

TECH & ENTREPRENEURIAL  
ECOSYSTEM MAPPING



# REPORT

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ԵՎՐՈՊԱԿԱՆ ՄԻՌԱՋՈՅՆԻ ՀԱՆՁՆԱՄՆԵՐՆԵՐԻ  
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EU4Business



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# ABSTRACT

Given report provides historical background about entrepreneurship in Armenian tech ecosystem, introduces general business environment in the country, maps existing players and initiatives in tech entrepreneurship, as well as attempts to provide a series of recommendations for the tech entrepreneurship ecosystem improvement. The report introduces findings from publicly available data and other reports, as well as results of a survey conducted among 28 ecosystem influencers, including one-on-one interviews with 10 respondents.

## Specifically, the report focuses on:

- 1) access to finance: the funding schemes and vehicles available in Armenian tech ecosystem, as well as the established venture investment practice in Armenia;
- 2) access to markets: overall level of understanding of global markets and the accessibility of markets for tech entrepreneurs willing to expand their businesses;
- 3) access to knowledge: review of tech educational programs and institutions, startup incubation and acceleration programs available in the ecosystem, including events promoting tech entrepreneurship in Armenia;
- 4) access to labor: overall review of tech workforce and work environment in Armenia, including new working culture spreading due to the development of startup ecosystem.

# GLOSSARY

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<b>CIS</b>	Commonwealth of Independent States
<b>EC</b>	European Commission
<b>EIC</b>	European Innovation Council
<b>EIF</b>	Enterprise Incubator Foundation
<b>IIAP NAS RA</b>	Institute for Informatics and Automation Problems of the National Academy of Sciences of the Republic of Armenia
<b>FDI</b>	Foreign Direct Investment
<b>GDP</b>	Gross Domestic Product
<b>GSP</b>	Generalised System of Preferences
<b>HTI Ministry</b>	Ministry of High-Tech Industry
<b>ICT</b>	Information and Communication Technologies
<b>PTA</b>	Preferential Trade Agreement
<b>QA</b>	Quality Assurance
<b>RA</b>	Republic of Armenia
<b>R&amp;D</b>	Research and Development
<b>SDG</b>	Sustainable Development Goals
<b>Support Organization</b>	Organizations, programs and events supporting the development of the ecosystem
<b>UI/UX</b>	User Interface and User Experience
<b>USD</b>	United States Dollar
<b>WIPO</b>	World Intellectual Property Organization
<b>WTO</b>	World Trade Organization

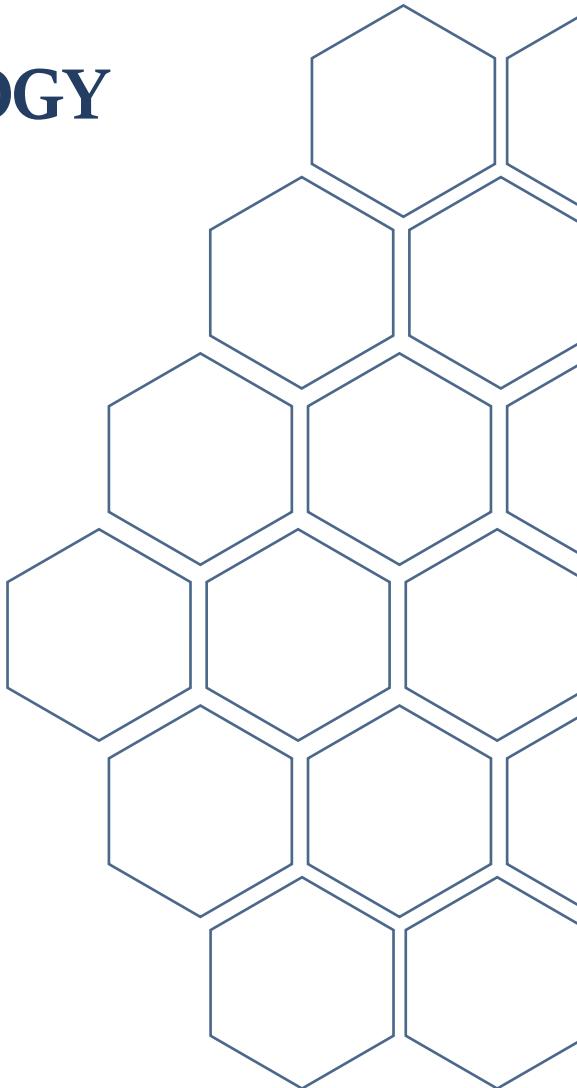
# 5 RESEARCH METHODOLOGY

The initial stage of the research was focused on the collection and analysis of secondary data and was done through desk research by examining benchmark reports, country reports by various international organizations, and national statistical reports.

As the next part of the research methodology, a qualitative perception analysis of the tech and entrepreneurial ecosystem was conducted. As the first step, 28 respondents were chosen (including startup founders, investors, executives of educational institutions and support organizations) and a questionnaire was shared with them to figure out their perception of the ecosystem (how it operates, what are the top existing challenges, their views on talent development and acquisition, overall culture, level of professionalism, attitudes of the society towards the entrepreneurship related activities, etc).

Second, after the initial analysis of the responses, interviews have been conducted with 10 respondents, whose answers pointed out interesting perspectives or provided unexpected insights. As the final step, the findings and insights from the survey and interviews have been thoroughly analyzed and summarized in the report in order to present the qualitative spectrum of existing “thought” around tech and entrepreneurial ecosystem in Armenia.

The current document is the initial version of the entrepreneurial ecosystem mapping report. The final version will be published after receiving feedback from the community and adjusting based on that. The expected date for publishing the final version is January 2020.





## BRIEF INFORMATION ABOUT ARMENIA

# BRIEF INFORMATION ABOUT ARMENIA

The Republic of Armenia is a country in the South Caucasus region of Eurasia. Located in Western Asia on the Armenian Highlands, it is bordered by Turkey to the west, Georgia to the north, the de facto independent Republic of Artsakh, as well as Azerbaijan to the east, and Iran and Azerbaijan enclave of Nakhichevan to the south. The capital, Yerevan, with a population of 1,081.3<sup>1</sup> people, is the largest city, economic, educational and technological center of Armenia.

Armenian is the official language, the second and third most used languages are Russian and English. For business purposes in technology sector the English language is used more frequently. As of 2012 poll, 40% of Armenians know basic English and only 4% have advanced proficiency of English, 16% intermediate and 20% beginner level<sup>2</sup>.

Armenia is in UTC+4 time zone, which makes it 11 or 12 hours ahead of PST (California time), depending on the time of the year.

## Visa-free travel

Armenia is visa-free for the citizens of 72 countries, including EU member states, US and China. A full list of these countries is available on the official website of the Ministry of Foreign Affairs. As a rule, foreigners may also apply for a visa at the airport upon arrival (requires preliminary arrangements). In May 2019, the Republic of Armenia signed a mutual visa free agreement with China that waives visa requirement for Armenian citizens visiting China<sup>3</sup>.

## Population

The population of Armenia is around 2.96 mln as of April 2019 and is increasing year by year. 63.9% of the population is urban (1.89 mln people in 2019). The population density in Armenia is 104 per sq. km<sup>4</sup>. The total area is 29,743 sq. km<sup>5</sup>. The majority are Armenians (98.1%).

Minorities are Russians, Yezidis, Kurds,

Assyrians, Greeks, Ukrainians, Jews and others<sup>6</sup>.

Armenia has a high level of literacy (99.7%)<sup>7</sup>, and a relatively high percentage of the population with higher education (310,767 people got higher education from 2002 to 2018, about 10% of the total population)<sup>8</sup>.

## Transport and Communications

Armenia has all types of public transport except trams. Yerevan has a metro with 9 stations. There are two international airports: Zvartnots in Yerevan and Shirak in Gyumri. The third airport will open soon in Syunik with Yerevan-Kapan flight but a prospective of operating also in other destinations in the future.

There are three mobile phone operators currently in Armenia: VivaCell MTS, Ucom and Veon Armenia (Beeline). Every mobile operator offers a service of affordable voice, text and data roaming and the vast majority of hotels, cafes, restaurants

<sup>1</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/nasel\\_01.07.2019.pdf](https://www.armstat.am/file/article/nasel_01.07.2019.pdf)

<sup>2</sup> Caucasus Research Resource Centers. Caucasus Barometer 2012.

<sup>3</sup> Ministry of Foreign Affairs of RA. Retrieved from <https://www.mfa.am/en/visa/>

<sup>4</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/nasel\\_01.07.2019.pdf](https://www.armstat.am/file/article/nasel_01.07.2019.pdf)

<sup>5</sup> The World Factbook: Armenia. (2019). Retrieved from [https://www.cia.gov/library/publications/resources/the-world-factbook/geos/print\\_am.html](https://www.cia.gov/library/publications/resources/the-world-factbook/geos/print_am.html).

<sup>6</sup> The Government of the Republic of Armenia. Retrieved from <https://www.gov.am/en/demographics/>.

<sup>7</sup> The World Factbook: Armenia. (2019). Retrieved from [https://www.cia.gov/library/publications/resources/the-world-factbook/geos/print\\_am.html](https://www.cia.gov/library/publications/resources/the-world-factbook/geos/print_am.html).

<sup>8</sup> Statistical Committee of the Republic of Armenia. Retrieved from <https://armstatbank.am/>

and public places of leisure activities offer visitors a free Wi-Fi connection.

As of 2019, 72.4%<sup>9</sup> of the population uses internet. Mobile 3G is covering around 90% of the country. 4G and 4G+ services are available in large cities<sup>10</sup>. There are four operators in the internet market: VivaCell MTS, Ucom, Veon Armenia (Beeline) and Rostelecom, Ucom having the largest share. The internet utility costs range from 2 to 15 USD a month. The average monthly price for Mbps is around 0.27 USD. For comparison, it is 1.05 USD in the US, 0.85 USD in Belgium, 0.62 USD in the UK and 0.55 USD in Germany<sup>11</sup>.

## **Doing Business, Competitiveness and Innovation**

Armenia has demonstrated an improvement in the World Bank Group Doing Business rankings in recent years, now occupying 41st position in 2019 among 190 countries compared to the 47th in 2018. Armenia is performing better compared to, for example, Belgium (45th), China (46th), and Italy (51st)<sup>12</sup>.

According to Global Innovation Index 2019 by World Intellectual Property

Organization (WIPO), Armenia's rank is 64 out of 129 countries improving its ranking position by 4 in 2018. In the list of upper-middle income countries, Armenia is ranked 15 out of 34 economies, being ahead of many other post-Soviet countries, e.g. Belarus, Kazakhstan<sup>13</sup>.

In the Global Competitiveness Report, published by the World Economic Forum, Armenia was ranked 70 out of 140 countries in 2018, improving its position by 9 compared to the previous year<sup>14</sup>.

## **Economy**

In 2018, the country reached an all-time high Gross Domestic Product (GDP) of 12.43 billion USD. GDP per capita is 4,212.1 USD and it increased with an annual growth rate of 7.5% in 2017 and 5.2% in 2018<sup>15</sup>.

According to the official statistics, in January 2019 the number of registered employees in Armenia reached 560,568. The average monthly wage is 378 USD as of June 2019<sup>16</sup>.

## **Foreign investments**

Foreign investors can benefit from the investment incentives including 100% ownership, free economic zones and others. The net inflows of Foreign Direct Investments (FDI) in Armenia for 2019 January-July amounted to 91.2 mln USD. In 2018, total inward investment was 254.1 mln USD and in 2017, 250.93 mln USD<sup>17</sup>. Structure of FDIs in 2019: Russia 48.72%, France 10.81%, Germany 5.18%, Argentina 3.79%, USA 2.93%, others 28.57%<sup>18</sup>.

## **Foreign trade**

Foreign economic policy of Armenia is based on the open market principles and directed to widening its integration into the world economy. Armenia has been cooperating and expanding its trade relations through Preferential Trade Agreements (PTAs) with Europe, US and by being a part of CIS free trade agreement and being a member of the WTO since 2003.

Armenia qualifies to export to the EU, US, Canada, Japan, Norway, Switzerland under Generalized System of Preferences (GSP). This means Armenia has access to these markets at 0% or reduced tariff rates. Since

<sup>9</sup> Internet World Stats: Usage and Population Statistics. (2019). Retrieved from <https://www.internetworldstats.com/asia/am.htm>.

<sup>10</sup> Freedom on the Net: Armenia. (2019). Retrieved from <https://freedomhouse.org/report/freedom-net/2018/armenia>.

<sup>11</sup> Cost of Living. (2019). Retrieved from [https://www.numbeo.com/cost-of-living/prices\\_by\\_country.jsp?itemId=33](https://www.numbeo.com/cost-of-living/prices_by_country.jsp?itemId=33).

<sup>12</sup> Doing Business 2019. (2019). WB Group

<sup>13</sup> Global Innovation Index 2019. (2019). WIPO

<sup>14</sup> The Global Competitiveness Report. (2018). Klaus Schwab, World Economic Forum

<sup>15</sup> World Development Indicators. WB Group

<sup>16</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/sv\\_07\\_19a\\_142.pdf](https://www.armstat.am/file/article/sv_07_19a_142.pdf)

<sup>17</sup> Armenia Foreign Direct Investment - Net Inflows. Retrieved from <https://tradingeconomics.com/armenia/foreign-direct-investment>.

<sup>18</sup> Statistical Committee of the Republic of Armenia.

2009, Armenia benefits from GSP+ and about 7,200 out of 9,655 of the EU products' classification can be exported without customs duties<sup>19</sup>.

The trades with the EU account for around 24.8% of Armenia's total trade and 28.4% share in total Armenian exports<sup>20</sup>. As for the US, by utilizing the GSP program, Armenian companies can take advantage of preferential duty-free access to the U.S market exporting around 3500 products (including jewelry, jams, spirits, instruments, parts and accessories)<sup>21</sup>.

## Tech sector

In the last few years Armenia has renowned itself as a new regional technological hub. If in 2017 the turnover from the ICT sector was 765.1 mln USD, in 2018 it reached 922.3 mln USD. The turnover in the ICT industry equaled to 7.4% of total GDP in 2018. Due to the development of tech educational infrastructure in regions, the number of companies operating outside of Yerevan has increased during the last few years. In 2018, there were 800 registered tech companies in Armenia which demonstrates a growth rate of 23.1% compared to 2017. From the period of 2008 to 2018, more than 50 tech companies were established

annually on average, reaching 150 new tech companies registered in 2018<sup>22</sup>. As of 2018, the information technology sector as a whole, which also includes the internet service providers, employs more than 19,552 people. Number of tech companies with foreign ownership is 243 (30.4% of the industry total)<sup>23</sup>.

### ***The main segments of activity for the local tech companies are:***

- **Software applications:** software development, programming services, consulting and integration, computer graphics, animation and multimedia programs, microcircuits design, engineering, research and experimental services.
- **Internet service:** Internet applications and e-commerce, databases and management systems, accounting, finance, banking and networking systems.

Among these companies, there are also gaming companies such as Frismos, Rockbite Games, Plexonic, as well as Industrial IoT (IIoT) companies, which are mainly concentrated around Engineering City. This report doesn't focus on all tech sector companies but rather on but rather than on product startups with rapid scaling potential and overall tech entrepreneurship in Armenia.

<sup>19</sup> GSP and GSP+. Retrieved from <http://www.investinarmenia.am/en/gsp-and-gsp>.

<sup>20</sup> European Commission Directorate-General for Trade. Retrieved from <https://ec.europa.eu/trade/policy/countries-and-regions/countries/armenia/>.

<sup>21</sup> GSP and GSP+. Retrieved from <http://www.investinarmenia.am/en/gsp-and-gsp>.

<sup>22</sup> Armenian ICT sector. (2018). Enterprise Incubator Foundation

<sup>23</sup> Armenian ICT sector. (2018). Enterprise Incubator Foundation

# TECH ENTREPRENEURSHIP IN ARMENIA

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## OVERVIEW AND HISTORY OF THE ENTREPRENEURIAL ECOSYSTEM

Armenia is steadily turning into a new regional hub of advanced technology and innovation. Being one of the leading technology blocks of the former Soviet Union and having a strong human capital, it served a solid ground for Armenia to embrace the power of technology in the 2000s and give it an exponential rise.

