TRAINING MODULE No. 2
Analytical Thinking and Resourcefulness as Ways to Identify and Satisfy Customer / Citizens’ Needs

Assoc. Prof. Todor Todorov
Assoc. Prof. Ivan Stoychev
Assoc. Prof. Marcho Markov
Dr. Ralitza Kuzeva

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This document, constituting part of a FIERE project deliverable in the context of the project’s Work Package 3: ‘Indicative innovative entrepreneurship skills training programme’, has been prepared in accordance with specifications applicable for all similar FIERE Training Modules.

It does not intend to provide a comprehensive review of the field of analytical thinking and resourcefulness. Instead it is intended as an introduction and starting point for discussions during Pilot Training sessions / Workshops to be organised in the various FIERE project partner regions in Italy, Greece, Bulgaria, Ireland, Iceland and Portugal.

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Assoc. Prof. Todor Todorov

Institute for Postgraduate Studies at UNWE (Bulgaria)

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1. Introduction

The FIERE (Furthering Innovative Entrepreneurial Regions of Europe) project aims to support local communities and regional economies by specifically focusing on developing skills among organisations’ employees to behave more entrepreneurially and innovatively within their work environment. The paradigm of innovative entrepreneurship lies at the intersection of entrepreneurship and innovation as it recognises the necessity of teaching innovation, entrepreneurship and creativity skills to policy makers, managers, administrators, enterprise development officers, community leaders and developers, founders of community and social enterprises, and organisers/managers of local community entities.

The FIERE partnership includes 7 partner organisations: the Tipperary County Council and the Waterford Institute of Technology from Ireland; AllWeb Solutions – a leading IT company in Greece; CESIE – a not-for-profit independent NGO from Italy; the Commercial and Industrial Association of Barcelos from Portugal; Einurđ ehf – a consultancy company from Iceland; the Institute of Postgraduate Studies at the University of National and World Economy from Bulgaria. The partners are gathered around the idea to design and implement a training programme in each FIERE partner region to support employees by increasing their potential, capacity and capability to behave entrepreneurially and innovatively.

1.1. Training modules objectives and relevance for the FIERE project and its target groups

Through the elaboration of training content under FIERE Work Package (WP) 3: ‘Indicative innovative entrepreneurship skills training programme’ the FIERE project partnership seeks to develop an innovative entrepreneurship training programme (TP) that addresses skills needs of regional organisations, while, at the same time, taking into account the operational issues associated with regional training programme delivery (e.g. developing a network of mentors/facilitators to assist regional adult education learners). The process of training programme development is not confined to WP3 only. It uses the results of WP2 ‘User Needs Analysis’ and WP4 ‘Case Studies’ and will eventually take into account the feedback from WP5 ‘Pilot Actions’ to fine tune the developed training products.

The work programme for WP3 builds on the results of the needs analysis undertaken of regional organisations in relation to innovative entrepreneurship provision and is based on the case studies, elaborated by each project partner to support the exchange of good practices of how regional organisations in the partner countries have successfully implemented innovative
entrepreneurial approaches to addressing the challenges faced by their regions. WP3 focuses on developing an indicative specification for an innovative entrepreneurship skills adult education course that identifies the following key learning modules to comprise the FIERE training programme:

- **Module 1:** “Creativity and innovation”;
- **Module 2:** “Analytical thinking and resourcefulness as ways to identify and satisfy customer/citizens’ needs”;
- **Module 3:** “Leadership and resilience in order to enhance innovation and more responsive service in public and voluntary sector”.

The content of the training modules package will eventually be used for the development of training handbooks for trainers/mentors/counsellors and for adult learners. The handbooks will provide learning materials to assist the participants to understand the basic concepts of innovative entrepreneurship. Additionally – and potentially importantly in the context of the delivery of the adult education programme in a regional context – the training handbooks will also address the supports that may need to be put in place at a regional level to support participants to implement the skills they have acquired.

