EU4Digital

EU4Digital: supporting digital economy and society in the Eastern Partnership

Market Assessment for Digital Innovation and Scale-up Initiative in Eastern partner countries

Final report

June 2020

About this study

In early 2020, EU4Digital Facility launched activity 'Market Assessment for Digital Innovation and Scale-up Initiative (DISC) in Eastern Partner Countries' (hereinafter – study / research) The goal is to analyse the investment landscape for digital high tech companies in these countries: Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine.

The activity was inspired by Digital Innovation and Scale-up initiative (DISC) in Central, Eastern and South Eastern Europe region (European Commission Factsheet).

Based on the findings of this study, the European Commission will be able to adjust its plans to better serve the needs of the local markets, developing adapted financial support instruments.

This research aims to:

1. Understand digital innovation and high-tech start-ups investment landscape and identify existing gaps on investment in Eastern partner countries.
2. Map the main private & corporate equity investors that provide financing to digital start-ups and fast growth companies in Eastern partner countries.
3. Map the main public sector investment programs in start-up / tech-oriented companies at the country-level.
4. Analyse micro-level data on private investments in start-up / tech-oriented companies in the region.
5. Provide recommendations to develop and use financial instruments for digital innovation and the scale-up of high-tech start-ups.

The research focuses on **start-ups** at the creation and scale-up phases, rather than traditional SMEs on their path to digitalisation.

The sector focus is **digital high tech,** i.e. companies developing digital solutions at various degrees of engineering innovation or scientific advances[1].

The information in this study is provided based on the analysis of existing data resources and field research data collected during the interviews with the key market stakeholder groups in March-June 2020.

Acknowledgements

More than 100 regional and local ecosystem stakeholders have been interviewed and consulted to develop this study. Among them: 20+ investors (business angels, VC funds, private investors); 30+ start-ups; 25+ techparks, incubators and accelerators; 25+ international programmes supporting start-ups-innovation-SMEs in the region; 10+ local innovation agencies and policy makers; 10+ software development companies and corporate R&D centres; 10+ universities.

The study also integrates valuable contributions and remarks from three major international finance institutions (IFIs), several key local and international VC funds, other regional associations and experts. In particular the authors would like to thank the representatives of: Almaz Capital; Bulba Ventures, AVentures Capital, ABRT Venture Fund, Club Orsini; eō Business Incubators, European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Fil Rouge Capital, International Finance Corporation (IFC), Mangrove Capital Partners, R&D Ribitzky, The Organisation for Economic Co-operation and Development (OECD), Ukrainian Venture Capital and Private Equity Association (UVCA).

Team

The study was developed by central and local country teams.

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[1] This notion is larger than that of digital deep tech, which often involves scientific research or academic institutions. Digital high tech includes, in particular, AI and ML; Big Data and data analytics; blockchain, distributed ledgers and smart contracts; high-performance computing (HPC); cloud computing and cloud-based architectures; computer vision/VR/AR; smart modelling, simulation and optimisation; cybersecurity; IoT; advanced software systems for robotics and autonomous vehicles, etc.

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List of abbreviations

Table 1 List of abbreviations

Abbreviation	Full name
AI	Artificial Intelligence
AR	Augmented Reality
ATIC	Moldovan Association of Information and Communications Technology Companies
B2B	Business-to-business
B2C	Business-to-customer
BA	Business angel
CEE	Central and Eastern Europe
CEP	Community Engagement Project
COSME	Europe's programme for small and medium
CPT	Corporate property tax
CVCi FoF	Croatian Venture Capital Initiative
DEG	German Investment Corporation
DISC	Digital Innovation and Scale-up Initiative
Eastern partner countries	Six Eastern Neighbourhood countries (Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova, Ukraine)
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EdTech	Educational technology
EIB	European Investment Bank
EIC	European Innovation Council
EIF	Enterprise Incubator Foundation
EIT Digital	European digital innovation and entrepreneurial education organisation
ESIL	Early-Stage Investing Launchpad
EU	European Union
EUGIPP	European Union-Georgia Joint Project on Intellectual Property
FAST	Foundation for Armenian Science and Technology
FinTech	Financial Technology
GEclose2EU	Increasing Competitiveness of small and Medium-Sized enterprises in Georgia
GENIE	Georgia National Innovation Ecosystem Project
GITA	Georgia Innovation and Technology Agency
GIZ	German Development Agency
H2020	Horizon 2020
HNWI	High-net-worth Individuals
HR	Human resources
ICT	Information and communications technology
IFC	International Finance Corporation
IFI	International finance institution

Abbreviation	Full name
InnoCENS	Enhancing Innovation Competences and Entrepreneurial Skills in Engineering Education
INNOVATE	Innovation Based Economic Development and Private Sector Growth in Belarus Activity
InnovFin	InnovFin's project Tech Transfer, BA, VC and FoF instruments
IoT	Internet of Things
IPR	Intellectual Property Rights
IT	Information Technology
KISS	Keep It Simple Securities
LP	Limited Partnership (legal business entity)
MCP	Moldova Competitiveness Project
ML	Machine Learning
MoESD	Ministry of Economy and Sustainable Development of Georgia
Moldova	The Republic of Moldova
MVP	Minimum Viable Product
NFC	Near Field Communication
NIF	European Union Neighbourhood Investment Facility
PE	Private equity
R&D	Research and Development
RBF	Russian-Belarussian fund
SaaS	Software as a Service
SAFE	Simple Agreement for Future Equity
SEGIP	Slovene Equity Growth Investment Programme
SME	Small and Medium-Sized Enterprise
SMEDA	Support to SME Development in Armenia
SRNSFG	Shota Rustaveli National Science Foundation of Georgia
STEM	Science, Technology, Engineering, and Mathematics
Study / research	Market Assessment for Digital Innovation and Scale-up Initiative (DISC) in Eastern Partner Countries
Tech	Technology
Tekwill	Centre of Excellence in Information and Communication Technologies
UN	United Nations
UNDP	United Nations Development Programme
UPOV	International Union for the Protection of New Varieties of Plants
US	The United States of America
USAID	United States Agency for International Development
USF	Ukrainian Startup Fund
UVCA	Ukrainian Venture Capital and Private Equity Association
VAT	Value-added-tax
VC	Venture capital
VCIP	Venture Capital Investment Program

Abbreviation	Full name
VR	Virtual reality
WCIT	World Congress on IT
WIPO	World Intellectual Property Organization
WNISEF	Western NIS Enterprise Fund
WTO	World Trade Organisation

Executive summary

Current situation

Over the past few years, certain countries of the Eastern Partner countries drew attention with a series of spectacular start-up success stories in the digital field. Ukraine, Belarus and Armenia, in particular, have been the birthplace or served as the R&D base of such companies as Busfor, Grammarly, Gitlab, Looksery, MSQRD, PicsArt, Revolut. These companies have either become unicorns, or been purchased by tech giants, or asserted themselves as global leaders in their field.

The development of large pools of tech talent across in the region (in particular in Ukraine, Belarus and Armenia) explains part of this success. However, Eastern Partner countries feature only tiny numbers of start-ups and investment volumes. This is the case even in Ukraine, the largest and most advanced of all Eastern Partner countries in this field.

Table 2 Private investment in start-ups born in Eastern partner countries: average yearly numbers

Country	Inhabitants (est. 2019)	R&D / GDP (2018)	Yearly start-up influx* (2020)	Yearly VC funding (Average 2017-2019)
Armenia	3m	0.19%	40	Invested locally:** **$3m** If including deals made abroad**:*** $9m**
Azerbaijan	10m	0.18%	10	Little significant. Most start-ups not venture ready
Belarus	10m	0.61%	100	Invested locally:** **$10m** If including deals made abroad**:*** $37m**
Georgia	3.7m	0.30%	40	Little significant. Most start-ups not venture ready
Moldova	3.5m	0.25%	5	Little significant. Most start-ups not venture ready
Ukraine	40m	0.47%	200	Invested locally:** **$25m** If including made abroad:*** **$330m**
All Eastern partner countries	***70.2m***	***0.33%***	***395***	*Invested locally:** ***$38m*** *If including made abroad:*** ***$376m***
Lithuania	2.8m	0.90%	N/A	$27m
Poland	38m	1%	N/A	$329m
Romania	19.4m	0,50%	N/A	$45m
EU	*446m*	*2.13%*	*N/A*	*$29 billion*

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding. ** Invested locally: made in the country or involving a local investor. *** Deals made abroad: investments in start-ups born in Eastern partner countries but having moved to another jurisdiction.*

Source R&D/GDP: World Bank. Sources start-ups and venture volumes: DISC research, CrunchBase, as well as Lithuanian Private Equity and Venture Capital Association, Private Equity Wire (Poland), BR Business Review (Romania).

Key challenges

The underdevelopment of the start-ups scenes of Eastern partner countries stems, first, from failures of the local ecosystems. There is a lack of start-up support capacities: only half a dozen quality accelerators in Ukraine, the largest country in the region. Corporations are rarely involved; technology transfers are little developed; and, in certain countries, unfriendly legal and/or judicial environments create additional obstacles for entrepreneurs and investors.

As a result, much of the local entrepreneurial energy and tech talent is not converted into investable start-ups.

The lack of funding is the next challenge in the development path of local start-ups. The gap concentrates at the pre-seed stage and at the Series A and later stages. Country-level analysis reveals a lack of private funding at virtually all stages in Belarus, Georgia and, to a lesser extent, Ukraine. It also reveals an uneven or unsustainable distribution of public funding across the region (around €15 per capita in Armenia and Georgia; 0 in Azerbaijan, from €3 to €4 in other countries).

Successful start-ups tend to seek funding abroad as early as the Seed and Series A stages. In 2017-2019, US VCs accounted for 72% of foreign investment in start-ups from these countries (all stages included), while EU investors accounted for just 12%. This is how so many of these start-ups register in and/or or move their headquarters abroad, essentially to the USA, generally leaving only R&D teams in their home country.

Opportunity

Supporting the start-up potential of Eastern partner countries holds a double opportunity for the *Digital Innovation and Scale-up Initiative (DISC) in Eastern partner countries* which the European Union considers launching.

Bringing local start-up development to the next level

By addressing the funding gaps and providing adequate support, DISC may bring a potentially game-changing stimulus to the start-up ecosystems of Eastern partner countries.

Several countries of Eastern Europe recently showed that start-up development can, suddenly, accelerate when proper conditions are met:

- As a result of government decisions in the field of financial regulation (regulatory sandboxes introduction) and increased support of the ecosystem through design of emerging hubs and acceleration programmes, Lithuania transformed itself in just a few years: formerly the least advanced in terms of start-up innovation, it is now the fintech tiger of the region.
- Most recently in Croatia, Fil Rouge Capital, backed by the EIF and private LPs, triggered the emergence of an unexpected number of start-ups in just one year. Its large financial capacity was combined with efficient but lean start-up incubation and acceleration support.

The start-up scenes of the Eastern partner countries also have the potential to change, as witnessed by the Georgian case. In this country, the World-bank-funded GENIE programme has shown substantial first results by combining ecosystem development measures with a generous grant programme for start-ups.

Asserting Europe's role in the region

Europe, which has so far been involved to a rather modest extent in these markets, may consider a more assertive presence:

- In terms of strategic development: from AI/ML, to Blockchain, to IoT, to FinTech, the technology focus of many start-ups from Eastern partner countries revolves around key enabling digital technologies. They have the tech talent, but no large market -- while Europe does have this market and needs these technologies to embrace its digital future. Europe may consider raising new pools of innovators in its neighbourhood as assets which can capitalise on the EU ecosystems and be integrated to emerging industrial value chains.
- In terms of institutional presence: the involvement of the EU in programmes supporting local start-ups or their ecosystems has been limited so far, in spite of several useful initiatives on the ground. The EU's effort has been below that of such institutions as the World Bank, the EBRD or USAID – be it for direct start-up funding (the amount invested by the EU across the six countries seems to be in the range of €10 million, according to preliminary data) or ecosystem development.

DISC programme outline

Goals:

- Stimulate the emergence, development and scaleup of local start-ups, in particular in the field of digital high tech, through adequate financial and associated instruments, with participation from the private sector;

- Develop EU-oriented development channels involving European financial, industrial and other players.

Components:

- **Financing: from ideation to scaleup**
  - Grant programmes – intended to boost the number of start-up projects at the ideation phase and to help them cover further R&D or MVP expenses.
  - A Pre-seed and Seed facility – aiming to address the main funding gap at the early stage of development of these ecosystems, in connection with incubation and acceleration mechanisms;
  - A locally-available Series A+ facility – aiming to reduce the reliance on foreign sources of capital and to support EU-oriented scaleup.
  - A fund-of-funds – stimulating the emergence of local funds, including angel funds, and incentivising foreign funds to invest in the region.
- **Associated support**
  - An incubation mechanism will support entrepreneurs at the ideation phase and in the initial stage of start-up development, providing them with financing, coaching, training, legal and other support
  - Acceleration support will provide mentoring and support services on the ground as well as access to EU accelerators, business and institutional networks;
  - To operate efficiently in the local context, the fund-of-funds should be associated with a capacity-building programme for the investors it will be dealing with – typically, sharing investment know-how and international best practices with business angels. In addition, when attracting international VC teams to Eastern partner countries, the funds-of-funds may help them operate locally in terms of staff, pipe and connections.

Main design principles:

- **Regional-level funding facilities**: the funding facilities may be designed centrally and deployed in all countries. There is no need to create distinct funds on a country basis.
- **Smart financing:** as mentioned hereabove, each funding instrument should be associated with portfolio support programmes (incubation, acceleration), addressing a crucial need of local start-ups and the lack of efficient local capabilities.
- **Local accessibility and adaptation**: to make the DISC programme effectively accessible on the ground, and due to the limited number of reliable intermediaries, local DISC offices should be opened in each country with a dedicated team of fund managers. In order to address local specifics efficiently, a certain latitude should be left to these fund managers in terms of investment strategy and programme implementation.
- **Limited reliance on local intermediaries**: local incubators, accelerators and other support organisations are few and rarely meet quality requirements. In many cases, DISC should have to develop its own portfolio support programmes or raise its partners' capacity to run such programmes.
- **Market-driven**: DISC should incentivise start-ups to keep a part of their activities in their country of origin, rather than impose unrealistic requirements on headquarter location. While working with fund manager, DISC should avoid imposing excessive requirements on, or interferences, with investment strategies.
- **Private sector participation** should be ensured at the key levels: co-funding the facilities, co-investing in start-ups, jointly design or manage portfolio support programmes, articulating the acceleration and scaleup process with emerging industrial value chains.
- **Middle- long-term strategy**: to harvest the benefits of investing in maturing ecosystems, the investment period of the DISC financial instruments may be set at six years.

Strategic orientations:

- **EU integration:** DISC should open to Eastern partner start-ups considerable and underused opportunities in the EU market in terms of investment, acceleration, commercial development and industrial integration. This EU orientation should be strong, but not exclusive, allowing these start-ups to seek opportunities in other geographies.
- **Tech focus:** DISC may support, in particular, digital high tech (e.g. AI/ML, Blockchain, IoT, FinTech), but through a differentiated approach by country, taking into account the emergence of market-driven specialisations and/or prioritisation policies.

Amount and impact

Large capital injections would not, in the short term, be fully efficient or necessary due to the currently limited number of investable start-ups. Funding instruments should nevertheless be established from the very beginning, associated with the required incubation and acceleration support. The number of investable start-ups may increase dramatically from the second year, as entrepreneurship grants and pre-seed investments will bring their effect.

Over six years, the total required funding amount in six countries could amount to some €850 million,[2] including:

- €190 million for the grant programmes;
- €90 million for the pre-seed and seed facility;
- €270 million for the Series A+ fund;
- €300 million for the fund-of-funds.

If talking into account the management fees, programme organisation costs, the costs associated to the portfolio support programmes and potential capacity-building programmes, the amount could be within the range of €1 – 1.2 billion.

In certain cases, ecosystem maturation may come fast, allowing to consider more substantial amounts. In a moderate growth perspective, the impact of the programme across the six countries over six years may be as follows:

- Some 1,000 start-ups financed directly (20% of the total number of emerging start-ups in the region);
- Around 30 start-up investment funds (private, public, local, international) backed by the fund-of-funds;
- Nearly 25,000 beneficiaries of grant programmes, including pre-entrepreneurs, start-ups and R&D teams.