Back in the Soviet Union, Armenia was a leading Research & Development hub for industrial computing and electronics. Additionally, 30% of innovation in the USSR military electronics was attributed to Armenia. Into the bargain, the education system has been significantly geared towards nurturing the uplift of technology development: Armenia was the first country for the number of PhDs per capita in the late 80's and currently, 43% of the tech workforce has graduate degrees acquired in Armenia or abroad<sup>24</sup>. With all those rewards of its past, along with the workforce potential, Armenia was prepared to step into a software development R&D center upon regaining

independence in the beginning of the 1990s.

Armenia registered 20-27% annual growth in technology more than 10 years in a row. The rapid uplift of the tech sector was largely supported by the Armenian diaspora. Very soon, a successful flow of investments in R&D was initiated both by Armenians and foreigners.

In 2006, Armenian tech sector amounted to 71 mln USD (less than 1% of the GDP). In 2018, the total industry revenue (software development, as well as the internet service provider sectors) increased by 20.5% compared to 2017 and amounted to 922.3 mln USD (7.4% of the GDP)<sup>25</sup>. With the rising attractiveness of the Armenian tech entrepreneurship, global tech companies were establishing their presence in Armenia through notable acquisitions of first-generation Armenian startups.

Founded in 2002, Ponte Solutions develops and markets model-based software products used during the

the manufacture and design of semiconductors. The company was bought out by **Mentor Graphics Corporation (Nasdaq: MENT)** in May 2008 for terms that were not disclosed. This indicated the first acquisition and was followed by many others.

Virage Logic, founded 1996, was an American provider of both functional and physical semiconductor intellectual property (IP) for the design of complex integrated circuits.

**Synopsys, Inc. (Nasdaq: SNPS)** made the move to buy Virage Logic in June 2010 paying 12 USD cash per Virage Logic share, resulting in a transaction value of approximately 315 mln USD, or approximately 289 mln USD net of cash acquired.

Monitis offers website monitoring, site load testing, transaction monitoring, application and database monitoring, cloud resource monitoring, and server and internal network monitoring within one easy-to-use dashboard. The company was founded in 2006 and was acquired by **GFI Software** on the 21st October 2011 for an undisclosed amount.

Virtualization giant VMware (NYSE: VMW)

<sup>24</sup> The Global Competitiveness Report. (2018). Klaus Schwab, World Economic Forum

<sup>25</sup> World Development Indicators. WB Group

announced on the 31st August 2010 that it has acquired an IT analytics startup called Integrien for 100 mln USD. VMware is a virtualization and cloud infrastructure international leader. It has more than 500,000 subscribers and 55,000 partners. Prior to the acquisition, Integrien and VMware had already been working together. Integrien's patented real-time datacenter performance analytics and management software helps customers manage application and infrastructure performance, turning data from existing management tools into actionable intelligence.

Since 2008, the LiveLOOK co-browse solution has helped Oracle customers efficiently manage web and mobile online engagements to improve customer satisfaction. In June 2014, **Oracle (NYSE: ORCL)** decided to acquire their partner company for an undisclosed amount.

In September 2014 **Cisco (Nasdaq: CSCO)** bought embedded memory provider Memoir Systems in order to use the technology to boost the performance of its switches, routers and other networking gear at the ASIC level. No financial details were released.

Established in 2005 Sourcio is a software consulting firm providing high-value, high-quality services to global companies which has participated in creating several successful startups in Armenia. On the 28th February 2016, U.S.-based **HelpSystems**, a global leader in IT software, acquired the

Yerevan-based firm which incorporated a team they've worked with for more than six years to build market-leading solutions.

February 15, 2017, **Moody's Corp. (NYSE: MCO)** announced that it has acquired the structured finance data and analytics business of SCDM, a provider of analytical tools for participants in securitization markets. SCDM, an AI-based analytics company specialized in the fixed income market, to a joint venture between Moody's / Deloitte. SCDM had broadened its services from data management to bespoke IT solutions into reporting, business intelligence, and cash flow simulations for investors in structured credit. The terms of the transaction were not disclosed.

In addition to acquisitions, there was an increasing flow of VC investments in the industry. Granatus Ventures was founded in 2014 and is the first VC firm based in Armenia. Since 2014, total of 123.2 mln USD of disclosed venture capital and grant financing has been injected into the ecosystem. Most notable venture capital firms involved in these deals were Sequoia, Sutter Hill Ventures, DCM, Learn Capital, e.ventures, True Ventures, Foundation Capital and others.

The government has also contributed significantly to tech revival. Establishing the Ministry of High-Tech Industry in 2019 is a forward-thinking move and a

prerequisite for structural changes in the economy overall. In 2014 a special tax regime was established for tech startups (0% profit tax, 10% income tax).

The ecosystem has seen a significant rise particularly after 2017. In addition to two VC firms, Granatus Ventures and SmartGateVC, three angel networks were launched: Science and Technology Angel Network (STAN), Business Angel Network of Armenia (BANA), and Angel Investor Club of Armenia (AICA). Notable startup programs and initiatives were initiated for the boost of pre-seed stage startups including Armenia Startup Academy, Entrepreneurship and Product Innovation Center (EPIC) at the American University of Armenia, Beeline Startup Incubator, Founder Institute's Yerevan chapter, Startup Studio by FAST, Sevan Startup Summit and others.

Machine Learning, Quantum Computing, Blockchain and Hardware Design are also evolving rapidly within informal communities of industry enthusiasts, research labs, as well as local and international conferences.

Among these players are ML EVN, YerevaNN, Gate42, yLedger, Noor, ArmSec Foundation, etc.

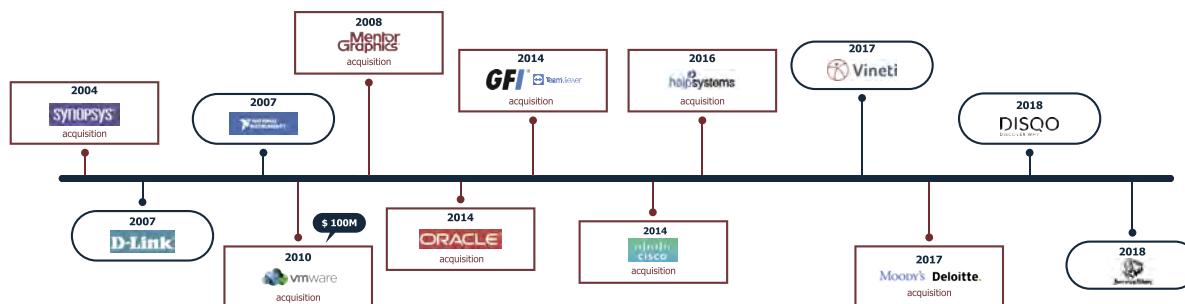
The development of the ecosystem has been nurtured by the rise of talent in the industry. It has seen two generations of entrepreneurs and the third generation is currently paving its way. Generation 0 bore the hardships of building successful companies in an ecosystem with many deficiencies and lack of solid infrastructure. Among them were

PicsArt, Monitis, Integrien, Memoir Systems, LiveLook, Joomag. In late 2013, the rising flow of investments gave birth to a new current of entrepreneurs referred as

**Generation 1.** Noteworthy companies of this stage are Teamable, SoloLearn, Menu Group, gg, Renderforest, WiCastr, and others.

Currently, Generation 2 is in its boom with mature tech entrepreneurs and rising talents in AI/ML, Security, Blockchain, Quantum Computing, and other domains.

### DEVELOPMENT OFFICES OPENED BY INTERNATIONAL COMPANIES IN ARMENIA



R&D offices set up by acquisition of local startups

R&D or branch offices of international companies

OVERVIEW OF NOTABLE LOCAL STARTUPS (EXISTING AND ORIGINATED IN ARMENIA)<sup>26</sup>

	Prototype	Received Funding	Raised Investment	US/EU Acceleration or Significant Revenue	Seed or post-seed
HR	LUCKYCARROT		Breedge HIMARK		CODESIGNAL teamable
Media	deatr ARD VIRTU	Pixomatic WIMEDIA DEAR GRÜV MOVIE TRIP	360 STORIES TruePublic	Shadowmatic oooucraft Forge Fiction	Renderforest Zoomerang PicsArt
Computer Vision	puzl MLabel Fast Simple Accurate			SUPER ANNOTATE	intelinair
IoT	FOREST BERG AFS petto	FOREST GUARD COWork ROBIN emory	HEL TUN		VOLTERMAN
Education	ChessMeed	Chessify		LiveBoard	SOLO LEARN
Security, Networks, Distribution	Rend Chain Trustscale	Security dmarc owl	Skycryptor NDX Cryptonex	GROVF XCLOUD viciniti	
AI	MemTalk Cerebrus imgel alimap		AMAROS		krisp SNARK ZERO
Other	BETICLE 3 Questour	FinAssist ERP Smart System	HUB APPEARE Currenci APAGA RetentionForce	gg Hello earlyone OnYourWay	menu.am zangi

We see early patterns of emerging startups in Media, IoT, HR and Computer Vision. During the next 2-3 years we expect to see formation of clusters based on mentioned patterns.

<sup>26</sup> Note: The map aims to present an overview to startup ecosystem and doesn't cover the whole tech sector.

# FUNCTIONING OF THE ENTREPRENEURIAL ECOSYSTEM

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## ECONOMIC AND POLITICAL SITUATION

According to the Global Competitiveness Report 2018 given by World Economic Forum, Armenia is characterized by a) stable macroeconomic environment, b) above-average ICT adoption score (ranked 56th among 135 countries), and c) supportive institutions (ranked 67th among 135 countries)<sup>27</sup>.

As a result of the political changes that occurred in April-May 2018, long-term systemic improvements have been made with regard to infrastructure improvements, state support to businesses, etc. The change of government has produced greater economic dynamism, reduction in corruption and monopoly power.

The 7.2% growth of GDP from 2018 to first quarter of 2019 is partially explained by the improvements in the external environment. Armenia continues to pioneer in the high-tech industry in the region due to the State support to the industry, skilled labor, and continuing growth in the number of tech companies. Having GDP per capita of approximately

4,212.1 USD, Armenia is an upper middle-income country as classified by the World Bank Group<sup>28</sup>.

## BUSINESS ENVIRONMENT AND INVESTMENT CLIMATE

Currently, Armenia is ranked 47th among 180 countries in the 2018 Index of Economic Freedom released by the Heritage Foundation<sup>29</sup>. 30.4% of the total tech industry is owned by foreign companies (243 companies), 54% of which are companies with US and Canada-owned shares, 23% European and 17% Russia/CIS-owned shares. The Armenian tech sector employs around 19,552 people as of 2018. 52.5% of the total tech workforce is employed by local and 47.5% by foreign companies<sup>30</sup>.

## TAX POLICIES AND LEGAL REGULATIONS

The RA Law on Free Economic Zones (FEZ)<sup>31</sup> in Armenia provides tax relief for entities operating in various key industries.

It covers Income tax, Property tax, Profit tax, Custom duties, VAT for products in the territory of the FEZ, and services delivered to the organizer and operator.

There are currently 4 FEZs in operation (2 in Yerevan, 1 in Meghri, 1 in Hrazdan). The fourth FEZ is planned to be in Hrazdan town specialized in high-tech solutions (blockchain, cryptocurrency mining centers, cloud-based technologies, big data analytics, etc.).

The main tax categories<sup>32</sup> in Armenia are rather low:

- Payroll income tax: 23 percent;
  - Social security payment: 2.5 percent (max 12,500 AMD monthly);
  - Stamp payment: 1,000 AMD for each employee;
  - Value-added tax (VAT): 20 percent (16.67 percent in some cases);
  - Turnover tax: 1.5-5 percent;
- Corporate (profit) tax: 20 percent.

The RA Law on State Support provides significant tax benefits to IT companies:

<sup>27</sup> The Global Competitiveness Report. (2018). Klaus Schwab, World Economic Forum

<sup>28</sup> World Development Indicators. WB Group

<sup>29</sup> Index of Economic Freedom. (2018). Heritage Foundation

exemption from profit tax (0%) and reduction of income tax from 23% to 10%. These benefits are offered to new companies with less than 30 employees. These incentives are applicable not only to local companies but also branches of foreign IT companies and will stay in effect until 2022<sup>33</sup>. In April 2019, several amendments have been done to this law which opens new favorable opportunities.

## STATE SUPPORT AND REGULATION OF THE TECH INDUSTRY AND BUSINESSES

Since 2017, the government has initiated an online platform ([www.e-gov.am](http://www.e-gov.am)) providing electronic governance services to all kinds of business enterprises, including tech. It combines tools and resources, an electronic tax submission system, other systems including State Payments, State Real Estate Cadaster, electronic registry of organizations, legal databases, and the official website for online notifications, electronic signature, etc.

The RA Law on State Support for the IT Sector was passed in 2014<sup>34</sup>. Activities subject to State support include:

- Software
- Consulting services in the field of computer technology,
- Management activities of computer systems,
- Data processing, hosting, and other activities,

- Activities related to web portals,
- Implementation of educational and research program(s) in the field of IT.

To be eligible to receive State support, entities must be engaged in innovative and advanced technologies, be involved in educational and research program(s) in the field of IT, and contribute to the development of the IT sphere in the RA.

The Law provides significant tax incentives to IT companies. Additionally, post-registration procedures have been simplified, and company registration fees have been eliminated in order to increase the number of foreign entries.

## PROTECTION OF INTELLECTUAL PROPERTY

The Intellectual Property Agency of the Republic of Armenia is the primary authority responsible for regulating the field of intellectual property with laws and regulations (both domestic and enforced by international agreements). It was established in 2002 and provides information on the registration of patents, copyrights, trademarks, inventions, utility models, industrial designs, etc.

Armenia became a member of the World Intellectual Property Organization (WIPO) in 1993 and the Eurasian Patent Office

in 1995. The RA Intellectual Property Agency cooperates with the European Patent Office as well as with other international and regional institutions.

Despite all these initiatives, the government of Armenia still needs to work towards having a stronger IPR enforcement system in order to meet the international standards and make a more attractive investment environment.

The laws, regulations and mechanisms related to trademarks are quite developed and work well. One of the main problems is regulations and procedures regarding patents (insufficient regulations, too many documents required, poor online framework managing submissions, immediate filing which results in issues related to confidentiality, absence of provisional patents). As a result of the issues, many companies and individuals prefer to file patents outside of Armenia.

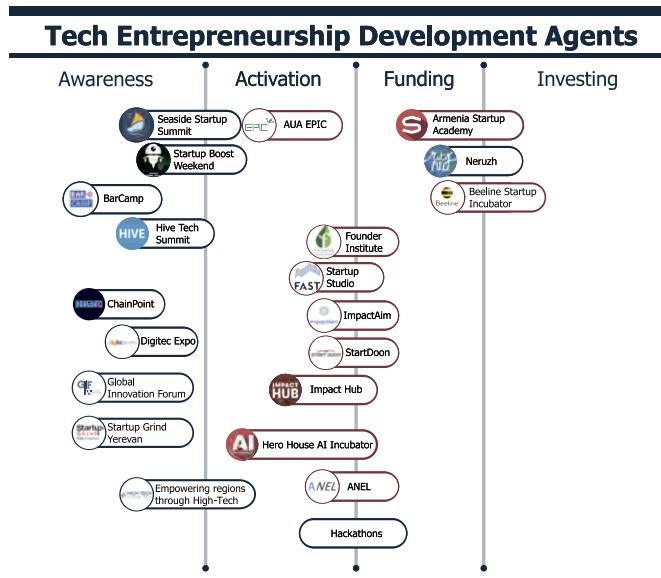
In order to improve the regulations regarding patents and encourage more companies to file patent locally, more flexible mechanisms should be established, provisional patents need to be introduced, creating clear claims for the process of application, improve the electronic platform managing submissions, allow English applications, make the procedures more affordable (e.g: matching with volunteer attorneys).

<sup>33</sup> Law of the Republic of Armenia State Support for IT Sector. (2018). Retrieved from: <http://www.arlis.am/DocumentView.aspx?DocID=130329>

<sup>34</sup> World Development Indicators. WB Group

# TECH ENTREPRENEURSHIP DEVELOPMENT AGENTS

The following map includes events, incubation and acceleration programs, which contribute to the development of tech entrepreneurship in Armenia.