**1.2. Training programme learning objectives**

After taking the training course, elaborated under the FIERE project, and more specifically – Training Module 2, participants should be able to:

1. Define the concept of analytical thinking and resourcefulness and their role for the organisation.
2. Identify and examine the relationship between innovative entrepreneurship on one hand, and analytical thinking and resourcefulness – on the other.
3. Discuss their own reflections on the concept of analytical thinking and resourcefulness, including its meaning and role in their organisation.
4. Explain the significance of analytical thinking and resourcefulness for the quality of the services provided by the organisation.
5. Apply different techniques for enhancing the level of analytical thinking and resourcefulness in the organisation.
6. Illustrate how innovative entrepreneurship in the regions can be supported by organisational resourcefulness.
7. Evaluate different stages of problem solving and identify the approaches to each stage in different situations.

8. Evaluate the potential for personal resourceful behaviour/opportunity in their current role.

9. Evaluate how to enhance individual resourcefulness within the workplace.

10. Identify and analyse the factors associated with innovation and entrepreneurship that determine the success at organisational and/or regional level.

11. Design innovative services that cater for the needs and expectations of customers and/or citizens.

12. Plan actions for the development of their organisations as well as for the socio-economic betterment of their regions.

1.3. Training module structure

The structure of the training modules agreed by project partners includes the following sections:

- **The concept of the skills covered by the respective module** – a short literature review on the main theoretical concepts of the skills, on which the respective training module is focused.

- **Relevance of identified skills for regional organisations** – a summary of the key findings from WP2 in order to justify the selection of the particular skills to be included in the respective training module.

- **Examples of good practices** – summaries of two/three case studies, which are most relevant for the respective training module and the skills it focuses on.

- **Conclusions and recommendations** – benefits for regional organisations arising from their involvement in the training course delivered using the materials elaborated under FIERE project and recommendations for most appropriate training delivery methods and approaches, to be eventually used in WP5 ‘Pilot Actions’.
2. The concept of Analytical thinking and Resourcefulness

The present section contains a short literature review on the main concepts of the skills, on which Training Module No 2 is focused, namely analytical thinking and resourcefulness. The aim is to enhance the level of analytical thinking for employees within the public and voluntary sectors, whereas including instruction on resourcefulness which is identified as a key for both the organisation and the individual employee in delivering the most effective service to the customer or citizen.

2.1. Analytical thinking

*Analytical thinking* often referred to as ‘critical’ thinking can be defined as the process of determining the authenticity, accuracy or value of something; characterised by the ability to seek reasons and alternatives, perceive the total situation, and change one’s view based on evidence (Wegerif, 2002). Analytical thinking gives one the ability to solve problems quickly and effectively. It involves a methodical step-by-step approach to thinking that allows people to break down complex problems into single and manageable components in order to solve them.

Educators have long been aware of the importance of analytical/critical thinking skills as an outcome of student learning. More recently this type of skill was identified as one of several learning and innovation skills necessary to prepare students for post-secondary education and the workforce. In addition analytical/critical thinking is reflected as a cross-disciplinary skill vital for college and employment (Lai, 2011). Despite widespread recognition of its importance, there is a notable lack of consensus regarding the definition of analytical/critical thinking.

The literature on critical thinking has roots in two primary academic disciplines: philosophy and psychology (Lewis & Smith, 1993). Sternberg (1986) has also noted a third critical thinking strand within the field of education, which is of special interest to us in light of the objectives set by the FIERE project. Those working in the field of education have actively participated in discussions about critical thinking. Benjamin Bloom and his associates are included in this category. Their taxonomy for information processing skills (1956) is one of the most widely cited sources for educational practitioners when it comes to teaching and assessing higher-order thinking skills. Bloom’s taxonomy is hierarchical, with “comprehension” at the bottom and “evaluation” at the top. The three highest levels (analysis, synthesis, and evaluation) are frequently said to represent
critical thinking (Kennedy et al., 1991). The benefit of the educational approach is that it is based on years of classroom experience and observations of student learning, unlike both the philosophical and the psychological traditions (Sternberg, 1986).

