



HEKATE

Higher Education and Enterprises: Knowledge Alliances for the Training of Entrepreneurs

Building bridges for entrepreneurial learning

Final Report





**Higher Education and Enterprises:
Knowledge Alliances for the Training of Entrepreneurs**

**Lifelong learning programme
ERASMUS – Knowledge Alliances**

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Building bridges for entrepreneurial learning
Where did we start and what did we learn?
Review of two years of experience

Final Report

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1 Introduction

The HEKATE project set out to make it easier to form ‘Knowledge Alliances’ that bring together businesses and higher education institutions (HEIs) to strengthen Europe’s innovation potential, for example, through the provision of new learning and teaching methods.

HEKATE (for Higher Education and Enterprises: Knowledge Alliances for the Training of Entrepreneurs) had one broad aim: to find a way for experienced R&D and new-business managers to inspire science and engineering postgraduates, whether continuing their study or in the early stages of their working lives, to start careers in innovation. This aim is in line with academia’s increasing interest in promoting entrepreneurial thinking among students, and industry’s desire for greater business acumen among the young people it recruits.

HEKATE was funded as part of the [University–Business Cooperation](#) initiative of the European Commission, and addressed the UBC topic ‘*Fostering entrepreneurial skills and attitudes, by promoting transversal skills through the inclusion of entrepreneurship education throughout higher education programmes.*’

1.1 Rationale for the HEKATE project

HEIs in the US often make a better return on research spending than those in Europe. This is partly due to a stronger culture of academic entrepreneurship, and greater support from American academics for the translation of their work into business, than exists in Europe.

This is changing. Early-stage researchers across Europe are increasingly interested in working with or for industry, and starting businesses, but often don’t know what this involves or how to find out.

In a world in which many young graduates’ careers are likely to include periods of self-employment, it is becoming essential to learn entrepreneurship skills. HEIs recognize that a purely academic training doesn’t make researchers particularly employable outside academia, or convey entrepreneurial attitudes that are best learnt from people who have applied them in existing businesses or start-ups.

It’s vital to connect such entrepreneurs to academia to show how these domains complement each other, but this is often difficult to do except on an *ad hoc* basis – entrepreneurs are very busy people.

While many programmes exist to encourage business start-ups, the key role that larger companies can play in encouraging entrepreneurship is often overlooked. European multi-nationals are important funders of research at HEIs; act as partners, customers and investors in SMEs; promote internal entrepreneurship using corporate venturing; and support start-ups. Europe’s multinationals also have excellent managerial skills, but these resources aren’t widely used to foster entrepreneurial skills in HEIs. Experienced R&D practitioners connect the world of research and business: they can inspire students and researchers to start act entrepreneurially.

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1.2 HEKATE objectives

HEKATE set out to build an open platform through which [EIRMA](#) (the European Industrial Research Management Association) could connect R&D and new-business managers who wanted to share their experiences with HEIs who wanted to bring that experience to their students. To implement this platform and showcase the potential of Knowledge Alliances, HEKATE developed new ways to deliver skills training to mixed groups of PhD students, early-stage researchers and young industry professionals.

The detailed objectives of the project were to:

1. Identify common issues and needs, establish cooperation between experienced innovation managers and experts in higher education, and develop entrepreneurship training concepts for Knowledge Alliances
2. Provide ways for R&D and new-business managers to engage with higher-education experts to provide training
3. Develop, run and assess two novel entrepreneurship-training workshop concepts that can be delivered efficiently, recognising the curriculum burden faced by many students
4. Provide a way for EIRMA and related organisations to help R&D managers engage with Knowledge Alliances to promote entrepreneurship across Europe

1.3 Project partners

HEKATE was formed as a compact partnership that would engage widely. EIRMA, a multi-sectorial networking organisation for companies that have significant research and innovation activities in Europe, acted as its hub. EIRMA's membership includes [multi-nationals, SMEs and start-ups](#), who together form an important research community focused on enabling new business opportunities. EIRMA and its members have the influence in Europe to take a key role in promoting Knowledge Alliances.

Participants in EIRMA activities are senior R&D and new-business managers, many involved in managing Open Innovation partnerships and/or corporate venturing strategies. Industrial partners Solvay and TechBridgeOne (both EIRMA members) acted as champions and catalysts for other companies to form Knowledge Alliances with HEIs.

HEKATE's HEI partners are strongly engaged in research on entrepreneurship. Hamburg University of Technology's (TUHH) [Institute for Marketing and Innovation](#), and Manchester University Business School Institute of Innovation Research ([MIOIR/MBS](#)) provided insights into new approaches for entrepreneurship education and training. They used their involvement in HEKATE to further develop innovative concepts to embed into existing education formats.

HEKATE was coordinated by [TuTech Innovation](#), a university-owned knowledge-transfer company with extensive experience of managing partnerships and supporting entrepreneurial individuals, and a strong track record of coordinating and sustaining collaborative projects. TuTech also has strong pan-Europe channels for disseminating best practice in the public and private sector.

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1.4 The HEKATE approach

HEKATE set out to form a community of stakeholders - academic staff, industrialists, PhD students, early-stage researchers – to develop, run and assess novel entrepreneurship workshops. This helped begin an interaction between HEIs and industry participants and, along with an online discourse, the resultant workshops also helped capture feedback from students and researchers.

The structure of the HEKATE workshops built on work from a previous project, known as ‘Research Management Training - ReMaT’¹, which was funded under Framework Programme 6 and taught research-management skills to PhD students. ReMaT has proved highly effective and very popular. The FP6 project ended in 2008, but the workshops are still being delivered.

The HEKATE workshops were intensive, interactive two-day non-residential events, during which R&D and new-business managers of large companies, entrepreneurs and academic lecturers worked closely with participants on problem-based learning approaches based on real-life cases.

