

# Strategy for Entrepreneurship Education at Ivan Franko National University of Lviv and other universities in Lviv, Ukraine

## *Towards creating Innovation Hub*

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## Executive summary:

Education and research at state universities in Ukraine are structured around traditional subjects with a strong focus on natural science and basic engineering. But today a shift from the culture of research that “can be applied” to “should be applied” is required. On this way a challenge is to develop entrepreneurial mindset in academic environment, to open up the universities to the surrounding society, and to develop entrepreneurship eco-system in the region. Young people often have no confidence in their own abilities to create a new venture, to find bootstrap finance to support their first steps in entrepreneurship. Benefits of entrepreneurship education are measured not only by the number of newly created companies and jobs but also by the entrepreneurial capacity among students, which is the basis for national well-being and prosperity, competitiveness of the region.

Currently, "Innovation and Entrepreneurship" programme for students of Ivan Franko National University of Lviv (IFU) is held by Stockholm University, supported by the Swedish Institute and organized by Ukrainian Distance Learning (UDL) System.

There is no national framework for strategic policy on entrepreneurship education at a university level. So our strategy suggests developing entrepreneurship education together with eco-system for startups in the region. This requires:

1. Shared understanding of the need for Entrepreneurship among the key stakeholders and encouraged collaboration on entrepreneurship education across universities in Lviv and establishing an Innovation Hub in the region as an entrepreneurship eco-system.
2. Find and activate champions and establish implementation mechanisms (public or private agencies and/or foundations) to carry out strategies and policies through a set of coherent programmes.
3. Formulate and pilot entrepreneurship course with involvement of business experience, interactive teaching methods, and eLearning format – First Generation web-portal for Innovation Hub. Facilitate this course as a cross-disciplinary programme and encourage student-led initiatives and activities to flourish.
4. Create a Business Angels Network – Second Generation web-portal for Innovation Hub - where mentors/investors come together to collaborate, learn and explore synergies in order to help create new enterprises.
5. Expand via more courses and more advanced courses and help business angels to meet with talented students and graduates through Third Generation web-portal for Innovation Hub.
6. IT Startup Accelerator “Innovation Hub” is to be created at the institutional level with the mission to improve students’ entrepreneurial mind-set and their ability to think different, to give practical tools for idea generation, to encourage diversity, to develop a high level of freedom in thinking and acting and to provide support for idea development into a business concept, to invite business angels and venture capitalists for IT start-ups.

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## Introduction

Ukraine is one of the largest countries in Europe. It has an area of 603,628 sq.km with almost 45 million people, 77.8% of whom are ethnic Ukrainians, with sizable minorities of Russians (17%), Belarusians and Romanians. Ukrainian is the official language of Ukraine. Ukraine's desire to join the European institutions dates back to 1994 when the government declared that integration to the EU is the main foreign policy objective. The political dialogue between the EU and Ukraine started in 1994 when the Partnership and Cooperation Agreement (PCA) was signed. Relations between Ukraine and the European Union (EU) are currently shaped via the European Neighbourhood Policy (ENP), a foreign policy instrument of the EU designed for the countries it borders, as well as "Eastern Partnership" project one of the tasks of which is preparation of Ukraine joining the EU.



The economy of Ukraine is an emerging free market, with a gross domestic product that has experienced rapid growth since independence in 1991. Ukraine's economy is ranked [52nd in the world](#), according to 2012 GDP (nominal) with the total nominal GDP of 176 billion USD, and \$7,422 USD GDP (PPP) per capita.<sup>1</sup> In the academic field, Ukraine has a well-developed education and research structure in most of the traditional disciplines and sciences such as natural science, liberal arts, computer and engineering science etc. The universities in Ukraine are large with a long and interesting history. Ukraine has more than 800 institutions of higher education, and in 2010 the number of graduates reached 654,700 people.

Lviv (West Ukraine) is recognized by KPMG as one of the best IT-BPO destinations along with 30 other cities in the world and among 11 cities in Europe, Middle East, and Africa. In Lviv, there are about 130,000 students at about 38 higher education universities and institutions. 30,000 highly educated graduates every year and more than 30,000 students major in engineering & IT, and additionally more than 5,000 – in mathematics and applied sciences. In April 2008, students of the Applied Mathematics and Informatics Department of IFU and the Department of Electrical Engineering and Computer Science of MIT, USA were gold winners in ACM International Collegiate Programming Contest (Canada) where more than 6,700 teams representing 1,821 universities from 83 countries competed.