The impact could be even higher, should DISC fully succeed to be a game-changing factor in certain countries.

Alternative approach

The alternative approach could be considered based on a lower amount facility (€85 million) invested by the EU financial institutions and partnering organisations. Such amount should be sufficient to address the funding gaps at the pre-seed stage across Eastern partner countries. However, it will be sufficient neither to support the development of locally-available investment funds nor to bring a deep impact on the local ecosystems.

Report structure and further DISC activation

This report includes two main parts:

- **Analysis** of start-up investment across Eastern partner countries, from both the public and the private sides.
- **Recommendations** on a possible design and implementation of DISC funding instruments in these countries.

Going further, the DISC research team analysed in depth, for each country, the characteristics of their ecosystems and of the related legislation, tax regimes and judicial systems. Some additional suggestions have been formulated to address the related issues while designing and implementing DISC in the region, ensuring its full success. These additional documents are not included in this report but are available.

To implement such a programme, the implementer may consider, in particular, the following next steps:

- Detailed design of the funding facilities and involved instruments;
- General framework for start-up selection and the use of funding instruments;
- Detailed design of the portfolio support mechanisms (incubation and acceleration programmes);
- Tender specifications to select country-level VC teams and other partnering organisations;
- Identification of European acceleration capacities, industry networks and emerging value chains which could be involved in the programme;
- Detailed roll-out plan at the regional level and per country;
- Design relevant legal and business patterns for international start-up development (management of legal entities in Eastern partner /EU/other jurisdictions, IP transfers, etc.)

[2] Without management fees

Part I: Analysis

This part presents the private and public start-up investment landscape across Eastern partner countries, as well as brief overviews of such related issues as: start-up development paths, ecosystem issues, legal and tax environment.

The Analysis reflects a three-month research involving both local and international stakeholders and experts.

The data (presented in analytical lists of funds, deals, and public programmes) stems from:

- Open data sources such as Crunchbase and Clutch;
- Industry reports provided by local associations and organisations such as AngelsBand (Belarus), GITA (Georgia) and UVCA (Ukraine);
- Additional information provided directly by local players;
- Media sources such as TechCrunch, VentureBeat, Ukraine Digital News, AIN.ua;
- CEE Software Analysis by Yevgen Sysoev and AVentures.

These sources combined have provided a unique set of data, probably unmatched for certain countries. However, due to a certain lack of deal transparency and structured data sources, this set of data is not comprehensive.

Table 3 Part I. Analysis - table of contents

1 Analysis: Insights

Insight #1: Yearly amount of venture funding

As reflection of the lack of maturity of ecosystems across Eastern partner countries is the fact that the numbers of start-ups emerging each year remain modest even in the largest and most advanced countries - Ukraine and Belarus. Besides, if considering only domestic transactions, Eastern partner countries feature very modest amounts of venture funding. They lag behind such neighbours as Lithuania (€24 million), Romania (€40 million) or Poland (€294 million).[3]

However, if including the deals involving start-ups born in Eastern partner countries but operating abroad, and involving international investors, the numbers are more significant (e.g. $330 million for Ukraine). This concern, in particular, start-ups born in Ukraine.

With $788 million raised between 2017 and 2019 four start-ups with Ukrainian roots (GitLab, Grammarly, People.ai, Bitfury) accounted for the overwhelming part of the funding volume related to start-ups from Eastern partner countries.

Table 4 Private investment in start-ups born in Eastern partner countries: average yearly numbers

Country	Inhabitants	Yearly start-up influx*	Yearly VC funding (average 2017-2019)
Armenia	3m	40	Invested locally:** **$3m** If including deals made abroad**: $9m**
Azerbaijan	10m	10	Little significant. Most start-ups not venture ready
Belarus	10m	100	Invested locally:** **$10m** If including deals made abroad**: $37m**
Georgia	3.7m	40	Little significant. Most start-ups not venture ready
Moldova	3.5m	5	Little significant. Most start-ups not venture ready
Ukraine	40m	200	Invested locally:** **$25m** If including made abroad: **$330m**
All Eastern partner countries	**70.2m**	**395**	Invested locally:** **$38m** If including made abroad: **$376m**

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually, raise funding. ** Invested locally: made in the country or involving a local investor. Source: DISC research, CrunchBase.*

[3] 2019 estimates. Sources: Lithuanian PE and VC Association (Lithuania), Inovo Venture Partners / Private Equity Wire (Poland), Claudiu Vrinceanu / BR Business Review (Romania)

Insight #2: Analysis of private investment activity

Local investors account for nearly half (48%) of the investment volume at the pre-seed stage scene. Individual investors play a significant role only in Ukraine and Belarus, where their investments may exceed those of local VC funds.

Starting from the Seed stage, international investors are predominant, reaching 98% of the transaction volumes at the latest stages (Series B+).

Among foreign investors, US VCs account for 72% of investment in start-ups (all stages included), leaving EU investors far behind. Many start-ups born in Eastern partner countries register in and/or or move their headquarters to the USA as soon as they start developing internationally.

Table 5 Private investment in start-ups born in Eastern partner countries: Estimated amounts in million USD per stage, type and origin of investors (2017-2019)

Investor type	Pre-seed	Seed	Series A	Series B+
Locally-represented VCs	2.70 (16%)	11.66 (18%)	23.45 (21%)	17.00 (2%)
International VCs	2.67 (16%)	47.80 (74%)	86.85 (79%)	905.00 (98%)
Local BAs	5.32 (32%)	5.00 (8%)	-	-
International BAs	Little significant	-	-	-
Local accelerators	Little significant	-	-	-
International accelerators	6.05 (36%)	-	-	-

Sources: Crunchbase complemented by DISC research

The proportion of pre-seed deals (33 out of 220 identified deals) is very tiny. The seed-to-Series A conversion rate (28 Series A / 111 seed investments) is, on the contrary, fairly high.

Table 6 Number of deals closed by start-ups from Eastern partner countries in 2017-2019 - analysis by stage

Stage	Number of deals
Pre-seed	33
Seed	111
Series A	28
Series B+	23
Other / non specified	25
Total number of deals identified	**220**

Sources: Crunchbase complemented by DISC research

Insight #3: Analysis of start-ups that raise funds

Out of 183 start-ups analysed, 28 reach the Series A stage, 23 reached Series B+, 10 were sold (independently from preceding funding stages).

Table 7 Analysis of start-up performance from early stage to later stage and exits

Criteria	Number of start-ups
Number of start-ups analysed	183
Number of start-ups reaching Series A	28
Number of start-ups reaching Series B+	23
Number of exits	2

Sources: Crunchbase complemented by DISC research

Start-ups born in Eastern partner countries take on average 3.48 years from inception to reach a Series A round, just under global average -- and faster than their European or Asian peers.

Table 8 Average number of years between start-up inception and Series A

Startup origin	Average nb. of years between start-up inception and Series A
Start-ups from Eastern partner countries	**3.48**
Global average	**3.8**
USA	3.6
Europe	4.1
Asia	3.9

Sources: DISC research (start-ups born in Eastern partner countries), special contribution from CrunchBase for other regions

If judging by those raising funding rounds, start-ups born in Eastern partner countries tend to specialise in digital high tech (53,6%) or cover other IT fields outside digital high tech (33,2%).

Table 9 Tech focus[4] of start-ups from Eastern partner countries raising venture rounds (2017-2019)

Digital high tech	Large IT focus	Large tech focus	Large tech/non-tech focus
118 (53,6%)	73 (33,2%)	14 (6,4%)	15 (6,8%)

Sources: DISC research

The most successful start-ups in terms of funding or exits follow a specific development path:

- Rather than deep tech projects, these start-ups develop digital technologies that require neither the backing of scientific institutions nor considerable capital injections.
- Hence, their rounds of funding generally involve small until the late stage or even exit.

[4] **'Digital high tech'** refers to start-ups developing digital solutions at various (not necessarily deep) degrees of engineering innovation or scientific advances. This may include in particular: AI and ML; Big Data and data analytics; blockchain, distributed ledgers and smart contracts; high-performance computing (HPC); cloud computing and cloud-based architectures; computer vision/VR/AR; smart modelling, simulation and optimisation; cybersecurity; IoT; advanced software systems for robotics and autonomous vehicles. **'Large IT focus'** refers to start-ups using information technology without seeking to develop specific engineering innovation or scientific advances i.e. many edtech, e-commerce or gaming start-ups, for example. **'Large tech focus'** refer too such fields as biotech, hardware, electronics, etc. **'Large tech/non-tech focus'** refers to young companies developing innovative products or services without a substantive tech dimension, e.g. next-gen furniture, mechanic toys, digital marketing agency.

- Due to the failures of the local ecosystems, these start-ups move abroad as soon as they can, leaving in their home country only R&D teams.
- These successful companies are now established in the USA, mostly Silicon Valley, and raise funds there - or were sold to such US digital giants as FB, Google and Snapchat.

This US path to global success was followed by all the start-ups that completed large funding rounds ($30 million or more) or were sold to large US digital companies. These start-ups are AIFactory, AIMatter, Gitlab, Grammarly, Looksery, MSQRD, People.ai, and Workfusion. Amsterdam-headquartered Bitfury is the only exception..

Insight #4: Analysis of local VC funds

There are 25 privately owned or managed funds investing in start-ups and based or represented in Eastern partner countries. Ukraine hosts twelve of these funds, far ahead from any other country.

These locally-represented funds invest essentially at the Seed and Series A stages, in relatively small numbers of start-ups. Checks are generally in the hundreds of thousand USD, sometimes a few millions. Local funds invest mainly in information technologies at large (33,2%) including specifically digital high tech (53,6%).

Table 10 Number of funds based or represented in Eastern partner countries involved in deals at various stages

Pre-seed	Seed	Series A	Series B+
9	23	13	4

Source: CrunchBase

Table 11 Investment capacity of the funds based or represented in Eastern partner countries

Checks	
Up to $100k	23
Up to $500k	22
Up to $3m	10
$10m or more	4

Number of portfolio companies	
Exceeds 5	7
Exceeds 10	6
Exceeds 15	1
Exceeds 20	2

Reads as follows: 23 funds (out of 25) offer checks of up to $100k, which means that 2 funds offer only checks <$100k. Only 4 funds may invest $10m or more. Source: DISC research

Table 12 Investment focus[5] of funds based or represented in Eastern partner countries

Digital high tech	Large IT focus	Large tech focus	Large tech/non-tech focus
118 (53,6%)	73 (33,2%)	14 (6,4%)	15 (6,8%)

Source: DISC research.

[5] Funds with a '**digital high tech focus'** seek start-ups that develop digital solutions at various (not necessarily deep) degrees of engineering innovation or scientific advances (see examples above). Funds with a '**large IT focus'** seek start-ups developing any type of information technology, including but not limited to digital high tech (i.e. including edtech, e-commerce or gaming start-ups, for example). **'Large tech focus'** refers to any type of technologies, including IT, biotech, hardware, electronics, etc. **'Large tech/non-tech focus'** refers to funds operating in a variety of fields, including technological ones and traditional ones. This is typically the case of PE funds which have some tech start-ups in their portfolio.

Insight #5: Public funding programmes

This research analysed the main local and international public programmes and facilities aiming to support start-up innovation across Eastern partner countries.

As far as international programmes and facilities are concerned, the analysis reveals that:

- The major part (around 70%) of the investment effort has been focused on supporting the ecosystem and its physical infrastructure, while direct funding support programmes have been more modest or underused;
- The effort has not benefited Eastern partner countries evenly: Armenia and Georgia have been proportionately supported more ($19 and $15 per capita, respectively) than Ukraine and Belarus (around $3.5);
- The involvement of the EU in direct or indirect start-up funding has not matched that of such other organisations as the World Bank, USAID or the EBRD.

Table 13 Programmes/facilities for direct/indirect start-up funding (without ecosystem support). Estimate in million USD as of June 2020

Institution	Amount (in million USD)
EBRD	36.21
World Bank	32.98
DEG (Germany)	23.52
USAID	15.00
EU	10.81
RVC (Russia)	10.00

Source: DISC research, based on non-exhaustive identification of international support programmes and facilities dedicated to start-up innovation across Eastern partner countries. Includes on-going, recently completed and yet-to-be deployed programmes.

2 Analysis: Private start-up investment

As start-up ecosystems in Eastern partner countries are at an early or embryonic stage of development, private investment provides the required support neither quantitatively nor qualitatively. This market failure may be summarized as follows:

- Pre-seed stage funding is scarce due to the lack of funds, the tiny numbers of individual investors, and widespread inadequate perceptions of technology investment.
- Seed stage capital may be more accessible in certain countries (Ukraine and, to a certain extent, Belarus and Armenia) as well as through international accelerators -- but this accessibility is only relative.
- Starting from Seed and Series A, the best start-ups strive to find funding abroad as part of their international expansion and/or relocation strategies, offering an indirect demonstration of the lack of funding opportunities in their home countries.

Thus, local private capital often fails to support start-ups when they emerge, and to retain them as they scale up.

On their side, international investors know little about these markets and even less about how to penetrate them. Only the diasporas bring, in certain countries, an influx of international experience and capital.

When dealing with start-ups from Eastern partner countries, international investors do not have to scout them: it is the most successful start-ups from there that come to them, trying their chance in internationally-oriented accelerators and/or large US or European tech hubs.

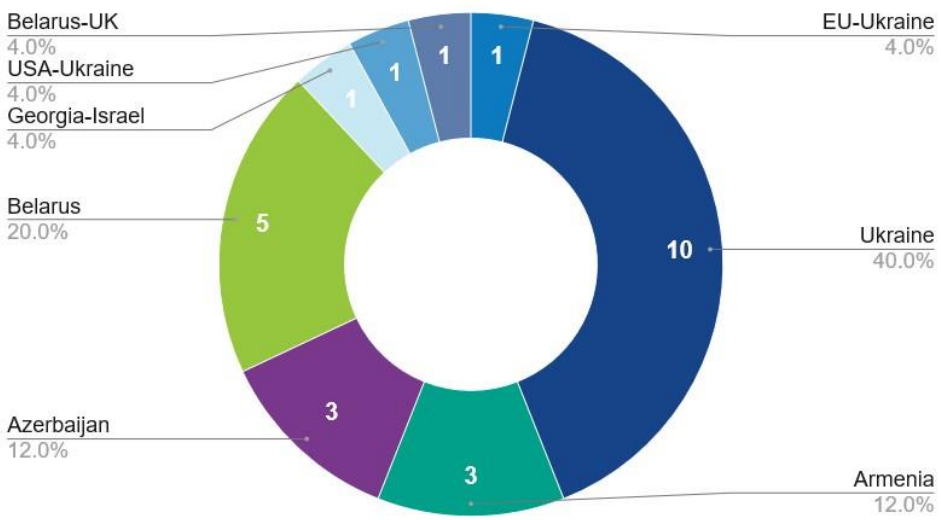
2.1 Who invests in start-ups from Eastern partner countries

2.1.1 Locally-represented investors

Funds

This research identified 25 privately-owned or -managed funds based or represented in Eastern partner countries and investing in start-ups. Ukraine hosts twelve of these funds (including a USAID-funded one and an EU-headquartered one), far ahead from any other Eastern partner country.

