content hub presenting and promoting results from HEIs innovators and connecting the social channels of all entrepreneurship & research-related initiatives. It serves both as a coordination and dissemination channel for the connected projects to make their results more widely known and as a place to assess impact analysis and review other related research being carried out.

The core of the PROMETHEUS initiative is an "entrepreneurs & innovators centred excellence" programme that is delivered through a three parts service of business support, coaching, mentoring, and access to an ecosystem of professionals fostering growth and innovation. The programme is based on 3 stages:

**Stage 1:** An initial research on existing infrastructures within EIT was conducted. In addition, a second parallel research on existing infrastructures worldwide was conducted on the same topic. Based on the identified results, a further research on their capabilities was conducted, and, most of these, were adopted by the PROMETHEUS initiative.

**Stage 2**: In most cases innovators are not fully aware of the potential impact of their technologies and how to transform innovation into viable - marketable solutions. The first step will be the use of the PROMETHEUS Knowledge Base (PKB) and infrastructures for understanding and intercepting business opportunities such as funding calls, tenders, meeting with investors that can be interesting for the innovators allowing the matchmaking with the opportunities. The PROMETHEUS Intelligent Assistant (PIA) will then allow innovators to better specify their value proposition, the business model and the target market and allow the PROMETHEUS team to build a tailored and targeted support for innovators.

**Stage 3**: The innovators will be involved in targeted and tailored coaching, mentoring, and training initiatives under the form of Massive Online Open Courses (MOOCs) produced for the specific purposes of the PROMETHEUS programme with the contribution of academics, practitioners, innovation experts, and investors. The completion of the programme will allow innovators to participate in meetings with potential investors, customers, and partners.

**Stage 4**: The innovators will be ready to capitalise on the benefits of the first two phases accessing new business opportunities and funding options through the PROMETHEUS toolset that will help to develop a real capability to meet the go-to-market requirements and will be enabled to be actively involved in business networks such as the associated partners ecosystems through hackathons, workshops or summer schools.

# 4 PROMETHEUS Systems & Tools

## 4.1 PROMETHEUS Knowledge Base

**Prometheus Knowledge Base (PKB)** is an Open Science tool. This tool will provide access to select- ed & curated open data sets and latest news on the topics of digital transformation, innovations, and entrepreneurship. In particular: (1) It will help to stay updated about the recent news on the topics of innovation, digital transformation, and entrepreneurship; (2) It will allow the users to monitor the latest trends in the digital world; (3) It will help to never miss important international activities and events.

Universities, research bodies, startups, public and private organisations, and citizens will have the opportunity to draw and/or upload data for the development of new services (while serving research purposes), mostly in connection to learning and societal challenges, emphasizing on digital transformation and sustainable development to benefit society as a whole.

The platform is still under development. In this area, it's shown a list of topics from the world of digital transformation and entrepreneurship.
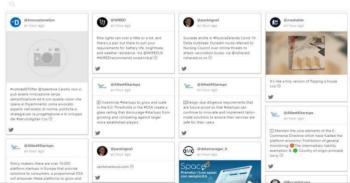


*Figure 1.        Proposed home page of Knowledge Base Tool*

It is possible to customize the information by clicking on the search icon up on the left. it is possible to select and choose some elements in order to customize the news and the information shown in the page. The tool enables you to choose: (1)Format (link, photo or text); (2)Tags (the hashtag used in articles, social media posts); (3)People (it is possible to select a person of interest in order to see what he has published); (4)Source (the source from which the information comes); (5)What (specific keywords); (6)Language.
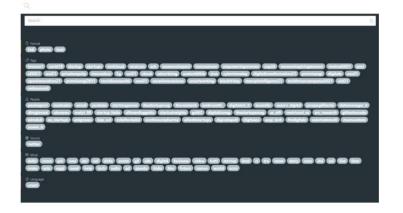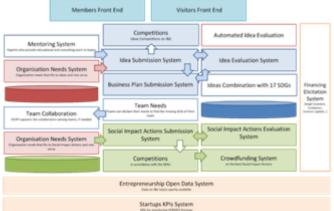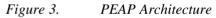
*Figure 2.        Knowledge Base Tool customization*

The Knowledge Base Tool will be useful not only to stay updated about the latest news on digital transformation, entrepreneurship and sustainability, but also to help researchers in their activity of gathering information. In a very user-friendly way, the tool will provide information in different formats from different sources, giving to the user an overview of the topic of interest.