Founded in 1661, IFU is one of the oldest and most respected universities in Eastern Europe. It is annually in the top Ukrainian University ranking.



Two IFU departments train specialists for IT area: Applied Mathematics & Informatics and Electronics. These

[countries by GDP \(PPP\) per capita](#) referring to World Bank (2009), and [http://data.worldbank.org/indicators/UY.GD.PP.CD?locations=EU](#) and [http://data.worldbank.org/indicators/UY.GD.PP.CD?locations=EU](#)

departments have good cooperation links with companies like CISCO, which locates its Networking Academy in the University, and SoftServe Company, which is awarded as the best employer for students. SoftServe is a leading ICT company in Ukraine (<http://www.softserveinc.com/>) that provides innovative Software Development Lifecycle Services (SDLC) in the development, testing, delivering and maintenance of information systems and business solutions for specific industries such as a) mobility and SaaS/Cloud technology, b) healthcare, c) education, and d) finance. In 2010, SoftServe was named in the “Rising Star” category of the 2010 Global Outsourcing 100®. The company takes an active part in the development of the IT-infrastructure in Ukraine; it is a co-founder of IT Ukraine Association.

In March 2010, IFU adopted the University Development Programme: “Ivan Franko National University of Lviv – Advanced European University” focused on forming cross-disciplinary groups and programmes for promoting leadership, and launching new curricula that respond to the labour market needs.

## Business climate

Today Ukraine is rated as the 5<sup>th</sup> largest exporter of software in the world: in 2011, the volume of exports of IT-services from Ukraine amounted to about \$ 1 billion, while the turnover of Ukrainian IT industry is \$ 2-3 billion per year, with annual growth rate of 20%. It is expected that by 2015 the IT sector will have generated 8% of GDP. According to the Plan of Actions aimed at promoting educational support in IT area for 2013, adopted by the Decree # 1036 of the Chamber of Ministers of Ukraine on 21 September 2011, in order to study the issue of increasing the importance of innovation and entrepreneurship elements while training IT specialists, it is required to develop curricula in Innovation and Entrepreneurship, and to train students with major in Management of Innovation Activities.

Over the past few years Lviv has become one of the largest IT centres in Ukraine. In 2009 audit and consulting company KMPG selected Lviv to be among the most potential cities for IT outsourcing in the upcoming future (*Source: Lviv City Council, KMPG 'Ukraine IT Outsourcing Report', Munk, Andersen and Feilberg 'Software Development in Ukraine', Nestle.ua, Lviv IT-BPO Cluster*).

The City's main competitive advantages are:

- Lower market entry cost, compared with the capital and other European cities
- High quality of human capital: thousands of qualified professionals annually graduate from two high-class universities
- Cultural proximity: Lviv used to be a part of Poland for a long time, and has become culturally closer to Europe, than other Ukrainian cities

The City was hosting of EURO 2012 and, before that event, it had improved its existing infrastructure.

Every day the city receives over 150 mln USD from IT sector. Accordingly, Lviv has identified IT as one of the city priorities - in the City Development Strategy adopted by the City Council in 2010.

It is estimated that over 6,000 people are employed in Lviv IT sector, and the number is growing every year. Over 1,800 IT specialists graduate from Lviv universities annually. Also, for the past years, Ukrainian students have continuously won in international IT competitions. Ukraine is the fourth country in the world, with the most competent IT professionals, according to the research 'Global IT IQ' from BrainBench.

The sector is expected to grow by 20% in 2010 – 2015, which will mean a growth from 800 employees in 2010 - to over 2,000 in 2014. In total, Lviv companies employ over 25% of all IT specialists in Ukraine.

At the end of 2013, there are over 60 IT companies in Lviv, and they work in the fields of IT outsourcing, programming and web development. Most IT companies have experience of working with European and US clients, such as Boeing (BA), DaimlerChrysler (DCX), General Electric (GE), Citibank (C), and NASA.

The most famous Ukrainian-owned Lviv IT companies are SoftServe (with more than 2,500 programmers) and Eleks (with more than 800 IT specialists). Every year they open new vacancies to more than 1,500 employees.

In the past year more foreign companies became interested in setting up their IT centres in Lviv. Among them are American Lohika Systems, Inc., German N-iX, Spanish Grupo Delaware and Ulybin, and Dutch Mita-Teknik. Only those companies employ over 1,000 employees full-time and around 100 freelancers. They not only provide outsourcing for companies abroad, but also service the local market.