2.2. Practical suggestions about how to think analytically

Analytical thinking follows the scientific approach to problem solving and as a process can be decomposed in the following stages:

**Stage 1 Defining the Problem**

A problem is a situation that is judged as something that needs to be corrected – implies that a state of “wholeness” does not exist. It is important to make sure one is solving the right problem – it may not be the one presented by the customer. The basic concepts in defining the problem which should be taken into account are as follows:

- Most of the problems are initially identified by the customer.
- Defining the problem clearly improves focus – it drives the analytical process.
- Getting to a clearly defined problem is often discovery driven – by starting with a conceptual definition and through analysis (root cause, impact analysis, etc.) one reshapes and redefines the problem in terms of issues.
**Stage 2 Formulating the Hypotheses**

Hypothesis is a tentative explanation for an observation that can be tested (i.e. proved or disproved) by further investigation. For formulating the hypothesis one should start at the end, figuring out the solution to the problem, i.e. “hypothesizing”. It also helps to build a roadmap for approaching the problem. The basic concepts in formulating the hypothesis worth mentioning include:

- Hypotheses can be expressed as possible root causes of the problem.
- Breaking down the problem into key drivers (root causes) can help formulate hypotheses.

**Stage 3 Collecting the Facts**

This stage is about accumulating meaningful information (has merit – not false) that is qualitative (expert opinions) or quantitative (measurable performance) to one’s decisions. Gathering relevant data and information is a critical step in supporting the analyses required for proving or disproving the hypotheses. The basic concepts here which should be taken into consideration are as follows:

- Knowing where to dig.
- Knowing how to filter through information.
- Knowing how to verify by things that have happened in the past.
- Knowing how to apply the things which relate to what one is trying to solve.

**Stage 4 Conducting the Analysis**

This is the deliberate process of breaking a problem down through the application of knowledge and various analytical techniques. Analysis of the facts is required to prove or disprove the hypotheses, whereas it provides an understanding of issues and drivers behind the problem. The basic concepts in conducting the analysis include:

- It is generally better to spend more time analyzing the data and information as opposed to collecting them. The goal is to find the clues that quickly confirm or deny a hypothesis.
- Root cause analysis, storyboarding and force field analysis are some of many analytical techniques that can be applied.
Stage 5 Developing the Solution

Solutions are the final recommendations presented to the customers based on the outcomes of the hypothesis testing. Solutions are what the customers are finally seeking to get. The basic concepts in developing the solution which should be taken into account are as follows:

- It is important to ensure that the solution fits the client – solutions are useless if they cannot be implemented.
- Running an actual example through the solution is an effective way of testing the effectiveness and viability of the solution.

TIPS TO ENHANCE ANALYTICAL THINKING

Being able to think analytically is one of the most important skills any adult can possess, and like many other skills, it’s surprisingly easy to learn. Several suggestions are presented below that one can use to become an analytical thinker and better understand important concepts, debates and issues.

- Use of thought experiments to examine concepts

Thought experiments are great logical tools for examining a situation or argument in full. While some thought experiments encourage people to reach a conclusion, some are designed to keep them guessing and are impossible to ‘solve’ in their entirety.

Thought experiments range from philosophical to practical. An example of a thought experiment is hypothesizing on the way one would react in a certain situation with limited options and outcomes.

- Avoiding dependence on inverse reasoning

Inverse reasoning is using the opposite of a true statement to answer a question or hypothetical situation. For example, an original statement might be: “If you add salt to the meal, the taste of the meal will change.”
This statement is completely logical and accurate. After all, if one adds salt to a meal, its taste does change. However, the inverse statement – “If you do not add salt to the meal, its taste will not change.” – isn’t logical or accurate.

This is because there are many ways to modify the taste of a meal. Adding sugar, for example, would modify its taste. Inverse reasoning can be an effective logical tool in certain situations, but it’s a dangerous logical fallacy when relied on.