Figure 1 Locally-present funds: number of funds by country of operation as of May 2020



Source: DISC research

Table 14 Privately-owned or managed, locally-represented funds investing in start-ups across Eastern partner countries

Name of fund	Origin/ team location	Year of launch	Size	Target maturity stage	Target segments & other comments	Target geographies*	Tickets	Portfolio start-ups**	Exits
Acrobator Ventures	EU	2019	Target: €20m Actual: €4m	Seed + Pre-seed	SaaS, BigData/ML/AI, Marketplaces, EdTech, AdTech/MarTech, HR Tech	EU + CEE/FSU	$50k-$1.5m	13	0
AVentures Capital	Ukraine	2012	Actual: >$20m	Seed + Series A	Software, AI & Big data, e-commerce, cloud services, mobile technology, IoT and others.	Eastern Europe	$500k-$2m	14	1
Aybuben Ventures	Armenia	2019	Announced: $50m	Seed + Pre-seed	IT	Armenia	$500k-$3m	0	N/A
AzFinance	Azerbaijan	N/A	Not applicable (large financial company)	Seed to growth	Large tech/non tech focus (traditional financial institution having occasionally invested in tech start-ups)	America, Europe, Russia and Asia	-	2	0
Bulba Ventures	Belarus	2018	N/A	Seed + Series A	ML	Belarus	€50k - €500k	8+	0
Chernovetskyi Inv. Group	Ukraine	2012	N/A	Seed + Series A	IT sector and the Internet	Ukraine	$1m- $5m	4+	3
Digital Future	Ukraine	2014	N/A	Seed + Series A	Advertising technologies, digital marketing, artificial intelligence, security, Internet-of-Things, SaaS, marketplaces, B2B, B2C.	Ukraine + globally	$50 -$500k	21+	3
Dragon Capital	Ukraine	2012	N/A	Later stages	Large financial group. Investments in IT	Ukraine	$3-5m	2+	N/A
Genesis Investments	Ukraine	2018	N/A	Seed + Pre-seed	Start-ups in Mobile, Health Tech, EdTech, Fitness & Wellness, B2B SaaS, and AI/ML industries	Ukraine, Belarus, Baltic countries.	$100k - $1m	11+	N/A
Global Startup Foundation	Georgia - Israel	N/A	N/A	Seed + Pre-seed	AI,Cybersecurity, Digital media, eCommerce, Mobile, Applications, Fintech, VR, AR,Blockchain, IoT,	Georgia	Up to $30k	N/A	0
Granatus Ventures	Armenia	2013	Announced: $26m	Seed + Pre-seed	ICT (enterprise software, consumer internet, digital media, mobile technologies); engineering (hardware, software and electronics); materials sciences and cleantech.	Armenia	$500k-$3m	11+	N/A
Haxus	Belarus	2016	N/A	Seed + Pre-seed	AI, ML, and CV	Belarus + globally	$300k-$2m	6+	3

* CEE: Central & Eastern Europe - FSU: Former Soviet Union **Only tech start-ups (cases of funds with a larger focus).
See further analysis of fund strategies in *Part I. Analysis, Section 3.*

Table 15 Internationally-owned or managed funds investing in start-ups across Eastern partner countries

Name of fund	Origin/ team location	Year of launch	Size	Target maturity stage	Target segments & other comments	Target geographies*	Tickets	Portfolio start-ups**	Exits
Horizon Capital	Ukraine	2006	$700m (large PE fund)	PE/ Later stages	IT, e-commerce + light manufacturing, food and agriculture, healthcare and pharma, consumer goods	Ukraine	$4m - $40m	11+	0
ICU	Ukraine	2018	N/A	Seed + Series A	IT	Founders /R&D in CEE	$1.5m	9+	N/A
Khazar Ventures	Azerbaijan	2013	N/A	Seed + Series A	App projects, web platforms and services, consumer products, e- and m-commerce, foodtech, fintech and ad tech.	Azerbaijan	N/A	14+	0
Russian Belarusian Fund	Belarus	2012	$20m	Seed + Series A	Technology	Belarus + Russia	Up to $2m	3	0
SmartGate VC	Armenia	2017	N/A	Seed + Pre-seed	Artificial Intelligence (AI), Security, Internet of Things (IoT) and emerging Biotech, Quantum Computing and Blockchain	Armenia + Armenia-rooted in the US	$1.5m	13	N/A
SmRK VC	Ukraine	2013	$10m	Seed + Series A	IT	Ukraine	$100k - $1m	13+	N/A
Sup VC	Azerbaijan	2015	N/A	Seed + Pre-seed	IT	Azerbaijan	Up to $100k	19+	N/A
TA Ventures	Ukraine	2010	N/A	Seed + Series A	Mobility, Digital Health, FinTech, PropTech, and AI-enabled Enterprise Software	Europe, USA, emerging markets	$250k--1m	8+	N/A
TechMinsk fund	Belarus	2013	Actual: $1.5m	Pre-seed	Mainly digital high tech	Belarus	Up to $50k	4	0
u.ventures	Ukraine	2016	Announced: $5m	Seed + Series A	Technology	Ukraine + Moldova	$100k - $500k	9	0
Vostok Ventures	Ukraine	2012	N/A	Seed + Series A	IT, mobile applications, e-commerce, cloud services, and the gaming industry.	Eastern Europe	$200k - 5m	N/A	0
VP Capital	Belarus	2012	N/A	Seed + Series A	Tech companies + real estate - generates own projects rather than invests in external teams	Belarus + global	N/A	4	0
Zubr Capital	Belarus	2009	Announced: $90m (PE/VC fund)	Seed to Later stage	High-tech	Belarus, Russia, Ukraine	N/A	6	0

* CEE: Central & Eastern Europe - FSU: Former Soviet Union **Only tech start-ups (cases of funds with a larger focus)
See further analysis of fund strategies in *Part I. Analysis, Section 3*.

Individual investors

Individual investment in tech start-ups is rare in Eastern partner countries. Not because these countries lack wealthy individuals, but because these usually prefer to invest in traditional sectors, as indicated below *(Part I. Analysis, Section 2.1).*

In the absence of reliable data, this research has estimated at less than a hundred the number of active or motivated individual investors in the largest countries (Belarus, Ukraine), and little significant numbers in other ones. However, in the case of Ukraine, and Belarus to a lesser extent, individual investments account for substantial amounts by local standards *(see country-level analysis in Part I. Analysis, Section 4).*

When they exist, business angel networks seem to be on the decline (Georgia, Ukraine) or not very active yet in terms of deals (Moldova). In comparison, the young and active Belarusian association AngelsBand could look gigantic with its 90 members.

It is not always accurate to call business angels these individual investors who come from traditional sectors. In Georgia, some prefer to call them *"devils,"* referring to their aggressive approach to company valuation and control matters.

At least can one say that extremely few individual investors in these countries have experience and connections in the very specific fields of technology investment and start-up development. Hence their capacity to become valuable mentors of start-up teams is limited.

Involvement of local corporations

So far start-ups from Eastern partner countries have not received much support from the corporate world. In Ukraine, the largest of these countries, not a single case of corporate funding took place so far, according to the most attentive local observers.

As a rule, local corporations have not involved themselves significantly in the ecosystem. They are in need for technical talents, absorbing them from IT schools - but often reluctant on open innovation, giving preference to in-house development or to buying supplies abroad.

However, encouraging signs of corporate involvement in start-up ecosystems have come recently from Ukraine:

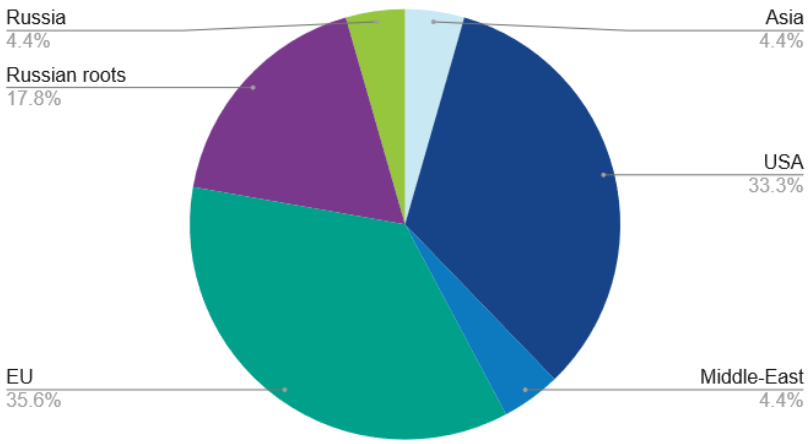
- At **Unit City,** the capital's largest innovation hub, open innovation activity is developing fast, involving both international corporations and such local ones as domestic corporations DTech (energy) and Kyiv Star (telecom). Corporate innovation teams account already for more than one third of Unit City's residents.
- The **Platform of Innovation Partnership** (YEP), with support from Cisco, recently announced the launch of a network of business incubators in four universities in Kyiv and Donetsk.
- At Kyiv Polytechnic Institute, the **Kyivska Polytechnika science park** has partnerships with a variety of domestic and international corporations.

In Belarus, IT service giant EPAM is one of those who tend to cooperate more intensively with local start-ups. Generally, however, Belarusian and Ukrainian IT companies are to start-ups more of a place of birth than a source of financing or potential acquirers.

2.1.2 Foreign investors

In 2017-2019, at least 78 international funds backed start-ups were born in Eastern partner countries. One third are headquartered in the USA and another third from EU countries. A specific group, international funds with Russian roots, account for some 18%. Funds from other countries are less involved.

Figure 2 Privately-owned or managed international funds investing in start-ups from Eastern partner countries (2017-2019): analysis by geographic origin



Source: DISC research, Crunchbase

Involvement of international funds at the pre-seed stage

Foreign investors are very little involved at the pre-seed stage in Eastern partner countries. Notable examples include:

- **Bas Godska and his fund Acrobator Ventures -** a Dutch businessman living in Kyiv, Godska is probably the most prolific foreign business angel and mentor across the former Soviet Union (Ukraine, Russia, Kazakhstan) with involvement in 40+ start-ups in almost a decade. Among the most successful cases of his individual investment activity are Miro, a Russia-born potential unicorn now headquartered in California (https://bit.ly/3804a3l) and Chocolife, a Kazakhstani start-up that has IPO plans. Godska has backed several Ukrainian start-ups, the latest case being Respeecher in a deal that involves other local and foreign investors (https://bit.ly/316hKB4). Building on this experience, Godska co-funded a fund, based in Western Europe, which plans to invest up to €20 million in the coming years from pre-seed stage to later stages partly in the former Soviet Union (https://bit.ly/2UMqN6n).
- The **Global Startup Foundation** (https://bit.ly/2B3nxg5) is practically the only active private investment fund active in Georgia, backed by Jerusalem-based investors. As of June 2020, this organization had made just one deal (https://bit.ly/3duSqqM), taking advantage of the matching grants offered by the World Bank via GITA, the national innovation agency. Two additional matching deals were under discussion.
- **Members of the traditional diasporas** (Armenia) or more recent **tech émigrés** (Ukraine, Belarus) who get involved in the start-up ecosystem of their country of origin. While just one or a few dozens of people per country are concerned, these communities are important because they bring back with them valuable experience from the USA, Western Europe or Russia.[6]

Many start-ups from these countries apply for leading foreign accelerators such as StartupBootcamp (UK), SeedStars (Switzerland), EIC Accelerator (EU), Starta, TechStars, Y Combinator and 500 Start-ups (USA). They also apply for accelerators in neighbouring countries (e.g. Huge Things in Poland, Startup Wise Guys in Estonia). Ukrainian and Belarusian start-ups have been seen as far as Singapore's Betatron and Startup Chile.[7]

Cases of funding from foreign accelerators are not very numerous, if judging by the performance of Ukrainian start-ups in 2018 and 2019. However, the amounts provided by these accelerators - which this research estimates at around $2 million per year - account for an important part (40%) of the funding provided in the region at the Pre-seed stage *(see tables below).*

[6] Example from Russia: **Ruben Vardanyan** supports some Armenian start-ups but rather with advice and commercial introductions than with money.

[7] An example is PromoRepublic, a start-up founded in Kyiv in 2013, which in its first five years managed to join and complete no less than four acceleration programs Estonia, Chile, Finland and ultimately the USA. https://bit.ly/2Nsdkwj

Table 16 Number of identified Ukrainian start-ups having received funding from major international accelerators in2018 and 2019

Year / Accelarator	Betatron	EIC Accelerator	Huge Things	Starta Accelerator	Startup Wise Guys	TechStars	Y Combinator	500 Start-ups
2018	1	0	0	1	5	3	1	0
2019	0	2	1	0	4	0	0	1

Source: AVentures Capital

Only one case of an Armenian-born company graduating an international accelerator was reported in three years. Taking advantage of their strong appeal, many leading international accelerators do not bother promoting their offers in Eastern Europe. Some of them, however (e.g. 500 Start-ups, Demium, Seedstars, StartupWiseGuys) make extra efforts to identify, and enrol locally, the best start-ups.

Table 17 Privately-owned or managed international funds investing in start-ups from Eastern partner countries (2017-2019)

Fund	Geographic origin	Fund	Geographic origin
500 Fintech Fund	USA	**Inovo Venture Partners**	EU
500 Start-ups	USA	**iTech Capital**	Russian roots
Admitad Invest	Russian roots	**K Cube**	Asia
Almaz Capital	Russian roots	**Khosla Ventures**	USA
Altair	Russian roots	**Knuru Capital**	Middle-East
Andreessen Horowitz	USA	**Korelya Capital**	EU
Anorak Ventures	USA	**Larnabel Ventures**	Russia
Birchmere	USA	**Lian**	EU
Blackstone	USA	**Lightspeed Venture Partners**	USA
bValue	Central Europe	**Liquid2**	USA
Cabra	EU	**London Venture Partners**	EU
CAV Investment Group	USA	**Macquarie Capital**	EU
CoinFund	USA	**Mangrove Capital Partners**	EU
COLOPL	Asia	**March Capital Partners**	USA
Da Vinci Capital	Russian roots	**Microsoft Ventures**	USA
Dentsu	Asia	**Mission Tech**	USA
Diligent Capital Partners	EU	**Northstar Ventures**	EU
Draper Associates	USA	**OSK Ventures**	Asia
Earlybird	EU	**OTB Ventures**	EU
Effective Investments	EU	**Overkill Ventures**	EU
e.Ventures	EU-USA	**Point Nine Capital**	EU
Fifth Third Capital	USA	**QED**	USA
FinForge	Russia	**Ringier**	EU
Finnish Public Fund	EU	**Rostec**	Russia
Flashpoint	EU	**RTA Ventures**	EU

Fund	Geographic origin	Fund	Geographic origin
Flint Capital	Russian roots	**Runway Venture Partners**	USA
FoundersClub	USA	**Salesforce Ventures**	USA
Gagarin Capital	Russian roots	**SCM Advisors**	EU
Gaingels	USA	**SDVentures**	Russian roots
Galaxy Digital LP	USA	**Sequoia**	USA
General Catalyst	USA	**Sierra Ventures**	USA
GGV Capital	USA	**Silverton Partners**	USA
Goldman Sachs	USA	**Speedinvest**	EU
GV	USA	**Startup Wise Guys**	EU
Hive	USA	**Startupbootcamp**	EU
Icebreaker	EU	**Sutter Hill Ventures**	USA
Iconiq Capital	USA	**TMT Investments**	Russian roots
Imperious Group VC	Russia	**True Ventures**	USA
Information Venture Partners	Other	**Y Combinator**	USA

Source: DISC research, CrunchBase

Involvement of international funds at further stages

Foreign tech funds are interested in strong entrepreneurs with great technologies no matter where they come from. So, as soon as strong start-ups from Eastern partner countries get mature and insert themselves into the international venture game, they attract investors' attention much more easily than when they were less mature and virtually invisible in their home country.[8]

Thus, international VCs from the West - mainly from the USA, Germany and the UK - are increasingly looking at Ukrainian start-ups, as well as Balarusian ones to a lesser extent. Data show their strong involvement in Series A or further rounds.

Investors from the start-up's home country are still involved in a significant fraction of these international Seed or further stage rounds.

Notable examples of foreign funds investing in start-ups from Ukraine, Belarus and Armenia at the Seed and Series A+ stages include:

- **Iconiq Capital** provides financial advisory and family office services, and manages direct investments across asset classes, with specific focus on technology growth equity, venture capital, middle market buyout and real estate. In 2019, Iconiq was a co-investor in the $268 million round to Ukrainian-born start-up GitLab. It also became a lead investor in a $60 million Series C round for People AI.
- **General Catalyst** makes early-stage and growth equity investments. To date, General Catalyst has managed eight venture capital funds totalling approximately $3.75 billion in capital commitments. In 2019, General Catalyst invested 90 million dollars in Ukrainian start-up Grammarly.
- **GGV Capital** is a multi-stage, sector-focused firm, GGV focuses on seed-to-growth stage investments across Consumer/New Retail, Social/Digital & Internet, Enterprise/Cloud and Frontier Tech sectors. The firm was founded in 2000 and manages $6.2 billion in capital across 13 funds. It was a co-investor in Ukrainian start-up People AI during a $30 million Series B round in 2018.
- **Lightspeed Venture Partners** is a venture capital firm that engages in consumer, enterprise, technology, and cleantech markets. It focuses on seed, early-stage, later stage, expansion stage, start-up, growth companies, and incubation and specializes in debt financing for start-up and growth companies. In 2018, LVP was a co-lead investor in a $30 million Series B round in People AI.