PhD students and early-stage researchers from across Europe, as well as those from the University of Manchester (UNIMAN) and TUHH, were encouraged to participate. The aim was to teach them entrepreneurial skills, and ask them about their attitudes to entrepreneurship. The HEKATE team also felt that running the workshops at UNIMAN and TUHH could inspire other European HEIs to implement similar training. A public report on the workshops² summarized the concept and learnings, and derived recommendations to support similar approaches at other European HEIs.



A Round Table was held halfway through the project, in September 2014, involving representatives of the Commission, industry, higher education and the project team³. They discussed new ways to foster a European entrepreneurial spirit through Knowledge Alliances, and teaching postgraduate STEM students to put their ideas to work. Experiences from the workshops and the Round Table, as well as from peer knowledge and EIRMA members, were formulated into an Operational Plan⁴ that EIRMA will use to ease the flow of knowledge between practitioners and HEIs after the HEKATE project ended.

A final conference⁵, in September 2015, presented HEKATE’s results more widely to stimulate further exchange between stakeholders. EIRMA’s platform for [registering innovation managers as a resource for HEIs](#) in developing entrepreneurship training was also launched at the conference.

¹ www.remat.tutech.eu

² Report on assessment of workshops, to be downloaded on hekate.tutech.eu.

³ Round Table: ‘Teaching STEM students to put their ideas to work’, report to be downloaded on hekate.tutech.eu.

⁴ Operational Plan approved by EIRMA Governing Board on 28 April 2015.

⁵ EIRMA Insight – HEKATE meeting – fostering entrepreneurship, report to be downloaded on hekate.tutech.eu.

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2 Overview of the development of the HEKATE concept

The cornerstone of the HEKATE project was to develop and deliver two novel entrepreneurship training workshops at UNIMAN and TUHH. This extracurricular approach gave the project the freedom to try novel approaches and test the transferability of the concept into different higher education environments.

The workshops had a number of novel features:

- They included case studies from industry and academic venturing that had not been used in entrepreneurship training before
- They used mixed groups of early-stage researchers and industry practitioners with strong technical backgrounds
- They drew on experience from the existing learning environments of UNIMAN and TUHH, the two HEIs
- They were developed with direct input from industrialist members of EIRMA

2.1 Background of the institutions

The University of Manchester

The HEKATE workshops were meant to address PhD students and early-stage researchers in three UNIMAN faculties:



- Engineering and Physical Sciences (EPS)
- Faculty of Life Sciences (FLS)
- Medical and Human Sciences (MHS)

UNIMAN is one of the largest research-intensive universities in the UK, with approximately 38,430 students⁶. The postgraduate research student population is 3450, about one third of whom are from outside the EU.

The HEKATE team at UNIMAN is based at Manchester Institute of Innovation Research (MIOIR), Manchester Business School (MBS). UNIMAN has been actively engaging with the business agenda over the past decade through the Manchester Enterprise Centre (MEC)⁷, which provides business and entrepreneurship education and related activities. These include business competitions, Enterprise Summer School, Enterprise Futures Postgraduate Conference, a workshop targeting PhD students on innovation and commercialisation of research, and a one-year research “Master of Enterprise”⁸ programme.

⁶ according to University Facts and Figures 2014

⁷ MEC was launched in 2000 with funding from the UK Government's Science Enterprise Challenge Fund.

⁸ <https://mec.portals.mbs.ac.uk/StudyEnterpriseWithUs/Postgraduatedegreeprogrammes/MasterofEnterpriseMEnt.aspx>

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The other key vehicle of UNIMAN's business training and activities is through UMI3, formerly University of Manchester Intellectual Property (UMIP) and University of Manchester Innovation Centre (UMIC). The University has supported the commercialisation of its intellectual property (IP) over the past 20 years, and more than 100 spin-out companies have been generated. The Career Services unit is another important player in helping to improve the research students' employability and career development. The Business Engagement Unit supported the HEKATE project in identifying industry partners of the region.

MIoIR collaborated with these actors to develop and deliver the HEKATE workshops. One outcome of this collaboration was recognition that post-doctoral researchers need entrepreneurship training for their career development, but that there was no specific provision for them. Post-doctoral researchers were therefore included as a target of the HEKATE workshops at UNIMAN.

Hamburg University of Technology

The main developer and organiser of the workshops in Hamburg was TUHH's Institute for Marketing and Innovation (IIM). TUHH is organised as a matrix of research centres: professors belong to schools and research is done in nine interdisciplinary research centres. TUHH is strongly engaged in applied research with industry and was the first public German university to start a private technology-transfer company, TuTech, in 1992. Since 1999 TuTech has supported between 180 and 200 start-ups, which have together created up to 900 jobs.



A key pillar of TUHH's strategy is to increase its entrepreneurial output. The TUHH Center of Entrepreneurship and Innovation, known as the TUHH Startup Dock, was founded in 2013 to enhance the entrepreneurial culture on campus, integrate education and training into all study programs, and strengthening coaching, incubation and the financing of new ventures. In January 2013, TUHH was one of 12 universities awarded funding under the Federal Ministry of Economics and Technology to support entrepreneurship in German universities. The HEKATE workshops were developed and delivered with TUHH Startup Dock and TuTech.



2.2 Current developments in entrepreneurship training

To work out how to produce better entrepreneurship training, the HEKATE team began by reviewing the state of the art in industry and higher education, using desk research and interviews with companies and HEIs providing such training. This enabled the team to identify gaps in, and potential demand for entrepreneurial training, and provide input for the design of the entrepreneurship workshops. The results of the review are summarized in a public Report on Existing Entrepreneurship Approaches⁹.

