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

August 2015
ACKNOWLEDGMENTS

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.

In preparing this Module 2: “Analytical Thinking and Resourcefulness as Ways to Identify and Satisfy Customer / Citizens’ Needs”, a variety of sources and published works have been used. We would like to also acknowledge comments and material provided by other FIERE project partners, through personal exchanges and discussions in partners’ meetings.

Assoc. Prof. Todor Todorov
Institute for Postgraduate Studies at UNWE (Bulgaria)

August 2015
CONTENTS

1. Introduction ................................................................................................................................................... 1
   1.1. Training modules objectives and relevance for the FIERE project and its target groups ...................... 1
   1.2. Training programme learning objectives ............................................................................................... 2
   1.3. Training modules elaboration within the roadmap for Training Programme development .................. 3
   1.4. Training module structure ...................................................................................................................... 5

2. The concept of Analytical thinking and Resourcefulness .............................................................................. 6
   2.1. Analytical thinking .................................................................................................................................. 6
   2.2. Practical suggestions about how to think analytically ........................................................................... 7
   2.3. Resourcefulness .................................................................................................................................... 11
   2.4. Practical suggestions about how to be resourceful ............................................................................. 12

3. Relevance of identified skills for Regional Organisations ............................................................................ 14
   3.1. Introductory remarks ........................................................................................................................... 14
   3.2. Key findings ........................................................................................................................................... 14

4. FIERE project contribution – examples of Good Practices .......................................................................... 17
   4.1. “Improve my city” – case study summary ............................................................................................ 18
   4.2. ArcLabs Research & Innovation Centre – case study summary ........................................................... 19

5. Concluding remarks ..................................................................................................................................... 21

References ....................................................................................................................................................... 24

Useful Websites ............................................................................................................................................... 26

Appendices – Training Delivery Toolkit ........................................................................................................... 27
   Appendix 1. Possible approaches to planning FIERE workshops ................................................................. 27
   Appendix 2. Training activities and exercises .............................................................................................. 32
   Appendix 3. Guidelines to the preparation of case studies by training workshop participants .................. 37
   Appendix 4. Questionnaire for ex-ante assessment of the level of skills of participants ........................... 38
   Appendix 5. Questionnaire for ex-post assessment of the level of skills acquisition .............................. 40
   Appendix 6. Questionnaire for general evaluation of training workshops by participants ...................... 42
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; Einurð 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 modules elaboration within the roadmap for Training Programme development

The elaboration of specification of innovative entrepreneurship adult education course within WP3 encompassed the following stages:

- Definition of training content – objectives and modules:

Following the findings contained in the Training Needs Survey Composite and National Reports – TNA (WP2), the partners identified the most appropriate approach to be used for the development of the training programme content. The selection takes into consideration the theoretical and technical specifications, as well as the future operability of the materials after the conclusion of the project.

Regarding training modules their specification is in line with the Implementation plan for FIERE pilot actions – workshops in partner countries developed by AllWeb Solutions S.A. and the proposed alternative scenarios therein (WP5). The training content structure allows for some degree of variation among project partners reflecting TNA Survey National Reports results and identified good practices at national level (WP4).
• **Allocation of tasks among partners** – the ‘module leaders’, responsible for the development of the respective modules, identified above, is as follows:

1. Module 1: “Creativity and innovation” – *AllWeb Solutions S.A. (AllWeb), Greece*;
2. Module 2: “Analytical thinking and resourcefulness as ways to identify and satisfy customer / citizens’ needs” – *Institute for Postgraduate Studies at UNWE (IPS), Bulgaria*;
3. Module 3: “Leadership and resilience in order to enhance innovation and more responsive service in public and voluntary sector” – *Waterford Institute of Technology (WIT), Ireland*.

• **Identification of training delivery methods** – in order to ensure the usability, adaptability and constant updating of the training content, the general framework of training delivery methods includes the following:

1. Learning approach – trainer-led sessions and online training;
2. Methodology to be based on PPT presentations and audiovisual materials;
3. Training delivery methods should again allow for some degree of flexibility among partners in the training delivery.