**Awareness** – events and initiatives contributing to the spread of tech and tech entrepreneurship within public or specific groups

**Activation** – events and initiatives providing very early stage structured support to teams building innovative solutions

**Funding** – events and initiatives providing support to companies with existing innovative solutions eligible for grants

**Investing** – events and initiatives providing support to innovative tech companies ready for private investments



## TECH AND ENTREPRENEURIAL EVENTS

**BarCamp** is one of the largest tech events in Yerevan currently in its 11th year with the aim of knowledge sharing, skills transfer and networking opportunities. Throughout those years the number of participants has drastically increased from 300 in 2009 becoming 3000 in 2019. BarCamp Yerevan features workshops by top IT specialists, international speakers discuss topics covering machine learning, smart cars, and global business. Also, it is a job fair, in which dozens of IT companies are represented.

The **Hive Annual Tech Summit** is going to host its 5th tech conference in Yerevan. Usually it is organized in mid-fall and aims to be a bridge between Armenia and Silicon Valley giving Armenian startups access to tech leaders and their insights. Tech Summit includes topics such as how to apply for participation in their accelerator programs and in-depth chats with startups, panel discussions with expert participants and showcase of the Armenian IT ecosystem. The summit also includes pitching contest between six Armenian startups with a grand prize of USD 25,000 investment from HIVE Ventures.

**Sevan Startup Summit** is a week-long camp business forum first organized by Startup Armenia Foundation in 2016, which aims to create a learning environment for startups and a platform for informal communication between startups and investors. Based on the stage of development and field, startups can participate in two programs: starter and booster. Starter program is for startup with idea and/or prototype, while booster is for those having prototype and presence in the market.

Sevan Startup Summit 2019 had prize fund of \$100k, 120 startup teams, 75 speakers, mentors, VCs and angel investors attending the event.

Starting from March 2017, **Startup Boost Weekends** are being organized in different universities of Armenia by joint efforts of Catalyst Foundation, YSU Entrepreneurship development center EDC, Breedge, Armenian National Engineering Laboratories Innovation Incubator, AUA Entrepreneurship and Product Innovation Center, Russian-Armenian University; Armenian State University of Economics and French University in Armenia with the support of EU-SMEDA project. It is a 54-hour event during which students with different skill sets - software developers, business students, graphic designers - come together to team up, and by the end of the event pitch ideas for new startup companies. Weekend activities include startup pitches, team formation, customer development, prototype building, UI/UX design, business model generation, mentor feedback from experts, and conclude with a Shark Tank-style pitching session. The event has been held 6 times with a total of 519 participants, 142 presented ideas, 61 formed teams, 10 out of which are currently operating.

Global Innovation Forum is being organized by Fast Foundation. The first forum named "Engineering the Evolution" was held in October 2018 and was aimed at bringing together cutting-edge research from the frontiers of biology and the exploration of data and intelligence.

The event had around 600 participants, 86 speakers, 29 sessions and 7 talks. The Global Innovation Forum 2019 will be held in October 2019 and is named "Transforming Intelligence". The goal of the forum is exploring the impact of AI on science and society from the scientific, technological, and industrial perspectives. There are expected to be around 80 speakers, 28 talks, speeches, dialogues, and sessions.

**ChainPoint Conference** aims to bring together global blockchain professionals by creating a platform for productive dialogue and sharing best practices. The first ChainPoint Conference was held on November 14-15, 2018 which brought together over 350+ Participants, 42 Speakers from over 30 Countries collecting industry 18 experts in Digital Economy, FinTech, Money, Decentralized Governance, Investments, Tokenization, Cryptocurrency, Stablecoins, DAOs, DEXs, AI, IOT, Cybersecurity, Emerging Markets, Regulation Challenges, Fundraising, New Paradigms and much more. In 2019, it will be held on October 13-14 with over 500 participants, 50+ speakers, 30+ countries, and 20 hours of networking.

**Startup Grind Yerevan** chapter was founded in 2016. It is the world's largest startup community, involving more than 200 cities, 98 countries and 1 million entrepreneurs. In the scope of the event, local company founders and investors give

speeches and share their experiences every month.

**Digitec** is an expo catering to all geeks and is the largest technological gathering in the region pulling in about 80,000 visitors. The Digitec Expo focuses on the accounting, banking and financial software, chip design and testing, computer graphics, multimedia and games, databases and information systems management, import, production and export of computer equipment, internet and mobile applications and much more. Leading SMEs, small and global companies are attending to develop and provide opportunities for investment and seeking new partnerships by presenting new business ideas through workshops, seminars and business meetings.

**Empowering regions through High-Tech** is a two-day forum in Gyumri co-organized by EIF and GTC in partnership with the Government of Armenia, Gyumri Municipality and EU-SMEDA project, focusing on development of higher educational models for regions. The main objective is to bring together young people from regions to discuss the strategies and challenges of innovative educational and business environment development in High-Tech. There will be 150 participants from all regions of Armenia with background related to tech. The third forum will be held on November 23-24, 2019.

## ACCELERATION AND INCUBATION PROGRAMS

**Armenia Startup Academy**, a 12-week pre-acceleration program for startups, was launched in October 2017. The Academy is a Catalyst Foundation project implemented in the framework of the Support to SME Development in Armenia (EU-SMEDA) Project. The Academy program is tailored for high-tech companies and startups based on the best international experiences and models from the Silicon Valley and leading European startup hubs. The participating startups get a chance to build on and advance their know-how on a number of technical processes, marketing, sales, customer development, under the guidance of professional mentors and trainers. Throughout the 4 cycles of the innovative 3-month program 72 startups and 188 entrepreneurs were involved. They had the chance to benefit from more than 450 one-on-one meetings, 145 sessions, workshops, breakfasts and dinners delivered by a network of 70+ high profile professionals and mentors spanning from Australia to Silicon Valley. The program graduates raised over €1 million of funding from different financing sources including angel and venture funding, EU-STEP, EU-IMG and other grants.

American University of Armenia's **Entrepreneurship and Product Innovation Center (EPIC)** is an on-campus start-up incubator that helps AUA students, alumni, and other entrepreneurs to advance their ventures from idea to success.

Teams made up of AUA students and outside entrepreneurs compete to enter EPIC where they receive further entrepreneurial incubation, education, mentorship, and other resources to grow and advance their start-ups. The Center was funded by USAID's Office of American Schools and Hospitals Abroad (ASHA) and by an AUA benefactor, Ms. Sara Chitjian. EPIC was established in Spring 2017 and had 4 generations with 33 graduate startups.

**Beeline Startup Incubator** started in Spring 2018 by Veon Armenia (Beeline) telecommunications company. It is a resource hub for intensive growth aimed at helping Armenian startups that produce digital products and services. The incubator organizes various events and sessions to support startups with technical and business means. The participant startups are provided with an office space, as well as training courses and master classes on entrepreneurship, management, marketing, PR, financial and legal issues. Each incubation cycle lasts 14 weeks for resident startups. The program has already run 4 cycles having 22 graduate startups. 2 of the graduates received investments and 2 are in negotiations.

The total value of startups mentored in **Founder Institute** makes more than USD 15 billion. It works with entrepreneurs and teams at the pre-seed stage: idea stage, prototype stage, early company stage.

in January 2017, Founder Institute's Yerevan chapter was launched with 4-month acceleration program. The Founder Institute was founded in Silicon Valley in 2009, operates across 180+ cities and 65+ countries.

FAST Foundation **Startup Studio** designed to support science- and technology-backed startups. The Studio offers Coaching & Mentorship program and provides access to Co-working space. The program consists of business and technical sessions, teamwork, panel discussions, mentor engagements, motivational talks, and company visits. In coaching program, there are 12 modules: Business model, Leadership, Teambuilding, Product Conceptualization, Financials and Accounting, Funding, Law and Taxation, and Soft Skills. Twice a year, the most promising startups get an opportunity to do a 3-minute pitch to the investors from the Science and Technology Angels Network. The incubator has launched in 2018 and 13 startups have already passed through the program.

**ImpactAim Venture Accelerator**, the key component of the global UNDP Impact Investment Vehicle concept, is an independent platform that aims to develop field-based acceleration programs to support early stage and established start-ups that address identified gaps in achieving the Sustainable Development Goals (SDGs). The involved startups target development of specific sector (Agriculture, Climate, Education, Food, etc.). The program has already involved 21 ventures.

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The first program was launched in November 2017. There were 4 acceleration programs implemented: Open Accelerator Program, Climate Change Technology Accelerator '18, Climate Change Technology Accelerator '19, Accelerator #5.

**GovTech Accelerator**, a new initiative of ImpactAim has kick started in September 2019 by joint initiative of ImpactAim, Hero House, HTI Ministry, and Armenia National SDG Lab. The program aims to promote cooperation between public and private sectors by engaging startups in developing GovTech solutions, which can improve the operations system of the government, make the society more engaged, increase governmental services' efficiency, transparency and accountability. It is a 12-week incubation startup program with 3 tracks: business, technology and impact.

**StartDooon** is a startup incubator founded in 2017, which aims at connecting Armenian startups and foreign mentors including professionals from Armenian diaspora, specifically from France. It provides professional accompaniment and consultation, networking, investment, and coaching. The incubator has already worked with 14 startups.

**Impact Hub Armenia** Social Innovation Development Foundation (also known as Impact Hub Yerevan) is a social innovation incubator aimed to support social impact projects and enterprises implementing

positive social change in Armenia. They provide education, mentoring, networking opportunities, resources, programs and events to help innovators get from idea to implementation of project and eventually to create impact. Their programs include Accelerate2030, Social Impact Award, and Fellowship for innovation in healthcare, Cult-up program, Neruzh program, Fellowship for transformative ideas etc.

## ACCESS TO FINANCE

### Overview and history of tech entrepreneurship funding landscape

Since 2014, more than 120 mln USD of venture capital and grant financing was raised by Armenian startups, of which 2.6 mln USD grant money provided by the World Bank and EU/GIZ via the Enterprise Incubator Foundation (85 grants to 78 companies), 34.4 mln USD pre-seed and seed investments (74 deals with 44 companies), 60.6 mln USD

series A deals (9 deals with 6 companies) and 25 mln USD series B deals of 2 companies. The most notable of the deals from top tier VCs are:

**Feb-Jun 2015:** PicsArt \$25 million Series A led by Sequoia Capital

**April 2016:** CodeFights \$2.5 million Seed with Sutter Hill Ventures

**April 2016:** PicsArt \$20 million Series B led by DCM Ventures

**October 2016:** SoloLearn \$1.2 million Seed led by Learn Capital

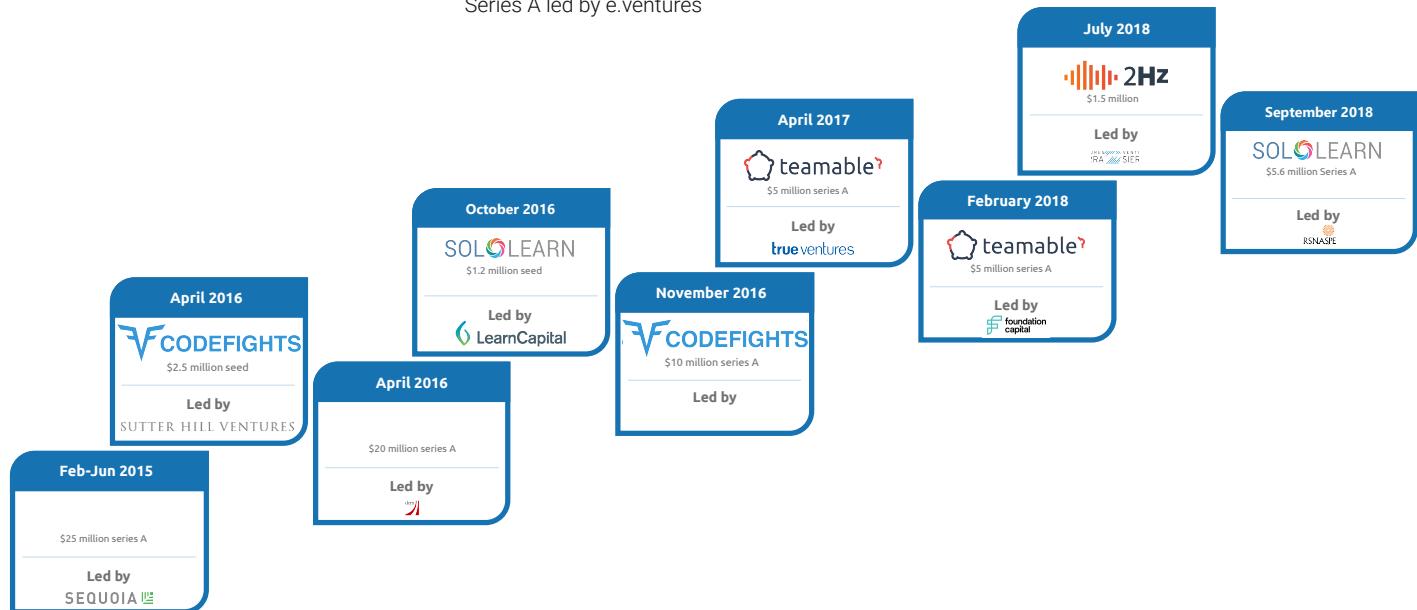
**November 2016:** CodeFights \$10 million Series A led by e.ventures

**April 2017:** Teamable \$5 million Series A led by True Ventures

**February 2018:** Teamable \$5 million Series B by Foundation Capital

**July 2018:** Krisp \$1.5 million Seed led by Sierra Ventures

**September 2018:** SoloLearn \$5.6 million Series A led by Naspers



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## FUNCTIONING OF TECH ENTREPRENEURSHIP FUNDING

The RA Law on Foreign Investments<sup>35</sup> provides several incentives for foreign investors' rights, legal interests, and property protection. The incentives include removing obstacles to investment entry, not levying duties on investment in founding capital and providing mechanisms for the protection of foreign investments. In case of changes in the legislation (within five years of the investment), the foreign branches or companies can follow the initial legislation if they request so. Additionally, the law also states that the taxpayer's losses (both local and foreign investors) in the current and previous years can be distributed in the following five years after the losses were made.

The incentives provided for foreign investors include 100% ownership of property, right to buy land, complete exemption of customs duties, VAT, profit and property taxes as a resident of Free Economic Zones, "One-stop-shop" based services provided by state agencies, no limitation on currency exchange at market rates, unlimited access to any sector and geographic location within the country, etc.

Other benefits include Free trade agreements with CIS countries, Bilateral treaties on

investment promotion and protection with nearly 40 countries, Membership to the International Centre for Settlement of Investment Disputes, access to Generalized system of preferences (GSP) of the USA, Canada, Switzerland, Norway and Japan, and GSP+ provided by EU.

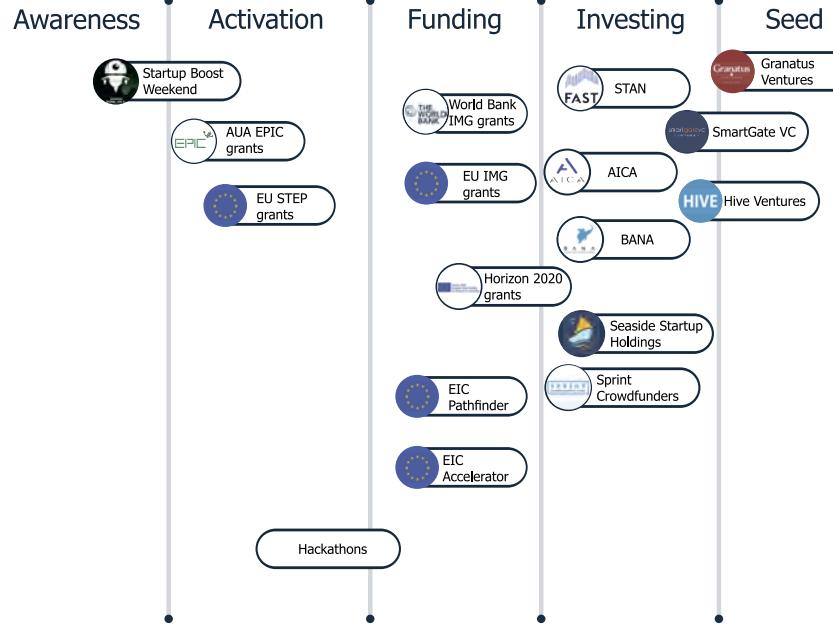
For raising funds, most of the local startups incorporate their companies in the market they're going to focus on and start raising funds there. Usually the incorporation is done in Delaware, US, and a subsidiary or service providing office is opened in Armenia.