Inverse statements are just one type of logical fallacy. Others include arguing that a certain outcome is true because it can’t be disproven and assuming a conclusion to an argument before one has finished explaining it.

- Checking facts by using a variety of sources

Facts, figures and statistics can be manipulated and modified to show just about any opinion or trend. From selection biases to deliberate manipulation, the myriad ways in which facts can be twisted makes it essential that one can check them for accuracy.

One of the most important aspects of analytical thinking is being able to break down the way in which facts and figures are collected. From opinion polls to graphs based on public data, many numbers aren’t as accurate as they originally appear to be.

For example, a poll about a controversial social issue can easily be slanted in one direction or another by choosing a biased audience. A poll on the question “Should bicycle lanes be built on all streets?” will get a different answer from an audience of bicyclists, for example, than it would from an audience of drivers.

When people encounter an argument that relies strongly on facts and figures, they should look into the source of these statistics and how they were collected. A revealing factor may be found in the data collection or questions used to interview respondents that shows bias or manipulation.
- Debating ideas to improve one’s understanding

If people think that their ideas are bulletproof they should test the strength of their argument by debating against someone with the opposite viewpoint. Exposing oneself to opposing opinions and arguments is the best way to spot flaws in one’s logic.

When people study a topic in depth and acquire a certain viewpoint, it’s easy to ignore evidence that runs contrary to their opinion. Even with deliberate study, it’s hard to understand both sides of an argument as well as people understand their own.

It is thus useful to expose oneself to new information, interesting statistics and persuasive evidence against one’s argument by engaging in regular debate with people who hold different views. It might not be easy, but it’s a great way to make one’s ability to think logically and spot analytical errors far more effective.

2.3. Resourcefulness

Entrepreneurial resourcefulness refers to the ability to self-regulate and direct one’s behaviour to successfully cope with difficult, stressful and challenging situations (Meichenbaum, 1977). Entrepreneurial resourcefulness comprises of three generic competencies – cognitive, affective and action-oriented (Kanungo & Misra, 1992). The competencies refer to the mental capabilities that help successful adaptation to the difficulties posed by the external environment. Entrepreneurial behaviour is the constellation of functions, activities and actions involved in the perception of opportunities and the creation of organisations. Entrepreneurial behaviour is a function of entrepreneurial resourcefulness. Sasi and Sendil (2000) argue that by positing that entrepreneurial resourcefulness influences entrepreneurial behaviour, the predictive power can be enhanced. Being resourceful is the key to becoming a successful entrepreneur. Resourcefulness offers the field of entrepreneurship a rich construct that combines not only the creative use of financial resources, but also numerous non-financial resources that lead to firm survival and firm performance. Resourcefulness includes innovation, initiative, creativity, dedication, vision and optimism. Min (1999) includes creativity, visionary, optimistic and innovator in the top ten attributes that entrepreneurs share. Gartner (1990) and Saayman et al. (2008) also support the importance of innovation in entrepreneurship. Drucker (2002) says that all the entrepreneurs he has ever met have ‘a commitment to the systematic practice of innovation’. Levitt (2002) argued
that creativity may be ‘more of a millstone than a milestone’ because of the shortage of creative people in business. According to Russell and Faulkner (2004), it is through times of upheaval that entrepreneurs are often resourceful by spotting opportunities in the environment and using their creativity to bring about innovation. Thus, all the findings suggest resourcefulness as a key attribute for an entrepreneur.

2.4. Practical suggestions about how to be resourceful

In reality life doesn’t always hand us solutions to go with the problems and situations we encounter. If you find yourself in a difficult situation, sometimes you have to use what you have, along with a bit of creativity and ingenuity, in order to get through it. Here are a few general suggestions.

Be prepared. You cannot anticipate everything, but you can anticipate many things, and the more you can prepare ahead of time, the more resources you will have to draw upon when faced with a problem. Also find ways to curb future problems if you can. Prevention is better than cure.