In September 2010, Nestlé Company announced the opening of its Business Service Centre in Lviv (NBS). This centre is the third largest in the world, and it outsources financial operations, rewards management, and HR functions from Nestle headquarters regionally. Lviv Business Centre is expected to serve 20-22 countries in Central and Eastern Europe. NBS management states that Lviv was selected due to its human capital potential, knowledge of foreign languages, and proximity to Europe. Also, Nestlé deeply cares about the cooperation with respected higher education institutions of Lviv.

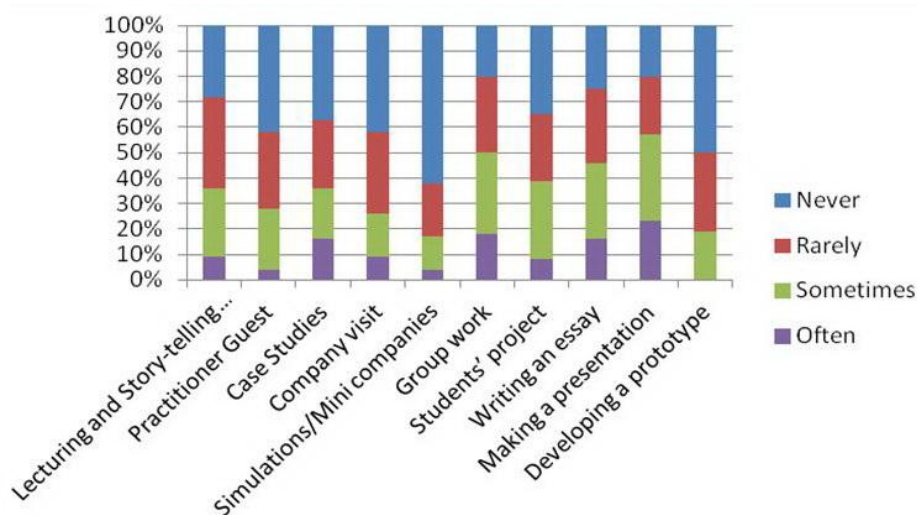
Although software programming is a hallmark of Lviv, there is practically no development of hardware-oriented programming in IT enterprises of the city, which is due to lack of appropriate specialists in these areas. And this is despite the fact that in Lviv there is the largest number of engineers per capita. On the other hand, quite naturally startups continue arise (though only up to 10 per year), which bridge the gap between this programming software vs. hardware, and even without any business incubators or accelerators (as there are none in Lviv). Local government is convinced that more and more companies will start their operations in Lviv, as the city has good living standards and is located close to EU. But today the nearest EastLabs incubator is located in Kyiv, which is 550 km away, and the trip to EastLabs costs \$80 per person. EastLabs in Kyiv is a startup accelerator that focuses on Internet projects at their initial stage. The accelerator is looking for talented teams inspired by their idea, in order to help them develop these projects in Ukraine. Since there are no such centres – ‘magnets’ for startups in Lviv, there is no constant flow of investors willing to invest in startup projects.

## Current situation of Entrepreneurship Education

Education and research at Ivan Franko National University of Lviv (IFU) are structured around traditional subjects with a strong focus on natural science and basic engineering, where Ukraine has reached a high level in an international comparison. A shift from the culture of research that “can be applied” to “should be applied” requires the development of entrepreneurial mind-set in the academic community. Research is still not so often closely linked to cooperation with entrepreneurs, private investors and companies. A challenge is, besides entrepreneurial thinking, to open up the universities to the surrounding society and develop entrepreneurship eco-system. Benefits of entrepreneurship education are measured not only by the number of newly created ventures and jobs but also by the entrepreneurial capacity among students, which is the basis for national well-being and prosperity, competitiveness of the region.

Since 2005, IFU, together with UDL, have initiated and supported an annual event – Innovation Spring, which includes: a series of workshops “From Idea to Marketplace”, Idea Competition – “Idea Marathon”, and final Innovation Spring Forum where students and young researchers present their innovation concepts to business and research communities. The lesson we’ve learned is that a lot of encouragement is needed for students to take risks and start entrepreneurial activities.