One of the practices of raising investment for the early stage startups is attending pitching sessions organized by Angel Networks. The interaction of startups with investors is initiated also during the Demo Days of incubation and acceleration programs.

<sup>35</sup> The Law of the Republic of Armenia on Foreign Investments. (1994). Retrieved from: [https://www.mfa.am/filemanager/Statics/36\\_en.pdf](https://www.mfa.am/filemanager/Statics/36_en.pdf)

# Access to Capital for Tech Entrepreneurs

## AVAILABLE FUNDING VEHICLES IN THE ECOSYSTEM



Currently, the main funding vehicles available in the ecosystem are two Venture Capital funds, three Angel networks, EU and WB supported grant schemes.

### VCs in the ecosystem

**Granatus Ventures**, the first Armenian VC was launched in late 2013. Its approach is investing worldwide in those startups that have core value-add activities in Armenia. The fund engages in the early life of a company, providing startups with initial seed capital, and following on with additional investments as the company matures. The first investments by the VC were announced on September 26, 2014 in New York. As of 2019, Granatus Ventures has 14 companies in its portfolio. The fund closed 3 new deals and participated in a number of follow-on rounds in 2018.

Currently Granatus is launching new global fund with the support of UNDP targeting UN SDG oriented tech ventures. The Fund, with a target size of \$40 million, will make investments in technology-driven ventures globally that demonstrate strong potential for social and environmental impact.

**SmartGateVC** is a Silicon Valley pre-seed VC fund which announced its first closing in February 2018 led by Silicon Valley VC Tim Draper.

**Awareness** – rising awareness about the ecosystem and the funding opportunities

**Activation** – grant schemes supporting in getting involved in the ecosystem

**Funding** – bigger grant schemes supporting further development of startups

**Investing** – providing angel and pre-seed investments

**Seed** – providing seed and post-seed investments

15 deep tech companies were backed by the fund since then. The fund provides its portfolio startups with resources, networks and hands-on support to transform ideas into global ventures by taking them from Armenia to the US market. The key focus areas are Artificial Intelligence (AI), Security, Internet of Things (IoT) and emerging Biotech, Quantum Computing and Blockchain. SmartGateVC invests in early stage startups with up to \$100,000 ticket size.

### **Angel networks in Armenia**

**Business Angel Network of Armenia (BANA)** kicked off with the support of the European Union SMEDA project in 2017. It involves mainly local high net worth individuals making investments that range between 5,000 and 100,000 USD.

**Angel Investor Club of Armenia (AICA)** was launched in late 2018 with mainly Los Angeles, Massachusetts and Yerevan based angels including Al Eisaian, Co-Founder & CEO at IntelinAir, Ara Aslanian, Co-Founder & CEO at Inverselogic, Arthur Mikaelyan, founder and CEO of MLL Industries and others. Currently, it has 20 angel members.

FAST Foundation initiated its **Science and Technology Angel Network (STAN)** in February 2018. Among the founding angels of this network are Russia-based entrepreneurs along with Igor Khalatyan, an Armenian entrepreneur who exited his company to Oracle, Noubar Afeyan, CEO of Flagship

Pioneering, Ruben Vardanyan, CEO and co-founder of Joomag and others.

### **Grant schemes available in the ecosystem**

In December 2014, the Enterprise Incubator Foundation grant scheme was implemented with the support from the World Bank's E-Society and Innovation for Competitiveness (EIC) project.

Recent "**Innovation Matching Grant (IMG)**" and "**"Science and Technology Entrepreneurship Programme (STEP)**" grant schemes were implemented within the "Support to SME Development in Armenia" (EU-SMEDA) project, which is co-funded by the EU and BMZ and implemented by GIZ. Both IMG and STEP aim at advancing innovative technology-based ideas in Armenia and helping startup teams, innovators, scientists, engineers, researchers, and entrepreneurs create new ventures, to move their products to the domestic and global markets, increase the competitiveness of existing SMEs, as well as to promote innovation and entrepreneurship in Armenia.

IMG and STEP provide startups with up to €50,000 of funding. 34 startups have received funding with the total amount of around €0.866 million.

8 of the 34 grantees have raised follow up rounds and the total disclosed amount of investments raised by grantees is around \$1.5 million.

In August 2019, new Matching Grants were announced by EIF with the support of the Government and World Bank in the framework of World Bank Trade Promotion and Quality Infrastructure (TPQI) Project. There are 2 types of grants: Innovation Matching Grants (IMG) and Regional Matching Grants (RMG).

Innovation Matching Grants are aimed at supporting new adaptation, development or improvement of a solution, product/service, and process by technology teams and SMEs. Regional Matching Grants aim at promoting the development of technology companies in the regions. The size of grants ranges from €10,000 to €50,000.

Startups can also get funding opportunities through European Commission (EC) research and innovation funding program. EC's initiative **European Innovation Council (EIC)** supports innovators, entrepreneurs, small companies and scientists in scaling up globally. First pilot phase was launched in 2018 bringing together Horizon 2020 schemes with total budget of €778 million. In 2019, the second phase was launched with an increased budget of €2.2 billion, introduction of pilot Pathfinder grant and pilot Accelerator funding. The full EIC will be implemented under Horizon Europe (2021-2027) with proposed budget of €10 billion, full accelerator funding with both grant and blended finance and full pathfinder scheme for grants in advanced research and transition activities.

	IMG	STEP
Amount of funding provided	€30,000 to €50,000	€15,000
Number of grantees	14	20
Total amount of funding	€604,500	€261,500
Jobs created	91	55

The EIC Pathfinder Pilot includes FET-Open and FET-Proactive offering grants of up to €4 mln for research and innovation on new technologies. These grants are for consortia of at least 3 entities from 3 different Members States and associated countries.

The EIC Accelerator Pilot provides both grant and blended finance (grant and equity). The scheme supports high-risk, high-potential innovative SMEs willing to develop and commercialize new products that could drive economic growth, create new markets or disrupt European and global existing markets. The funding is for applicants established in an EU Member State or a Horizon 2020 associated country.

During 2017-19, 3 applicants received funding from the **European Union's Horizon 2020** research and innovation program.

There are other support mechanisms and funding vehicles present in the entrepreneurial ecosystem.

**Hive Ventures**, a Silicon Valley based initiative of Hirair and Anna Hovnanian Foundation, invests in Armenian startups. In 2018, Hive made 5 new deals.

**Seaside Startup Holdings** is investing in promising startups of Sevan Startup Summits as well as other summits in Ras Al-Khaima, UAE and Goa, India. It's co-founded by Russia-based media entrepreneur Arthur Janibekyan and Startup Armenia Foundation and curated by Granatus Ventures.

**Sprint CrowdFunders Fund** is financing crowdfunding campaigns. The Fund is behind a number of crowdfunding campaigns such as Volterman (\$2.77 million) and Bristly (\$958,000).

American University of Armenia's **Entrepreneurship and Product Innovation Center (EPIC)** provides cash awards to its startups after Demo Day starting from 2018: the EPIC Innovator Prize (\$500 USD)

and the EPIC Seed Fund Award (\$1,000).

**Startup Boost Weekend** provides monetary prizes to the three winning teams: €500, €350 and €200.

## GAPS

According to the 37% of survey respondents, lack of financing is the largest issue within the startup ecosystem. Although there was no baseline for clear reference, however the team preparing this report thinks the number most probably was higher few years ago.

The interviewees mentioned that there is an issue connected with the regulations and processes of receiving grants. Specifically, requiring too many documents and financial projections for a long period from early stage founders doesn't make complete sense from grantees perspective. Delays in receiving won grants and difficulty of co-financing for matching grants have been mentioned as problems as well.

Another issue mentioned in interviews is connected with the amount of grant financing. Due to small amount of financing at an early stage, the founders are not able to fully commit because of having other jobs and still are being involved in startups only part-time.

Additionally, it was mentioned that there are not enough funding opportunities for seed and post-seed stages in the ecosystem for now.

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## RECOMMENDATIONS

Reviewing existing grant schemes:

- Simplify grant management processes for startups as they spend a significant amount of resources on administrative processes after receiving grants;
- Have more funding opportunities in the ecosystem by bringing in more grant schemes linked to existing educational startup programs;
- Consider introducing new grant category of matching already made investments (up to a certain amount);
- Optimize the process of applying for, receiving and using grants, which can be done by adjusting the requirements on documentation.

Synchronization of entrepreneurial education and funding:

- Provide enough funding to startups accepted to startup incubation and pre-acceleration programs for their founders to be able to leave their jobs and fully commit to building the company;
- Make targeted efforts in incorporating angel investing and existing startup educational programs;
- Promote more educational programs for early stage founders abroad, with special focus on fundraising.

# ACCESS TO MARKETS

## HISTORICAL OVERVIEW

Armenia is a member of the World Trade Organization since 2003 and has GSP (Generalised Scheme of Preferences) access to the U.S., EU, and Japan, and Free Trade Agreement with neighboring Georgia.

Since 2004, Armenia is included in the European Neighborhood Policy. In 2009, the country became a member of the Eastern Partnership.

In January 2015, Armenia joined the Eurasian Economic Union (EAEU) along with Russia, Belarus, Kazakhstan, and Kyrgyzstan. EAEU membership provides direct access to a total market of more than 175 million people and a combined GDP of 2.2 trillion USD.

In May 2015, the Armenian Government signed a Trade and Investment Framework Agreement (TIFA) with the US, which aims to improve the cooperation between countries and creating opportunities for investment and trade.

In November 2017, Comprehensive and Enhanced Partnership Agreement (CEPA) was signed between the European Union and

Armenia. This was a pivotal step towards improving the investment climate in Armenia and creating a better regulatory environment for businesses to grow.

## HISTORICAL OVERVIEW

The volume of export was 363.9 mln USD in 2018 growing by 7% compared to 2017. 65% of this was the volume of foreign companies. The largest export destinations have been the United States and Canada accounting for 45% of the total exports. 25% of the export was to Europe, 11% to Asia, 10% to Russia and CIS countries, 9% to Cyprus, India, South American and other countries<sup>36</sup>.

Armenia strengthened the partnership with Asia and started to export more to Asian countries. Armenia's entry to Eurasian Economic Union (EEU) is also reflected on the export geography.

In 2012, the first Armenian Free Economic Zone (FEZ) was founded aiming to increase the export volumes and contributing to the development of the economy.

The Free Economic Zones at RAO MARS

CJSC and Yerevan Computer R&D Institute CJSC focus on production and export of technologies in the areas of IT, electronics, engineering, biotechnologies, industrial design, etc.

## CHANNELS TO EXPAND TO FOREIGN MARKETS

There are several channels that provide Armenian startups with opportunities to expand to foreign markets.

### Channels to EU market

One of the channels to expand to EU market is **EU4Business** initiative, which supports SME development in Armenia and one of the priority areas of the initiative is improving access to markets. This implies providing SMEs with opportunities to expand to other locations. The common problems hindering entrepreneurs from accessing markets include the lack of knowledge of the problems and foreign markets as well as the skills of negotiating and attracting customers. EU4Business programs aim at filling the knowledge gap by training the entrepreneurs and equipping them with knowledge about EU market: standards,

<sup>36</sup>Armenian ICT sector. (2018). Enterprise Incubator Foundation

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certificates, trade agreement provisions, trade barriers, etc.

**HyeTech Europe** is a network connecting high-profile professionals, investors and entrepreneurs, which aims to link European and Armenian ecosystems. It organizes events such as pitching sessions, networking events, brainstorms, mentoring, showcases, as well as contributes to European and Armenian programs related to education and entrepreneurship. The network supports Armenian startups and entrepreneurs to expand and grow in European markets. With the support of HyeTech Europe, Armenian startup founders (e.g: **Embry Tech, Exper Technologies, Virtlo**) participated in **VivaTech** annual technology conference held in Paris and Armenia has had its pavilion called "Inspiring Armenia" at VivaTech 2019.

Another channel to get access to the EU market are accelerators, such as **Startup Wise Guys**. They regularly visit Armenia, meet with local entrepreneurs, do mentoring sessions and interview the program applicants.

### Channels to US market

Among the channels for startups to access US market is SmartGateVC venture capital fund, which serves as a gateway for Armenian startups to Silicon Valley. It helps startups by providing them knowledge, connections and accommodations necessary for expanding to the US market, particularly to

Bay Area and New York.

### Armenia Startup Academy

pre-acceleration program equips its participant startups with knowledge about US market and skills needed to expand to the market as well as assists them in the whole process of penetrating the market and provides with network of leading accelerators, funding institutions and advisors. The pre-acceleration program graduates have the opportunity to participate in **Entrepreneur Immersion Program (EIP)**

organized in cooperation with HyeTech network. During the 10-day program, the selected startup founders meet investors, successful entrepreneurs, visit accelerators, investment firms, companies in Los Angeles and San Francisco Bay Area. The immersion program helps entrepreneurs to gain insights about Silicon Valley, acquire network and do first steps in accessing the market. In 2019, 13 startups participated in the program.

The startup founders can also get access to US market by participating in acceleration programs such as **Berkeley's SkyDeck** and **YCombinator**. Armenian startups **Krisp, SuperAnnotateAI, Grovf** and **Snark AI** have graduated from those acceleration programs.

### GAPS

One of the survey questions was about the

issues causing difficulties for expanding to international markets.

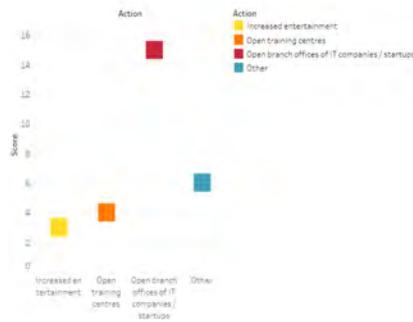
Lack of business knowledge is the number 1 difficulty in penetrating international markets according to 30% of the respondents. The lack of understanding of business context in specific industries, as well as lack of knowledge and business skills is a preventer of startups being able to penetrate international markets rapidly.

For the 25% of the respondents, the primary issue is the lack of knowledge of customer needs. Many people within Armenia haven't had great amounts of experience in other countries or with other cultures, therefore there is a weaker understanding of customer needs abroad in the US or EU countries. This seems too often stand in the way of startups being able to progress and penetrate these markets.

The interviewees mentioned the lack of knowledge and understanding of global markets, lack of resources being put into business development, marketing and sales, as well as the bad perception about doing sales in the society as factors hindering the expansion to other markets.

53.6% of the respondents mentioned opening branch offices of tech companies or startups in the regions as the most important action to take for driving national economic growth.

Actions to take in regions to drive growth in the tech entrepreneurship:



The interviewees stated that the ecosystem is starting to develop in regions, specifically in Gyumri. However, there are real issues connected with the infrastructure that hinders the growth in regions (e.g. roads in poor condition, lack of hotels and diverse entertainment for employees from Yerevan to relocate to regions).

Almost all interviewees mentioned that there is a substantial lack of knowledge and skills in the workforce of regions as well as language gap. Also, they mentioned work ethics as a serious issue for the regions.

A significant gap in access to markets besides understanding a business context in target markets is the weak cultural fit of founders from Armenia in the eyes of investors in target markets. Founders from Armenia lack enough gravity, personal charm and skills for convincing investors in target

markets to invest in their companies. However, this is not only a personal issue of founders but an ecosystem problem that requires a complex solution.

## GAPS

### **Increasing the knowledge about global market:**

- Design and implement systematic exchange programs for startup founders to US and EU for better understanding of market context and business culture in those regions;
- Educate startups on importance of knowing the market and investing in business traveling;
- Allocate special funds to startup educational institutions for buying access to unique information and market knowledge from leading global analytical data and knowledge providers (e.g. Statista, CB Insights, Gartner, Pitchbook etc)
- Establishment of permanent technological presence of Armenia in global technological hubs.