## 4.2        PROMETHEUS Knowledge Base

The **PROMETHEUS Entrepreneurship Acceleration Platform (PEAP)** is an academic accelerator of innovation and entrepreneurship ideas from the participating HEIs students and staff while also assembling activities to develop and nurture business in Digital transformation, Circular Economy, and Sustainable Development. It constitutes the main tool for performing activities on I&E and aids potential entrepreneurs as well as organises events to develop and nurture business ideas in the areas of Digital Transformation and Sustainable Development. PEAP's architecture can be seen in the figure below:



*Figure 3.        PEAP Architecture*

**Members/ Visitors**: The PEAP will support the existence of different roles with varying functionalities. A Visitor is considered a non-registered user who can review all open areas of the platform, while a visitor can support actions and ideas by voting. A "Member" is considered a registered user in the platform and has access to most of PEAP's functionalities. Some member types that are foreseen to exist in the PEAP are:

- **Students/ Researchers/ young Entrepreneurs**: Any individual who is interested in taking part in PROMETHEUS I&E activities such as submit an idea on I&E or an Action, support an idea;
- **Organisations**: Companies or Entities either from the public or the private sector who is interested in taking part in PROMETHEUS I&E activities such as needs submission that can potentially be met by ideas; start-ups or actions, sponsor contests, or act as an angel investor for an idea;
- **Mentors**: an individual expert who is interested in supporting an idea shaping through the provision of educational and consulting work; Mentors will be able to simply register their expertise and be matched to ideas through PEAP

- **Evaluators**: a member of the evaluation committee, in the context of a competition of business ideas or a call for actions with social/environmental impact. The evaluators represent the aca- demic, business and public administration community;
- **Angel Investors**: Private investor or business that supports an idea, financing it or providing an important service or resource, at a very early stage;
- **Venture Capitals**: banking institutions, or similar public financial institutions, interested in examining the financing maturity of ideas;
- **Incubators & Accelerators**: Collaborating business incubators or accelerators that further sup- port the ideas that will stand out from the PROMETHEUS initiative, integrating them into their infrastructure;
- **Sponsors**: Individuals or companies that support PROMETHEUS operation, by providing services or items, or by providing financial support to assist the work of PROMETHEUS.

**Ideas Submission System**: The Idea Submission is limited only to the registered "Member" users and it will be in the context of a competition or as a standalone idea. An idea can be submitted to a competition or out of a competition. The ideas that emerge will be developed with the help of mentors (**Mentoring System**), graded by evaluators (**Idea Evaluation System**) and supported by the community. During the idea creation, team members will be capable of asking for the cooperation of other members of the community, to find skills that are missing from the original team (**Team Needs**).

**Social Impact Actions Submission System**: Members will be capable of submitting ideas for actions with a social impact, either as part of an idea competition or as part of a permanent submission. The procedure of the emerged Social Impact Actions will be evaluated (**Social Impact Actions Evaluation System** and the best actions of a competition can be funded through crowdfunding (**Crowdfunding System**).

Both for Business Ideas and Social Impact Actions, the societal impact will be analyzed in accordance with the **United Nations Sustainable Development Goals (SDGs)**. Organisations from the public and private sector will be able to submit their needs (**Organisation Needs System**), for further development. These needs can fit to one Business Idea and Social Impact Action or vice versa, team members can build their ideas on these needs by creating new businesses or actions that meet real needs.

Entrepreneurship data included in PEAP will be openly available to all members (**Entrepreneurship Open Data System**). In addition, PEAP will elaborate a **Startups KPI System** to monitor PEAP Startups. Finally, it will offer the available channels that startup business ventures can use to propel themselves to greatness.

## 4.3      PROMETHEUS Intelligent Assistant

**Prometheus Intelligent Assistant tool (PIA)** is established to enhance the innovation and business support services for students and universities. PIA is an online tool aimed at real-time evaluation of the efficiency of the start-ups or innovation driven business ideas such as the results of R&D projects by assessing the innovation, economic and social potential through more than 200 indicators. The result of the evaluation is a report which is divided in three domains – innovation, economic and social.

The assessment model is built by using indicators proposed from the above-mentioned techniques and adapting them to the operational context: The result is a framework that adopts 7 synthetic indices: 3 of them are related to specific areas of impact and related subcategories, visualized in following figure. These are the vertical indices. Each vertical index is composed of sub-indices corresponding to specific subcategories.
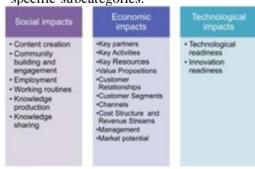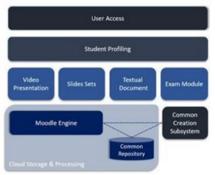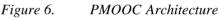