In order to facilitate training delivery, a Toolkit has been created, found in the Appendices to this module. Suggestions for possible approaches to running the FIERE training programmes can be found in Appendix 1. A number of useful tools to support the pilot training delivery, include the use of practical exercises, group building exercises, ice breakers, etc. all of which are provided in Appendix 2.

In order to ensure a high level of practicality in the course of training programme delivery, pilot training participants (organised in groups) will be assigned to develop their own case studies. These will present useful practices to illustrate how regional organisations have used the skills covered by the training programme to enhance their region’s competitiveness and their ability to deliver effective services. Thus participants will receive an instant opportunity to employ the innovative entrepreneurship skills they have acquired. Guidelines to the preparation of case studies can be found in Appendix 3 of this module.

• **Development of training materials** – in order to communicate the objectives, purpose and characteristics of the training content produced by the partners, training materials should be
comprehensive, complementary and consistent with the selected training delivery methods. Moreover, the training materials to be developed by each project partner (PPT presentations, audiovisual materials, etc.) will reflect the training content specifics – workshops, modules, sessions, etc.

- **Preparation of evaluation tools** – the development of evaluation tools is fundamental so as to ensure that training content and materials are fine-tuned based on end users’ feedback. Three types of evaluation questionnaires will be used:
  1. For ex-ante assessment of the level of skills of participants (Appendix 4);
  2. For ex-post assessment of the level of skills acquisition (Appendix 5);
  3. For general evaluation of the training course content and delivery (Appendix 6).

- **Translation of training course content** – to ensure the usability of the training content and materials, each module will be translated into the national language of each of the project partners (Bulgarian, Greek, Icelandic, Italian and Portuguese).

1.4. **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 proactiveness were highly valued.
- For role performance the two most important skills were analytical thinking and proactiveness.

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 website\(^1\).

---

\(^1\) [http://www.fiereproject.eu/index.php/reports/]
4. FIERE 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 FIERE 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 FIERE 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 specialism’s 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//
Appendices – Training Delivery Toolkit

Appendix 1. Possible approaches to planning FIERE workshops

The aim of Appendix 1 is to provide guidelines to trainers/mentors/counsellors for the planning and organisation of training workshops using the FIERE training programme and materials. It should be noted that the approaches below are designed for delivery of training to a group 50-60 participants.

**Approach 1 – One workshop (full day – 8 hours)**

It is proposed that one full day Workshop is organised in a selected location allowing access to the required number of participants (min. 50 representing a number of regional organisations). The Workshop’s content consists of material on the so-called “priority skills”, forming the basis for the elaboration of Modules 1, 2 and 3 (see above) supplemented by cases material from the various partner countries. Participants are also required, working in groups, to carry out an Assignment (e.g. How to develop their own case study or How to adapt a specific good practice from another organisation and/or another partner country, to the particularities of their own organisation), which is subsequently presented and discussed. The Workshop is evaluated by participants at the end of the full day. The approach is detailed in the table below.

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>2 hours</td>
</tr>
<tr>
<td>Participants</td>
<td>Min. 50 participants (representing a number of regional organisations)</td>
</tr>
<tr>
<td>Content</td>
<td>• Introduction – Course content and Procedure, Distribution of materials.</td>
</tr>
<tr>
<td></td>
<td>• Part 1 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>4 hours</td>
</tr>
<tr>
<td>Participants</td>
<td>Same 50 participants as above</td>
</tr>
<tr>
<td>Content</td>
<td>• Part 2 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
<tr>
<td></td>
<td>• Participants’ Assignment (description, guidelines /see Appendix 3 below/ and in-class group work).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>2 hours</td>
</tr>
<tr>
<td>Participants</td>
<td>Same 50 participants as above</td>
</tr>
<tr>
<td>Content</td>
<td>• Part 3 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
<tr>
<td></td>
<td>• Presentation and discussion of participants’ Assignments Reports.</td>
</tr>
</tbody>
</table>

| Evaluation | Evaluation of the quality of the workshop |
| Duration   | 15-20 minutes |
| Participants | Same 50 participants as above |
| Content    | See Appendix 4 below |
Approach 2 – One workshop, participants divided into three groups (full day – 8 hours)

It is proposed that all three modules run on the same day. The 50-60 participants will be separated into three groups which can either be based on organisation type or delivery level depending on prior learning (e.g. if one group already hold a graduate qualification then delivery of the module and expected learning outcomes can be delivered at a higher level). All participants will be together for a brief introduction session and then they will be divided into three separate groups. The FIERE training programme will focus on theory in the morning sessions and workshop and practice-based sessions in the afternoon.