⁹ Report on Existing Entrepreneurship Approaches can be downloaded from: hecate.tutech.eu

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The following recommendations informed the development of the HEKATE workshop concept :

1. **Openness and interactivity** - Entrepreneurship education and training is becoming more open and interactive, demanding a new training approach in which students and early-stage researchers are exposed to real-world situations by interacting with industry experts and entrepreneurs.
2. **Customised and active learning** – An effective way to train academic researchers and managers in entrepreneurship is to combine active and experiential learning with personalised approaches. Training needs to be strongly tailored to each group of participants, industry sectors and individual needs, bringing the learning process much closer to the day-to-day experience of professionals in the target sector. Action learning is critical to shaping participants' behaviour.
3. **Emphasis on soft skills** - Industry partners said that effective communication and presentation skills are essential for today's engineers and scientists, and so training in these skills should be provided as part of an effective entrepreneurship training course.
4. **Direct relevance** - Entrepreneurship training should have a direct impact on each participant's work and aspirations.



2.3 Developing the workshops

The workshop concept was developed using input from both industrial and academic HEKATE partners. Both wanted to teach students about value creation, exploiting scientific and technical results, and entrepreneurial thinking, to better prepare them for their professional careers. Developing the HEKATE workshop concept also showed how senior R&D and new-business managers can work with HEIs to teach students, and how to build communication channels between industry and HEIs.

The workshop focused on STEM students, in part because of the science and technology profile of the industrial project partners, EIRMA, Solvay and TechBridgeOne. It targeted a mixed group of early-stage researchers and young industrial professionals, to better reflect the mixed environments in which industrial innovation happens and to support early-stage researchers, who often have limited access to business and entrepreneurship training.

The industrial partners strongly advocated that the workshop should be no longer than two or two and a half days, and wanted to include intrapreneurship, that is, entrepreneurship within companies.

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A moderated online course was conducted at UNIMAN to understand the needs of early-career researchers in business and entrepreneurship skills. Moderated online courses were piloted at TUHH, but conditions for efficient and effective use across Europe's HEIs have not yet been explored in detail. Despite intense advertisement, early-stage researchers in Manchester did not respond to the online discourse, but preferred to use face-to-face events to communicate their needs. Nevertheless, recommendations for the design and application of future moderated online discourses could be derived, as depicted in the Report on Moderated Online Discourse¹⁰.

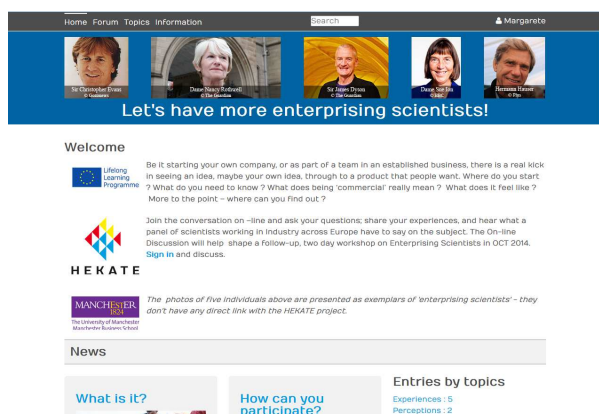


Figure 1: The Moderated Online Discourse Platform

Case study material and industry contributors were collected via EIRMA meetings and newsflashes, university and personal networks. Academic lecturers and industry contributors worked together to refine the experience of industry contributors into well-structured case studies that match the learning objectives of the workshops.

The review of existing entrepreneurship training provided insights in current training methodologies which fed into the workshop concept alongside findings derived from academic and industrial needs. Two concepts with slightly different learning objectives, but strong similarities in learning approaches and formats, were developed, to match the differing needs and environments of TUHH and UNIMAN.

Common features of the workshops included an experience-based learning approach, interactive sessions with industry speakers and industry case studies, and a focus on strengthening the participants' entrepreneurial drive, be it in start-ups, established companies or academia. The workshops also emphasised interaction and communication, teaching students how to interact with



¹⁰ Report on Moderated Online Discourse; can be downloaded from hekate.tutech.eu

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different stakeholders, and techniques for bringing a message to the targeted audience in a precise way. This was taught through a combination of role-play, pitch training, Q&A sessions, group discussions, and networking with external industry experts and entrepreneurs.

Table 1 summarises the key principles, teaching methods and approaches to training used in the both sets of HEKATE workshops.

Table 1 Principles and methods of the HEKATE workshop

Goal	Facilitating interaction and communication between researchers and early-career engineers, across academia and industry
Teaching and learning principles and methods	<ul style="list-style-type: none"> - Action learning and experiential learning (pitching, role-playing, solving real case problem, guest speakers) - Peer learning (group work, discussions, feedback) - Personalised learning (application to own research and work fields)
Team building	Mixed multidisciplinary teams
Training approach	Teaching, coaching, role models, case studies

The Manchester workshops

The key principle of the HEKATE workshops at UNIMAN was that enterprising scientists can create value and opportunities across organisational and sectorial boundaries. The workshops aimed to raise early-stage researchers' awareness of their opportunities to create value through existing businesses, start-ups, a broad range of commercial opportunities, and in the application of their research ideas throughout their career.