In March 2010, IFU adopted the University Development Programme: “Ivan Franko National University of Lviv – Advanced European University” focused on forming cross-disciplinary groups and programmes for promoting leadership, and launching new curricula that respond to the labour market needs. The study of main teaching methods employed at IFU (where students in IT department rated the frequency of the given methods: from *never* - to *often*), gave the following findings:



Teaching methods and approaches used in classes at IFU, Ukraine



The analysed results show that the dominant methods include students' group work, presentations, and lectures, while practitioner guest lectures, company visits, simulations/mini companies and developing a prototype are hardly ever used in classes at IFU.

While in terms of support, which the IT students would like to get from the University for their idea development in business, they mentioned first of all internship in a company (78%), education (62%), and business consulting (47%). Most interviewed students would like to have Entrepreneurship course in their university curriculum (either mandatory or optional), and a formal discussion is going on right now with the University administration in order to institutionalize this process.

The Swedish-Ukrainian-Georgian Programme "Innovation and Entrepreneurship" for students of the Departments of Applied Maths and Electronics, IFU, was held by Stockholm University (Department of Computer and System Sciences), supported by the Swedish Institute, and organized by UDL in November-December 2012 and 2013. Students from other Lviv universities also joined the course. The Course Syllabus included the following topics: Requirements for starting a new business; Bootstrap finance and Business angel involvement; Marketing - business model - business plan; Sales in practice; Venture capital and Crowdfunding.

The programme also included pitch training, practicing pitch presentations of team projects, guest speakers from start-ups, consulting and investment companies. Each class included two video-lectures (online) followed by discussions and consultations conducted by Sweden and Ukrainian experts. All students received the textbook "The New Business Road Test. What entrepreneurs and executives should do before writing a business plan" by John Mullins.



Upon successful completion of the course and pitch presentations of their business idea or startup project, students had an opportunity to be interviewed by successful entrepreneurs from Ukraine and Sweden and be invited to have internship in one of the IT cluster companies in Lviv or Stockholm. Such course provided a unique experience for students, it increased their motivation to implement the ideas and to start-up. Also, pitch and general presentation skills are essential for students.

It was noted that young people in Ukraine have no confidence in their own abilities to start a business and to find bootstrap finance, they are often afraid of taking risks and making the first step, which is the main thing for entrepreneurship. Key lesson taken by the students can be formulated as follows: "*There is nothing impossible*" and "*Doing business is simple*". So it is essential to make clear that entrepreneurship is a change, because through entrepreneurship innovations come into the society, and entrepreneurship assists in creating jobs.

## Strategy for Entrepreneurship Education at Ivan Franko National University of Lviv and other universities in Lviv “Towards creating Innovation Hub in IT area”

Below follows a proposed step-by-step strategy to establish entrepreneurship education at IFU and creation of the Innovation Hub as an eco-system of stakeholders (e.g. business-angels, investors, experts, coaches, successful entrepreneurs). The strategy is a result of collaboration between Sweden, Georgia and Ukraine under the Swedish Institute ([www.si.se](http://www.si.se)) programme Thematic partnerships, knowledge intensive services ([link](#)).

In order to define the strategy, we have conducted the following steps:

- i) Identification of local and international best practice
- ii) Conducted entrepreneurship course in close collaboration with industrial partners
- iii) Evaluation of course
- iv) Offered international entrepreneurship internship at innovative companies to students
- v) Workshop with innovation expert sharing experiences

In summary, a wide range of activities have been conducted in order to identify good examples, conduct actual entrepreneurship education, adapt experiences and knowledge to local business climate.

### Step 1 Shared understanding of the need for Entrepreneurship

In order to establish entrepreneurship education, several key stakeholders should support the initiative. These stakeholders are to be continuously informed and sometimes educated in order to reach a positive decision. This step consists of drawing up a list of potential stakeholders, formulating questions for the interview to define the specific needs of the IT industry and IT-related education, and conducting a number of meetings with defined persons.

This approach will allow the stakeholders to act as co-authors of the EE Strategy and take on partial responsibility for achievement of the set goals (outcomes).

Conduct a ‘round table’ with representatives of the stakeholders:

- Encourage collaboration on entrepreneurship and entrepreneurship education across universities both in Lviv and in the region in general;
- Encourage local and regional governments to work with other stakeholders in order to establish an Innovation Hub.

Post the draft Strategy on the web-sites of IFU and UDL for receiving feedback and comments from researchers and students.

UDL is to review and analyze the stakeholders' comments and suggestions concerning the draft programme, and based on these recommendations, shall offer an updated version of the Strategy, with amendments and changes.

We aim to have completed this step by March, 2014.