In the morning session there will be three sub-sessions in total which will include Theory and Module Background for Modules 1, 2 and 3. Each of the sessions will run three times in the morning so that each of the groups will complete each of the theory and background sessions for the three modules of the FIERE programme. In the afternoon sessions the same process will be repeated for the practical workshop aspect of each of the modules. Each group will complete the three workshop-based practical sessions for Modules 1, 2 and 3. The trainers for Modules 1, 2 and 3 will conduct the theory and background part of the respective module three times in the morning (for each of the three groups). The practical aspect will also be conducted three times in the afternoon session to facilitate each of the three groups. The approach is detailed in the table below.

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>30 minutes</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>50-60 participants (representing a number of regional organisations)</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>• Introduction – Course content and Procedure, Distribution of materials.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>2-3 hours</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Same 50-60 participants as above (divided into three groups)</td>
</tr>
</tbody>
</table>
| **Content**     | • Module 1: Theory & Module Background  
                   • Module 2: Theory & Module Background  
                   • Module 3: Theory & Module Background |

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>4-5 hours</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Same 50-60 participants as above (again divided into three groups)</td>
</tr>
</tbody>
</table>
| **Content**     | • Module 1: Workshop-based session (Case studies, Exercises, Assignments)  
                   • Module 2: Workshop-based session (Case studies, Exercises, Assignments)  
                   • Module 3: Workshop-based session (Case studies, Exercises, Assignments) |

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Evaluation of the quality of the workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>15-20 minutes</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Same 50-60 participants as above (again divided into three groups)</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>See Appendix 4 below</td>
</tr>
</tbody>
</table>
**Approach 3 – Two workshops (full day – 8 hours each)**

It is proposed that two full day Workshops are organised (each for 25-30 participants) in a selected location. During these two workshops, the topics covered are the same as in Approach 1. The approach is detailed in the table below, referring to each of the two workshops.

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>2 hours</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>25-30 participants (representing a number of regional organisations)</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>• Introduction – Course content and Procedure, Distribution of materials.</td>
</tr>
<tr>
<td></td>
<td>• Part 1 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>4 hours</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Same 25-30 participants as above</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>• Part 2 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
<tr>
<td></td>
<td>• Participants’ Assignment (description, guidelines /see Appendix 3 below/ and in-class group work).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>2 hours</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Same 25-30 participants as above</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>• Part 3 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
<tr>
<td></td>
<td>• Presentation and discussion of participants’ Assignments Reports.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Evaluation of the quality of the workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>15-20 minutes</td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>Same 25-30 participants as above</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>See Appendix 4 below</td>
</tr>
</tbody>
</table>
**Approach 4 – Two Parts (half day – 4-5 hours each)**

It is proposed that two half day Workshops are organised with the same 50 trainees in each. During these 2 half days, the topics covered are the same as in Approach 1. In the case of this Approach, the participants’ Assignments are worked out during the time between Part A and Part B. The approach is detailed in the table below.

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part A.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>2 hours</td>
</tr>
<tr>
<td>Participants</td>
<td>Min. 50 participants (representing a number of regional organisations)</td>
</tr>
<tr>
<td>Content</td>
<td>• Introduction – Course content and Procedure, Distribution of materials.</td>
</tr>
<tr>
<td></td>
<td>• Part 1 of Training Material, supplemented by 1-2 relevant Case Studies</td>
</tr>
<tr>
<td></td>
<td>(Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part A.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>2 hours</td>
</tr>
<tr>
<td>Participants</td>
<td>Same 50 participants as above</td>
</tr>
<tr>
<td>Content</td>
<td>• Part 2 of Training Material, supplemented by 1-2 relevant Case Studies</td>
</tr>
<tr>
<td></td>
<td>(Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
<tr>
<td></td>
<td>• Participants’ Assignment (description, guidelines /see Appendix 3 below/). Participants are expected to make arrangements for working in groups during the time between the Part A and B of the Workshop.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Part B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>4-5 hours</td>
</tr>
<tr>
<td>Participants</td>
<td>Same 50 participants as above</td>
</tr>
<tr>
<td>Content</td>
<td>• Part 3 of Training Material, supplemented by 1-2 relevant Case Studies</td>
</tr>
<tr>
<td></td>
<td>(Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).</td>
</tr>
<tr>
<td></td>
<td>• Presentation and discussion of participants’ Assignments Reports.</td>
</tr>
</tbody>
</table>