[8] More easily than before – but still perhaps not as easily as their Western peers. When entering the global market, start-ups entrepreneurs from Eastern partner countries may be disadvantaged in terms of cultural and linguistic adaptation, market knowledge and business networking. This is why it is sometimes said that Eastern European start-ups succeeding in the West may be technologically even stronger than Western ones, compensating in this way potential cultural and business disadvantages.

- **Mangrove Capital Partner** – An early investor in Skype and several other successful companies, Mangrove has asserted itself as one of the most prestigious Western European funds. One of his partners, Belgian David Waroquier, has kept an eye on the Eastern European start-up scene since the mid-2000s. Thus, the fund made several investments at the Seed and Series A+ stages in Russia (KupiVip, Oktogo, Travelata) as well as, more recently, in companies from Belarus (https://prn.to/2VcRDVr) and Ukraine (https://bit.ly/2VtxPxd).
- **Microsoft Ventures,** the venture capital arm of Microsoft, currently invests in technology companies (Series A and beyond) in North America and Israel. They became one of the investors in Belarussian start-up PandaDoc in a $15 million Series B round in 2017.
- **Point Nine Capital** is a Berlin-based venture capital firm focused on early-stage investments related to SaaS and digital marketplaces. It became a lead investor in Preply, during a $4 million round in 2018.
- **TMT Investments,** a London-listed fund with Russian roots, invests in high-growth technology companies across a number of core specialist sectors. It has a significant number of Silicon Valley investments in its portfolio. It was a lead investor during a $1.5 million Seed investment in Ukrainian service RetargetApp.

Starting from the Seed stages, and growingly at further stages, foreign investors contribute the overwhelming part of the funding of start-ups from Eastern partner countries.

Table 18 Private investment in start-ups born in Eastern partner countries: estimated amounts per stage, type and origin of investors (2017-2019), in million USD

Investor type	Pre-seed	Seed	Series A	Series B+
Locally-represented VCs	2.70 (16%)	11.66 (18%)	23.45 (21%)	17.00 (2%)
International VCs	2.67 (16%)	47.80 (74%)	86.85 (79%)	905.00 (98%)
Local BAs	5.32 (32%)	5.00 (8%)	-	-
International BAs	Little significant	-	-	-
Local accelerators	Little significant	-	-	-
International accelerators	6.05 (36%)	-	-	-

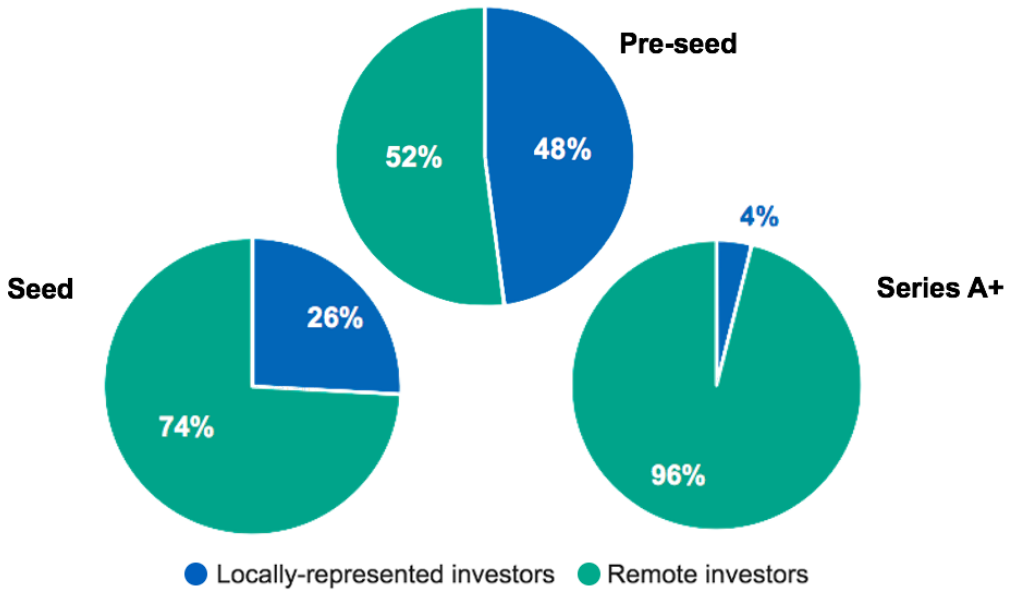
Sources: DISC research, Crunchbase

Analysis by geographic origin

- **Local funds vs. foreign funds**

Starting from the Seed stages, and growingly at further stages, foreign investors contribute the better part of the funding of start-ups from Eastern partner countries.

Figure 3 Private investors in start-ups born in Eastern partner countries: Analysis of geographic origin in fraction of invested amounts at different stages (2017-2019)



Sources: DISC research, CrunchBase

- **The predominance of US funds**

US investors are predominant in the financing of start-ups from Ukraine, Belarus and Armenia starting from the Seed stage - and their involvement tends to increase as start-ups grow in maturity. Investors from the EU lag behind. Investors from other parts of the world are involved even more rarely.

US investors' domination is not explained by any particular effort from their side to explore opportunities in Eastern partner countries. US investors are not better informed about the potential of these countries than their European peers.

The main explanation lies in Silicon Valley's unmatchable appeal among start-ups from the region, and in the fact that local investors encourage and support them to go there *(see Part I. Analysis, Section 3)*. This attraction is powered by the global US leadership in terms of venture investment volume, number of unicorns and exits, domestic market, innovation capacities, and more.

That the US market is far away both in geographic and cultural terms, and the most competitive; that considerable opportunities in Europe, Asia and elsewhere could be considered as well - all these considerations do little to change the mindset of many start-up entrepreneurs and investors from Eastern partner countries.

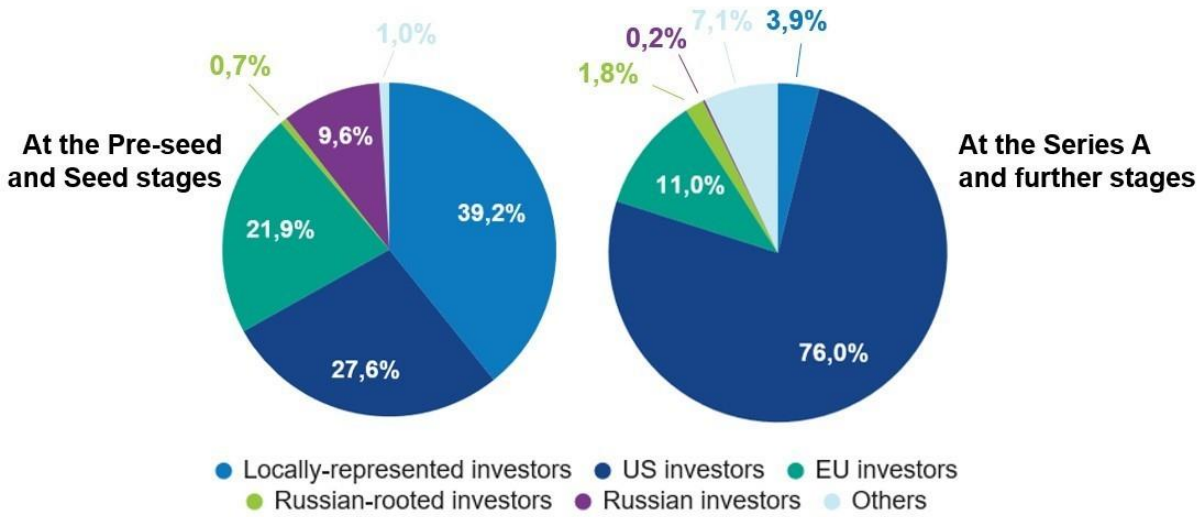
Much of the involvement of US funds in backing start-ups from Armenian is due to the active role of the Armenian diaspora.

Table 19 Investors in start-ups from Eastern partner countries: analysis by geographic origin and amount invested (2017-2020)

In million USD	Local investors	US investors	EU investors	Russian-rooted investors*	Russian investors	Other investors	Total transaction volume
Pre-seed & Seed	32.59	22.95	18.16	0.55	8.00	0.81	**83.06**
Series A	23.45	38.10	21.25	11.50	2.00	14.00	**110.30**
Series B+	17.00	746.50	92.00	7.00	0.00	59.50	**922.00**
All stages	**73.04**	**807.55**	**131.41**	**19.05**	**10.00**	**74.31**	**1,115.36**

** Global investors with Russian roots (e.g. Almaz Capital headquartered in California)*
Source: DISC research, Crunchbase

Figure 4 Private investors in start-ups from Eastern partner countries: Analysis of geographic origin in fraction of invested amounts at different stages (2017-2019)



Source: DISC research, CrunchBase

A specific group of funds

International funds with Russian-speaking founders or managers (not to be confused with Russian funds) play a quantitatively modest but noteworthy role in the funding of start-ups from the former Soviet Union. Among these funds are Almaz Capital, Altair, Da Vinci Capital, Flint Capital, Gagarin Capital, iTech Capital, SDVentures and a few others. Over the past years, these funds actually took part in several deals involving start-ups from Ukraine and Belarus.

Headquartered in Western countries, these investors generally keep an eye on opportunities in Russian-speaking countries. Due to their dual culture and specific experience in bridging Eastern Europe to the global market, these funds may be interested in, and potentially associated to, international initiatives aiming for the international scale up of start-ups from the former Soviet Union.

Partnership opportunities with foreign companies

So far international companies operating in Eastern partner countries did not promote active open innovation programmes -- but this might be changing progressively.

Significant initiatives of foreign corporates with local start-ups were identified, in the course of this research, in Ukraine. In Kyiv, innovation hub Unit City has begun involving French companies BNP Paribas, Crédit Agricole and L'Oréal in open innovation initiatives. Kyiv-based RadarTech is an extremely rare example of a corporate accelerator - the company helped 17 teams sign agreements with corporates as of May 2020.

In Belarus, too, some international corporations have begun involving local start-ups in their open innovation activities.

No substantial international open innovation activity was identified in other countries.

International exits

Exits have not been very numerous for start-ups from Eastern partner countries -- but some high-profile deals already took place:

- In December 2019, **Snapchat acquired AI Factory,** a start-up with Ukrainian roots that develops image and video technologies. Founded less than two years before, AI Factory was reportedly valued at some $200 million (https://bit.ly/31diQLq);
- In 2017, Belarusian start-up **AIMatter was acquired by Google** for an undisclosed amount (https://bit.ly/2NCfBVD);
- In 2016, **Facebook acquired Masquerade (MSQRD),** a Belarusian video filer app, for an undisclosed amount (https://tcrn.ch/3dyzcAC);
- In 2015, Ukrainian technology **Looksery was purchased by Snapchat** in a reported $150 million deal (https://bit.ly/31c9BLm).

Each of these deals had an extremely strong psychological impact in the local start-up and investor communities.

Among other cases of start-up acquisitions were the following:

- In 2019-2020, the Russian-founded gaming giant **Playrix purchased game studios successively in Belarus, Ukraine and Armenia** (https://bit.ly/2Z3jh8p);
- In 2019, Menu Group, a UK-registered start-up operating in Armenia, Georgia and Belarus, announced the **acquisition Eda.ua, the food delivery leader in Ukraine** (https://bit.ly/2Z8eYIH);
- In 2014, Russian Internet giant **Mail.ru Group acquired Belarusian Maps.me** (https://bit.ly/2Nwf1c2), which had developed a mobile maps and navigation service;
- In 2019, Israeli internet company Perion **paid $3.7 million to acquire Ukrainian start-up Captain Growth,** which develops AI-supported ad campaign managing tools (https://bit.ly/2BW4UKU);
- In 2019, **BlaBlaCar,** the carpooling giant born in France, expanded to a new market segment with the acquisition of international Ukrainian-born bus ticketing platform **Busfor** (https://tcrn.ch/3eLsjxv);
- In December 2019, **Logicify joined forces with DataArt**, a global IT consulting company (https://bit.ly/2AhEnaL). Logicify is a software R&D company and a long-term technical partner for many start-ups and SMEs in the USA and Europe.

2.2 Why so few start-up investors operate locally

2.2.1 Domestic investors

With few variations, the main reasons for the scarcity of start-up investors are similar across Eastern partner countries.

First, the **lack of appeal and apparent performance of the start-up market** at its early stage of development:

- Investment opportunities are not numerous: from a few dozens of start-ups in Azerbaijan and Moldova to a bit more than 1000 in Ukraine in 2020. And the quality of many projects leaves to be desired.
- Inspiring success stories are still rare in Ukraine, Belarus and Armenia, and non-existent or hardly noticeable in other Eastern partner countries.

Second, a **mindset gap between potential investors and the technology business:**

- Start-ups are unfamiliar to most potential LPs and business angels, who operate in traditional sectors. The specific risky and agile approach to technology investment are not in these investors' mindset yet.
- Investors are not used to business models that require waiting 5-7 years to get a hypothetical big return on investment. Most wealthy individuals tend to invest in industries with quick returns -- and relatively high ones if compared with Western countries.

While there are many high-net-worth individuals (HNWI) in these countries, business angel activity is associated with specific challenges. In Eastern partner countries, some governments offer tax incentives for IT companies, for VC investors, or for corporate investors – but none of them provide tax breaks specifically to individual investors in start-ups (should such incentives exist, they could have some effect only on law-abiding taxpayers).

In countries where the presumption of innocence is not always respected, people think twice before undertaking steps that may attract attention from the authorities. Investing in a local start-up entails risks of being part of a

bankruptcy procedure, while becoming shareholder of an international entity may involve a KYC procedure, international money transfers, etc.

In one of these countries, a group of business angels went under the scrutiny of the secret service in the process of registering their association. The association was finally created but only with support from a strong legal advisor.

2.2.2 Foreign investors

The information gap

The first reason why foreigners invest in start-ups from Eastern partner countries so exceptionally is that they are usually not even aware of their existence.

While several Eastern European countries are renowned for their tech talent pools, their start-up potential is rarely just perceived. In October 2019, less than five years after product launch, Ukrainian-founded Grammarly became a unicorn (https://bit.ly/2Nrnhu4). But who noticed this exceptional performance in the global flow of emerging unicorns?[9] Who paid attention to the fact that at least three start-ups from Belarus and Ukraine were sold to Facebook and Snapchat in just a few years? Who just even knows the geographic origin of successful start-ups born in the former Soviet Union, when their founders generally strive to look *'as American'* as their Silicon Valley models?

One of the issues lies in the poor coverage of Eastern Europe in the mainstream tech media. In 2017, East-West Digital News established that less than 4% of TechCrunch articles were about start-ups from any of 24 Central and Eastern countries, Russia included.

Among Eastern partner countries, Ukraine is the only one offering coverage of its start-up scene in English language (https://ain.ua/en/, https://www.uadn.net). In some other countries (Armenia, Azerbaijan, Georgia), not only isn't there a resource in English: online resources are lacking in their own language, which poses a problem of awareness on the domestic side.

The coverage of the region by international databases is also leaves to be desired. A recent initiative by Dealroom and Ukrainian stakeholders has aimed to address the issue (https://bit.ly/2ZDseW7).

Lack of market appeal and legal red flags

These markets do not look very attractive either for objective reasons. Strong entrepreneurs -- combining project or product excellence with the ability to execute in an international context -- are not many. Exits are very rare.

The flaws of the local judicial systems are a big issue in the eyes of Bas Godska, the prolific Dutch business angel who settled in Kyiv several years ago: *'The system is outdated. Western investors will not come if they feel they might have their legal battles in untrustworthy courts.'*

Since investors don't come, start-ups have to come to them. This is why virtually all deals involving international investors are made under another jurisdiction, fuelling start-up drain from all the region.