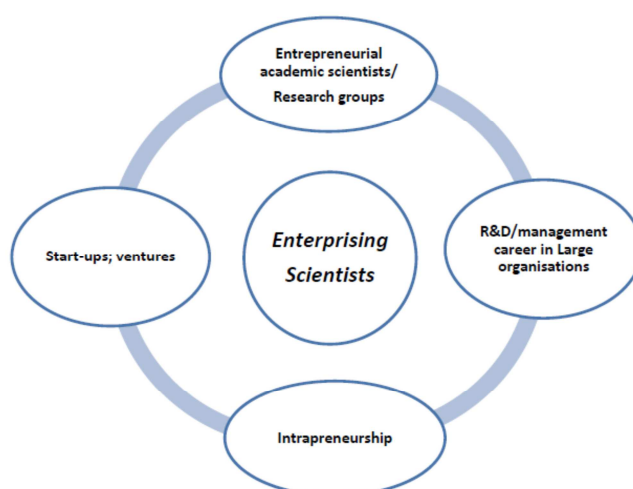


Figure 2: The 'Enterprising scientists' concept

The structure of the UNIMAN workshop is laid out in Table 2.

Table 2 Structure of the Manchester workshop

Day 1
The Enterprising Scientist <ul style="list-style-type: none"> - Experiences from academia, a large corporation and a high-tech SME - The Entrepreneurial Commercialisation of Knowledge - Views from practitioners
Day 2
Enterprise in Career, Contexts and Practice <ul style="list-style-type: none"> - Special Panel Session: The Enterprising Scientist – making a career in business - From Idea to Reality – industrial case studies (EIRMA contribution) - Stakeholder Management

The Hamburg workshops

The key principle of the HEKATE workshops at TUHH was how to turn ideas into business opportunities. The workshops were designed for a mixed group of early-stage researchers, and young industry professionals in scientific and technical disciplines. As shown in Figure 3, the workshop follows a ‘methodology-application-feedback’ framework. Participants learned practical tools and business methodologies before using those skills to develop their business ideas.

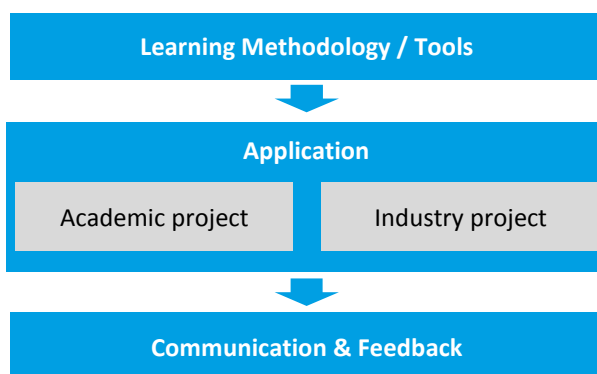


Figure 3: Framework of the Hamburg workshop

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The workshop takes an innovative approach in mixing industry practitioners and academic researchers (about half each) and building ‘tandem teams’ consisting of a practitioner and a researcher. Each tandem team works on a business idea, brought by the researcher or the practitioner, so that the researcher can benefit from the practitioner’s professional experience and working style. Students are also trained to pitch their idea to a jury, which develops their communication skills and gives them a better idea of how business judges investment opportunities.

Table 3: Structure of the Hamburg workshop

Day 1
Get to know each other <ul style="list-style-type: none"> - Welcome and networking dinner
Day 2
Improve your idea, share with others and learn from real entrepreneurs <ul style="list-style-type: none"> - Develop ideas: Use creativity techniques and benefit from team work - Speed up ideas: Learn how to analyse ideas quickly - Switch into realization: Learn from experts how to turn ideas into projects
Day 3
Learn business techniques, get coached and pitch! <ul style="list-style-type: none"> - Create a business proposal: Apply evaluation tools and learn from professional evaluators - Pitch your idea: Train how to bring your case across - Evaluation and Feedback

2.4 The four pilot workshops – aims and outcomes

Four pilot workshops were conducted, two each in Manchester and Hamburg. The first set took place on 28-29 October and 26-28 November 2014, and the second set on 24-25 March and 8-10 April 2015. Each workshop was limited to 24 places, all of which were taken up. The workshops were promoted to early-stage researchers at the two universities across Europe. The TUHH workshops also invited young industrial professionals.

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Manchester participants

The majority of the participants in the Manchester workshops were from the home university, with a balance of genders and national backgrounds, plus four participants from Switzerland and Germany. About half of the participants were PhD students, with the rest being post-doctoral researchers with an average of two years' post-doctoral experience.

Workshop contributors in Manchester included local technology entrepreneurs, university scientists working at start-up companies, an early-mid career industry manager, as well as senior managers from EIRMA companies. Participants worked in groups and interacted with the industry contributors, who facilitated the entrepreneurial processes and idea development.



Hamburg participants

The TUHH workshops attracted PhD students from the Hamburg region and across Germany, as well as the UK, Finland and Tunisia. There were applications from regional industry, among them young industrial R&D professionals, self-employed professionals as well as experienced managers, marketing managers, innovation managers and experienced CEOs. There were also applications from individuals with non-technical backgrounds.



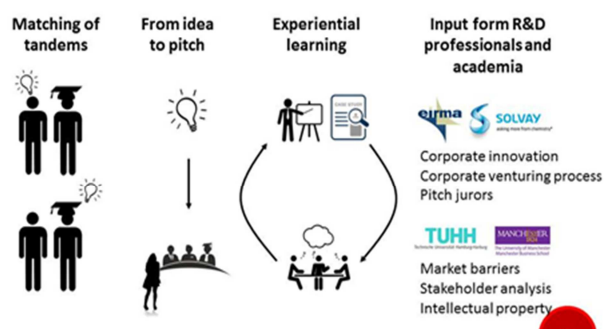
Oversubscription enabled the organisers to select the participants, to make it more likely those chosen were equipped to get the most out of the workshops. Participants were chosen to ensure they had similar levels of experience, and to ensure a good mixture of regional/national backgrounds.