**Evaluation**

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Evaluation of the quality of the workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>15-20 minutes</td>
</tr>
<tr>
<td>Participants</td>
<td>Same 50 participants as above</td>
</tr>
<tr>
<td>Content</td>
<td>See Appendix 4 below</td>
</tr>
</tbody>
</table>
**Approach 5 – Three decentralised Regional Workshops (2 half-days each)**

It is proposed that three Workshops with 15-20 trainees each are organised in selected locations and, furthermore, that each of them is implemented in two Parts (e.g. in two consecutive Weeks). Each Part covers part of the course material, supplemented by presentation and discussion of 2-3 relevant Case Studies. The 15-20 participants in each of the three Workshops originate from 5-6 organisations (on average 3-4 representatives from each organisation), appropriately grouped. The approach is detailed in the table below, referring to each of the three workshops.

<table>
<thead>
<tr>
<th>Training part #</th>
<th>Duration</th>
<th>Participants</th>
<th>Content</th>
</tr>
</thead>
</table>
| Part A.1        | 2 hours  | 15-20 participants (originating from 5-6 organisations, appropriately grouped) | • Introduction – Course content and Procedure, Distribution of materials.  
• Part 1 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below). |
| Part A.2        | 2 hours  | Same 15-20 participants as above | • Part 2 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).  
• Participants’ Assignment (description, guidelines /see Appendix 3 below/). Participants are expected to make arrangements for working in groups during the time between the Part A and B of the Workshop. |
| Part B          | 4-5 hours| Same 15-20 participants as above | • Part 3 of Training Material, supplemented by 1-2 relevant Case Studies (Presentation, Analysis, Discussion) and Exercises (see Appendix 2 below).  
• Presentation and discussion of participants’ Assignments Reports. |

**Evaluation**

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Duration</th>
<th>Participants</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of the quality of the workshop</td>
<td>15-20 minutes</td>
<td>Same 15-20 participants as above</td>
<td>See Appendix 4 below</td>
</tr>
</tbody>
</table>
Appendix 2. Training activities and exercises

Icebreaker / Group building / Energizer Activities

**Activity name**  | **House of the Devil**
--- | ---
**Aim (what for?)**  | Remember each other’s names
**Group (whom for?)**  | 15-35 participants
**Material needed**  | Chairs
**Duration**  | 10-15 minutes (depending on the number of participants)
**Description**  | Participants sit on chairs in a circle. One person is left standing in the middle. This person asks someone “Are you happy with your neighbours?” (Neighbours are the people sitting to the immediate right and left of the person asked.)
If they answer is “Yes”, nothing happens and someone else is asked. If the answer is “No”, then the one in the middle asks “Who would you like to change with?” Two people are named, and then the two sitting neighbours try to change with the two new people before the one in the middle can sit down.
Remember, the one asked does not change places! Along with “yes” or “no”, the one seated can answer “House of the Devil” and then the entire circle has to change places.

**Activity name**  | **Alphabetical chairs**
--- | ---
**Aim (what for?)**  | To break the ice and to get to know the names of participants at the beginning of a training course
**Group (whom for?)**  | 10-30 participants
**Material needed**  | Chairs
**Duration**  | 10-15 minutes (depending on the number of participants)
**Description**  | Put the chairs in a circle (close enough to each other) and ask the participants to stand on the chairs (with or without shoes depending on your arrangements with the cleaning staff). When on the chairs you ask the participants to move into alphabetical order according to first name WITHOUT touching the floor (it is a cooperation exercise). When done, you do a round of names to check if the order is correct and at the same time refresh all the names.
You could add a second round asking participants to rank according to birthday (shoe size, experience in the topic of the course, etc).
**Activity name** | **Touch blue**
--- | ---
Aim (what for?) | An energiser for having fun and a touch of physical contact
Group (whom for?) | Any
Material needed | None
Duration | 10-15 minutes (depending on the number of participants)
Description | The facilitator calls out names of colours. The participants should touch an object of this colour as soon as possible.
Next step could be that everybody touches a piece of clothing or accessories of a group member of this colour.