Assess the situation. When a challenging situation comes in your way, try to clarify and define the problem as best as you can. Finding a solution to the problem is better than worrying. This can be learned by training your mind each time you start worrying.

Assess what is available to you. Being resourceful is, above all, about clever, creative use of resources. Do not forget that resources are not all objects. Do you have access to, or could you obtain, any of the following: people, communications, information, money, time?

Work backwards. Take stock of what you have available, then consider how you can apply it to the problem.

Break the rules. Use things in unconventional ways or go against conventional wisdom or societal norms, if it will help. Be prepared to take responsibility, redress wrongs, or explain yourself if you do overstep your bounds.

Be creative. Think of unconventional possibilities as well as obvious or practical ones. You might find inspiration for a workable solution in one of them.

Experiment. Trial and error might take awhile, but if you have no experience with a particular situation, it is a very good way to begin. At the very least, you will learn what does not work.
Use the situation to your advantage, if you can. If you missed an opportunity try to engage in anything meaningful until a similar opportunity comes your way again.

Improvise. Do not box yourself into thinking that only a permanent solution will do. Use what you have at hand to arrive at a temporary solution.

Be an opportunist. If an opportunity presents itself, do your best to take it. Do not over think.

Act quickly. Often an effective solution hinges on a speedy response. Be decisive, and once a decision is made, do not analyse too much, act.

Learn from your mistakes. If you had to scramble to correct a problem, take steps to make sure that it does not happen again. If you tried something that did not work, try it a different way next time.

Be persistent. If you go away before the problem does, then you have not solved anything. Try again, a dozen or a hundred different ways, if that is what it takes. Do not give up. Never consider not succeeding immediately as a failure – consider it practice. See the positive in every situation.
3. Relevance of identified skills for Regional Organisations

3.1. Introductory remarks

As per FIERE project Work Plan, a pilot survey on users’ entrepreneurship skills was carried out by all partners. The aim of the FIERE skill needs analysis survey conducted within WP2 was to gain a level of understanding of the entrepreneurial skills and behaviours of employees from public, private, community & enterprise and voluntary sectors. In total, across the FIERE consortium partners 450 respondents from 223 organisations were surveyed, with the public sector registering the highest at 39%, followed by the private sector at 38% and the community & enterprise sector at 14% and finally a small sample of voluntary organisations.

The prepared Combined Survey Report identified ‘resourcefulness’, ‘resilience’ and ‘analytical thinking’ as the three most important skills for the organisations and their employees which were deemed appropriate to be used as the basis for the elaboration of the innovative entrepreneurship training programme. The latter is developed jointly by the partner organisations, taking into account the survey results, while it is aimed at enhancing the capacity of regional organisations and their employees to be more entrepreneurially-oriented while performing their duties.

The FIERE skills needs analysis survey has been used to support the development of an entrepreneurial skills training programme which will be delivered in each FIERE partner country during 2015. More particularly, the findings of the survey served to identify the key skills to form the base for the different training modules, namely:

- **Module 1**: creativity and innovation;
- **Module 2**: analytical thinking and resourcefulness;
- **Module 3**: leadership and resilience.

3.2. Key findings

The key survey findings that can be identified to support, either directly or indirectly, the importance of the skills analytical thinking and resourcefulness for capacity building within organisations to encourage the development of their regions in an innovative and entrepreneurial manner, are as follows:
Bulgaria

- In terms of skills required by organisations, males rated resourcefulness, being resilient and results driven the highest, while females put the emphasis on resilience and analytical thinking.
- Voluntary sector males chose project management and resourcefulness as the two the most important skills.

Greece

- Among the skills required by respondents’ organisations, analytical thinking and pro-activeness were highly valued.
- For role performance the two most important skills were analytical thinking and pro-activeness.

Iceland

- In terms of skills required by the organisation, public sector respondents are required to be resourceful and resilient.
- Overall, there was consensus among all respondents (both females and males) that resourcefulness was among the most valued skills.