Participants from the first set of workshops were invited to join the second set of workshops, but at the other venue. One person from Manchester and Hamburg each took this opportunity. They appreciated the complementarity of the two workshop concepts and the opportunity to enhance their networks.

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In addition to the academic facilitators and senior managers from EIRMA companies, technology-transfer specialists, entrepreneurship consultants from Startup Dock and a communication expert were involved as lecturers. Senior managers involved in corporate venturing and/or venture capitalists evaluated the pitches of the twelve tandem teams at the end of the workshop. They challenged participants with questions, shared their expertise, and provided useful contacts.

Key elements of the TUHH-HEKATE workshops: Turning ideas into business opportunities



Key elements of the TUHH-HEKATE workshops: Example of a tandem II

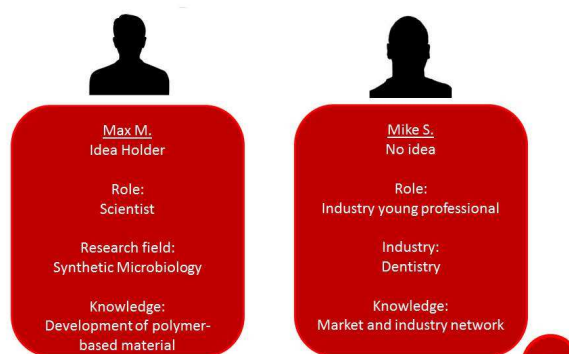


Figure 4: 'Tandem' concept of the Hamburg workshop

Participants' evaluation

A standardised questionnaire was used to get feedback from the participants. Overall satisfaction with the programme was very high for all four workshops. Participants highly appreciated the choice of topics and speakers, and this correlated with the overall session satisfaction. Working in tandem (in the Hamburg workshops) was highly valued. Tandem partners rated the quality and impact of the Hamburg workshops similarly, independent of whether they were developing their own or their partners' idea.



Industry professionals and early-stage researchers were both very satisfied with the learning outcomes. Both those who already had an idea or wanted to start a business, and those who just wanted to explore entrepreneurial thinking, felt they had gained useful insights.

Participants in all four workshops were very positive about their impact. Most indicated they would take more training courses, a pleasing result for a workshop concept designed to stimulate further learning. Impacts on entrepreneurial mindsets, e.g. on entrepreneurship skills and knowledge, and intentions to take actions for commercialisation, were also assessed positively



What the participants said

From the first UNIMAN workshop

"One of the strongest points conveyed was the importance of the customer and generating awareness in the customer of your technology's value – focus on the end point (i.e. sales) from the start! I will be implementing this strategy as I enter my future role in business development"

"I am more inclined towards starting a start-up company"

"It was a kick-start for my thoughts about enterprise"

"Not everybody can make it to an academic position. Most researchers have the mind of an entrepreneur but need to be aware of their potential"

"I liked this course as it was more on how to do it rather than the specifics of IP etc. Foster this "you can do it/get up and go" attitude rather than add the technical theory stuff"

"[The course] provided in-depth and reliable explanations of experiences of real-life entrepreneurs (i.e. coming from academic background) and inspiration for pursuing our own enterprising ventures"

From the second UNIMAN workshop

"Now I know the importance of knowing my customers, the importance of managing my stakeholders, and the importance of planning ahead"

"The way I see my research project – not only to focus on the technical details but to think of the impact on customers"

"I am less threatened about my career pathways after the workshop. I realised that there are a lot of opportunities and one needs to take chances and to be more enthusiastic" - Overseas participant

"As an engineer, we never see or study these kind of topics, which will definitely affect you in the future"

From the TUHH workshops

"A very good workshop, I learnt a lot and I am surprised how brilliant all the ideas are!" - Packaging Manager from Beiersdorf

"Great motivation to pursue your own business idea" - PhD Student from Max-Planck Institute

"Thank you very much to all the organizers. It was a great experience, good matching for partners, well organized and structured workshop" - PhD Student from KIT

"Really great to combine research and industry participants. Great speakers!" - Engineer from Airbus



What the industry contributors said

From the UNIMAN workshops

"I very much enjoyed the workshop and hope that my contribution helped. I was impressed with the engagement and enthusiasm of the participants. They seemed to be really listening to the presentations and engaged in the discussions. This is not a surprise given the quality of the inputs I listened to on the second day! I thought that the opportunity for the participants to hear from and engage with a variety of different people from outside the UoM was very positive." - Industry contributor

"The workshop is a much-needed energy boost for budding entrepreneurs, so well done. I am a believer in 'seeing is believing' and to immerse oneself in environments where innovation happens." - Industry contributor/local entrepreneur

From the UNIMAN and TUHH workshops

"It was nice to be able to represent EIRMA, and I hope that the connection to MBS can continue. Both in Manchester and Hamburg it was great to see a group of young researchers who want to learn and develop their skills; one of our agenda items at EIRMA's recent programme committee meeting was how to interact with Millennials and their new approaches to work. The groups I saw at the two events show that there is a wealth of talent out there that we should be helping to develop in exactly the way HEKATE is doing. It was an inspirational visit for me; thank you for inviting me to be part of the workshop." - Industry contributor

"The structure of the first day seemed to be very good - mixing theory/practical working sessions and illustrative case studies worked well. It's obviously great that you can call on a local success story to inspire attendees: I'm sure that was a big plus." - Industry contributor

Building better workshops

The feedback suggested ways to improve the workshops. For example, some formats work better in a British than a German environment, and *vice versa*. One case study used in both HEKATE workshops was refined throughout the four workshops, based on feedback. The tandem concept was well received but took a lot of work to prepare and benefited from experience gained through repetition, resulting in very good scoring in the second workshop. Changes made in choosing tandem pairings helped improve the way the approach was received in the second workshop. It is not yet clear whether entrepreneurship training in 'tandem' will have a better long-term impact on participants than more traditional training models. However, there is a correlation between individual experiences of working

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in tandem, perception of the workshop performance, and entrepreneurship skills learnt. The participants also really liked the intense, professional pitch training.