**Activity name** | **Winking Game**
--- | ---
Aim (what for?) | Getting non-verbal communication skills working, connect participants to each other
Group (whom for?) | 20-30
Material needed | Chairs
Duration | 10-15 minutes (depending on the number of participants)
Description | Half of the group sits in chairs – the other half stands behind them with their arms down at their sides (one person behind each chair except for one, which stays empty). The person standing behind the empty chair is the “seducer”. S/He has to try to “seduce” someone so that they come to his/her chair – they do this by winking at those sitting in the chairs. If they are winked at, the people sitting must try to jump out of their chair before the one behind them can grab them. If they escape, then they take up the “seducer’s” empty chair and it is someone else’s turn to wink. If they are caught, then they return to their seat and the seducer must try to wink at someone else.
**Analytical thinking / Resourcefulness Exercises**

**Exercise name**  
*Shipwrecked*

**Aim (what for?)**  
To examine the issues involved in analytical thinking and to illustrate the importance of having a framework within which problems may be examined and solved

**Group (whom for?)**  
3-5 people

**Material needed**  
None

**Duration**  
20 minutes

**Description**  
You have been shipwrecked and stranded on a desert island. In the distance you can see the remains of your vessel floating in the ocean. You have managed to salvage a few items from the ship, which include a few basic tools, some morsels of food, a barrel of drinking water and a bottle of medicinal brandy. You do not have any radio equipment or any other electronic means of communication. In an initial investigation of the immediate surroundings you discover several other member of the crew and various items from the ship, which have been washed ashore.

Your mission (and you have no choice but to accept it) is to make the best of this sorry state of affairs and to survive in the wilderness of the desert island until you are rescued (which is not guaranteed). The question is how …?

*Source: [www.chakarov.com](http://www.chakarov.com)*

**Exercise name**  
*Lost In the Wilderness*

**Aim (what for?)**  
To examine the issues involved in analytical thinking and to illustrate the importance of having a framework within which problems may be examined and solved

**Group (whom for?)**  
3-5 people

**Material needed**  
None

**Duration**  
20 minutes

**Description**  
During an expedition to the Amazon your Systems Analysis and Design tutor has been reported missing. There is grave concern for his/her well-being and plans are being mooted for an elite search and rescue team to be formed.

A strategy committee has been commissioned to design and oversee the execution of the rescue plan. You are a member of that committee. Your task is to advise on the best course of action to be taken, including any recommendation for personnel and equipment, and to produce a strategic plan that will result in a successful rescue.

*Source: [www.chakarov.com](http://www.chakarov.com)*
**Exercise name**  
**Escape from Earth**

**Aim (what for?)** To examine the issues involved in analytical thinking and to illustrate the importance of having a framework within which problems may be examined and solved.

**Group (whom for?)** 3-5 people

**Material needed** None

**Duration** 20 minutes

**Description** It is the 23rd Century and you are being pursued by a squad of Androids from the Federation Against Expressionism, Individuality and Non-Conformism for your active participation in gratuitous hedonism. You have therefore decided to leave this planet in your space-mobile and head for the Octagon Galaxy. It is rumoured that this galaxy contains planets with communities and life-forms that resemble those found on earth in the late 20th century. You have decided that you will gather together a number of like-minded individuals who are willing to undertake this journey, as well as key resources that you will need. However, the questions to be answered are: Who do you take with you and why? What resources will you need? How will you get there? How will you survive?

*Source: [www.chakarov.com](http://www.chakarov.com)*

---

**Exercise name**  
**Find the shortest path**

**Aim (what for?)** To stimulate participants’ resourcefulness.

**Group (whom for?)** 3-5 people

**Material needed** A sheet of paper and a pen

**Duration** 10 minutes

**Description** An ant has to travel from one of the floor corners to the opposite ceiling corner of a room. The ant has to travel on the walls and has no means of travelling other than walking.