Ireland

- Both females and males from public organisations agreed that resourcefulness is the most important skill required by their organisation. Furthermore, females solely agreed that being analytical is highly important.
- Overall, there was consensus among all respondents (both females and males) that the following skills were the most valued: project management, employee resourcefulness, problem solving and being proactive.

Italy

- According to all respondents, innovation/creativity and employee resourcefulness are considered to be the most important skills within their respective organisations.
- For the male interviewees in the public sector, the most important skills employees should be trained in are: leadership, resourcefulness, goal seeking and problem-solving.
- In their current roles within their organisations, most respondents stated they needed to be passionate about their work, resilient, proactive, analytical and decision-makers.
Portugal

- Overall the most important skills for respondents’ organisations were resourcefulness and resilience.

For more detailed information on the findings of the respective surveys conducted by each FIERE partner in their region, comprehensive individual country reports can be found on the FIERE website¹.

4. FIREE project contribution – examples of Good Practices

This section presents summaries of case studies, which are most relevant for the respective current training module and the skills it focuses on, namely *analytical thinking* and *resourcefulness*.

The aim of case study identification and development within WP4 of FIREE project is to prepare and disseminate good practice case studies on the provision of innovative entrepreneurship education among regional stakeholders and on how the skills acquired have been used. Furthermore, best practice case studies are used to illustrate how regional organisations have harnessed the skills covered by the present module to enhance their region’s competitiveness and their ability to deliver effective services.

The case studies are also intended to be important aids for the network of adult education providers/mentors/counsellors to be established under the project in promoting awareness of the innovative entrepreneurship course and in assisting adult learners in regional community and voluntary organisations to apply examples of good practice in their own regions.

Overall, the seven examples of useful practices presented for the partner regions covered by the FIREE project are:

1. The case of **Austurbrú** – the case of an amalgamation of regional support institution in East Iceland.
2. The case of **ICY – Innovation centre for young people** in the town of Gotse Delchev, located in the South-Western part of Bulgaria.
3. The case of **Libera Terra** (literally “Freed Land”) – a not for profit social cooperative founded 2001 in the “Alto Belice Corleonese” region in Sicily, Italy.
4. The case of “**Improve my city**” – an initiative by the Municipality of Thermi, situated in the east side of the Prefecture of Thessaloniki (Greece).
5. The case study of the **Merger of the former North and South Tipperary County Councils** into Tipperary County Council (TCC), Ireland.
6. The case of **In.Cubo – Incubator of Innovative Business Initiatives** created by ACIBTM – Association for the Incubation Center of Technological Base of Minho, Portugal.
7. The case study of Waterford Institute of Technology’s (WIT) ArcLabs Research & Innovation Centre: Creating an Ecosystem of Open Innovation as a model for supporting a regional ecosystem of open innovation, Ireland.

The case studies identified and developed by project partners to be used for the purposes of Training Module No 2 ‘Analytical thinking and resourcefulness as ways to identify and satisfy customer/citizens’ needs are as follows:

- The case of “Improve my city” (provided by Allweb, Greece).
- The case study of ArcLabs Research & Innovation Centre: Creating an Ecosystem of Open Innovation (provided by WIT, Ireland).

4.1. “Improve my city” – case study summary

The “Improve My City” Good Practice refers to an “innovative and entrepreneurial” initiative developed and implemented by the Municipality of Thermi, situated in the east side of the Prefecture of Thessaloniki (region of Central Macedonia); at a distance of fifteen (15) km from the metropolitan centre of Thessaloniki. The Municipality of Thermi consists of fourteen (14) local communities and it occupies an area of approximately 386 km².

The Improve my City service enables the citizens of the Municipality of Thermi to report existing and/or developing local problems such as potholes, illegal trash dumping, faulty street lights, destroyed tiles on sidewalks, and illegal advertising boards. The submitted issues are displayed on the city's map. Users may add photos and comments. Moreover, they can suggest solutions for improving the environment of their neighbourhood.

The “problems” that the Municipality was facing were rather severe:

- Poor communication with citizens,
- Negative sentiments against the Municipality,
- Perpetuation of problems and
- Deterioration of local environment.