Industry contributors, from both EIRMA member companies and start-ups, were positive about their experience of sharing and interacting with early-stage researchers. Some offered to participate in more than one workshop, demonstrating their commitment to teaching the next generation of entrepreneurs and the value they feel they get from interacting with them.



There were additional impacts:

- At both UNIMAN workshops, participants asked to visit the laboratories of a local entrepreneur, demonstrating that these workshops can help sow the seeds of new networks.
- Some workshop participants have copied parts of the HEKATE approach into their own courses.
- The host HEIs have gained experience in building relationships with industry partners and developing training programmes with both EIRMA member companies and start-ups.
- The host HEIs learnt from working with HEIs in other countries, with different institutional environments.

Overall, the workshops worked well. Participants were very positive about the experience, took steps to develop their ideas beyond the confines of the workshop exercises, and felt their entrepreneurial thinking had been stimulated. The development process intensified industry-university collaboration in education, and cross-fertilisation between the two HEIs. Recommendations and lessons learnt are summarized in Section 5. Further details on the development, delivery and evaluation of the workshops are documented in the Report on the assessment of workshops¹¹.

3 Using EIRMA to engage industry with entrepreneurship education in HEIs

Beyond the delivery of novel entrepreneurship training, the major objective of HEKATE was to engage R&D and new-business managers with entrepreneurship education in HEIs. In participating in HEKATE, EIRMA has committed itself to support this engagement, alongside its existing commitment to both [Responsible Partnering strategies](#) and the emerging discipline of [Responsible Innovation](#).

Most of EIRMA's member companies are large multinationals with a strong interest in promoting R&D in Europe. They are used to working with universities in their research programmes, and may be involved in Masters programmes at HEIs. Yet there is less cooperation between universities and business in higher education than in R&D, and what collaboration there is happens on an *ad hoc* basis. HEIs often find it difficult to identify companies and staff willing to contribute to entrepreneurship education, and cooperation efforts often fail because there is not enough time to find partners and build relationships.

HEKATE offered the chance to lay a basis for easier and more reliable encounters between industry and HEIs. EIRMA, Solvay and TechBridgeOne worked with TUHH and UNIMAN to test cooperation models. They invested time to discuss their needs and expectations, and to develop common training

¹¹ Report on the Assessment of Workshops, can be downloaded from hekate.tutech.eu.

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concepts. The EIRMA Operations team also advertised cooperation with HEIs via EIRMA meetings, newsflashes, social media, word-of-mouth communication and conferences, building awareness of the initiative among the membership.



The Round Table in September 2014¹² and the Final Conference in September 2015 provided opportunities for EIRMA members, representatives from academia and policy makers, to discuss requirements, benefits and challenges of university/business cooperation and to collect ideas about how to transfer the discussion into sustainable action.

EIRMA's Operational Plan, based on these discussions and other learning from the project, focuses on continuing to promote university/business interaction. EIRMA now offers a platform where managers can offer their time, experience and/or case studies for entrepreneurship training in HEIs. EIRMA members who participated in the HEKATE workshops are currently registering themselves. Close links between EIRMA and the European University Association will be used to advertise the platform among HEIs. TuTech and EIRMA will also provide advice, based on the HEKATE experience, on setting up effective Knowledge Alliances for training entrepreneurs.



¹² See EIRMA Insight – HEKATE meeting – teaching STEM students to put their ideas to work, can be downloaded from hekate.tutech.eu.

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4 Integration of the HEKATE concept into the entrepreneurship training environments of HEKATE partners

At Manchester

At UNIMAN, the HEKATE project enabled the team to develop close relationships with a broader community of UNIMAN business teaching staff, which will help to sustain its outcomes and lessons. To ensure the sustainability of the project and embed the HEKATE networks and contacts, the second Manchester workshop relied on greater involvement from the MEC. HEKATE addressed post-doctoral researchers, a target group with less access to training than Masters or PhD students at UNIMAN. MEC will use concepts and insights from the HEKATE project in its programmes. MEC strongly appreciated the Europe-wide approach of HEKATE and will try to find ways to do more work on a European level.

At TUHH and TuTech

At TUHH, the sustainability of the learning is ensured by the involvement of the Startup Dock, and close collaboration between TuTech and TUHH in entrepreneurship education. Startup Dock is planning to implement an online platform that will help team formation and networking among those interested in entrepreneurship. HEKATE modules, case studies and learning material will be used by Startup Dock.

TuTech will continue to offer entrepreneurship training using HEKATE concepts, on a similar cost-recovery basis as the ReMaT workshops. Universities, research institutions and graduate schools want more training on entrepreneurship, innovation and valorisation of research results, but can't find providers. TuTech will answer this demand Europe-wide with training based on the proven HEKATE approach, and advice services on implementing it in other HEIs.

Resources remain an issue. Many European universities don't have the money to set up intense skills training schemes or buy them from third parties. Students and early-career researchers have limited resources to pay for it.

5 Summary – lessons learnt

From October 2013 to December 2015, the HEKATE project developed two novel entrepreneurship training workshops for early-stage researchers. Four pilot workshops were conducted and received very positive feedback from the participants. The workshops used interactive and experiential learning, based on real-life case studies, over two intense days. Lecturers included academics with strong teaching skills, senior R&D and new business managers from large companies, and entrepreneurs. Academics developed the teaching framework, lecturers from business provided the experience and case studies. Together, they were effective teachers for their audience.