### Step 2 Find and activate champions

Learn from pilot initiatives, including our course on Innovation and Entrepreneurship, find active champions, and then work to scale the effective programmes.

Organize a workshop on SWOT and GAP analyses to evaluate the prospects of implementing the Entrepreneurship Education and Innovation Hub, with involvement of representatives of IT industry, various levels of the University management, faculty staff, students, graduates. During such Workshop, leaders are to be defined, and a working group (WG) to be created by representatives of the main stakeholders.

The WG is to develop a schedule of the Strategy presentations, it shall organize their conduct and thus, the final version of the Strategy will be received.

Establish implementation plan and mechanisms (public or private agencies and/or foundations) to carry out strategies and policies through a set of coherent programmes.

We aim to have completed this step by May 2014.

### Step 3 Formulate basic entrepreneurship course

The Course curriculum is to be developed: a syllabus, schedule of classes, evaluation methods and tools, methodological guide for students, web-platform for eLearning will be created and e-course designed. The curriculum is to be presented to local business community for review and ensuring the development of industry relevant course materials.

Facilitate and encourage private sector links with academia by involving the University faculty staff and students in business operations within IT companies.

Facilitate a consistent and adequate level of funding for Entrepreneurship Education (EE) programmes.

Provide incentives, not only for the course development, but also for the sharing of materials throughout the University and EE programmes using eLearning techniques.

Encourage faculty to use interactive teaching methods (case studies, games, projects, laboratories, etc.) and create a network for sharing and exchanging the practices.

Encourage partnerships between existing programmes and initiatives as appropriate to better leverage resources and expand impact.

Facilitate cross-disciplinary programmes in the area of EE and encourage student-led initiatives and activities to flourish.

Innovation Hub/web-portal (Generation I) for eLearning is to be created.

We aim to have completed this step by July 2015.

#### Step 4 Activate and engage local business community

The Course is to be implemented in the university-industry partnership using F2F class, video-lectures, eLearning formats, and representatives of local business community are to be involved as mentors, guest speakers, offering practical cases and hosting students' internship.

The Business Angels Network is created where angel investors can come together to collaborate, learn and explore synergies in order to help create new enterprises.

Innovation hub/ web-portal (Generation II) for Business Angels Network, on the one hand, and idea pitches and startups, on the other hand, is to be developed and promoted.

We aim to complete this step in 2015/16 academic year.

#### Step 5 Expand via more courses and more advanced courses

More specialized courses are to be offered in such topics as Cloud industry, Mobile application, Database, Security, Energy saving programming, Hardware oriented programming etc.

UDL and Lviv IT-BPO Cluster aims:

- assisting teachers at Lviv Universities in efforts to modernize the curricula, in particular, to bring more practical cases and tools into the labs and students' tasks;
- introducing modern software programming methodologies and development tools, methods and techniques used in leading IT companies worldwide.

Innovation Hub/web-portal (Generation III) for meeting with talented students and graduates.

We aim to have completed this step by September 2017.

#### Step 6 Engage in entrepreneurship research activities ...

Organizing a Workshop 'From Idea to Marketplace' and Innovation Spring Forum for young researchers involved in:

- implementation of automated systems for data collection and management on the base of various types of interfaces;
- successful application of various methods of processing and analysing large mass of information;

- effective methods for identification and security;
- programming software vs. hardware for neuro-networks.

Innovation Hub/web-portal (Generation IV) for knowledge intensive services and technology-based startups is to be prepared.

We aim to have completed this step during November 2016 - May 2017.

### Step 7 Build innovation institutions such as incubators/ accelerators

An IT Startup Accelerator “Innovation Hub/ROOM” is to be created at the institutional level with the mission to improve students’ entrepreneurial mind-set and their ability to think different, to give practical tools for idea generation, to encourage diversity, to develop a high level of freedom in thinking and acting and to provide support for idea development into a business concept, to invite business angels and venture capitalists for IT start-ups. Innovation Hub should be integrated with the relevant infrastructure of universities, with allocated resources, strong leadership and advocacy from top management. The Innovation Hub team invites, engages and builds the Innovation Hub as an eco-system of stakeholders (e.g. business-angels, investors, experts, coaches, successful entrepreneurs). The Accelerator partners conduct mentoring sessions (master classes) on business models with invited mentors/business angels, and then pitches of projects are to be made to the investment committee. It also offers legal and media support.

We aim to have completed this step by September 2017.