Reasons for hope

Most international investors are geo-agnostic -- moreover, those attentive to the region note that valuations are substantially lower than in Western countries and that the start-ups emerging from these countries may achieve high technological and financial performance.

Investors familiar with the region do come, as witnessed by the recent launch of Acrobator Ventures in Western Europe and in Ukraine simultaneously. An important potential move could come from the Mangrove and ABRT VC teams, who consider launching an up to $100 million seed and early-stage fund dedicated to start-ups from the former Soviet Union.

At the personal level, many examples show investors' readiness to invest in a start-up from an Eastern partner country when they are presented with concrete opportunities: through an introduction, a contest, or a syndication. Cases of Western business angels investing in such countries as Ukraine, Armenia and Belarus are regularly reported.

The international reputation of some countries may also be improving. Lately, some US businessmen started paying attention to Ukrainian start-ups for an unexpected reason: having noticed that many US companies, including some of their own portfolio companies, worked with Ukrainian software outsourcing companies, they realized how strong the local engineers were, and started considering this country under a potential investment angle.

[9] 78 new ones in the USA in 2019, according to CrunchBase

Meanwhile, Armenian observers noticed an increased promotion and awareness of entrepreneurial activities in the international media over the past two years. *"Armenian start-ups 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 start-up scene news. They cover events, prepare articles about start-ups and the technology sector, write about the success stories and the developments, etc."* notes *'Tech and Entrepreneurial Ecosystem Mapping,'* an EU-supported report by Catalyst Foundation. 2019. (https://bit.ly/3dAxIpD)

2.3 Investor strategies

2.3.1 Target companies

Technologies of focus

- **Digital technologies**

From AI/ML, to blockchain, to cloud, to security: the majority of the locally-represented funds invest in start-ups from digital high tech segments. A few other funds have a larger IT focus that includes advertising technologies, e-commerce, edtech, digital health and fitness - or IT at large.

The Ukrainian case illustrates this focus. Most locally-represented funds have digital high tech start-ups in their portfolios. Of $509.9 million invested by local or foreign investors in Ukrainian-founded companies, $435.5 million can be attributed to digital technology with various degrees of engineering or scientific advances *(see country-level analysis in Part I. Analysis, Section 4 below).*

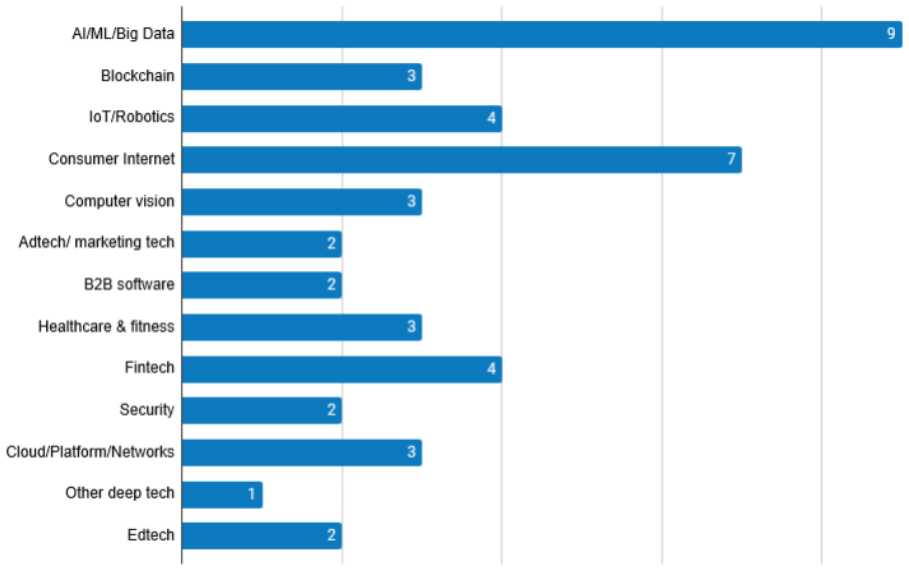
- **Outside the digital sector**

A few local investors across Eastern partner countries target both digital and non-digital sectors. These are a few venture funds (Granatus Ventures in Armenia, RBF in Belarus, TA Ventures and u.ventures in Ukraine); and a few generalist PE funds (Horizon Capital in Ukraine, Zubr Capital in Belarus). However, when they invest in start-ups, they tend to invest in digital projects.

Local investors tend not to invest in biotech, nanotech, etc., because they do not possess knowledge in those spheres and because these deep tech areas are very capital-intensive. These funds are too small in size for such investments, putting aside large PE funds - but these focus on companies with profitable and mature business models.

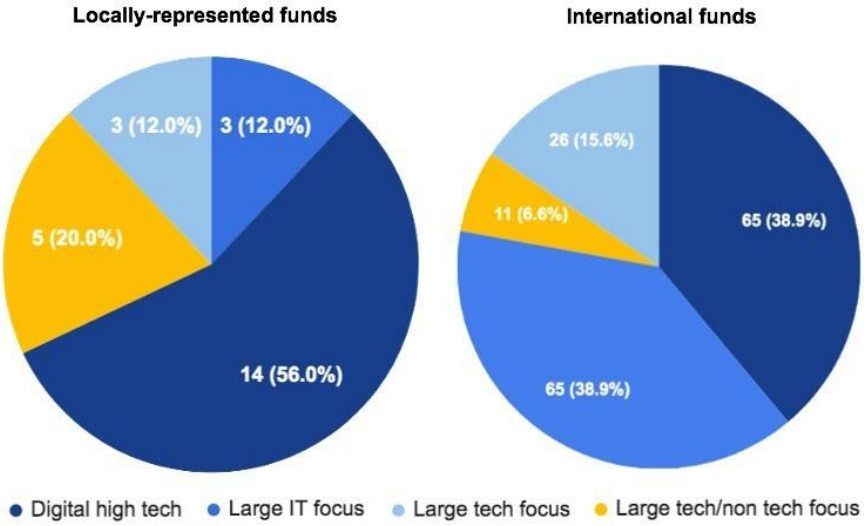
These focuses create funding gaps at the sector level. Thus, it will be very challenging for start-ups focusing on hardware or biotech to secure funding from local sources - even in Ukraine where a dozen of funds operates.

Figure 5 Strategies of funds investing in start-ups across Eastern partner countries: target types of technology



Reads as follows: 9 local funds have included AI/ML/Big Data in the list of their target segments, 3 included Blockchain, etc.
Source: company information

Figure 6 Strategies of funds backing start-ups from Eastern partner countries: target segments



Source: company information

Targeted maturity stages

In terms of maturity stages, the majority of the 25 locally-represented funds overwhelmingly focuses on and around the Seed stage: 23 funds seek to take part in such rounds, while 13 target Series A rounds. Very few ones are large enough to target later stages.

This focus on the Seed stage does not mean that funding is abundant at this stage of maturity. In Eastern partner countries, the size of these funds is limited. In Ukraine, several of them are in the disinvestment phase, i.e. have exhausted the better part of their investment capacity.

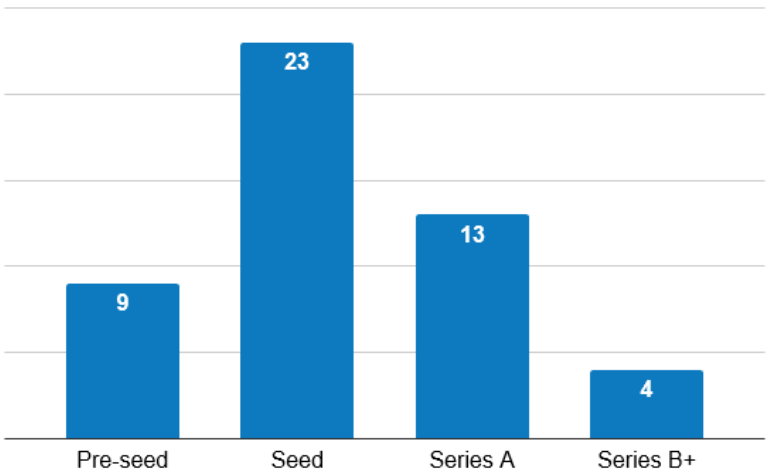
In terms of actually invested volumes, data shows that locally-represented funds invest proportionately even more in Series A and follow-on deals than at the seed stage, but with limited amounts in absolute numbers.

Table 20 Number of funds based or represented in Eastern partner countries involved in deals at various stages

Pre-seed	Seed	Series A	Series B+
9	23	13	4

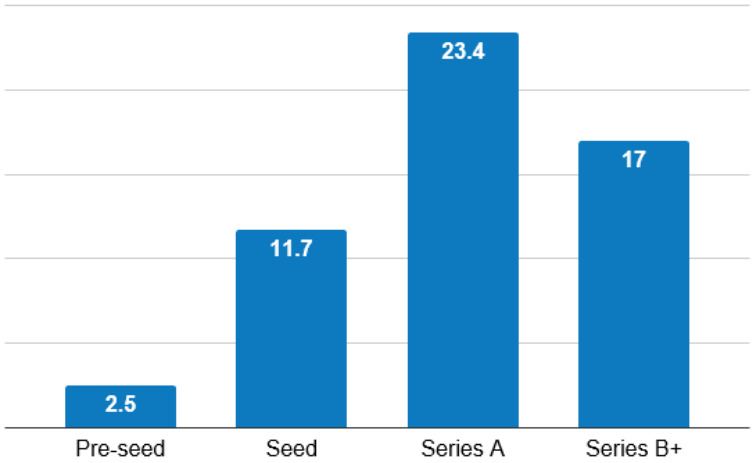
Source: DISC research, CrunchBase

Figure 7 Coverage of investment stages by locally-represented funds



Reads as follows: 9 local funds indicate they operate at the pre-seed stages, etc.
Source: company information

Figure 8 Actual amounts invested by locally-represented funds by stage (in million USD, 2017-2019)



Reads as follows: Local funds invested $23.4 million in start-ups from Eastern partner countries through Series A rounds.
Source: Crunchbase + DISC research

Table 21 Investment capacity of the funds based or represented in Eastern partner countries

Checks	
Up to $100k	23
Up to $500k	22
Up to $3m	10
$10m or more	4

Number of portfolio companies	
Exceeds 5	7
Exceeds 10	6
Exceeds 15	1
Exceeds 20	2

Reads as follows: 23 funds (out of 25) offer checks of up to $100k, which means that 2 funds offer only checks <$100k. Only 4 funds may invest $10m or more. Source: DISC research

Domestic and international investment

The overwhelming majority of funds based in Eastern partner countries target companies from their own countries, potentially including as well neighbouring countries. This may be explained by the fact that many of these funds were initially designed to invest locally, filling a gap in start-up financing as the ecosystems began emerging.

Moreover, most local funds would lack market knowledge, local networking and legitimacy to operate on remote and sometimes very competitive start-up scenes.

Thus, in Ukraine, only two (of 12 funds present locally) invest abroad. These are TA Ventures, which has been a prolific investor across Western countries and emerging markets - rather than in Ukraine, - and Digital Future, which occasionally invests abroad (https://bit.ly/2YqtRag).

In Armenia, local VC firm Granatus recently agreed with the UNDP to launch an internationally-oriented fund dedicated to technologies *'with strong potential for social and environmental impact.'* With a $40 million target size, this fund will also - but secondarily as it seems – *'contribute to accelerate the development of Armenia's impact investment ecosystem.'* (https://granatusventures.com/node/129)

2.3.2 Internationalisation strategies

In spite of their local focus in terms of investment targets, local investors generally push their portfolio companies to go global. Entrepreneurs and investors equally understand that the domestic market is too small and that their portfolio start-ups should develop their future operations essentially in foreign markets - keeping though, in many cases, a local engineering team.

Often operating themselves legal entities registered abroad, local investment funds and business angels help their start-ups do the same. Not only that: some of these local funds present themselves as bridges or tech conveyors to the global market, especially to the US and Silicon Valley:

- **In Armenia,** SmartGate presents itself as a *"Silicon Valley pre-seed venture capital fund backed by Tim Draper and a network of entrepreneurs and professionals from the US, Europe, and MENA."* Armenia Startup Academy's pre-acceleration programme provides knowledge about the US market and assists participants' networking with leading accelerators, funding institutions and advisors.[10]
- **In Ukraine,** since 2015 (https://bit.ly/3dukNWk) several funds have teamed up with Ukrainian émigrés to prepare their start-ups for landing in Silicon Valley. These efforts have allowed many Ukrainian start-ups to strike Series A and further deals with high-profile US investors. Startup.network, a local deal syndication and start-up support platform, also aims to systematically organise the success of their portfolio companies in California.
- Founded **in Silicon Valley** by Russian investor Nikolay Davydov (alias Nicholas Davidov), **Gagarin Capital** has made AI-oriented Eastern European start-ups its sweet spot. It helped prepare the acquisition of Belarusian Masquerade (MSQRD) by Facebook and aims to apply this special know-how to other start-ups (https://bit.ly/2Vcsg5W).

[10] During the 10-day programme, 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 a network and do first steps in accessing the market. In 2019, 13 Armenian start-ups participated in the program. Armenian start-ups Krisp, SuperAnnotateAI, Grovf and Snark AI graduated from this or other acceleration programmes available in the US. *Source: Armenia: Tech and Entrepreneurial Ecosystem Mapping Report by EU4Digital, Sept. 2019* https://bit.ly/3dAxIpD

3 Analysis: Public funding programmes

The review of public start-up funding programmes in Eastern partner countries reveals a very diverse picture. As a rule, while funding programmes from local governments are too modest (when existing) to address the lack of private capital supply, several countries are covered by sizable international programmes aiming to fill these gaps:

- In Armenia, internationally-backed funding is already available, and sizable new venture facilities are in discussions – perhaps exceeding the current absorption capacity of the local start-up scene.
- In Azerbaijan, there is currently no specific public funding programmes for start-ups, neither from the local government nor from international institutions -- which can be explained by the lack of projects to fund in this country today.
- In Belarus, local and international public funding is scarce, with several IFIs or IFI-backed funds not involved significantly in the country. As a result, capital is insufficiently available to start-ups, creating a major obstacle to their emergence and development.
- In Georgia, a World Bank-backed programme provides a variety of financial and non-financial resources, offering a chance to local start-ups in the absence of significant private funding opportunities. However, the end of the programme in 2021 poses the question of the continuity of the effort.
- In Moldova, international public support and local government efforts have been geared mainly towards the creation of physical and soft infrastructure for start-up innovation across the country.
- In Ukraine, the local and international public funding capacity is growing, but it is still not sufficient to cover the needs of the vibrant local start-up ecosystem.

3.1 Funding from local governments

In none of the studied countries do start-ups receive substantial amounts from government programmes. In some countries (Azerbaijan, Armenia, Georgia, Moldova), start-up funding programmes are small, non-existent or yet to come, as described below. In Belarus, a state-backed fund is almost inactive due to inadequate matching requirements.

The only exception is Ukraine, where the government recently launched a $15 million start-up grant fund and is planning to create a fund-of-funds.

Meanwhile, government strategies in the field of innovation are not defined and/or applied yet (Azerbaijan, Belarus, Ukraine[11]), and when defined (Armenia, Georgia, Moldova) no clear focus in terms of prioritisation/specialisations is expressed. As for the effort to reorient science towards marketable applications, it is not backed by substantial financial means, and not even always strongly present in government plans.

3.2 International backers

The main backers are IFIs, EU and member state institutions, and USAID. Russia has co-funded one fund in Belarus. The amounts are channelled through local public organisations (e.g. World Bank via GITA in Georgia); through private VC firms (e.g. World Bank and UNDP via Granatus in Armenia; DEG via Da Vinci Capital in Ukraine, Belarus and Kazakhstan); or directly (e.g. EBRD VCIP, Horizon 2020 grants).

3.2.1 Funding distribution

IFIs provided significant support to fund local tech start-ups in two cases. In Armenia, a few years after injecting $26 million in the main local fund, the World Bank is considering backing a new $100 million investment fund. In Georgia, the provision of $40 million by the World Bank has allowed to offer large grants to local start-ups and to develop the ecosystem.