Through an organised Plan of newly designed interventions, largely based on The Municipality’s staff creativity and use of technology, it was attempted to improve the situation and remedy the “problems”. In short, the main “innovative” solution devised and implemented was the creation of
a fully interactive Data Base for citizens’ reporting of problems, monitoring of action taken by Municipal services and real time feedback to citizens.

In general, the implementation process is considered to be successful! Since 2011, when the new Service started operating, more than 1000 citizens’ reports have been received and the reported “problems” were, in most cases, successfully resolved.

The Application has been widely publicized and several local authorities across the country, as well as organisations from other European and non-European countries, have contacted the Municipality and inquired on transfer and adoption possibilities.

Problems that had to be overcome related to understandable and expected internal “resistance to change”, mainly attributed to some of the operators’ reluctance to undertake additional tasks that they were not familiar with. On the other hand, the main factor which allowed overcoming such hurdles was the “political will” demonstrated by the Municipality’s Mayor to proceed and implement the “Improve my City” project.

It has to be noted however that availability of earmarked EC funding for the project and the element of transferable transnational technical expertise and assistance, were also important factors mitigating “risks” and inhibitions. “Political will”, by itself, might not have been sufficient, if scarce resources had to be diverted from other uses. Similar comments may be made with regard to the time schedule applied for the project as a whole.

4.2. ArcLabs Research & Innovation Centre – case study summary

The ArcLabs Research & Innovation Centre case study explored the role key individuals played in the establishment of ArcLabs Research & Innovation Centre and its progression towards becoming an ecosystem of open innovation. The core concept of innovation in the ArcLabs model is the dynamics created by the co-location of academics and researchers within the Telecommunication Software Systems Group (TSSG) and the Centre for Enterprise Development and Regional Economy (CEDRE), engineers (in TSSG) and entrepreneurs (in CEDRE) and startups in the incubation centre. The purpose of the case study is to illustrate how individuals with a complimentary vision and focus on the development of the region’s economy can support economic development through enhancing the research and innovative absorptive capacity of a region.
The goal of the ArcLabs Research & Innovation Centre is to provide entrepreneurs (with high growth potential) and early-stage ventures with the support required to achieve success in national and international markets. ArcLabs aims to accelerate business growth by providing business advisory services, mentoring and access to the R&D resources of Waterford Institute of Technology. WIT has developed a successful model for co-locating research, business incubation and entrepreneurship training through the ArcLabs model. The key to this applied approach is enabling the movement of human capital between the three elements as research generates know-how and intellectual property, and helps early-stage companies to develop technologies. Business incubation provides the physical infrastructure and advisory services for spin-outs, spin-ins and entrepreneurs. Specific entrepreneur development programmes provided in ArcLabs are a pipeline of companies that are interested in accessing research and utilising business incubation services.

Creating such an environment takes considerable time, dedication and foresight and the ArcLabs model provides a road map for small and lagging regions on how they can build open systems of innovations and develop regional specialisms and support regional economic development (O’Gorman and Donnelly, 2014). ArcLabs Research & Innovation Centre, since its establishment in 1996 has secured over extensive levels of national and European Union funding for basic and applied research and the commercialisation of research. The ArcLabs model has generated over 10 spin-out and 4 spin-in companies, and developed an extensive international network across the globe.
5. Concluding remarks

Supporting entrepreneurship and innovation serves different purposes – it is a strategic instrument for encouraging economic development and boosting the competitiveness of the economy both at national and regional level, presents opportunities to different social groups for successful labour market integration, etc.

In this context the FIERE project actively supports the concept that within regional economies, public organisations, societies, clubs and not-for-profit organisations could be more entrepreneurial and innovative in the way they organise their entities and deliver services to their clients and the citizens overall. FIERE aims to support local communities and regional economies by specifically focusing on the development of entrepreneurial and innovative skills and attributes of policy makers, managers, administrators, enterprise development officers, community leaders and developers, founders of community and social enterprises, and organisers/managers of local community entities.