### Regional development:

- Continue building infrastructure in form of improving the roads to regions, hotels and ensuring minimal standard of living for the companies to consider opening branches in regions;
- Design and offer to multinational companies incentives to operate in regions too, for example, by providing the office building for free, showing the benefits of operating from

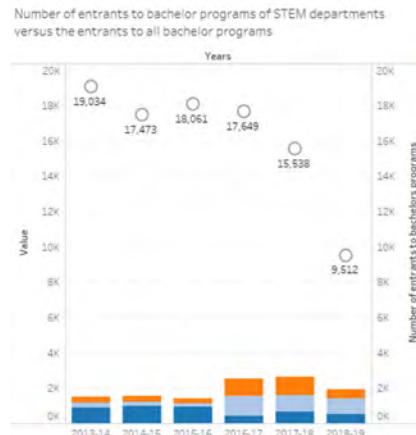
regions such as cost reduction coming from tax breaks;

- Incentivize companies to work with universities in regions by opening specific directions and educating students to have relevant knowledge and skills for the industry;
- Move senior specialists to company offices in regions to train the workforce there;
- Offer tax breaks to companies and professionals working from regions, especially those engaged in educational activities;
- Organize more events, hackathons in regions to continue cultivating the tech and business culture from early on.

# EDUCATION

## HIGHER EDUCATION SYSTEM

The higher education system in the Republic of Armenia includes 56 educational institutions and 12 branches with a total enrollment of 69,622 undergraduate and 10,855 master's students in 2019<sup>37</sup>. The number of students experienced downturn in 2014-2015 which might be caused due to the demographic situation in the late 1990s and a decline in the birthrate previous few decades.

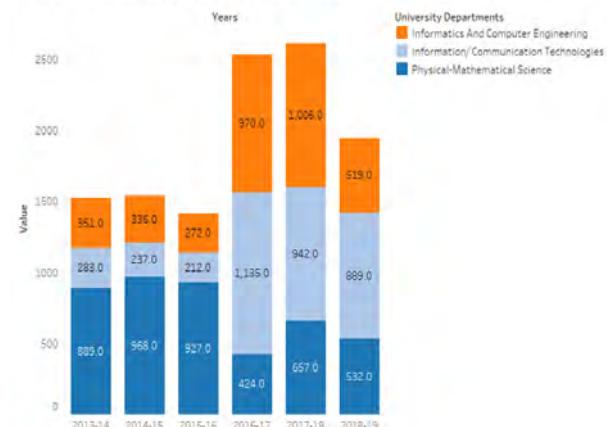


## STEM EDUCATION

In 2018-2019 academic year out of 69,622 university students 10,799 (15.5%) were studying in bachelor programs of physical-mathematical science, information/communication technologies, informatics and computer engineering departments.

The number of students accepted to and graduating from these departments were 1,940 (20.4% of the total bachelor entrants to universities) and 2,236 (14.4% of total bachelor graduates) accordingly<sup>38</sup>.

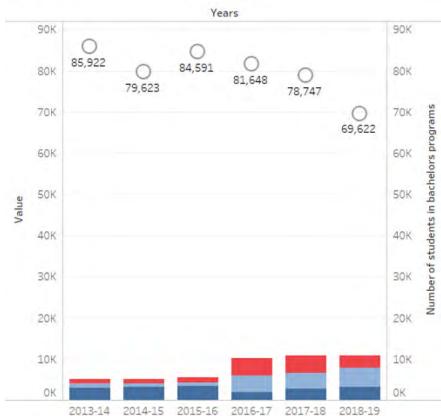
Number of entrants to STEM departments



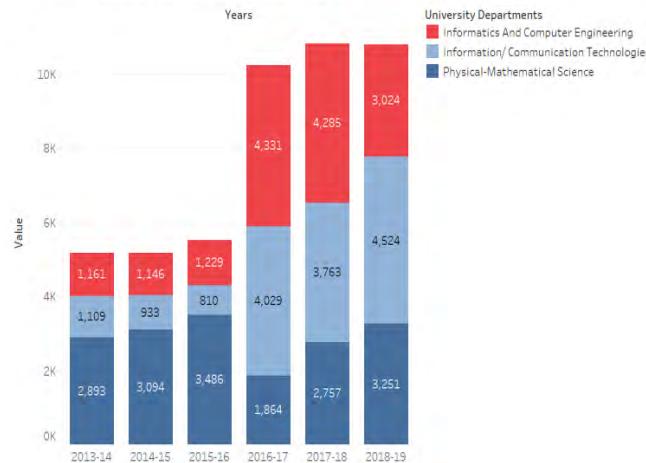
<sup>37</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/sv\\_03\\_19a\\_5190.pdf](https://www.armstat.am/file/article/sv_03_19a_5190.pdf)

<sup>38</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/sv\\_03\\_19a\\_5190.pdf](https://www.armstat.am/file/article/sv_03_19a_5190.pdf)

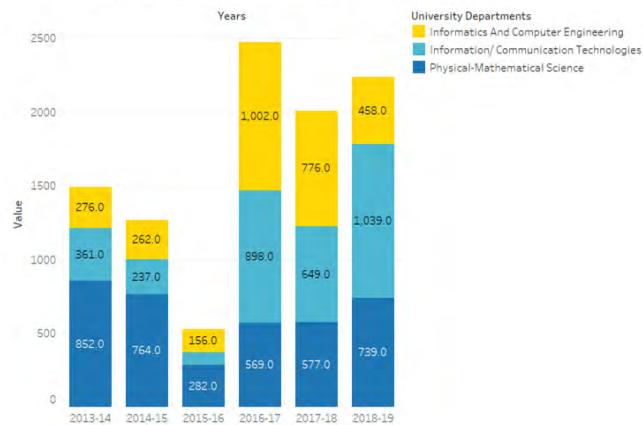
Number of students in the bachelor programs of STEM departments versus the students in all bachelor programs



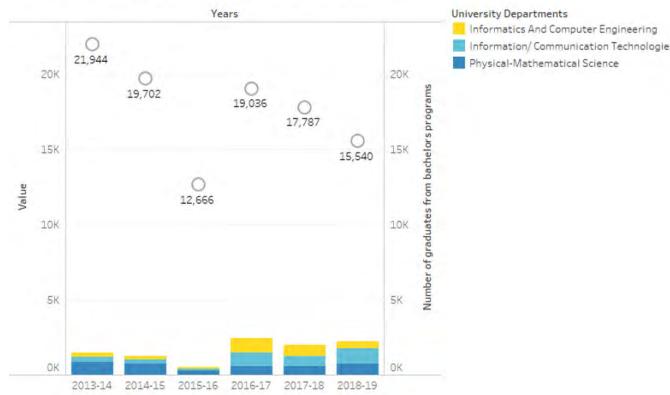
Number of students in STEM departments



Number of graduates from STEM departments



Number of graduates from the bachelor programs of STEM departments versus the graduates in all bachelor programs



## BUSINESS EDUCATION

The number of students studying business disciplines was 10,142 in the academic year of 2018-2019. The number of entrants and graduates was 943 and 2,473 correspondingly<sup>39</sup>.

There are a few institutions that provide business and management education in Armenia:

- College of Business and Economics at American University of Armenia offers four programs: Bachelor of Arts in Business, Master of Business Administration, Master of Science in Strategic Management, Master of Science in Economics.
- Institute of Economics and Business at Russian-Armenian University (RAU) offers undergraduate program in Management, master program in Project Management. The Business School of RAU offers MBA program and professional training and development courses.
- Armenian State University of Economics has bachelor program in Management, Marketing, Business Organization, master programs in Business Management, Marketing Communication, Marketing Research, and Business Organization.
- French University in Armenia offers bachelor programs in Management and Marketing, master's program in Marketing and International Business Law.

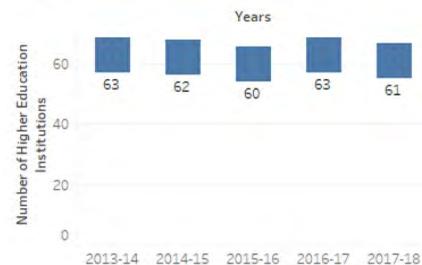
Law.

- European Regional Educational Academy has bachelor programs in Business Management, Strategic Management, Business Translation, master's programs in Business Management, Innovation and Investment Management, Event Management, International Business.

## FUNCTIONING OF THE EDUCATION SYSTEM

Armenia's education system consists of kindergarten/pre-school, primary (4 years), secondary (5 years), high schools (3 years). After completing secondary education, students have the opportunity to attend specialized, technical secondary colleges instead of high school, which usually takes 3-4 years to complete.

### Higher Education Institutions



As since 2005 Armenia is a member of the Bologna Process (European higher education area), the higher education has 3 cycles: bachelor, master, doctorate. Bachelor's degree takes 4 years to complete, Master's 2 years and PhD 2-3 years.

Most of educational institutions, among them the most demanded ones, are located in Yerevan. The regional demand is satisfied with the presence of branches of major universities.

There are both public and private institutions. The State Educational institutions (managed by the Ministry of Education) are completely dominant in terms of the number of students, the quality of education and prestige (popularity). As a rule, private institutions concentrate on the humanities and do not have specializations in demand among IT companies.

As of 2018, the number of publicly owned universities is 24, while the number of private universities is 3740.

## COOPERATION BETWEEN EDUCATIONAL INSTITUTIONS AND TECHNOLOGY COMPANIES

During recent years there have been positive changes in the cooperation between the tech industry and educational institutions compared to the period after the collapse of the Soviet Union. Currently, the cooperation between educational institutions and tech companies is mainly aimed at preparing qualified professionals for companies.

Since 2004, **Synopsys Inc.** carries out bachelor, master and research programs through SAED (Synopsys Armenia Education Department) at different universities of Armenia with a purpose to prepare qualified specialists for microelectronics field. As a result of this focus on producing high level candidates 100% of SAED graduates have found employment, 77% of those are employed directly by Synopsys and the remaining 23% by tech companies within Armenia or internationally. 350 graduates became professional engineers at Synopsys Armenia. Synopsys cooperates with The National Polytechnic University of Armenia (NPUA), Yerevan State University (YSU), Russian-Armenian (Slavonic) University (RAU), European Regional Academy (ERA), The National Research University of Electronic Technology (MIET).

The **Gyumri IT Center** (GITC), the first IT center in Gyumri, was established as a result of the cooperation between The Fund for

Armenian Relief (FAR) and EIF in 2005.

The center is offering programming courses. They've already had 500 students, 495 out of which are employed in companies like Volo, PicosArt, SFL, Develandoo, Synopsys, etc. GITC cooperates with training centers in Armavir, Tavush, Lori and Vayots Dzor offering training programs in those regions too.

In 2011, the RA Government, National Polytechnic University of Armenia, the Microsoft Corporation, USAID, and EIF established **Microsoft Innovation Center Armenia**. The center offers a combination of training courses covering web/mobile development, programming, QA, UI/UX, as well as coding and data science bootcamps. A summer program over 5 weeks teaches 10-14 year old the basic mechanics of technology, programming, Web Development, IT English and Life Skills called TechnoChamp for Teenagers. 800 to 1000 people are trained annually in the center. There are two main directions: training track and bootcamp track. From the bootcamp track, 90% enter the job market. Overall, about 35% out of 1000 trained students find jobs.

The **Armenian National Engineering Laboratories (ANEL)** in National Polytechnic University of Armenia was established in 2013 by National Instruments and EIF.

The main purpose of ANEL is to prepare qualified specialists in engineering who will meet the demand of the industry, increase innovativeness and competitiveness of Armenian high-tech business. ANEL is a combination of 30 state-of-the-art education and research laboratories, covering 6 major specializations of NPUA: Cybernetics, Radio Engineering and Communication Systems, Power Energy, Electrical Engineering. The scientific laboratories are equipped with computerized measurement and control devices. The ANEL collaborates with industry and research institutions in the country. In particular, ANEL helps those labs and institutes to solve their technical and scientific problems.

IBM's cooperation with YSU resulted in the establishment of the **Innovative Solutions and Technologies Center (ISTC)** at YSU in 2015. A year later, master's degree program in Big Data was launched by ISTC and YSU. ISTC has a purpose of addressing global challenges by introducing collaboration between researchers, students, professors and startups. Via their education network they offer courses in system admin design, machine learning, digital marketing, programming, cyber security, machine learning, business process improvement, analytics, SPSS software, 3D modeling & texturing etc.

**Hero House AI Incubator** is a 12-week incubation program designed to help create scalable business solutions and to tighten the

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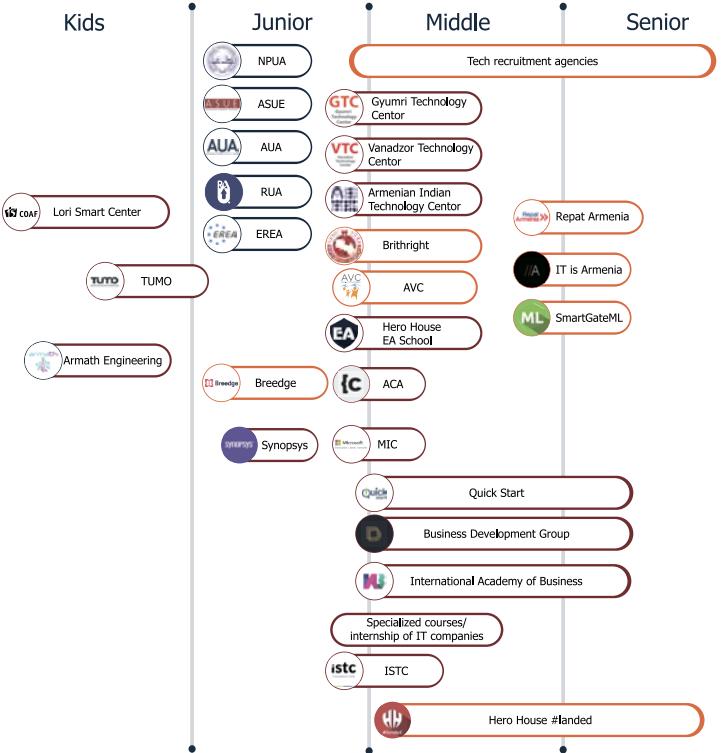
collaboration between universities and businesses. During the program, undergraduate researchers work with startup teams on AI solutions. The first batch of the program involved 11 companies and 16 researchers from Computer Science and Data Science departments of Armenian universities.

### Since 2016, **Science Technology**

**Convergence (STC) Conference** is being organized annually by the IIAP of NAS RA and Catalyst Foundation with the support from the EU-SMEDA project. It aims to strengthen the cooperation of science and industry in the technology sector. Distinguished researchers and engineers from Armenia and abroad coming from both industry and academia take part in the conference. The focus areas of the conference are Machine Learning, Electronic Design Automation, Robotics & IoT, Computational Biology, Quantum Computing, Computer Vision. In 2019, it is a platform to discuss the roadmap of creating Machine Learning PhD program in Armenia, involving postdoctoral researchers from Armenian universities and discussing their possible repatriation, establishing joint research labs in cooperation with top universities and university labs in the US and Europe.

The following map includes key players in the education sector as well as agencies that contribute to the talent development and connect them to the labor market.

## Labor, Education and Talent



**Kids** – working with students studying at schools

**Junior** – working with students studying at universities

**Middle** – working with post-graduate young people (< 30 years)

**Senior** – working with senior talent (> 30 years)

Formal education institutions with STEM programs

Non-formal tech and entrepreneurial education institutions

Organizations connecting talent with industry

## FORMAL EDUCATIONAL INSTITUTIONS

**Yerevan State University (YSU)** was established in 1920. It has 13 faculties covering almost all the fields. One of the most demanded faculties is the Faculty of Informatics and Applied Mathematics. Together with Mathematics and Mechanics, these departments prepare tech specialists in spheres such as data analytics, cybernetics, engineering, software development and etc. The university has its branch in Ijevan.

In 2018, 839 students were enrolled in the Faculty of Informatics and Applied Mathematics with different specializations. The graduates of this faculty are working in the leading companies either in Armenian or abroad. The Faculty of Mathematics and Mechanics had 535 students enrolled in 2018.

**National Polytechnic University of Armenia (NPUA)**, also known as Yerevan Polytechnic Institute, was founded in 1933. The university is one of Armenia's leading sources of IT specialists. As of 2016, the university has campuses in 3 Armenian cities other than Yerevan: Gyumri, Vanadzor, Kapan. NPUA has over 50 Bachelor's and about 40 Master's specializations in Engineering, Industrial Economics, Engineering Management, Applied Mathematics and Sociology.