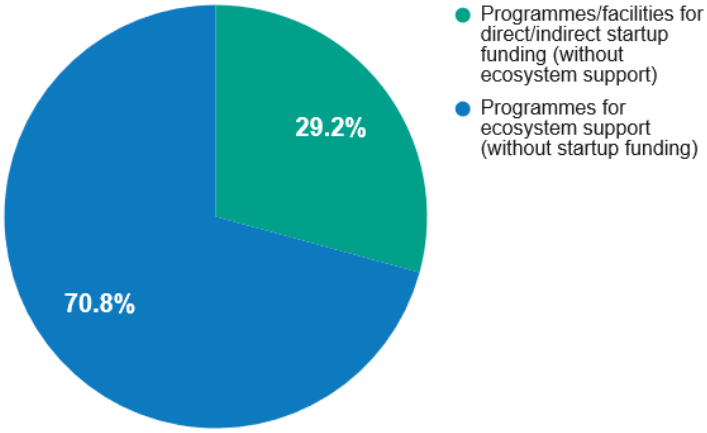
However, based on a non-comprehensive analysis of international public support initiatives across Eastern partner countries, it appears that investments in ecosystem development (i.e. capacity building, soft and hard infrastructure) tend to involve larger amounts than direct or indirect start-up funding facilities (i.e. grant or loan programmes, equity financing, fund-of-funds activity associated with start-up investment).

For example:

[11] For example, Ukraine has plans to support such sectors as AI and financial technologies https://bit.ly/3fgb9I9. The government is also in the process of designing a national development strategy for the digital economy.

- In Georgia, just around 10% of the considerable budget of WB-backed GENIE programme have gone to grants, 90% to ecosystem development measures.
- In Ukraine, the EIB has just agreed a €50 million loan to Unit City, the country's largest start-up innovation hub, to support the construction of new buildings. This amount is several times as high as the total sums spent by EU institutions on direct or indirect start-up funding across the six countries of the Eastern partner partnership.[12]
- In Belarus, USAID is set to launch a $10 million, five-year programme to support the development of the start-up ecosystem. This amount is very substantial given the modest size of the local ecosystem, but no start-up funding mechanism seems to be included in the budget.

Figure 9 International public support programmes for start-up development: Ecosystem support vs. start-up funding



Source: DISC research, based on non-exhaustive identification of international support programmes and facilities dedicated to start-up innovation across Eastern partner countries. Includes on-going, recently completed and yet-to-be deployed programmes.

3.2.2 Underused facilities

Some available international funding instruments available in all Eastern partner countries, but not specifically dedicated to them, are underused. For example:

- EBRD VCIP has made only five investments across Eastern partner countries since 2012;
- IFI-backed, Earlybird-managed Digital East funds invested neither in Belarus nor in Ukraine, even though its mandate covers these countries;
- The IFC did not materialize intentions to invest in Ukrainian tech companies and in a Belarusian PE/VC fund;
- RBF Ventures, a public Russian-Belarusian fund, has remained virtually unused in three years;
- Horizon 2020, when formally available, is rarely used by local start-ups.

The reasons lie in insufficient attention to or involvement in these specific markets (e.g. Earlybird), a lack of operational agility (e.g. IFC), and/or unappealing targets. Some programmes do not correspond to the needs, strategy or application capacities of local start-ups (e.g. Horizon 2020), while others impose challenging co-investment requirements (e.g. GENIE, RBF Ventures).

3.2.3 Unavailable facilities

A variety of European or international facilities are not available, or available only partially, to Eastern partner countries. Here are a few examples:

- The EU's InnovFin's (Tech Transfer, BA, VC and Fund-of-Funds) instruments are not available in Armenia, Azerbaijan and Belarus.
- EIT Accelerator is not available in Azerbaijan and Belarus;

[12] In these countries Horizon 2020 is rarely used by tech start-ups.

- COSME's financial instruments are available in none of the Eastern partner countries, while its non-financial instruments are available only in Armenia, Moldova and Ukraine;
- The EBRD's Star Venture programme (https://bit.ly/3dnoRaT) currently available in Mediterranean countries, could be most relevant in Eastern partner countries too;
- Da Vinci Capital and Earlybird IFI-backed funds cover Belarus and Ukraine but not the other Eastern partner countries.

3.3 At the sub-national level

In some countries, international support programmes have been designed to develop country-wide ecosystems, not just concentrating on the capitals:

- In Armenia, the Enterprise Incubator Foundation (EIF) with World Bank support has developed facilities and made available its grant programmes in Vanadzor and Gyumri, the country's main technology centres after Yerevan. In addition to WB, the EIF works with local government bodies and universities; EBRD, EU, GIZ, UNDP, USAID, and a variety of other organisations. (http://www.eif.am).
- In Georgia, the World Bank-backed GENIE programme has aimed to support innovation all across the country, even though the grants are distributed centrally in the capital Tbilisi;
- In Moldova, the EU is backing a programme, *'Start-up City Cahul'* (2020-2023), which will provide seed funding and acceleration services to local IT start-ups.

Paradoxically, no such programmes have targeted so far regional tech hubs in the two largest countries, Belarus and Ukraine. In the latter, no notable national or international public programme has focused specifically on developing start-up activity in cities like Dnipro, Lviv or Odesa, where start-up activity has a potential to develop.

(see details in Part I. Analysis, Section 4 below)

Table 22 Overview of public start-up funding programmes across Eastern partner

Country	Government-backed programmes	Internationally-backed programmes	Key take-aways
Armenia	• No specific local public funding program for start-ups until 2020	• Significant existing or planned IFI-backed facilities and programmes • Several EU start-up support and funding instruments are accessible. H2020 is rarely used by local start-ups • Important programmes at the sub-national level, but not funding-oriented	The available or planned financing volume is substantial, if considering the current small number of start-ups – but not fully covering local needs in spite of the currently limited number of investable start-ups.
Azerbaijan	• No specific local public funding program for start-ups	• No international public funding programme • EU start-up support instruments are not formally available locally (except COSME, H2020, Invest EU with restrictions)	No available public funding support, reflecting the embryonic stage of the ecosystem
Belarus	• State grant programmes are not sufficient or efficient • Inefficient joint Belarusian-Russian start-up fund	• EU start-up support programmes not formally available locally (except H2020 and Invest EU with restrictions) • EBRD has backed two start-ups and 1 fund. Other IFIs did not get involved significantly in the country. • Growing USAID support of the ecosystem - but no funding mechanism for start-ups	The public response to the lack of private funding has been insufficient or inefficient
Georgia	• Very modest state grants for start-ups	• GENIE: WB-backed programme providing substantial matching grants, but underused due to matching requirements.	A substantial grant programme is not easily accessible to start-ups due to strict matching

Country	Government-backed programmes	Internationally-backed programmes	Key take-aways
		• Several EU start-up support and funding instruments are accessible (e.g. H2020, EIC, EIT Digital, ESIL, InnovFin) but little used by local start-ups	requirements and potentially not sustainable as GENIE will end in 2021
Moldova	• No specific local public funding program for start-ups, but a national start-up fund is being planned	• Funding accessible to local start-ups through USAID-backed fund and, under plans, an EU programme at the sub-national level • Several EU start-up support and funding instruments are accessible (e.g. H2020, EIC, EIT Digital, ESIL, InnovFin). H2020 is rarely used by local start-ups	The available public funding is not significant, reflecting the embryonic stage of the ecosystem -- but emerging public and private funds could be supported
Ukraine	• Recently launched national start-up fund (USF), fund-of-funds under plans • No significant specific programmes at the sub-national level	• Several funding facilities or initiatives backed by IFIs (USAID, DEG, EBRD) cover Ukraine, but not all of them involve significant amounts or target specifically this country • Several EU start-up support and funding instruments are accessible (e.g. EIC, EIT Digital, ESIL, InnovFin). H2020 is rarely used by local start-ups.	So far, the public response to the lack of private funding has not been sufficient

Source: DISC research. See details in Part I. Analysis, Section 4 below

3.2 Beyond the numbers: optimising the public response

While local government support is not sufficient or substantial in the considered countries, the question of international support may be considered from different angles.

Quantitatively

International public funding effort is far from addressing needs in Belarus and Ukraine. In Georgia, the effort needs to be maintained as the GENIE programme will end in 2021. In Armenia, international support has been substantial in terms of amounts, with plans or stated intentions to develop it further. In Moldova, where small public or public-private start-up funding programmes have been developed, an extra public effort could help the emergence of local funds. No specific start-up funding programmes are available in Azerbaijan -- but this seems to correspond to the embryonic state of the local start-up scene.

Making existing facilities more accessible in all countries could be part of the answer to address the gaps. Belarus and Ukraine, in particular, are formally covered by a number of start-up funding instruments or programmes (EBRD, IFC, some EU programmes, some internationally-backed VC firms) but not all of them have not been put in practice in these countries so far. International backers may consider adopting a more attentive and active approach to these countries, while the EU may consider making available to them an even larger number of its existing programmes.

To be more impactful, some key internationally-backed start-up funding programmes may need to be optimised or adjusted rather than quantitatively increased. Thus, programmes should avoid too restrictive formal requirements. In Belarus (RBF Ventures) and Georgia (WB-GITA grants), unrealistic co-investment requirements have led to underusing the facilities.

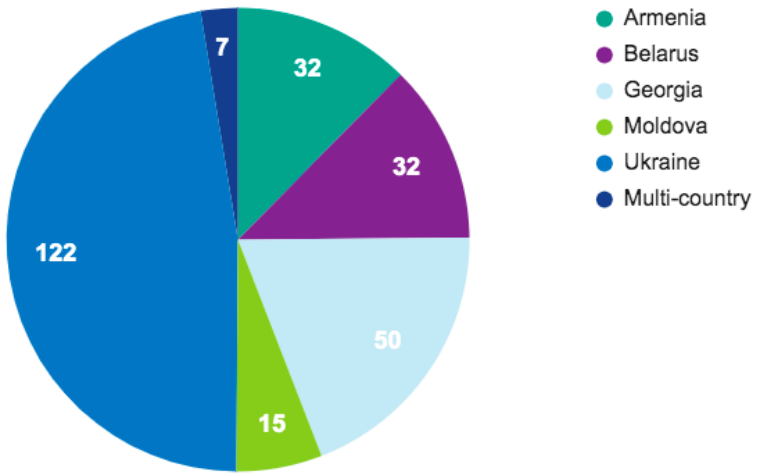
It might also seem paradoxical to see more new facilities created in a country (WB and Mubadala projects in Armenia) where some funding facilities have already been put in place while fewer or none are planned in countries where the funding gap seems more pressing (Ukraine, Belarus).

In a strategic and dynamic perspective

If considering the current modest number of start-ups, a substantial increase of international funding support at the regional level might seem little necessary at the regional level.

But if considering the fact that a well-designed and well-funded support programme can have a catalytic effect, *multiplying by five or more* the number of eligible start-ups,[13] international backers may consider not only optimising or articulating existing programmes but consider launching new ones beyond the current apparent needs.

Figure 10 International public support programmes for start-up and ecosystem development: Distribution among Eastern partner countries (estimate in million euros)

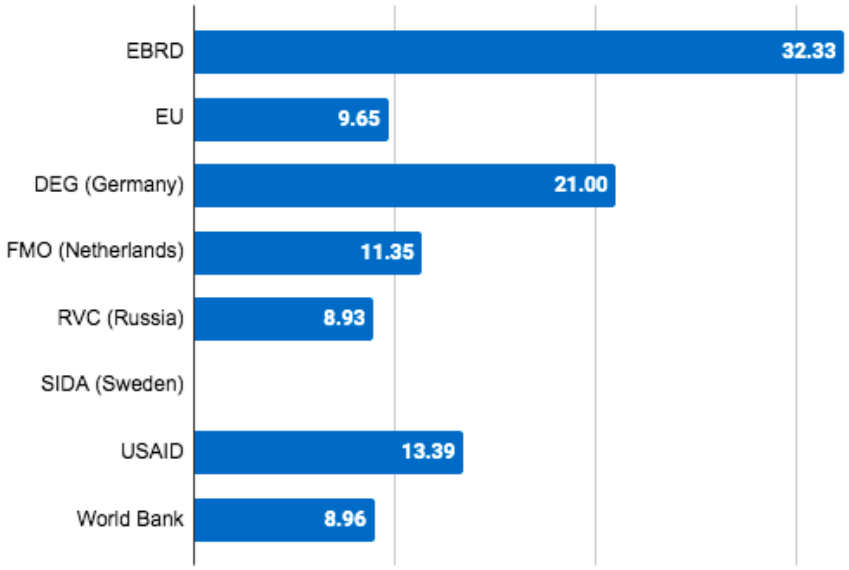


Source: DISC research, based on non-exhaustive identification of international support programmes and facilities dedicated to start-up innovation across Eastern partner countries. Includes on-going, recently completed and yet-to-be deployed programmes.

3.3 EU involvement

So far, the involvement of the EU in direct or indirect start-up funding (i.e. grant or loan programmes, equity financing, fund-of-funds activity associated with start-up investment) has not matched that of such other organisations as the EBRD or USAID. Based on non-exhaustive identification of international support programmes and facilities across the region, the amounts spent by the EU on such purposes specifically seems to be in the range of €10 million.

Figure 11 Programmes/facilities for direct/indirect start-up funding (without ecosystem support). Estimate in million euros as of June 2020



Source: DISC research, based on non-exhaustive identification of international support programmes and facilities dedicated to start-up innovation across Eastern partner countries. Includes on-going, recently completed and yet-to-be deployed programmes.

[13] As exemplified recently by the impact of WB-backed GENIE in Georgia and EU-backed Fil Rouge Capital in Croatia.

The amounts spent by the EU on supporting ecosystem development (i.e. capacity building, soft and hard infrastructure) amount to €60 million at least, based on incomplete data collection. This number includes the most recent EIB €50 million loan to Unit City in Ukraine.

4 Analysis: Country-level start-up funding analysis

4.1 Armenia

4.1.1 Private start-up investment

Investment in Armenian start-ups is sometimes misrepresented with analysts including start-ups founded abroad (essentially in the USA) by the Armenian diaspora but with no or little actual activity in Armenia itself. This research did not cover such cases, but did include deals made abroad by start-ups which initially started in Armenia.

Table 23 Key numbers for Armenia

Inhabitants	Yearly start-up influx*	Yearly VC funding (Average 2017-2019)
3m	40	Invested locally:** **$3m** If including deals made abroad**: $9m**

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding. ** Invested locally: made in the country or involving a local investor.*
Source: Crunchbase and DISC research

Table 24 Private investment in start-ups born in Armenia: estimated amounts in million USD per stage, type and origin of investors (2017-2019)

Investor type	Pre-seed + Seed	Series A	Series B+
Locally-represented VCs	4.30	-	-
International VCs	2.97	10.60	-
Local Bas	1.0	-	-
International Bas	Little significant	-	-
Local accelerators	Little significant	-	-
International accelerators	0.3	-	-

Sources: Crunchbase complemented by DISC research

Funds with local activity or representation

The country hosts several VC funds, reflecting the potential of Armenian or Armenia-connected start-ups across the world:

- **Aybuben Ventures** was founded in 2019 during the WCIT Congress in Armenia. Primarily dedicated to Armenian tech entrepreneurs from all over the world, this $50 million venture capital fund expects to invest from $500,000 and $3 million while targeting a capital share of between 5% and 25%.
- **Granatus Ventures,** the first Armenian VC, was launched in 2013 with backing from the World Bank ($26 million announced). It invests at the seed, start-up and early-stage in start-ups that have core value-add activities in Armenia. Granatus's initial focus on deep tech could be implemented only partially due to the lack of such projects in the country. As of 2019, Granatus Ventures had 14 companies in its portfolio -- not having exhausted its investment capacity. Granatus has a desk at the Techstars accelerator office in London. In 2019, Granatus agreed with the UNDP the launch of a new, globally-oriented fund, **Granatus Tech4SDG Fund**. With a target size of $40 million, this fund will invest technology-driven ventures that *"demonstrate strong potential for social and environmental impact."* The fund also commits to *"contribute to UNDP's efforts to accelerate the development of Armenia's impact investment ecosystem aimed at achieving SDG goals."*
- **SmartGate VC** is a Silicon Valley-oriented pre-seed venture capital fund established in 2018 with support from Tim Draper. At least 10 Armenian tech companies were backed by SmartGate VC since then, as of June 2020, with checks usually amounting to $50,000. Among these portfolio companies are Krisp, Embry, Super Annotate, Expper and others. The fund aims to find PhDs from top universities/labs in machine

learning and AI, or target experienced experts from Armenia-based multinational corporations, evaluate different possible ideas, find local middle/senior level engineers and set up the company (usually, a US Delaware company holding the IP with a branch registered in Armenia). Another strategy is to initiate high-tech labs that will study some deep tech topic resulting in different start-ups as spin-offs (e.g. Gate42 quantum computing lab and the Bridge42 quantum consulting start-up).