*Figure 4.        PIA vertical indices*

## 4.4    PROMETHEUS MOOC

Massive Open Online Courses (MOOC) are online courses that disrupt the traditional methods of education through easy access and low-cost content. It includes training material and activities and offers access to high-quality educational level to students while fostering the online collaboration and exchange of information and experiences regarding I&E and Sustainable development. MOOC involves the development of the platform for the online educational materials and activities, for the learners to have access to contents through an interactive and easy-to-use environment. Moreover, the **PROMETHEUS MOOC PMOOC** will be an intensive educational outreach effort from the PROMETHEUS research community focusing on Entrepreneurial Teaching and Learning, as well as teaching curricula for pre- and post-graduate levels in issues related to digital transformation and sustainable development. Such a dynamic and adaptable specialization will be utilised to deepen the expertise of its students and teach them numerous skills relevant to the knowledge areas they prefer and are interested to study further. Additionally, non-standard forms of education such as mentoring sessions, industrial lectures, and practice-based learning will be tested in terms of entrepreneurial teaching and learning. The architecture of the PMOOC can be seen in the figure below.



*Figure 6.        PMOOC Architecture*

**User Access:** User access refers to the interface, the environment where the learners interact with the platform that contains the online educational materials and activities.

**Student Profiling:** Student Profiling contains all the information about students such as personal info, grades, etc. from the assessment process.

**Video Presentation:** Video Presentation contains the training modules, contents, and material in video form.

**Slide Sets:** Slide Sets refers to the presentation of contents, modules, and training materials from mentors, in order students have access to high-quality educational level.

**Textual Document:** Textual Document includes the notes of the training modules in electron-ic form, in order students obtain a completely knowledge in the field.

**Exam Module:** Exam Module refers to the online tests and quizzes that students should achieve, to complete their evaluation process.

**Common Creation Subsystem:** Common Creation Subsystem is the proper collaboration of different approaches and system's elements under a common system.

**Moodle Engine:** Moodle Engine is a learning management system and refers to the platform which consists of the online courses and aims to easy access, low-cost content and high-quality educational level for students.

**Common Repository:** Common Repository is the tool for the easy management, collection, and storage of data sets.

## 4.5    PROMETHEUS Network Analysis Platform

The PROMETHEUS Network Analysis Platform (PNAP) analyses the network developments to steer the further development. The platform allows monitoring the network development and to explore different features of the knowledge graph (e.g., relationships, ego-networks, structural parameters, centrality statistics, etc.). The platform uses the power of R and python for performing various statistical analysis and data manipulations, allowing for easy development of digital applications for monitoring

and evaluation. Additionally, since the platform allows for read-only access on the raw data, there can be virtually infinite data manipulations using the same raw source, each manipulation becoming a data file itself on the platform. This is extremely useful for researchers for instance – experimenting with different analysis without altering the integrity of the source data file is possible. Once the experiment is done it can be deployed in production very fast.

A deep-learning machine (nVidia Jetson, 128 cores GPU) is also added to the platform which allows for easy building, training and validating several AI applications using Keras and Tensorflow. The deep learning machine is suitable for advanced AI research analysis (predicting network development, modelling networks over time, etc).
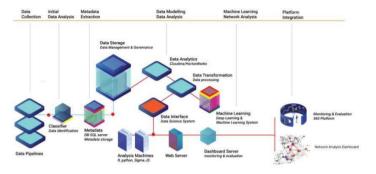


*Figure 7.        Prometheus Ecosystem data-driven network platform infrastructure*

Moreover, the platform allows integration with other digital tools developed via the API (e.g., the Knowledge Base, the Acceleration Platform, etc). In addition, the platform can share network visualizations on the web, allowing for the deployment of high-quality, interactive network-based visualizations on websites. In addition, these tools were designed in such a way to support the Entrepreneurship Acceleration Cycle.

**Idea Creation**: The entrepreneurial activities mentioned will also contribute to the conceptualization of the innovative ideas for the entrepreneurs and will provide guidance on entrepreneurial ambition and/or potential scalable product or service idea for a considerable market entry. Moreover, modules and courses on best practices and relevant topics will help them to define mission and vision with initial strategy and key milestones for the next few years on how to get there.

**Mentoring**: Support via mentorship is a frequent element, offered in a number of ways and on a variety of terms by a very broad array of people. Mentors may occasionally become active investors in businesses or join executive teams through a Management Buy-in. Furthermore, mentors should be familiar with the startups and their ecosystem, open to new ideas, and capable of establishing an entrepreneurial attitude in the business's founding members. PROMETHEUS will set the required rules of engagement to ensure fair play and transparency.

**Business Plan Creation**: A business plan is essential for any new firm, and startupers should concentrate on product development, business concepts, and a business model that defines how the company intends to scale-up. PROMETHEUS will provide guidance on how innovative entrepreneurs will build a business plan successfully through workshops, competitions and mentoring schemas as well as modules on the topic of business plan creation.