The HEKATE workshops served as a model for the way in which education partnerships between HEIs and industry can be developed and maintained. The experiences in the workshops and the intense discussions among EIRMA members formed the basis of an Operational Plan that EIRMA will use to promote the Europe-wide formation of Knowledge Alliances for entrepreneurship training beyond the end of the project.

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Some key lessons have been learnt and recommendations can be drawn from these lessons:

- Recruiting industrial speakers takes a long time, and the time they can commit is very limited.
- HEIs have to win the institutional support of companies as well as of individuals. A challenge arises when a company is supportive but does not have an appropriate speaker, or occasionally when individuals are keen to contribute but their employers are not supportive.
- HEIs need to build and maintain strong networks of those who already collaborate with industry, with companies in their region, and trusting relationships with HR and R&D departments. This requires sustained efforts by both sides.
- Educational concepts need enough flexibility to enable learning outcomes to be achieved with a variety of industrial contributors.
- Recently retired senior managers from large companies are a valuable resource: they often have more flexible schedules, are independent and eager to pass on their experience.
- HEIs should also engage with inspiring personalities who have left senior roles in industry and are now free to develop new approaches to entrepreneurship and open innovation.
- Industrial lecturers see benefits, if HEIs create space for informal interaction with future employees and potential collaborators, offer additional networking contacts to other research departments, and/or there are synergies between research and educational collaborations.
- HEIs need the resources to reimburse at least travel and accommodation costs for speakers.
- HEI should be given the means to offer fair remuneration to those who combine industrial experience, entrepreneurial spirit and excellent teaching qualities fairly.
- Developing learning materials with industry contributors requires knowledge, skill and experience of business practices and organisational complexities.
- Mixing young industry professionals and early-stage researchers as tandem partners takes a great deal of preparation and labour-intensive matching processes.
- There is no 'one size fits all' model for entrepreneurship training programmes or Knowledge Alliances. Any training concepts, design and delivery approaches need to be tailored to specific programmes and the skills and expertise of both the workshop providers (i.e. the supply side) and the needs of specific organisations and participants (i.e. the demand side).

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6 Get in contact

... if you are a manager involved in new business development, innovation, venturing and intrapreneurship and are interested in sharing your experience

... if you can contribute business case studies

... if you come from an HEI interested in building a Knowledge Alliance with industry

... if you come from an HEI and you need contacts for lecturers and/or case studies from the business world

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www.hekate.tutech.eu

7 References

Report on Existing Entrepreneurship Approaches, April 2014 (HEKATE deliverable 2.1, [Report on Existing Entrepreneurship Approaches D21.pdf](#) available for download on hekate.tuttech.eu)

Documentation of the workshop concept and material, September 2014, (HEKATE deliverable 2.2, [Workshop Concept HEKATE D 2.2.pdf](#) available for download on hekate.tuttech.eu)

Report of the moderated online discourse – outcomes and methodological assessment, August 2014 (HEKATE deliverable 3.1, [Report on Moderated Online Discourse D3.1.pdf](#) available for download on hekate.tuttech.eu)

Report on the assessment of the workshops, June 2015 (HEKATE deliverable 4.1, [Report on Assessment of Workshops HEKATE D41.pdf](#) available for download on hekate.tuttech.eu)

HEKATE Workshops: Concept, Outcomes and Lessons learnt, April 2015 (short summary of workshop results, [Concept, Outcomes and Lessons Learnt.pdf](#) available for download on hekate.tuttech.eu)

Teaching STEM students entrepreneurial thinking, Video, September 2014 (3 minutes, published on [EIRMA Youtube Channel](#) and hekate.tuttech.eu)

Teaching science, technology, engineering and mathematics students to put their ideas to work, Insight from Round Table Meeting, 9 September 2014, EIRMA insights, EIRMA/14.075 (HEKATE deliverable 5.1, [EIRMA Insight – HEKATE meeting – teaching STEM students to put their ideas to work.pdf](#) available for download on hekate.tuttech.eu and www.eirma.org/eirma-insight)

Building bridges between industry and its future innovation managers, HEKATE Final Conference, 22 September 2015, Brussels, Belgium, presentations and programme (available for download on <http://hekate.tuttech.eu/hekate-final-conference/>)

Fostering entrepreneurship among young industry professionals and academic researchers, Insight from HEKATE Final Conference: "Building bridges between industry and its future innovation managers", 22 September 2015 – Brussels, Belgium, EIRMA insights, EIRMA/15.098 (HEKATE deliverable 6.1, [EIRMA Insight - HEKATE final meeting - fostering entrepreneurship.pdf](#) available for download on hekate.tuttech.eu and www.eirma.org/eirma-insight)

Notes on the 6th University Business Forum, Brussels, 5-6 March 2015, short report of impressions of HEKATE team participants ([Note for HEKATE The 6th University Business Forum 150408updated.pdf](#), available for download on hekate.tuttech.eu)

Effectuation and the Innovation Family
<http://de.slideshare.net/SMBBV/smb-22052014-corina-kuiper-health-venture-check>

The Business Model Canvas
www.businessmodelgeneration.com/downloads/business_model_canvas_poster.pdf

8 Links

EIRMA Platform Industry – Higher Education Institutes: Register for potential EIRMA contributors for entrepreneurship trainings in HEIs, <http://www.eirma.org/platform-industry-higher-education-institutes>, accessible for members only; otherwise; <http://www.eirma.org/contact>

EIRMA European Projects: <http://www.eirma.org/european-projects>

EIRMA Insights – reports on EIRMA events, related to research and innovation, entrepreneurship etc.: <http://www.eirma.org/eirma-insight>

Hamburg Innovation – hep - support for business startups: <http://hamburg-innovation.net/index.php/page/Projects-2010-10-19>