The task of the participants is by using the piece of paper and the pen to show the shortest path which the ant should use to reach its destination.

**Solution** Take the sheet of paper and draw a straight line from one of the corners of the sheet to the opposite one. Then fold the sheet in two so as it forms two adjacent walls of a room. The straight line that you drew before is the correct answer.
<table>
<thead>
<tr>
<th>Exercise name</th>
<th>Did you say something?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim (what for?)</td>
<td>To stimulate participants’ resourcefulness</td>
</tr>
<tr>
<td>Group (whom for?)</td>
<td>3-5 people</td>
</tr>
<tr>
<td>Material needed</td>
<td>None</td>
</tr>
<tr>
<td>Duration</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Description</td>
<td>A man approached a kiosk offering only bottles of lemonade of 0.5 l and handed the seller 1 Euro without saying anything. The seller gave 2 bottles to the man and a change of 20 cents – each bottle of lemonade cost 40 cents. The man took the bottles and went away, again saying nothing. Question: How did the seller understand that the man wanted two bottles of lemonade?</td>
</tr>
<tr>
<td>Solution</td>
<td>The man handed the seller two coins of 50 cents each.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise name</th>
<th>Think outside the box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim (what for?)</td>
<td>To stimulate participants’ resourcefulness</td>
</tr>
<tr>
<td>Group (whom for?)</td>
<td>3-5 people</td>
</tr>
<tr>
<td>Material needed</td>
<td>None</td>
</tr>
<tr>
<td>Duration</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Description</td>
<td>The trainer names a very common object (e.g. a brick) and asks participants to identify all the applications of this object they can think of.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise name</th>
<th>The 5 stages of Problem Solving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim (what for?)</td>
<td>To apply the stages of problem solving in a practical situation</td>
</tr>
<tr>
<td>Group (whom for?)</td>
<td>3-5 people</td>
</tr>
<tr>
<td>Material needed</td>
<td>None</td>
</tr>
<tr>
<td>Duration</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Description</td>
<td>The trainer asks participants to present a problem from their experience and explain how they would solve it using the 5 stages of Problem Solving.</td>
</tr>
</tbody>
</table>
Appendix 3. Guidelines to the preparation of case studies by training workshop participants

Workshop participants (organised in small groups) will be assigned to develop their own case studies or to adapt a specific good practice from another organisation and/or another partner country, to the particularities of their own organisation. Thus participants will receive an instant opportunity to employ the innovative entrepreneurship skills they have acquired during the workshop(s). Guidelines to the preparation of case studies can be found below.

<table>
<thead>
<tr>
<th>Name of the case study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of the case study</td>
</tr>
<tr>
<td>The “situation before”:</td>
</tr>
<tr>
<td>Problems/issues:</td>
</tr>
<tr>
<td>Innovative/entrepreneurial action taken:</td>
</tr>
<tr>
<td>The “situation after”:</td>
</tr>
<tr>
<td>Who and what made the difference:</td>
</tr>
<tr>
<td>Lessons learned and transferable elements:</td>
</tr>
</tbody>
</table>

Why relevant for FIERE project?

Which sector?

- Public
- Voluntary association or organisation
- Network / Cluster
- Community or non-profit enterprise
- Other, what? __________________________

Does the case demonstrate certain skills within organisation?

- Creativity & Innovation
- Analytical thinking and Resourcefulness
- Leadership and Resilience
Appendix 4. Questionnaire for ex-ante assessment of the level of skills of participants

ASSESSMENT QUESTIONNAIRE

How good are you at solving problems?

For each statement, choose the option in the column that best describes you. Answer questions as you actually are, rather than how you think you should be. When you are finished, calculate your total score by summing up the scores you have for the individual statements and refer to the score interpretation below to find out how good your problem solving skills are.