- **Sprint Crowdfunders,** launched in 2018, aims to *"support start-ups engaged in crowdfunding with various financial instruments in a fast and smart way."* Sprint Crowdfunders fund invests an average ticket of $100,000 that is mainly destined for promotional costs in marketing campaigns on the crowdfunding websites Indiegogo and Kickstarter. Successful cases are Volterman Wallet that generated €4 million via Kickstarter and Moon-By-One-Ring reaching €1.2 million via Indiegogo.

Capital supply from these funds is substantial, if considering to the relatively small numbers of local investable start-ups. However, additional capital is still arguably needed to fully realize the potential, particularly at the pre-seed and seed stages, according to market players interviewed in this research.

Illustrating this lack of funding is the fact that some start-ups have to offer a substantial stake in their start-up in exchange for very small capital injections.

Individual investors

In spite of the existence of two business angel networks,[14] only few individuals invest in start-ups locally. In Armenia like in other Eastern partner countries, wealthy individuals generally invest in traditional sectors, with ROI expectations that rarely correspond to the economics of technology business. Meanwhile, people with a better understanding of these matters - for example those working in modern corporations - rarely have enough financial means to invest in Armenian start-ups.

Total individual investment in start-up is estimated at up to $1 million over three years (2017-2019).

Remote investors

Many deals involving Armenian-connected start-ups are backed by major international VCs. Examples include DCM Ventures (PicsArt), e.ventures (CodeFights), Learn Capital (SoloLearn), Nasper (SoloLearn), Sequoia Capital (PicsArt), Sierra Ventures (Krisp), Sutter Hill Ventures (CodeFights), True Ventures (Teamable). These deals are facilitated by the strong connections between the Armenian ecosystem and US business circles.

US fund HIVE is specifically oriented towards Armenian tech entrepreneurs across the world – in particular in the USA and Armenia. It was established in 2014 to invest in early stage Armenian tech entrepreneurs, focusing on IoT, AI and blockchain. To date, HIVE has invested in over 40 start-ups in the US and Armenia, including ServiceTitan, Gecko Robotics and ShopMonkey. HIVE plays an active role in developing social capital for the Armenian deep tech ecosystem by organizing annual tech summits in Yerevan bringing together top VC funds and entrepreneurs.

4.1.2 Public funding programs

Local government programmes

Until this year, no significant government-backed funding program for tech start-ups had been launched..

However, the government has been showing interest in the sector since 2000. That year, the Armenian government declared IT a priority of the national economy. Since then the institutional capacity has been built progressively, in particular by the following:

- The Union of Information technology Enterprises was established in 2000. It hosted the World Congress on IT (WCIT), a major event in 2019.
- The Information technology Development Support Council, aimed at advancing public-private partnerships was launched in 2001, chaired by Prime Minister. Jointly with the World Bank this Council launched the Enterprise Incubator Foundation (EIF), an ecosystem enabler.

[14] According to Armenia's 'Tech and Entrepreneurial Ecosystem Mapping': **Business Angel Network of Armenia (BANA),** launched 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. **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. (https://bit.ly/3dAxIpD)

- In 2014, a law on 'State Support for the IT Sector' was passed,[15] providing significant tax incentives to IT companies, simplifying post-registration procedures and eliminating company registration fees.
- In 2017, the government initiated an online platform (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.
- In 2018 a designated Ministry for High-Tech industry was established. The Ministry of High-Tech Industry of the Republic of Armenia has drafted a comprehensive 2020-2025 strategy document containing three separate strategies for the 'Development of High-Tech industries in Armenia, the Digitalization of Armenia and the Development of the Military-industrial complex.'[16]
- In 2020, the government announced a grant programme of at least $1 million for start-ups, to start this year.

The brand-new Ministry of High-Technology Industry, led by an entrepreneur himself, is currently developing the idea of a national venture fund through a public-private partnership, with support from the World Bank (TPQI project). This fund could reach $100 million in 5-7 years.

Meanwhile, insufficient funding and low salaries in research institutions have resulted in a decrease of the number of scientific organizations and researchers, hampering the technology transfer potential in the country.

Internationally-backed funding programmes

Having identified a strong potential for tech innovation in Armenia, a variety of international organisations are involved in local investment programmes in the field of scientific research or start-up development. The main players involved are the World Bank, the UNDP and the EU.

Some initiatives have involved sizable amounts, e.g. two internationally-backed funds managed by local VC firm Granatus, plus another under consideration (including a potential WB-backed $100 million venture funds).

However, the size of these existing or emerging facilities does not necessarily exceed the absorption capacity of the local start-up ecosystem: as per the experience of Enterprise Incubator Foundation (EIF), there room for even larger grant and equity programmes to support quality Armenian start-up projects.

Table 25 Internationally-backed funding programmes in Armenia

Programme	Geographic coverage	Type of programme	Comments
Grant programmes of SMEDA (Support to SME Development in Armenia) https://bit.ly/311zSvH 2017-2019 - Potential new programme under consideration Backers: EU (EU4Business, EU4Innovation) and Germany (GIZ)	National	Two grant programmes with business support took place in 2017-2019: 'Innovation Matching Grant' (IMG) and 'Science and Technology Entrepreneurship Programme' (STEP) (grants €15,000 to €50,000). The project was not renewed but another one, potentially associating Business Angel Network (BANA) and the Hero House to offer more opportunities to tech start-ups.	34 start-ups 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 was around $1.5 million as of Sept. 2019. SMEDA also helps the public and private sectors access to EU innovation support resources within Horizon 2020

[15] 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 country.

[16] This strategy includes (1) Implementation of projects throughout the complete life-cycle of high-tech industry production including research, production, sales and utilization (2) Development of a mature digital ecosystem by focusing on reforming education, creating a start-up ecosystem, developing fundamental infrastructure and reforming the regulatory framework (3) Implementation of sectoral projects in AI, nanotechnology, robotics, cyber-security and space technology. It is available in Armenian language only.

Programme	Geographic coverage	Type of programme	Comments
Horizon 2020 Backer: EU	International	Vital source of financing for some research institutes (especially physics). In 2020 Grovf was the first start-up winner of a grant under the H2020 SME instrument in the region. Generally speaking, however, H2020 is little adapted to the needs and/or capacities of local players.	
Grant programmes from Enterprise Incubator Foundation (EIF) http://www.eif.am/ 2017-2019+ EIF was established in 2002 Backers: World Bank, EU	National with regional focus	Over the past 15 years, EIF managed 4 main grant programmes (totalling some $5m). The latest ones were: - In 2017-2019 EIF was associated to the above-described SMEDA grant programme. - In August 2019, new matching grants were announced by EIF with the support of the government and WB (TPQI project). These were (1) Innovation Matching Grants (IMG) for new adaptation, development or improvement of a solution, product/service, and process by technology teams and SMEs. (2) Regional Matching Grants (RMG).	EIF is an ecosystem enabler, not an investment programme. These grant programmes, however, are in line with its stated goals is to create new channels for attracting foreign direct investment to Armenia
E-Society and Innovation for Competitiveness Project (EIC) https://bit.ly/2Bg2Duf 2010-2016 Total amount: $43.45 million Backer: World Bank	National	Support to the establishment and funding of Granatus Ventures, Armenia's first VC fund (around $3 million actually provided)	The general outcomes of the EIC programme were assessed as being satisfactory, including Bank and Borrower performance.[17]
	National	Innovation Matching Grants ($822,710)	
	Sub-national level	Contributions to the creation of the Gyumri Technology Centre ($1,5223,580) and Vanadzor Technology Centre ($256,884)	
National venture fund (In discussion) Potential backer: World Bank (TPQI)	National	The considered amount ($100 million) would probably exceed the current absorption capacities of the market, should the fund target only domestic projects at the early stages.	

[17] *"Some lessons learned included: (i) Introduction of new and catalytic activities that have longer-term impacts rather than short-term is not usually a big sell but can have enormous impacts that go beyond the Project Development Objectives (PDO), and within the boundaries of the project or country; (ii) Both the Government of Armenia (GoA) and the World Bank teams noted that the World Bank's operational policies and guidelines are not optimal for the fast-evolving dynamic Information Technology (IT) industry, and these need review; (iii) Establishing partnerships, not only in terms of mobilizing private sector resources but also collaborating with universities, industry associations, and research institutions, were fundamental for maximizing the impact and increasing sustainability of investments; and (iv) Finally, mainstreaming the project into existing institutions has ensured sustainability and continued build-up of project activities."* https://bit.ly/2NxkFe9

Programme	Geographic coverage	Type of programme	Comments
Granatus Tech4SDG https://granatusventures.com/node/129 Agreed in 2019 Involving UNDP	Global	As per an April 2019 agreement with the UNDP, Granatus will establish and manage the Granatus Tech4SDG Fund. 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."* The fund also commits to *"contribute to UNDP's efforts to accelerate the development of Armenia's impact investment ecosystem aimed at achieving SDG goals."* In spite of the fund being *"global",* an important fraction of its capital is intended for Armenian projects	
ImpactAim venture accelerator https://impactaim.com Since 2017 Backer: UNDP	National	More than 20 ventures since 2017. Among them are Expper Technologies. ADB Ventures has partnered with ImpactAim in 2019 to leverage technology for climate change. Among other acceleration programmes: e-government, agritech.	
UAE venture funds (considered) Potential backer: UAE sovereign fund Mubadala Investment Company	National	In Oct. 2019, Mubadala Investment Company (UAE sovereign wealth fund) expressed interest in the 'formation of venture capital funds,' targeting Armenia's technological sector. https://bit.ly/2V5DoBx	

Source: DISC research

4.1.4 Note on internationally-backed non-financial programmes

Here are the most notable non-financing public programmes aimed to support start-up innovation and commercially-oriented R&D in the country:

- **Armenian Startup Academy** (since 2017), co-funded by EU (EU4Business). Some of the graduates managed to successfully raise €1 million of funding from the EU through IMG and STEP grant schemes. (https://www.startupacademy.am)
- **Enterprise Incubator Foundation (EIF**), established in 2002 with World Bank support, is positioned 'as a cross-point for all entities in the sector – public and private institutions, international organizations and government agencies, major multinationals and small start-ups.' Aims to 'cover every aspect of sector development – ICT-related legal, business and educational reforms, investment channelling and creation of funding schemes for start-ups, individualized services and consulting for IT companies, talent identification and workforce development.' EIF has been driving innovation strategy with a focus on the regions with the development of technology centres in Vanadzor and Gyumri. For the past 15 years, EIF has been managing four grant programmes involving in particular the World Bank, the IFC, the UNDP, the EU and USAID, and totalling some $5 million. Among these programmes were Science and Technology Entrepreneurship Program (STEP) since 2006 and Innovation Matching grants (IMG) since 2013. (http://www.eif.am)
- **EU TUMO Convergence Centre for Engineering and Applied Science: l**aunched in 2019 this programme aims to bridge the gap between education and industry and to fuel Armenia's tech industry with more developers. Among the Centre's partners is the next-gen French coding Ecole 42.
- **EU programmes:** The EU and its member states currently play an important role in supporting the Armenian innovation ecosystem -- not by the size of invested amounts but by the number of programmes they are backing or involved in and the impact of some of them. In science, Horizon 2020 is a vital source of financing for some research institutes (especially physics), which have acquired the resources and skills to apply for and manage such projects. The country-level report of this research presents a variety of suggestions to go further in the support of Armenia's research in digital deep tech.

  Due to the low number of fundable and investable start-ups, the EU's approach shifted from a pure access to finance intervention to a systematic entrepreneurship ecosystem development approach. Thus, the EU

support does not involve massive financial instruments, in contrast with the World Bank, the UNDP or, potentially, the UAE sovereign fund.

However, while not addressing the need of a mature start-up, the grants distributed by SMEDA (up to €50,000) appear to be much higher than those offered by some local start-up support organisations (e.g. FAST).

Recently, EU-SMEDA supported the Armenian Ministry of economy with the development of a comprehensive innovation strategy with an action plan with special focus on SMEs (https://bit.ly/311zSvH). Among the major bottlenecks identified (as far as tech innovation is concerned) are:

- the lack of financial instruments to support business investment in innovation or R&D;
- a relatively low number of researchers, aside from physics, in the Armenian science system;
- the low and stable level of R&D expenditures in the last decade, with scientific funding spread over a large number of sub-critical scale institutions;
- gaps in managerial technical and vocational skills required for innovation activity in the business sector.

4.1.5 Note on the availability of EU instruments

Among the locally accessible EU instruments are H2020, COSME (not the financial instruments), EIC, EIT Digital, ESIL, InnovFin, Invest EU (in certain cases).

4.2 Azerbaijan

4.2.1 Private start-up investment

The Azerbaijani venture investment market is still embryonic. For the past decade, extremely few companies or individuals dedicated themselves to investing in tech start-ups.

Table 26 Key numbers for Azerbaijan

Inhabitants	Yearly start-up influx*	Yearly VC funding (Average 2017-2019)
10m	10	Little significant. Most start-ups not venture ready

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding.*
Source: DISC research

Table 27 Private investment in start-ups born in Azerbaijan: estimated amounts in million USD per stage, type and origin of investors (2017-2019)

Investor type	Pre-seed + Seed	Series A	Series B+
Locally-represented VCs	0,42	-	-
International VCs	0,30	10.60	-
Local Bas	0,13	-	-
International Bas	0,10	-	-
Local accelerators	0,08	-	-
International accelerators	0,58	-	-

Sources: DISC research, Crunchbase

Funds with local activity or representation

The only notable organization active today is **Khazar Ventures,** the local pioneer in venture capital investment. This is an early-stage seed investment venture firm targeting innovative start-ups in Azerbaijan. They invest in start-ups in their earliest stage of life and provide support in recruiting, business development, knowledge, marketing and introductions to industry leaders and partners.

The selection criteria are classic which include the existence of an MVP from the start-up. The fund is interested in app projects, web platforms and services, consumer products, e- and m-commerce, foodtech, fintech and ad tech.

Khazar Ventures aims to *'create a long-lasting relationship with start-ups'* by *'connecting entrepreneurs with the tech, community and the necessary resources.'* The founder, Mammad Karim, is former Head of VAS at a local telecom. He also founded the Digital Marketing Institute in Azerbaijan.

Another financial organisation, **AzFinance,** does not position itself as a tech investment fund. However, they co-invested in two companies from the SUP.vc Winter Accelerator program: Whelp and Nextsale.

Individual investors

There is a decent number of wealthy individuals in the country, but they are rarely ready to invest in technological companies.

Farid Musayev is one of the rare local individual investors in technology start-ups. As of April 2020, he made three investments. One of them, an e-commerce start-up Modaha, failed, while the two others (Buglance, NextSale) are EBITDA-positive. Musayev says his primary motivation to invest in these companies was *'their potential to scale to international markets.'* He concedes that similar companies which are based in the US are moving much faster in terms of performance.

Even raising from family and friends is quite a challenge for Azerbaijani start-ups. In general, there is no mindset among the population, where family members, or close relatives could invest in your business. Most families cannot afford doing it, and even if they have the capacity, such investment may be perceived as a waste of money.

4.2.2 Public funding programs

No currently working public start-up funding mechanism was identified in the course of this research.

Local government programmes

In the past, grants were made available for start-up projects by the now-defunct ICT Fund. However, this mechanism was ineffective with non-transparent mechanisms and the failure of almost all the supported projects.