**Seed Financing**: PROMETHEUS seeks to assist and accelerate the establishment of innovative enterprises, from the ideation of the initial concept throughout the early phases of market entry. To do so, PROMETHEUS will provide important business assistance, resources and funding through a variety

of events such as International Competitions and Hackathons while also intercepting business opportunities such as funding calls, tenders, meeting with investors that can be interesting for the innovators allowing the matchmaking with the opportunities.

**Startup Establishment**: After extensive mentoring, teaching and learning as well as seed financing the innovative startup enterprises will be established. The successful companies will exit from PROMETHEUS either as independent, self-sustaining entities that are able to attract new capital, or by spinning them into a new or existing business unit.



*Figure 8.*      *The PROMETHEUS Entrepreneurship Acceleration Cycle*

# 5    Conclusions

This paper has the aim to present an innovative, prototype of digital platforms and tools, able to provide essential guidance on entrepreneurial issues (e.g. how to further develop your idea, how to promote a start-up, where to find suitable events or competitions, what is the existing framework for a HEI spin-off, etc) via digital means. In order to do so, all the Prometheus solutions and systems were presented in the paper by following a specific methodology presented, also, in this paper. These solutions can easily be adopted by any organisation interested in enhancing the entrepreneurial notion of its internal environment either fully or partially with any needed amendments. The paper also defined some of the most innovative Entrepreneurship Acceleration Platforms in the EIT ecosystem while also providing a comparative platform analysis between the entrepreneurship acceleration platforms within EIT.

Some of the most significant changes seen in PROMETHEUS Initiative are:

**The collaborative training**, which is working and can be fun, with invited lectures from different HEI's, invited lecture from Industry to HEI's and vice-versa.

**Students' engagement** is also a fundamental aspect for PROMETHEUS and now with the PROMETHEUS Entrepreneurship Acceleration Platform it can be accomplished by working together with other teams.

**The Network** is an important issue for PROMETHEUS and to attract new partnerships you need an offering. The PROMETHEUS initiative offers collaboration to companies and organisations with memorandum of understanding (MoU), mentors, faculty and students through the PROMETHEUS Entrepreneurship Acceleration Platform.

Finally, some lessons Learned, concerning HE Innovate methodology:

**HE Innovate provides a strong overall framework of 8 dimensions for entrepreneurship in HEIs.** PROMETHEUS Initiative enhances this framework with collaborative systems and tools.

**HE Innovate evaluation tool can be used by HEIs for a quick assessment of their status**. In this way, PROMETHEUS can quickly classify new members of its community.

**HE Innovate can be further extended to cater for more detailed, or broader HEI needs.** These extensions are becoming part of a set of actions and indicators for the University of the Future.

The table below presents the most important KPIs achieved by the PROMETHEUS Initiative within a year.

| Main Targets | Achievements | Activities performed |
|---|---|---|
| Start-up/scale-ups supported | 3 | Activities to support young entrepreneurs transforming their ideas into businesses (such as hackathons, workshops or summer schools, mentoring schemas, tailored coaching and training on startup topics). |
| Students/ Academic staff/Non-Academic staff trained | 654 | - Enhance the I&E teaching curricula, utilising means of both formal and informal education, by efficiently involving business experts and public administration executives.<br>- Teaching and training of innovative entrepreneurial curricula co-developed with private sector entities, representing an opportunity to upgrade academic and non-academic staff skills, networking with private sector and, eventually, jobs outside academia. |
| Students/Academic staff/Non-Academic staff mentored | 54 | - By mobilizing a network of 77 high calibre, international market experts that have crystallised general or special business experience.<br>- The mentoring process of PROMETHEUS promoted the notion of entrepreneurship among students, academic and non-academic staff while also supporting in shaping an idea, through the provision of educational and consulting work. |
| Invited Lectures among universities and industry | 10 | Collaboration with industry for co-performing invited lectures to train HEIs ecosystem through innovative ways presenting real life industries experiences. |
| Students involved in our activities | 618 | Various activities performed on I&E topics. More particular, hackathons, workshops, summer school, virtual panels while in these events students from all over the world participated. |
| Research Centers involved | 40 | Research centers participated in shaping our approach by signing an MoU. They also participated in the performed activities. |
| Students ideas on I&E submitted | 223 | PROMETHEUS, through its platforms, allow students to shape and submit innovative ideas in digital transformation related to circular economy, climate change and sustainable development providing at the same time ways of improvements (such as tailored mentoring and training schemas to each idea's needs) |
| Public and Private sector involved | 77 | Organisations from the public and the private sector participated in shaping our approach by signing an MoU. They also participated in the performed activities. |

*Table 1.        The PROMETHEUS Initiative core KPIs*

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