<table>
<thead>
<tr>
<th>No</th>
<th>STATEMENT</th>
<th>Not at all</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Once I choose a solution, I develop an implementation plan with the sequence of events necessary for completion.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>After a solution has been implemented, I immediately look for ways to improve the idea and avoid future problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>To avoid asking the wrong question, I take care to define each problem carefully before trying to solve it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>I strive to look at problems from different perspectives and generate multiple solutions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>I try to address the political issues and other consequences of the change I’m proposing so that others will understand and support my solution.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>I evaluate potential solutions carefully and thoroughly against a predefined standard.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>I systematically search for issues that may become problems in the future.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>When I decide on a solution, before I make it happen I take into account the opposition that I face.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>I don’t find that small problems often become much bigger in scope, and thus very difficult to solve.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>I ask myself lots of different questions about the nature of the problem.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>After my solution is implemented, I don’t relax focusing entirely on my regular duties.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>I don’t focus on keeping current operations running smoothly hoping that problems don’t appear.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>I don’t evaluate potential solutions by only thinking of them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>When I need to find a solution to a problem, I usually have to collect the information I need to solve it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>When evaluating solutions, I take time to think about how I should choose between options.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16</td>
<td>Making a decision is not the end of my problem-solving process.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Score interpretation
## Analytical Thinking and Resourcefulness

<table>
<thead>
<tr>
<th>Score</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-36</td>
<td>You probably tend to view problems as negatives, instead of seeing them as opportunities to make exciting and necessary change. Your approach to problem solving is more intuitive than systematic, and this may have led to some poor experiences in the past. With more practice, and by following the approach offered in the FIERE resources, you’ll be able to develop this important skill and start solving problems more effectively right away.</td>
</tr>
<tr>
<td>37-58</td>
<td>Your approach to problem solving is a little “hit-and-miss.” Sometimes your solutions work really well and other times they don’t. You understand what you should do, and you recognise that having a structured problem-solving process is important. However, you don’t always follow that process. By working on your consistency and committing to the process with the help of the FIERE resources, you’ll see significant improvements.</td>
</tr>
<tr>
<td>59-80</td>
<td>You are a confident problem solver. You take time to understand the problem, understand the criteria for a good decision, and generate some good options. Because you approach problems systematically, you cover the essentials each time – and your decisions are well thought out, well planned, and well executed. With the help of the FIERE resources you can continue to perfect your problem-solving skills and use them for continuous improvement initiatives within your organisation.</td>
</tr>
</tbody>
</table>

Source: [www.mindtools.com](http://www.mindtools.com)
Appendix 5. Questionnaire for ex-post assessment of the level of skills acquisition

ASSESSMENT QUESTIONNAIRE

1. Define in brief the concepts of analytical thinking and resourcefulness as well as their role for the organisation.

2. Describe the meaning and role of analytical thinking and resourcefulness in your organisation.

3. Explain the significance of analytical thinking and resourcefulness for the quality of the services provided by the organisation.

4. Give examples of different techniques for enhancing the level of analytical thinking and resourcefulness in the organisation.

5. Explain how innovative entrepreneurship in the regions can be supported by organisational resourcefulness.
6. Give examples of ways to enhance individual resourcefulness within the workplace.

7. Which are the factors associated with innovation and entrepreneurship that determine the success at organisational and/or regional level?

8. Can you come up with innovative services that cater for the needs and expectations of customers and/or citizens?
Appendix 6. Questionnaire for general evaluation of training workshops by participants

EVALUATION QUESTIONNAIRE

Please indicate how much you agree with the following statements using the scale provided, where: 1 = strongly disagree and 5 = strongly agree.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The workshop purpose and objectives were clearly stated</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop agenda covered all necessary issues</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop materials I received were well prepared</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop participants were actively involved</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop was a good opportunity for discussion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop time was used effectively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop venue was convenient for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The workshop fulfilled my expectations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

What aspects of the workshop were particularly useful to you?
...................................................................................................................................................................
...................................................................................................................................................................
...................................................................................................................................................................
...................................................................................................................................................................

What aspects of the workshop were less useful to you?
...................................................................................................................................................................
...................................................................................................................................................................
...................................................................................................................................................................
...................................................................................................................................................................

Do you have any additional comments about the workshop?
...................................................................................................................................................................
...................................................................................................................................................................
...................................................................................................................................................................
...................................................................................................................................................................

Please leave your e-mail to be informed about the project updates: ........................................