**Armenian State University of Economics** is one of the leading universities in Management, Economics, Mathematics established in 1930.

It has 6000 students, 6 faculties with more than 50 specializations. Tech related faculties are: Faculty of Management, Computer Science and Statistics. The faculty of Computer Science and Statistics has the following specializations: Statistics, Actuarial and Financial Mathematics, Information Systems. The faculty of Management has the following specializations in technology: Management, Economics and Management of Enterprises.

**American University of Armenia (AUA)** is a private institution founded in 1991 and affiliated with the University of California and accredited by the WASC Senior College and University Commission. AUA's undergraduate program offers bachelor's degrees in 5 fields out of which tech related are Engineering Sciences, Computer Science, Data Science. As for the master's degree, it offers nine fields of study including Industrial Engineering and Systems Management, Computer and Information Science.

**Armenian-Russian (Slavonic) University** was founded in 1997. Besides the number of specializations in 1999 established the Faculty of Applied Mathematics and Informatics, in 2003, it opened its Physics-Technical Department. The following departments prepare specialists in Mathematics and Math Modeling, Software Development, and Electronics and Chip Design.

In 2012, similar subject areas were separated and now it's an adjunct institute/college, named the Institute for Mathematics and High Technologies. It provides specialized education in information and telecommunication areas through specializations in Applied Mathematics and Informatics, Electronics and Nano-Electronics, Telecommunication Technologies and Communication Systems, Electronic Media Technologies and Design, Medical Biochemistry, Pharmaceutical, Bioengineering and Bioinformatics. Over 490 students are enrolled in the university's various STEM programs.

**French University in Armenia (UFAR)** is one of the new universities established in 2000. It has 5 faculties. The newly opened faculty is the Informatics and Applied Mathematics established in 2018. After graduation, the students will be awarded a double state diploma: Armenian and French. Graduates of Computer Science and Applied Mathematics can work as: Programmers (algorithms, web, functions), IT engineers, Project / Product Managers in the tech sector, and Data analysts (Big data, data mining, machine learning).

**European Regional Educational Academy (EREA)** was established in 2001 by the European Union. The university specializes in tech business management and programming. Currently around 220 students are enrolled in the STEM programs. The Academy has graduate, post-graduate and

vocational programs, as well as offers professional training and qualification courses in Yerevan and the regions.

## NON-FORMAL EDUCATIONAL INSTITUTIONS

**Armenian Code Academy** provides high-quality tech education for both new starters and those who are firmly active in the IT community. Based in Yerevan, the academy is focused on intensive training that will introduce graduates to future roles with competitive salaries. The curriculum they offer includes introductions to advanced levels of coursework specialized in Java, Node.js, iOS, Android, python, C++ fundamentals and development as well as detailed project management and advanced big data courses. The education structure involves class participation, group projects and results in an accredited certification.

**SmartGateML** was initiated by SmartGateVC and is a center providing Machine Learning training for experienced software developers. It organized series of lectures on Machine Learning as well as an Applied Machine Learning course. The center initiates joint programs between companies in Silicon Valley and Armenian Machine Learning communities, as well as hosts machine learning public workshops and seminars.

The Gyumri Technology Center (GTC) has been established by Enterprise Incubator

Foundation and provides office spaces and support to tech companies moving to Gyumri. The GTC works with 150+ international partners, 200+ professionals and 25+ tech companies. A major success story initially housed in the GTC is Digital Pomegranate, a software development company that already employs 50 tech professionals.

The **Vanadzor Technology Center (VTC)** was established by Enterprise Incubator Foundation and backed by the Government of Armenia and the World Bank. The center has been established to assist start-ups, tech teams and existing companies and offer assistance and guidance in areas of mentoring, business consultancy, marketing, business networking and generating a pipeline for further funding. Focusing on the areas of Vanadzor and Lori, the aim is to strengthen local technology infrastructure.

The **Armenian-Indian Center for Excellence in Information and Communication Technologies (AITC)** acts as a joint venture between Enterprise Incubator Foundation (from Armenian side) and C-DAC center (from Indian side). The Center delivers both short-term and long-term courses in areas of Web Technologies, JAVA Technologies, Database Technologies, Linux Operating System, Network Administration and Information Security Mobile Programming (Android, iOS), Parallel Computing

(PARAM), Graphic Design, Marketing and Sales Statistical Analysis by SPSS Project Management & MS Project Human Resources Management, etc.

For talented individuals under the age of 18 there is the **Tumo Center for Creative Technologies**. With 6 tech and design centers across Armenia, Lebanon and France, Tumo facilities have been purpose built for 19,000 students to take their initiatives and education to another level. Tumo provides in depth educational pathways in Animation, Game Development, Filmmaking, Web Development, Music, Writing, Drawing, Graphic Design, 3D, Modeling, Programming, Robotics, Motion Graphics, Photography and New Media for youngsters in workshop formats, self-learning and project lab facilities.

**Armath Engineering** schools and laboratories comprise of approximately 220 science and technology hubs across the country. The program was launched in 2014 and currently stands with an estimated 5000 children. The education base ranges from grades 5-12 with the intention of providing education in programming, robotics, design skills and 3D-modeling. Thus, providing participants with a professional orientation towards a career in engineering and parallel sectors. It is noted that 89 percent of Armath laboratory attendees progress to university and 43 percent of those students combine tertiary education and work with an average salary of 140,000 AMD.

**COAF KIDS** is a technology hive based in Debet, Lori, was launched in May 2018. The center offers free training to 150,000 young and elderly people, including music, dance, painting, active citizenship, languages, programming, robotics, information technology, art, communication, ecology, healthy lifestyle, business and civic skills. COAF SMART partners include The SAP Next-Gen Lab which brings the latest blockchain technology, iOS development and Virtual Reality design to students at the COAF SMART Center. COAF is also collaborating with PicsArt and looking to partner with Instigate Robotics and Instigate Training Center furthering the reach of education to all.

## TECH COMPANY TRAINING CENTERS

Some of the Tech companies have successfully entered education space by providing trainings for not only their employees but also those interested in gaining new skills.

**PicsArt** launched an educational program for machine learning and data science in Armenia in 2015. PicsArt University was born, providing long-term training opportunities for their employees, interns and students. The programs include Product Management, AI, and Machine Learning, iOS Development trainings, as well as language courses, such as English and Chinese. It is noted that more than 400 students have graduated from the program and 50 of them were hired by the

company. PicsArt in conjunction with Armenian Code Academy (ACA) is also initiating advanced courses in Image Processing.

**DISQO**'s mission of knowledge sharing with the local community includes hosting lectures on building high performance teams, customer success, etc whilst also participating in local events such as Barcamp and running an iOS workshop during Tumo's hot month. Starting from October, DISQOtech sessions are hosted on a monthly basis, which are experience and knowledge sharing sessions held by DISQO team members.

**Hero House** is a creative and innovation hub based in Yerevan. It runs various programs. In the context of education, it works with talented university students to develop and mentor successful and innovative Armenians that will contribute to the future of the local and global startup ecosystem through its **Entrepreneurial Assistants School (EA School)**. Areas of excellence the program focuses on are business intelligence and customer development, intellectual property, customer success, UI/UX design, growth hacking, sales, public relations, product management and analytics. 100% of the graduates found jobs after completion of the program. The last cycle of EA School involved 16 students.

Besides training centers in IT companies,

there are a couple of organizations specializing in preparing qualified professionals and corporate training. One of them is **Quick Start**. It offers lectures and short courses on IT project management in technology, Social Media Marketing, how to develop a start-up, HR management workshops, becoming a QA lead, graphic design and JIRA management.

**International Academy of Business (IAB)**, which was founded in 2006, has 3 divisions: International Qualifications, Language Advancement, Business Trainings. IAB also organizes many projects to generate business ideas in various regions of Armenia, such as the project initiated by the World Vision Armenia within the framework of the "EU for Youth: SAY YES Skills for Jobs" project. It's aimed at supporting and financing the implementation of the business ideas of young people aged 18-35 residing in Alaverdi, Ararat, Stepanavan and Gavar.

## LEGISLATION OVERVIEW

The legislative framework regarding labor is included in the RA Constitution and Labor Code<sup>41</sup>, which was adopted in November 2004. The Labor Code contains information about the contracts and terms of employment, working hours, paid and maternity leave, protection of young workers and minimum working age, equality, pay issues, regulations regarding unions and employers' association, collective bargaining, dispute settlements, strikes, labor courts, etc.

Besides Labor Code, there are a number of legal acts that are supplements in regulating labor related issues: The Civil Code, The Trade Unions Act, The Civil Service Act, The Employment Wages Act, The Act on Public Associations, The Act on Remuneration of Civil Servants, The Minimum Wage Act.

Since 1992, Armenia is International Labor Organization member. 29 international Conventions were ratified by Armenia in July 2006. The list includes Forced Labor, Equal Remuneration, Minimum Age, Right to Organize Collective Bargaining,

Discrimination, Employment Policy, Conventions and more<sup>42</sup>.

## DEMOGRAPHICS AND REGIONAL DISTRIBUTION

As of 2019, the total labor resources are 2,065,600 people, out of which 1,263,100 are urban. During this year, the labor market participation level increased by 0.4% compared to 2018 reaching to 56.1%<sup>43</sup>. The reasons behind the increase can be higher participation of women in the labor market compared to previous years and decreased work-related migration to Russia. Meanwhile, the participation rate is decreasing in the world and Armenia is catching up with the global levels as a result of this.

According to recent data, the number of unemployed people is 253,600 (76.26% urban, 23.74% rural). So the level of unemployment in 2019 is 21.9%, which increased by 0.9% compared to 2018. From 2010 to 2016, there was about a 15% decrease in the labor resources, which was mostly caused by emigration and low

number of working age people as a result of low birth rate<sup>44</sup>.

The highest unemployment rate was observed among youth aged 20 to 24 (34.5%) and 25 to 29 (24.3%)<sup>45</sup>. The reasons behind can be non-effective transition from education to labor market.

In 2017, the age group with the highest percentage of labor resources was 25-49 (44.4%). The main part of labor resources is in Yerevan (31.7%). The resources are almost equally distributed in Ararat, Armavir, Gegharkunik, Lori, Kotayk, Shirak regions and the smallest number of people are in Vayots Dzor (only 1.4% of the labor resources)<sup>46</sup>.

<sup>41</sup> Labor Code of the Republic of Armenia. (2004). Retrieved from: <https://www.ilo.org/dyn/travail/docs/961/Labour%20Code%20ENG.pdf>

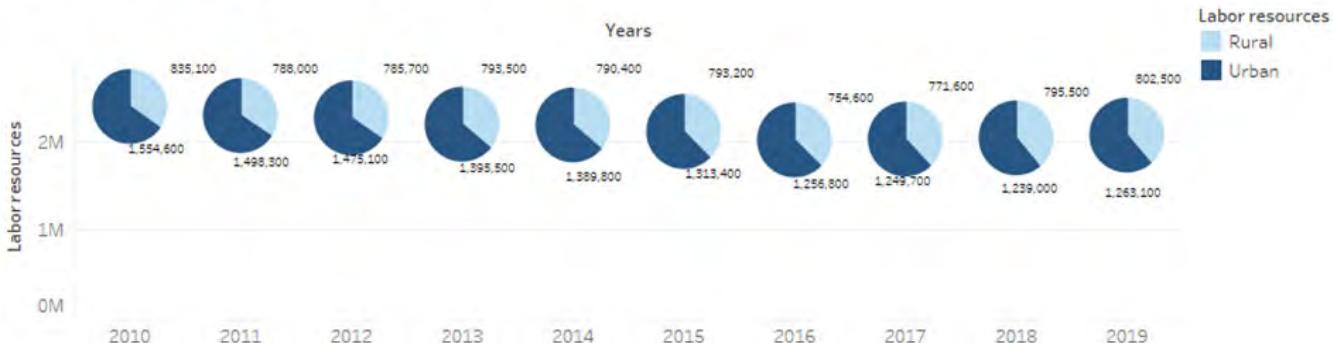
<sup>42</sup> ILO Ratifications for Armenia. Retrieved from [https://www.ilo.org/dyn/normlex/en/?p=NORMLEXPUB112000:NC:P11200\\_COUNTRY\\_ID:102540](https://www.ilo.org/dyn/normlex/en/?p=NORMLEXPUB112000:NC:P11200_COUNTRY_ID:102540).

<sup>43</sup> Statistical Committee of the Republic of Armenia. Retrieved from: [https://www.armstat.am/file/article/sv\\_06\\_19a\\_141.pdf](https://www.armstat.am/file/article/sv_06_19a_141.pdf)

<sup>44</sup> Statistical Committee of the Republic of Armenia. Retrieved from: [https://www.armstat.am/file/article/sv\\_06\\_19a\\_141.pdf](https://www.armstat.am/file/article/sv_06_19a_141.pdf)

<sup>45</sup> Statistical Committee of the Republic of Armenia. Retrieved from: [https://www.armstat.am/file/article/trud\\_18\\_1.pdf](https://www.armstat.am/file/article/trud_18_1.pdf)

## Urban versus rural labor resources



### EMPLOYMENT IN TECH SECTOR

The workforce in the IT sector reached 19,552, out of which 15,239 were technical specialists in 2018 growing around 27% compared to the previous year. This comprises about 2.5% of the country's total employment. The majority of the technical specialists (62.9%) are engaged in the segment of software and services and the rest are involved in telecommunications.

Around 4,200 jobs were created in the ICT sector in the period of 2017-2018 for technical specialists such as software engineers, project managers, etc.<sup>47</sup>

In 2018, there were 52.5% specialists out of the total workforce employed by local and 47.5% by foreign companies<sup>48</sup>.

### PROFICIENCY IN FOREIGN LANGUAGES

In Armenia, foreign languages are taught from primary school. Students start learning Russian from second grade. Starting from the third grade they learn whether English, French, German, Spanish as the third language. Some schools include the third foreign language starting from fifth grade.

There is a school in Yerevan where children can learn Chinese language. The universities also include foreign languages into their curricula. The most popular languages are Russian, English, French, German, Spanish, Arabic, Georgian, and Chinese. The language courses can be either mandatory or optional. Some universities, such as Russian-Armenian University, American University of Armenia, French University in Armenia, European Regional Educational Academy, offer full programs in foreign languages.

Additionally, technology companies such as Digitain, Synopsys, Workfront, Webb Fontaine, offer language courses in order to improve their employees' language skills.

<sup>44</sup> The Global Competitiveness Report, (2018). Klaus Schwab, World Economic Forum

<sup>45</sup> World Development Indicators. WB Group

## Workforce with higher education as a proportion of total workforce



### AVAILABILITY OF SKILLED WORKFORCE

As of 2018, the percentage of workers in ICT sector with bachelor's degree is 43, masters and higher degree is 41 and percentage of students is 11<sup>49</sup>.

Unpaid internships are offered to graduates by a number of companies. Interns with outstanding performance get the opportunity to become permanent employees.

### SALARIES IN THE TECH SECTOR

The average monthly salary in local companies is around 300 to 400 USD for a

junior technical specialist, and up to 3,500 USD for a senior specialist. In foreign companies the salaries are on the same scale and vary from 400 to 3,500 USD<sup>50</sup>.

According to the data from Statistical Committee of the Republic of Armenia for June 2019, tech industry employees have the highest salary in Armenia, which is 1,219 USD in average monthly. Meanwhile, the average monthly salary in Armenia is 378 USD<sup>51</sup>.

### LABOR RESOURCES BY GENDER

As of 2019, the 54% (1,115,900 people) of

people in the total labor resources are women and 46% are men (949,700 people). However, in 2019, the participation in the labor market remains low in women (46.9%) compared to men (66.9%).

Economic activity rate of women overall increased slightly in the period of 2008-2017, but is still lower than the rate of men by around 20%. Among 253,600 unemployed population, about 40% are women and 60% are men. The number of unemployed women decreased by 2.9% compared to 2018, while the number of unemployed men increased by 14.4%<sup>52</sup>.

Males comprise the 68% of employees in ICT sector.