TuTech's workshops on entrepreneurship, innovation and research management for early-stage researchers: <http://www.remat.tuttech.eu>

Manchester Enterprise Centre: focal point for student enterprise and entrepreneurship learning at The University of Manchester, based within Manchester Business School: <https://mec.portals.mbs.ac.uk/>

TUHH – Startup Dock: Centre for innovation and entrepreneurship at Hamburg University of Technology: <https://www.tuhh.de/startupdock/startup-dock.html>

UMI³ Entrepreneurship Forum, [UNIMAN's](http://uniman.com) innovation company: <http://umi3.com/>

University Business Cooperation – an initiative of DG Education & Training
http://ec.europa.eu/education/tools/university-business_en.htm

Overview about Knowledge Alliances funded by EC before 2014:
http://eacea.ec.europa.eu/llp/results_projects/project_compendia_en.php

ERASMUS+ EU programm for education, training, youth and sport – Overview about funded Knowledge Alliances after 2014:
<http://ec.europa.eu/programmes/erasmus-plus/projects/>

ERASMUS for young entrepreneurs
<http://www.erasmus-entrepreneurs.eu/>

European Confederation of Junior Enterprises
<http://www.jadenet.org/>

Junior Achievement International Europe and Young Enterprise Europe
<http://www.jaeurope.org/>

Good practice case studies in University-Business Cooperation
www.ub-cooperation.eu/index/casestudy and <http://www.ub-cooperation.eu/index/casestudiesreport>

ERASMUS+ EU programm for education, training, youth and sport –Entrepreneurship in education
http://ec.europa.eu/education/policy/strategic-framework/entrepreneurship_en.htm

The Entrepreneurship 2020 Action Plan
http://ec.europa.eu/growth/smes/promoting-entrepreneurship/action-plan/index_en.htm

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ERASMUS+ EU programm for education, training, youth and sport – Cooperation with business:
http://ec.europa.eu/education/opportunities/higher-education/business_en.htm

ERASMUS+ EU programm for education, training, youth and sport – Key documents:
http://ec.europa.eu/education/library/keydocs/index_en.htm

ERASMUS+ EU programm for education, training, youth and sport – Document library:
http://ec.europa.eu/education/library/index_en.htm

EACEA Education, Audiovisual and Cultural Executive Agency
<http://eacea.ec.europa.eu/>

Entrepreneurship education in OECD countries
<http://www.oecd-ilibrary.org/>

Intrapreneurship for Higher Education Reform
http://ssir.org/articles/entry/intrapreneurship_for_higher_education_reform

Eurydice network to understand and explain how Europe's different education systems work
http://eacea.ec.europa.eu/education/eurydice/index_en.php

BMW i business start-up portal
<http://www.existenzgruender.de/>

Enterprise Educators UK
<http://www.enterprise.ac.uk>

National Centre for Universities & Business (UK)
<http://www.ncub.co.uk/>

National Centre for Entrepreneurship in Education
<http://ncee.org.uk>

Vitae Careers Research and Advisory Centre
www.vitae.ac.uk/

9 Project Partners



<http://www.tutech.net/>

TuTech was founded in 1992 by Hamburg University of Technology (TUHH) as the first private technology-transfer company founded by a German university. TuTech's mission is to promote the effective transfer and exploitation of scientific and technical knowledge to serve both public and private interests. TuTech provides a variety of services ranging from support for technology business start-ups, cluster management, continued professional development training, services for conferences and trade fairs to trans-national technology transfer. TuTech is strongly involved in promoting training and support relating to entrepreneurship.



<http://www.eirma.org/>

EIRMA is an independent not-for-profit organisation that provides a European perspective on the global management of applied R&D and innovation. It engages about 100 major companies based in more than 20 countries and operating in a wide range of sectors, gathering world-class R&D insights. Membership and networks are pan-European and cross-sectorial. Open and honest discussion between practitioners, and the exchange of pragmatic experience with people who face similar issues, helps members address their current and future R, D and innovation challenges.



<http://www.solvay.com/>

Solvay is an international chemical group, offering a broad range of products that contribute to improving quality of life and the performance of its customers. It has its headquarters in Belgium. Solvay is active in innovative solutions through its New Business Development activity, which aims to create materials and systems using leading-edge technologies, such as printable organic electronics, sustainable energies, nanotechnologies, and renewable based chemistry.

TechBridgeOne

TechBridgeOne s.p.r.l. is a consulting and service company providing bridges for Industrial partnerships for academia/applied research centers/professional associations/SMEs/venture funds. The company is dedicated to help Innovation flourish in Europe with a global impact on industrial application and has been founded by Dr Leopold Demiddeleer. It is located in Brussels.



<http://www.mbs.ac.uk/>

The Manchester Institute of Innovation Research (MIIoR) at Manchester Business School (MBS), University of Manchester is a centre of excellence in the field of innovation studies, which includes the overlap of innovation with science management and science policy. With over 50 full members, approximately 50 PhD researchers and a range of associated academics, MIIoR is Europe's largest and one of the world's leading research centres in its field. The Institute's key strengths lie in the linkage and cross-fertilisation of economics, management and policy around innovation, science and technology.



<http://www.imi.tuhh.de/en>

Founded in 1978, TUHH is Germany's youngest technical university. TUHH was the first public German university to found a private technology transfer company, TuTech, in 1992. Enhancing the entrepreneurial output of the university is a key pillar of the universities strategy. TUHH was one of 12 universities to be awarded funding under the German Federal Ministry of Economics and Technology (BMWi) EXIST (University-Based Business Start-Ups) programme for supporting entrepreneurship in German universities. With this TUHH carries the title 'Gründerhochschule'.