The FIERE partnership recognises that existing innovation, entrepreneurship and creativity training has been provided to regionally-based organisations to date in a piecemeal and ad-hoc manner. The focus of the FIERE project is on providing innovative entrepreneurship education to members of a wide range of regional organisations but with a particular focus on addressing needs of sub-regional community and voluntary organisations that are seeking to develop their locality’s economic and social potential.

Thus FIERE aims to assist regional institutions in making their regions both innovative and entrepreneurial, and working with other regional stakeholders to achieve this objective. The underlying idea of the project is to support members of regional organisations and help them acquire innovative entrepreneurial skills. Another key FIERE goal is to provide innovative entrepreneurship education to policy planners and managers of regional organisations (regional authorities, chambers of commerce, clusters/networks) to enable them to develop innovative and entrepreneurial policies and programmes.

The benefits for regional organisations arising from their involvement in a training course delivered using the materials and training content elaborated under FIERE project can be outlined in the following aspects:
Regional organisations will be provided with opportunities to enhance their abilities to plan actions and services for the socio-economic betterment of their regions, making them innovative and entrepreneurial;

- The personnel of regional, sub-regional and voluntary organisations will be granted access to innovative entrepreneurship education;
- Innovative entrepreneurship skill sets will be enhanced within regions’ institutional infrastructure.

Regional institutions will be supported in their efforts to make their regions innovative and entrepreneurial, to turn ideas into jobs;

Regional organisations will increase their capacity to develop innovative public-private partnerships to tackle the challenges in employment, economy, climate change, etc.

In order to support the process of innovative entrepreneurship skills enhancement within regional organisations, the FIERE work programme envisages the development of training handbooks for trainers/mentors/counsellors and for adult learners. The handbooks will provide additional learning materials to assist the participants to understand the basic concepts of innovative entrepreneurship. The handbooks will also contain summaries of case studies of how regional organisations have (successfully or not) implemented innovative entrepreneurial approaches to addressing the challenges faced by their regions.

The objective for the production of a trainee handbook is to assist learners to acquire the skills of innovative entrepreneurship and to demonstrate how and in what context these skills could be utilised for the advancement of their regions. The structure of the handbook will reflect the key modules of the training programme. A key aim of the handbook is to assist learners to apply innovative entrepreneurship concepts in their organisation’s activities and here best practice case studies will be used to illustrate how regional organisations have used these concepts to enhance their region’s competitiveness and ability to deliver effective services.

The development of a handbook for trainers (and regional mentors/counsellors) will aim at providing additional learning resources to assist in the delivery of innovative entrepreneurship training programmes. The handbook will also contain the case studies mentioned above that the trainer can use to illustrate how innovative entrepreneurship skills can be applied by regional organisations to enhance their region’s economic development. Importantly, the handbook will also offer guidance on how trainers can monitor and evaluate learners’ skills acquisition.
Supporting learners at a regional level in innovative entrepreneurship skills training will require inputs from a network of regionally-based mentors. The FIERE partners plan to establish a network of mentors/counsellors in each partner country who will be tasked with providing learning supports to learners in assimilating innovative entrepreneurship skills and with providing assistance in using the innovative entrepreneurship skills that they have gained to develop innovative and entrepreneurial strategies and actions for their region.
References


Useful Websites

Analytical Mind – Offering new paradigms to improve performance and quality of life at work
http://analytical-mind.com/

Critical Thinking Web

FPSPI – Future Problem Solving Program International
http://www.fpspi.org/
http://philosophy.hku.hk/think/

Mindtools – Problem Solving

Open Polytechnic – How to think critically and analytically
http://www.openpolytechnic.ac.nz/study-with-us/study-resources-for-students/assignments/how-to-think-critically-and-analytically

Oxford Economics – Analytical Tools and Models

Palgrave Study Skills – Critical and Analytical Thinking Skills

The Critical Thinking Community
http://www.criticalthinking.org//