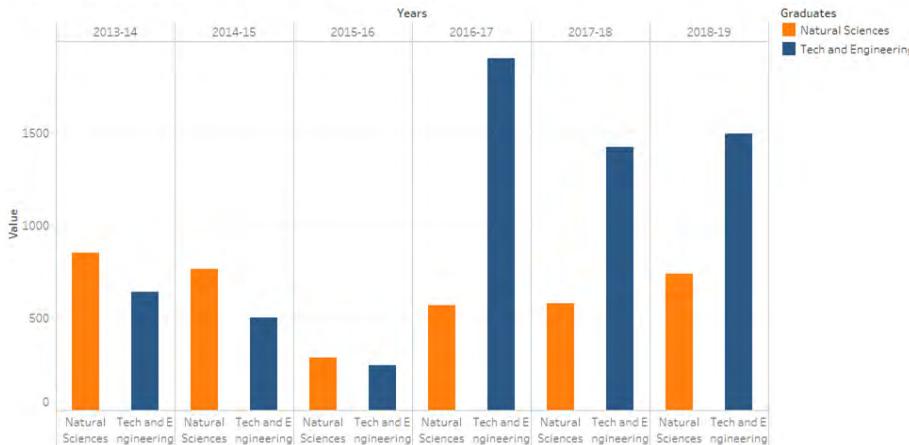
<sup>49</sup> Armenian ICT sector. (2018). Enterprise Incubator Foundation

<sup>50</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/sv\\_07\\_19a\\_142.pdf](https://www.armstat.am/file/article/sv_07_19a_142.pdf)

<sup>51</sup> Statistical Committee of the Republic of Armenia. Retrieved from [https://www.armstat.am/file/article/sv\\_07\\_19a\\_142.pdf](https://www.armstat.am/file/article/sv_07_19a_142.pdf)

<sup>52</sup> Statistical Committee of the Republic of Armenia. Retrieved from: [https://www.armstat.am/file/article/sv\\_06\\_19a\\_141.pdf](https://www.armstat.am/file/article/sv_06_19a_141.pdf)

## Graduates specialized in Tech and Natural Sciences



The participation of women in the tech industry is higher compared to Canada, US, Belarus, EU. In comparison to the previous years, women are more involved in Armenian ICT sector comprising 30% of the employees. Women are involved both in marketing, sales and in QA, software development, game development, etc. However, compared to 2017, female employees decreased by 2%<sup>53</sup>.

## SUPPLY AND DEMAND ON THE LABOR MARKET

In 2017-2018, 1,940 students enrolled in

<sup>54</sup> The Global Competitiveness Report. (2018). Klaus Schwab, World Economic Forum  
<sup>55</sup> World Development Indicators. WB Group

## TECHNICAL RECRUITMENT AGENCIES

**Minds**, the only Armenian dedicated technical recruitment agency, was launched in 2016 and helps companies to find their best-fit tech talents and do RPO (recruitment process outsourcing). They partner with tech companies like Krisp, PicsArt, 10WEB, SoloLearn, Rockbite Games, Plexonic, Questrade. By now Krisp, DISQO and Storegear have already onboarded some of their technical positions via Minds. They also regularly organize dedicated intensive courses to help experienced HR specialists to switch to technical recruitment. Upon the successful completion of the course, they also support the participants to find appropriate jobs.

As of now, **HIRECLOUD**, represents the only US based technical staffing agency. Being tech recruiting partners for such technical giants as Uber, Tinder, Hulu and Sony and having two branches in Los Angeles and Las Vegas, they opened a branch in Yerevan in 2018. Originally, the Armenian team was to only support the US branches but as there was a huge demand from Armenian tech companies, it became own self sustained business.

**2minds**, a specialized HR agency, is also an essential part of the ecosystem. Technical recruitment is one of their key directions.

bachelor programs of Armenian higher education institutions offering specializations in information and high technologies. During the same academic year, 2,236 students graduated from departments related to natural sciences and information technology.<sup>54</sup>

The number of new jobs created in the industry in 2017-2018 is more than 4,200<sup>55</sup>. Thus, there is a mismatch in the supply and demand on the tech labor market and shortage in the workforce. Also, many companies mention that there is a lack of high-skilled and quality workforce.

Besides that, being familiar with the tech industry and having experience in HR, they also have their contribution in the development of the ecosystem by providing short-term courses for the Belline Startup Incubator teams as well as holding thematic discussions with the startup enthusiasts.

**Staff.am**, which was introduced in 2016, is a recruitment website, created with the mission of making job-seekers and employers happy by helping them find the job they love and hire talented staff they need. It offers job-seekers job listings and tools like job alerts, verified skills, and badges, while for employers it offers to search their database of potential job-seekers and other tools like employee reviews, company management dashboard, application form maker. 1,465 private and 4 public companies are already on staff.am.

**Breedge** was founded in 2017 and provides companies the opportunity to make their early hires based on their culture and not just the initial skill set of the hiree. By now 130 companies recruit via Breedge, and 200 students already founded their first jobs through their help. Their partner portfolio includes Rockbite Games, D'efekt, Vineti, EIF and SmartGateVC.

**Quick Start and Business Development Group**, are the only training centers, besides Minds, holding regular in-depth courses for the future technical recruiters. They hold 1.5-2 months length in-depth certification courses. During the course

the participants get to know tech industry trends and characteristic features, as well as the latest techniques for the right recruitment and self-branding and get a network.

### SUPPORT ORGANIZATIONS FOR REPATRIATION

As the country makes strides forward many Armenians born abroad want to connect to the growing infrastructure or come back and participate in the progress and change that is currently taking shape.

**"Neruzh"** is initiated and organized in December 2018 by the Ministry of Diaspora of the Republic of Armenia and with several other organisations such as FAST, IDEa, Impact Hub. It is a Diaspora Youth Startup Program for young entrepreneurs of Armenian descent who wish to bring their startup ideas and projects to Armenia. The program is aimed at 18-35 year old diaspora Armenians. Around 70 startups, out of which 50 are from the Diaspora participate currently. Those who are based in Armenia, have been living in the country for at least the last six months and have a startup in the following sectors: Agriculture, Tourism, Innovative Technologies, can be eligible for the program.

**#landed** was launched by SmartGateVC in August, 2018. Its main aim is to support

professionals in becoming a true part of the Armenian tech scene. The program is designed for engineers and professionals in business development, Machine Learning, Cybersecurity, Internet of Things, Blockchain, Startups, Quantum Computing, growth hacking, and other domains to connect or reconnect with the growing local ecosystem. The program is consistent with attracting talent and interest in the Armenian technology sector and provides participants with opportunities to pursue entrepreneurship, join startups and become involved in research.

**IT is Armenia** is a program launched in August 2018 that is designed to showcase and attract Diasporans and IT professionals to come and live, work and contribute to growing technology ecosystem in Armenia. Working with a panel of over 100 companies the intent of this program is to deliver top Armenian and foreign talent to areas of Mobile tech, gambling and gaming, augmented reality, Artificial Intelligence, advertising technology, data science, audio and voice, big data analytics, consumer product development, education, finance, QA, developer tools, hardware, health, HR, communication, information security, legal, media, photography and video, software as a service.

Repat Armenia was established in September 2012. For those considering moving to Armenia, Repat offers insight and assistance for personal and individual integration

services around the concept of repatriating diasporan Armenians back to their homeland. Repat Armenia offers a wide berth of industries and sectors not just focusing on the IT sector and its massive growth.

**Birthright Armenia**, which is also known as Depi Hayk, was founded in 2003, as an international nonprofit organization. It is a volunteer internship enhancement program that also offers travel fellowships, host family living arrangements, excursions, language classes, forums and more to eligible participants (Armenian Diasporans aged 21-32), with the mission of assisting in the development of Armenia and enhancing relationships between the homeland and Diaspora youth, by giving them a chance to be a part of Armenia's day-to-day life. As of 2019, over 1800 individuals from more than 48 countries have participated in the Birthright Armenia program. It partners with 978 internship organisations.

**Armenian Volunteer Corps (AVC)**, which is a volunteer placement organization, was founded in 2000. It offers individuals to come to Armenia to perform short or long-term volunteer service, giving them a chance to contribute to the country's economic and social development. Their mission is to serve Armenia through volunteerism and help strengthen a culture of volunteerism in Armenia. As of 2019, over 904 individuals, aged 21 and up, from more than 52 countries have participated in the Armenian Volunteer Corps program. It works with over 980

placement partners from the fields of business, education, environmental sciences, arts and culture, finance, health.

## WORK SPACES AND CO-WORKINGS

During the past couple of years, coworking spaces, including work spaces for startups, started to operate in Yerevan.

**Hero House** is a coworking space for startup teams and individuals working in the tech industry, which hosts around 40 residents. Impact Hub, Startup Armenia Foundation and Beeline Startup Incubator also have spaces to host startup teams.

The **Engineering City**, which is a result of Public-Private Partnership between the Government of Armenia and a Consortium of Private Companies, being created for engineering companies in the high-tech sector, brings together engineering, science, and education, with the purpose of dealing with complex engineering challenges.

The completion of the construction of the Engineering city is expected to be in late 2020 or in early 2021. It's planned that there will be settled more than 30 engineering companies with their separate buildings and an engineering incubator with 38 newly setup companies. Furthermore, they will provide professional training for 1500 specialists resulting in 2000 new jobs and newly established startups.

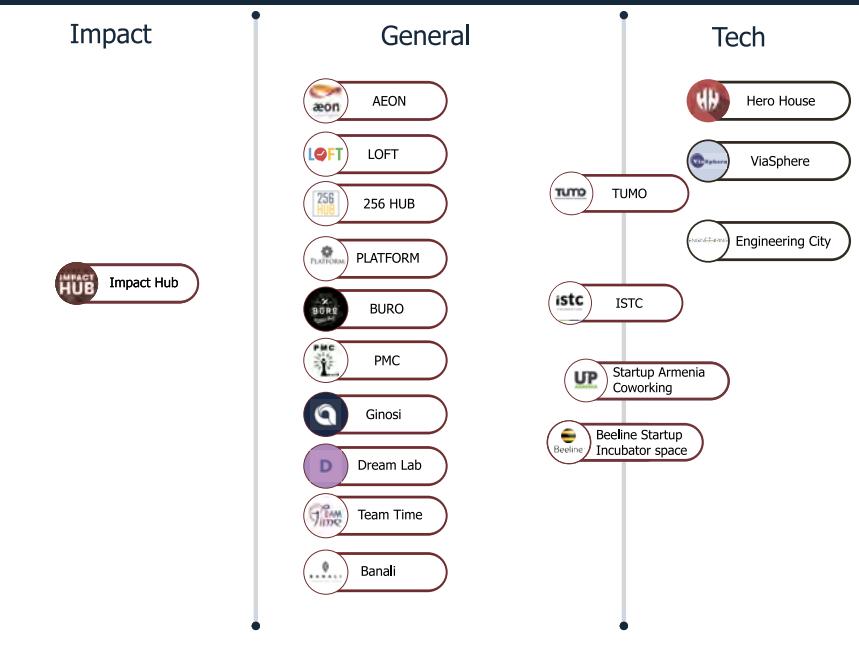
Currently, the Engineering city has 10 tenants, who have already established an engineering center, a library, museums of space, science, and technologies.

The 1st Armenian technology part is **Viasphere**, which was launched in Yerevan in 2001, is a subsidiary of Viasphere International, a Silicon Valley-based venture capital firm and incubator that invests in startup technology companies and provides management services to them.

The **Technopark** currently offers office space consisting of over 100,000 square feet and it works with 13 companies as tenants varying from applications, platforms, infrastructure, devices, and semiconductor intellectual property. And those resident companies have access to not only the facilities, but also the following services: corporate accounting, legal including corporate, intellectual property, business and general management, logistics, training.

**EU TUMO Convergence Center** for Engineering and Applied Science, which was launched in March of 2019 by the European Union by partnering with the Tumo Centre for Creative Technologies, is going to be a new education ecosystem that brings together research, education and startups. According to the plans, there will be constructed approximately 15,000 square meters of building space in Yerevan. The campus will include infrastructure for educational programming, a STEM research laboratory,

## Work spaces / Co-working spaces



a conference center, and commercial space to generate revenue to keep the center financially sustainable in the long-term. TUMO Labs and the UFAR's Faculty for Informatics and Applied Mathematics will also be hosted here.

Aside from the work spaces designed for startups, there are general coworking spaces in Yerevan such as *Loft*, *Aeon*, *Ginosi*, *256 Hub*, etc.

There is a growing inclination of creating spaces for startup/tech residency and building communities. The *Vahakni Residential Community* is building innovative community from 2004 and aims at including business center in the area in future. Also, *Galaxy group of companies* is building a community of companies including from tech industry.

## CULTURE

As a post-soviet country, the work culture in Armenia is still quite similar to the Soviet times (e.g.: fixed work time, hierarchy, command and control management style, bureaucracy, etc). During the past couple of years, a part of the society is shifting to Western/American workstyle. The causes behind this might be the establishment of international companies and R&D offices in Armenia, which brought the new work ethics to the internal and external culture of tech companies. Another cause can be the presence of such educational institutions as the American University of Armenia and French University in Armenia.

Companies start having flexible working hours, there is an increasing tendency of employee empowerment, using English as a working language. The shift in the culture is seen also in form of opening more coworking spaces and cafes, where people go to work. More and more people become interested in entrepreneurship and starting or joining a startup.

## GAPS IN EDUCATION AND LABOR MARKET

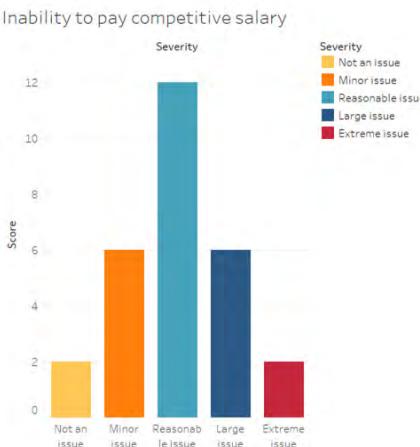
On average, the respondents think that all the mentioned options in the survey (Inability to pay competitive salary, Lack of high quality senior and junior talent, Lack of resources to find talent) are significant issues.

But the number 1 issue is the lack of senior talent.

Generally, paying competitive salary does not seem to be considered a major issue within the ecosystem. 42.9% of respondents consider this to be a reasonable issue.

The fact that the vast majority of incumbents (71.4%) chose one of the first three options (not an issue, minor issue and reasonable issue) shows that this is not an issue during talent acquisition.

From further conversations and investigations with key players, it becomes clear that the industry is able to pay the



salary where necessary for a talent that warrants the money. The issue does not come in the inability to pay the amount required for a good talent but in finding the talent itself.

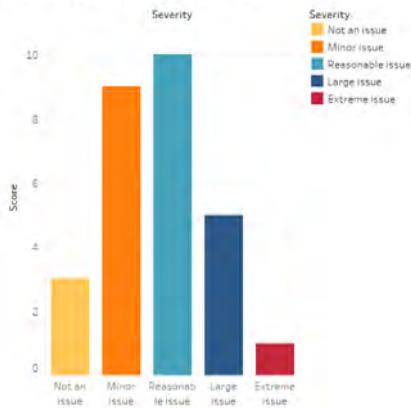
Additionally, some potential employees within the market occasionally expect high salaries and get promotions in form of getting higher positions. In many cases, the role of, for example, "senior developer" in Armenia might expect a similar salary to that of one in Europe or the US but their knowledge base and skill sets are usually not comparable.

As the survey and interviews results indicate, the lack of high quality senior talent is a huge issue.

The quality of talent is being constantly improved due to various programs and initiatives of the last few years, however many companies still struggle to find good quality senior talent to join their team as shown by 64% of respondents rating this as a large or extreme issue, only 7% identify this as a minor issue. This stems from the fact that many individuals that reach the point where they would be considered senior talent, often find opportunities in other countries including the US and EU countries.

This means that one issue stems from the ability to maintain the senior talent within Armenia and a difficulty within this is giving them enough development opportunity. Too soon, some people become the top of their

## Lack of high quality junior talent



Junior talent is not a very large issue as the fresh graduates from university are still not skilled enough to leave Armenia in order to go to work in other countries, therefore there is enough pool of them to join companies in Armenia. Only 4% identified this as an extreme issue.

Companies are able to find junior talent from universities who have basic skills in programming, however there is still a consensus within interviewees that university education is not able to meet the demand in the industry.

The biggest lack of talent appears to be in the areas of product/project management, quality assurance, sales, marketing, business development and customer success.

area and they have less opportunity to learn from others and this forces them to seek further, different challenges abroad as well as interactions with even more experienced individuals within their area.

There is a lack of senior talent not only in technology, but in product management, business development, sales and marketing as well. These skill sets are extremely rare to find within Armenia, especially at the senior level. This stems from various reasons including the lack of quality education in these areas, the lack of understanding of other markets and certain stigmas within society.

From the conversations and the survey, there seems to be enough resources for finding talent.

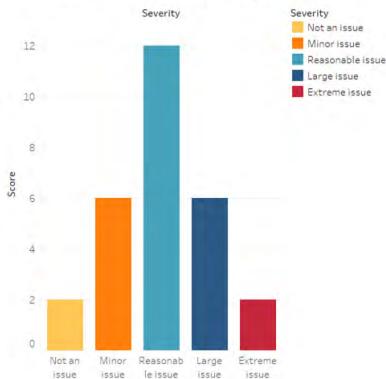
The tech industry in Armenia works heavily from networks and therefore most companies feel that they are able to acquire talent as much as they can. Mostly, the issue is not the method of acquiring the talent but the quantity and quality of the talent itself. 50% of the respondents seeing this as a reasonable issue is generally a sign that this is not something urgent and major that needs to be concentrated on but not something we should all completely ignore.

From the survey results, the lack of skilled workforce appears to be an important issue. **46.4% of respondents feel that there is a large or severe lack of skills in their companies,**

The interviewees mentioned that the universities in Armenia are not able to supply workforce with relevant knowledge and skills to the industry. The reasons behind this might be that the university curriculum and the way of educating is outdated, universities don't supply enough practical knowledge, as well as the motivation of students to study is quite low. These result in workers without deep knowledge related to their specializations and less qualified workforce for the industry.

Aside from the main specializations, the biggest lack of talent appears to be in the areas of **product/project management, DevOps, quality assurance, customer support,**

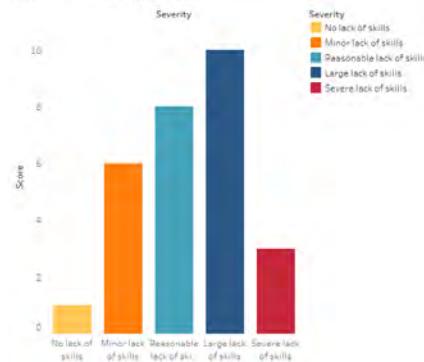
## Inability to pay competitive salary



sales, marketing, business development, PR, growth hacking, UI/UX.

Also the interviewees mentioned that there is a lack of workers who can be in the executive positions. There are not enough skilled managers, engineering leads and software architects.

The estimated effect of lack of skilled workforce for the companies of respondents



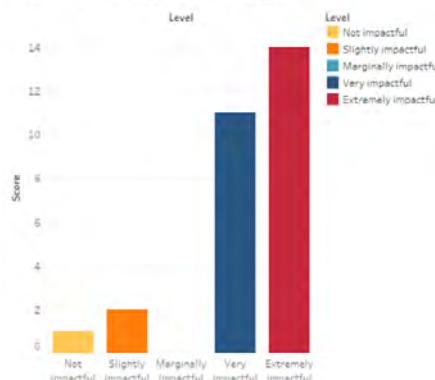
During interviews, there was a consistent opinion among all the organizations that aside from specialty related abilities, soft skills are substantially lacking within the workforce. Communication and collaboration skills are the top issues here.

Besides, there is lack of applied research in computer science. In universities, research groups fail to form as the same people don't stay in the groups and the system doesn't reproduce. This happens because people go to work in the industry as there are more

favorable conditions and very few students stay interested in science and research. In the short-term, it is beneficial for the industry by filling the shortage of workforce. However, it might lead to a shortage of quality instructors in future bringing long-term problems for the industry in the form of not qualified specialists.

96.4% of the respondents agree with the statement that an experienced foreign team member can have a significant impact on the productivity of the company. Meanwhile, 89.2% of them think that an experienced foreign team member can be extremely impactful or very impactful for the organization.

The amount of impact of an experienced foreign team member (from US or EU) on the culture and productivity in the respondent organizations



While explaining the reasoning behind the answers, respondents mentioned that an experienced foreign team member "serves as a mirror" and helps to recognize the gaps, positively changes the culture and mindset in the company, changes the work ethics and discipline in the company, brings expertise, new approaches, global market knowledge and networking opportunities, improves the language gap.

The issue connected with this is the absence of mechanisms and favorable regulations to hire from abroad and integrate in the local society.

### Recommendations

- Make reforms in universities in form of building strong business-minded management inside, radically changing the faculty members and adjusting educational programs;
- Invite guest speakers from top tech companies to join university lectures and run practical sessions;
- Build mechanisms for students to get access to real problems and projects to work on;
- Involving instructors from the industry, where needed, might be a short-term solution;
- Provide students an access to funding for undergraduate research;
- Incentivize investment in education from big companies. Make it easy to contribute to the development of education and labor market by setting up clear mechanisms;
- Organize structured awareness campaigns

**47**

among students about demanded skillsets in the industry;

- Simplify, incentivize and make clear the process of bringing foreign talent to Armenia: have clear mechanisms, tax breaks, smooth processes, clear instructions, available information to people from abroad about, for example, visa, right of employment, etc.
- Involve top experts from leading tech hubs (Europe and Silicon Valley) in entrepreneurial educational programs and processes throughout the year. This will assure the entrepreneurs have access to network and knowledge outside of Armenia and will ease their entry to those hubs. The experts should be involved in the frame of entrepreneurial educational programs as EIRs or coaches.

# MEDIA AND PROMOTION

## MEDIA PROMOTION OF ENTREPRENEURSHIP THROUGH STORIES OF NEW AND SUCCESSFUL BUSINESSES

In the past 1-2 years, there is an increased promotion and awareness of entrepreneurial activities in media. Armenian startups that boost the local tech and entrepreneurial scene have been featured in and recognized by the various local news outlets. Websites like iTel (Mediamax), VNews, StartHub, Hetq, EVN Report present and bring attention to the tech sector and the latest startup scene news. They cover events, prepare articles about startups and technology sector, write about the success stories and the developments, etc. Local media and national news media outlets feature and cover tech events. 1in channel is notable for promoting tech and entrepreneurial coverage along with Azdarar News and Ararat TV. Armenian media doesn't fall short of endorsing young and upcoming entrepreneurs and tech leaders and bring recognition their progress in tech retrospect.

## MENTIONS OF THE TECHNOLOGY SECTOR IN THE INTERNATIONAL MEDIA

Snark AI: Automated AI Engine and YCombinator Graduate featured in

### TechCrunch

<https://techcrunch.com/2018/07/25/snark-ai-looks-to-help-companies-get-on-demand-access-to-idle-gpus/>

Krisp: AI Powered Speech Enhancement featured in TechCrunch and Nvidia

<https://techcrunch.com/2018/12/10/krisp-reduces-noise-on-calls-using-machine-learning-and-its-coming-to-windows-soon/>

Dual Based Yerevan and Silicon Valley startup PicsArt featured in TechCrunch as #1 Photo and Video Editing app with more than 130m MAU at Series B Round

<https://techcrunch.com/2017/10/31/creative-focused-app-picsart-hits-100m-maus-attracting-brands-tired-of-trolls/>

XCloud Networks: "Replaces Cisco, F5, and Juniper" in Gaming Company Software according to SDXCentral

<https://www.sdxcentral.com/articles/news/gaming-company-replaces-cisco-f5-and-juniper-with-xcloud-networks/2018/08/>

Yahoo! News features the growing and inspiring tech scene in Armenian reform education and startup system

<https://news.yahoo.com/robotics-classes-armenian-teens-dream-high-tech-future-023253569.html>

Global Startup Movement Podcast discusses the future of AI driven Armenian Startup Scene

<https://open.spotify.com/episode/2ZPzP3mZCdPPZ01CbyGE8v>

Valuer V+ Lists Yerevan as top 6 of 25 up-and-coming Startup cities in 2019

<https://valuer.ai/blog/25-up-and-coming-startup-cities-to-watch/>

The Next Web: "Armenia is the Silicon Valley of Former Soviet Union"

<https://thenextweb.com/asia/2017/03/17/armenias-rising-tech-scene-new-silicon-valley-former-soviet-union/>

Apple's Entrepreneur Camp features Armenian D'efekt Creative Videography Startup as featured in TechCrunch

<https://techcrunch.com/2019/01/28/app-store-developers-have-earned-120-billion-since-2008/>

European Entrepreneurial and Innovation Media Site Sifted: "Amazing Armenia" Tech Force

<https://sifted.eu/articles/armenian-tech-startups-index-venues-picsart-2hz-defekt/>

Dual Based Yerevan and California based startup ServiceTitan now valued at \$1.65bln

<https://techcrunch.com/2018/11/14/serviceitan-raises-165m-for-its-home-services-software-are-now-valued-at-1-65b/>

Armenian startup EasyDMARC featured in DMARC software growth forecast in Digital Journal and Newswire

<http://www.digitaljournal.com/pr/427283?fbclid=IwAR2eEBQ7Qs2aobLlxCrjcZ5mXhZTHlZ2diUakBGNrohSjipy9x3G-Hwg30s>

### THE PERCEPTION OF ENTREPRENEURSHIP AND STARTUPS IN ARMENIA

Startups have a mixed perception within general society where some see it as a cool and fun space but can also be seen as an industry for people who are solely "in it for the money".

From the survey results and interviews, there are a couple of views highlighted on the perception of entrepreneurship:

- There is a perception that startups and entrepreneurship are connected with high risks which are not worth taking. It is something that is not in the spectrum of wide acceptable social norms.
- Usually, the expectation from startups are quick growth and high return, but not failure.
- Many people see tech entrepreneurship as something strange, unusual, but interesting and with a lot of potential.
- There is a perception that startups are for the younger generation. At the same time, for

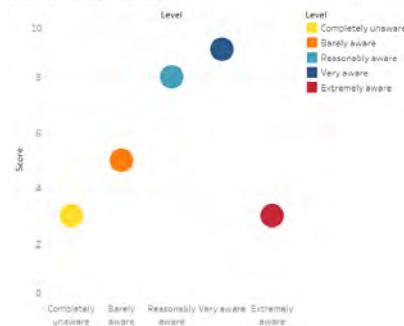
young people it is usually perceived as something fun to do. They want to be a part of the trendy movement, but don't seem to understand all the challenges of tech startups. Usage of such an unknown term in Silicon Valley as "startuper" in Armenia is sadly a sign of "startups" becoming a cool toy for some layers of the population.

There is a lack of understanding about hi-tech startups and the right perception is limited to certain community participants.

71.4% of the respondents think that the population is quite aware that it's beneficial to be in the tech industry.

From the conversations with interviewees appears that an issue might be that many people believe startups are a quick way to make money or a "cool" project to do. They do not comprehend all the challenges that are endured throughout the process of building a company.

The awareness level of the local population with higher education about the benefits of being a part of the tech/startup industry



A part of the problems is because of low awareness among the general population about entrepreneurship and startups. One of the reasons behind this is the exaggerated and too optimistic media promotion. As mentioned by the interviewee experienced in PR and media, the issue is connected with the fact that the journalists who are writing about startups and the tech industry don't have a strong understanding of technology and entrepreneurship. As a result, they are not well qualified to be able to interview individuals in the industry, have the right focus on what to cover and present their findings properly. On the other hand, most of the executives and startup founders are not aware of the importance of PR and not able to communicate with journalists in a way that would result in a realistic coverage and awareness rising.

### RECOMMENDATIONS

- Train journalists, establish a pool of literal tech journalists;
- Involve experienced PR and Communication specialists from abroad to train their local colleagues;
- Establish a joint brand for Armenian tech to be used by the majority of technological product-based companies;
- Educate startup founders on the importance of PR and business development so they prioritize presenting their products/businesses rightly to the general public, local and international media, start participating in international conferences and rising awareness.

## GAP ANALYSIS

The conducted survey and interviews proved that there are a number of issues connected to the tech and entrepreneurial ecosystem in Armenia.

The main challenges in the ecosystem ranked from biggest to smallest are lack of financing, lack of knowledge of customer needs, difficulty in selling to global markets, lack of knowledge about market trends, inability to attract quality talent, especially foreign talent both in Armenia and abroad.

Mentioned issues connected to financing were regulations and processes, the amounts of grants and the availability of opportunities. The issues related to accessing markets are limited understanding of global markets, the lack of business knowledge and skills, the lack of capital as well as the lack of resources invested in business development as mentioned by interviewees.

Another notable issue is the development of ecosystem and driving growth in regions. The problems related to this are the poor infrastructure, lack of knowledgeable and skilled workforce, the language gap, and work ethics.

The main gap in the labor market is the lack of senior talent, which was mentioned by all interviewees and was noted as extreme or large issue by 64% of the survey respondents.

In general, skilled and quality workforce appears to be quite severe issue among the surveyed organizations. This refers to both technical and soft skills.

The insufficient level of awareness and false perception among the population about entrepreneurship and tech industry are also worth mentioning as gaps that hinder the development of the ecosystem.

## STRATEGIC DIRECTIONS AND RECOMMENDATIONS

### *Reviewing existing grant schemes:*

- Simplify grant management processes for startups as they spend a significant amount of resources on administrative processes after receiving grants;
- Have more funding opportunities in the ecosystem by bringing in more grant schemes linked to existing educational startup programs;
- Consider introducing new grant category of matching already made investments (up to a certain amount);
- Optimize the process of applying for, receiving and using grants, which can be done by adjusting the requirements on documentation.

### *Synchronization of entrepreneurial education and funding:*

- Provide enough funding to startups accepted to startup incubation and

pre-acceleration programs for their founders to be able to leave their jobs and fully commit to building the company;

- Make targeted efforts in incorporating angel investing and existing startup educational programs;
- Promote more educational programs for early stage founders abroad, with special focus on fundraising.

### *Increasing the knowledge about global market:*

- Design and implement systematic exchange programs for startup founders to US and EU for better understanding of market context and business culture in those regions;
- Educate startups on importance of knowing the market and investing in business traveling;
- Allocate special funds to startup educational institutions for buying access to unique information and market knowledge from leading global analytical data and knowledge providers (e.g. Statista, CB Insights, Gartner, Pitchbook, etc)
- Establishment of permanent technological presence of Armenia in global technological hubs.

### *Regional development:*

- Continue building infrastructure in form of improving the roads to regions, hotels and ensuring minimal standard of living for the companies to consider opening branches in

regions;

- Continue providing grants to startups to relocate some of operations into regions;
- Design and offer to multinational companies incentives to operate in regions too, for example, by providing the office building for free, showing the benefits of operating from regions such as cost reduction coming from tax breaks;
- Incentivize companies to work with universities in regions by opening specific directions and educating students to have relevant knowledge and skills for the industry;
- Move senior specialists to company offices in regions to train the workforce there;
- Offer tax breaks to companies and professionals working from regions, especially those engaged in educational activities;
- Organize more events, hackathons in regions to continue cultivating the tech and business culture from early on.

#### *Education and Labor Market:*

- Make reforms in universities in form of building strong business-minded management inside, radically changing the faculty members and adjusting educational programs;
- Invite guest speakers from top tech companies to join university lectures and run practical sessions;
- Build mechanisms for students to get access to real problems and projects to work on;

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The report was prepared by Anna Tantushyan under the supervision of Hambardzum Kaghketsyan. Special thanks to the team members of Catalyst Foundation for contributions and insights, specifically to Ashot Arzumanyan and Armine Galstyan, as well as to the volunteers Norig Bakla, Areg Aslanov, Liana Karapetyan, Arpine Sargsian, and Mariam Grigoryan. Thanks to Merri Grigoryan and Anna Abramyan for the design of maps and the document. Also, thanks to all ecosystem players who participated in the survey and interviews.

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This is the initial draft version of the report, which will be finalized after receiving and addressing the feedback from the ecosystem influencers and the tech community. If you have any comments or suggestions, please email them to [info@catalyst.am](mailto:info@catalyst.am).