A new law is under preparation that will oblige local corporations to spend a certain percentage of their income on innovation and technological development. Details are not known yet.

This expected law is a sign of government attention to these matters, in spite of the tiny size of the country's tech innovation sector. As early as 2011, a notable state support mechanism was established under a presidential decree on the country's 'Youth Development Program.' Incubation centres were established within universities to support entrepreneurship among the young population and enhance their participation in economic development. The exact number of incubation centres created at that time remains unknown.

A new step in policy support was made in 2018 as another presidential decree established an 'Innovation Agency' under the authority of the Ministry of Transport, Communications and High Technologies. This new body was created on the basis of two existing institutions – the State Fund for Development of Information Technologies and the High-Tech Park – which were considered to lack efficiency. This Innovation Agency has a significant budget and a wide mandate including:

- Assistance to local business entities in acquiring modern technologies and technological solutions;
- Support of innovation-oriented scientific research and encouragement of innovative projects, including start-ups by funding them through grants, concessional loans and a venture capital fund;
- Identification of products and services for digital transformation;
- Support of intellectual solutions on robotic and cloud technologies, large-scale data processing and artificial intelligence.

The Innovation Agency also aims to promote the production of innovative and high-tech products and the provision of services under the 'Made in Azerbaijan' brand, as well as to create conditions for existing local brands to go global. These efforts materialized, in particular, through the launch of the Barama Entrepreneurship and Incubation Centre in the agency's premises -- so far with quantitative rather than qualitative results.

The Innovation Agency also plans to open a Technology Lab in a bid to help innovators build initial product prototypes.

According to unconfirmed information, the Presidential Office,[18] could directly lead or coordinate a part of the policy and coordination effort. The purpose of such coordination would be to create a 'unified national concept of development of innovation in Azerbaijan.'

Internationally-backed funding programmes

The start-up community knows no international funding programmes available locally.

According to OECD data, in 2017 and 2018 there had been around $17.2 million invested in the country by donors from some European and Asian countries. The main allocation of those funds covered the following categories: higher education (mostly providing scholarships to study abroad); small and Medium-Sized enterprises (SME) development; business policy and administration; secondary education; employment creation; vocational training.

The absence of any specific focus on start-up and venture activity seems to be due to the fact that such activity has not been very noticeable to date.

4.2.3 Note on the availability of EU instruments

These EU instruments, in particular, are not accessible locally: EIC, EIT Digital, ESIL, InnovFin. Available with restrictions: COSME, H2020, Invest EU.

[18] Led by Shahmar Movsumov, Assistant to the President of the Republic of Azerbaijan and Head of the Department of Economic Issues and Innovative Development Policy in the presidential administration.

4.3 Belarus

4.3.1 Private start-up investment

Belarus features a well-structured and active business angel network (a rare case in Eastern partner countries) as well as a few local funds.

Table 28 Key numbers for Belarus

Inhabitants	Yearly start-up influx*	Yearly VC funding (Average 2017-2019)
10m	100	Invested locally:** **$10m** If including deals made abroad**: $37m**

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding. ** Invested locally: made in the country or involving a local investor.*
Source: DISC research, Crunchbase

Table 29 Private investment in start-ups born in Belarus: estimated amounts in million USD per stage, type and origin of investors (2017-2019)

Investor type	Pre-seed + Seed	Series A	Series B+
Locally-represented VCs	3,04	0,00	7,00
International VCs	10,43	12,00	82,50
Local BAs	2,59	-	-
International BAs	Little significant	-	-
Local accelerators	-	-	-
International accelerators	1,31	-	-

Sources: DISC research, Crunchbase

Funds with local activity or representation

A handful of investors in tech start-ups currently operate in Belarus, with a focus around the Seed stage (the pre-seed stage is covered by only one of them, Haxus):

- **Bulba Ventures** was founded in 2018 by two local businessmen, Yury Melnichek (the founder of Maps.me, AIMATTER) and Andrew Avsiyevich (formerly a top-manager at Atlant-M and Triple). With a strong focus on digital high-tech, Bulba Ventures offers start-ups amounts from €50,000 to €500,000.
- **Haxus** focuses on artificial intelligence, virtual and augmented reality. The company is registered in Cyprus. Its founders are a Belarusian IT-entrepreneur Yuriy Gurskiy (he was a mentor and investor of such start-ups as MSQRD, Maps.me, Flo, AIMATTER start-ups), Alexey Gubarev (entrepreneur, co-founder and CEO of XBT Holding which includes Servers.com and Webzilla hosting providers).[19]
- **RBF Ventures:** This $20 million start-up fund – backed by the state-owned fund Belarusian Innovation Fund and the Russian state-owned fund of funds Russian Venture Company (RVC) – has been underused so far. RBF may invest in Belarusian and Russian start-ups at different stages, from seed to Series B and beyond. Initiated in 2011, RBF Ventures became active in Belarus only in 2017. RocketData is its only Belarusian portfolio start-up to date. This fund has a number of formal requirements, such as the generation of monthly revenue of at least $10,000, company registration in Belarus, and co-investment for at least 25% of deal amount.

[19] Due to the small number of digital high-tech start-ups the country, Haxus and Bulba Ventures now work as start-up builders rather than purely financial investors. They co-build and invest only in their own projects.

- **TechMinsk Fund:** In 2019, a group of Belarusian tech-oriented businessmen set up a $1.5 million fund to provide equity via the TechMinsk accelerator -- which was founded under USAID support six years earlier.[20] The tickets may be up to $50,000. The founders of the fund viewed their initiative rather than a community support initiative than as a certain source of returns.
- **VP Capital:** Launched in 2012, VP Capital is the venture arm of Belarusian self-made man Viktor Prokopenya. With considerable means, partially brought by Russian family office Larnabel, this fund invests in real estate and various tech companies. Among them are four in-house projects, which received capital injections of $80 million over the past three years, according to confidential information shared by the fund.[21]
- **Zubr Capital** was founded in 2010 (with backing from EBRD and Dutch Development Fund FMO) as the first professional direct investment fund manager in the country. This private equity fund Invests in such different sectors as telecommunications, IT, retail, durable goods, innovative technologies. In 2017-2019, their only investment in a tech start-up involved Targetprocess, a developer of visual portfolio and work management tools. Zubr Capital offers start-ups from $3 million to $7 million, generally taking 25% of the total equity of the start-up. The start-up must have annual revenue of $5 million.

Table 30 Deals involving the TechMinsk fund (since inception in 2019)

Year	Startup	Amount	Investors	Stage	Tech segment
2019	ArtyLine	$100,000	TechMinsk fund, AngelsBand	Pre-seed	AR
2019	80days	$80-120,000	TechMinsk fund	Pre-seed	AI
2019	PigPug	$80-120,000	TechMinsk fund	Pre-seed	Medtech
2019	Djinn Sensor	$80-120,000	TechMinsk fund	Pre-seed	IoT

Source: DISC research

Individual investors

Business angel activity is nascent in Belarus, but not negligible due to a few deals involving significant volumes.

AngelsBand, the association registered in 2018, claims 90 members in a country of 10 million inhabitants. These individuals generally invest in digital high tech start-ups at the pre-seed and seed stages. Activity is concentrated in Minsk. Such activity is challenging, however, as analysed above.

Table 31 Deals involving business angels including those syndicated via AngelsBand (2018-2019)

Year	Startup	Amount	Investors	Stage	Tech segment
2018	Lung Passport	$150,000	AngelsBand	Pre-seed	ML
2018	RocketData	$500,000	AngelsBand, RBF Ventures	Seed	AI
2018	FriendlyData	$1m	AngelsBand, Bulba Ventures	Seed	Big Data
2018	RocketBody	$15,000	AngelsBand	Pre-seed	IoT, AI
2019	Mobiwise	$95,000	AngelsBand	Pre-seed	Edtech

[20] Founded in 2013 as the first accelerator in the country, TechMinsk Accelerator supports digital high-tech start-ups with coaching and other services, claiming a network of more than 700 mentors from the Google For Start-ups programme and local Imaguru network. Currently the accelerator batches are focused on AI, SaaS, blockchain, game and data-driven start-ups. The TechMinsk accelerator claims its alumni since 2013 have raised more than $125 million in total.

[21] Only the publicly disclosed fraction of these amounts were included in the market estimate. Due to the in-house character of the investments, this research did not consider VP Capital as a market player in the full sense of the term.

Year	Startup	Amount	Investors	Stage	Tech segment
2019	Cashew	N/A	AngelsBand, unnamed BA, TechStars	Pre-seed	finech
2019	Skinive	$45,000	AngelsBand	Pre-seed	AI, CV, Medtech
2019	ArtyLine	$100,000	AngelsBand, TechMinsk fund	Pre-seed	AR
2020	Mobiwise	$200,000	AngelsBand	Seed	Edtech
2020	Filmustage	N/A	Unnamed BA	Pre seed	AI
2020	Stroboscope	N/A	Unnamed BA	Pre seed	AI
2020	CaerSidi	N/A	Unnamed BA	Pre seed	NFC
2020	EasyBloggers	N/A	Unnamed BA	Pre seed	AI

Source: DISC research, Crunchbase

Remote investors

At the Pre-seed stage, if judging by the deals that took place between 2017 and 2019, Belarusian start-ups may find support abroad essentially from internationally-oriented Russian investors (notably Altair) as well as such neighbouring accelerators as Techstars, HugeThings (Poland) and StartupWiseGuys (Estonia).

At further stages, Belarusian start-ups raised funds from foreign investors:

- From the USA: Altos, Elysium Venture Capital, Georgian Partners, Founders Fund, Microsoft Ventures, Rembrandt Ventures Partners, Silicon Valley Bank;
- From Russia: Rostec, SDVentures;
- With Russian roots: Flint Capital, Gagarin Capital;
- From the EU: Baurer, Mangrove Capital Partners;
- From other countries: Verge Health Tech Fund (Singapore).

4.3.2 Public funding programs

Local government programmes

While important pro-innovation initiatives marked the past decade (Belarus High Technologies Park with its privileged tax regime http://www.park.by/, liberalization of investment activity in 2017 https://bit.ly/2BJgcCs), few local funding mechanisms have been made available for tech start-ups, and not always efficiently:

- **Belarusian Innovation Fund** - This state fund has developed various tools of financial support for start-ups at different stages. Its annual competition of innovative projects has been held for a number of years now. As a result, some promising projects get picked as eligible for grants of up to BYN 14,000 ($5.900) to commercialise their development. In 2021, it is planned to offer vouchers and grants up to $100,000 per single development to promising innovative start-ups. However, this instrument is not viewed as efficient by the local start-up community.
- **Joint Russian-Belarusian start-up fund** – As discussed above, this fund has a number of formal requirements which have prevented it to invest actively (only one Belarusian investee company in three years).
- **State programmes to support research and innovation** - The main currently available programme theoretically applicable to digital high-tech start-up is the State program on Development of Digital Economy and Information Society in Belarus. The implementation period is March 2016 – December 2020. This programme aims to stimulate the development of digital high-tech industries and services by improving both the institutional and business environments. It seeks to develop the export potential in this field, leveraging the existing and potential competitive advantages of Belarus. However, this and other programmes target

a wider scientific, technical and innovative range of activities. As far as start-ups are specifically concerned, several issues can be pointed out.[22] The support mechanisms are aimed at financing low-risk rather than high-risk start-ups. Bureaucracy and slow decision processes are rarely compatible with start-up business and mindset. Moreover, the decision-making process often involves people with a rather theoretical background rather than a practical experience.

As a result, not a single case of a Belarusian digital high tech start-up taking advantage of such programmes has been reported in the course of this research.

In 2019, the state budget spent on scientific, technical and innovative activities amounted to 278.5 million rubles (about €118 million). In accordance with the Law on the Republican Budget for 2020, the budget spent on scientific, technical, and innovative activities in the amount of 330.0 million rubles (about €140 million), the republican centralized innovation fund - 177.9 million rubles (about €76 million), local innovation funds - for a total of 249 million rubles (about €106 million).

Internationally-backed programmes

Currently, the only international programs supporting digital high-tech in Belarus have been backed by USAID:

- In 2016, USAID started a partnership with the IPM Business School and the Society for Innovative Business Support (SIBS) to advance entrepreneurship training, including digital high-tech start-up schools and entrepreneurship competitions in the regions of Belarus.
- In partnership with BEL.BIZ, USAID is supporting start-up development. Projects include business training, international experience exchange, and funding opportunities for start-ups. TechMinsk, a start-up accelerator founded in 2013, supported more than 200 participants from 90 digital high-tech start-ups. The programme itself does not provide funding, but TechMinsk recently teamed up with a new private fund which provides up to $50,000 in equity.
- USAID is about to launch a new program called 'Innovation-Based Economic Development and Private Sector Growth in Belarus Activity' (INNOVATE https://bit.ly/2AIcZCk). This five-year, $10 million program will *"help develop the ecosystem for innovation-based entrepreneurship in Belarus and expand the role of the private sector in the innovative economy."* In turn, INNOVATE will *"contribute to export markets diversification; greater inclusion of Belarus in global economic value-chains; and Belarus' economic self-reliance."*

The EBRD has been involved on a case-by-case basis: it has backed Zubr Kapital, a large PE fund that occasionally invests in start-ups, while its VCIP facility has been involved in only two Belarusian investments since 2012. The EBRD vouchers (CIV), which funded dozens of Ukrainian start-ups, might be accessible to Belarusian start-ups in the near future.

IFC also intended to back Zubr but did not close the deal. No investment was made in start-ups.

Earlybird's Digital East funds (CEE-focused, IFI-backed) made no investment in Belarus/Ukraine, even though these countries are included in its mandate.

DEG-backed new Da Vinci Capital fund does cover Belarus (https://bit.ly/2Z4LGL4).

4.3.3 Note on the availability of EU instruments

These EU instruments, in particular, are not accessible locally: COSME, EIC, EIT Digital, ESIL, InnovFin. Available with restrictions: H2020, Invest EU.

[22] Interview with Dmitry Kalinin, Director of Belarussian Innovation Fund

4.4 Georgia

4.4.1 Private start-up investment

With just one fund making rare deals and a dozen of little-professional individual investors, the private investment scene looks empty. The funding gap is filled only partially by the World Bank's matching grants under the GITA programme.

Table 32 Key numbers for Georgia

Inhabitants	Yearly start-up influx*	Yearly VC funding (Average 2017-2019)
3.7m	40	Little significant. Most start-ups not venture ready

* Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding. Sources: OECD and DISC research

Table 33 Private investment in start-ups born in Georgia: estimated amounts in million USD per stage, type and origin of investors (2017-2019)

Investor type	Pre-seed + Seed	Series A	Series B+
Locally-represented VCs	0,24	0,00	0,00
International VCs	3,24	0,00	0,00
Local BAs	Little significant	-	-
International BAs	Little significant	-	-
Local accelerators	0,00	-	-
International accelerators	0,22	-	-

Sources: DISC research, Crunchbase

Funds with local activity or representation

Only one private start-up investment fund backed tech start-ups in Georgia in the period covered by this research (2017-2019): the **Global Startup Foundation** (https://bit.ly/2B3nxg5). Backed by Jerusalem-based investors, this organization has made one deal, taking advantage of the matching grants offered by the **World Bank via GITA,** the national innovation agency (https://bit.ly/3duSqqM). Two additional matching deals were under discussion as of June 2020.

While they cannot be considered as start-up investors, two other funds may be mentioned:

- **Georgian Co-Investment Fund (GCF)** operates in traditional sectors, from manufacturing to energy. In 2015, this fund took part in a $20 million round for Bitfury, a US-based start-up using a data centre in Georgia (https://tcrn.ch/3iah5EQ). No other investment in tech start-ups have been reported since then.
- **Georgia Capital (GCAP)** is a large and diversified investment group which made a €2.8 million investment in Redberry, a digital marketing agency. No investment in a tech start-up as such was ever made.

Individual investors

There is no business angel market or community, but just a dozen of wealthy people -- often from family or personal networks – investing at the idea stage and sharing their experience and contacts in the business sphere. This research identified only two cases of investment in digital start-ups, a recent and vivid one being Edison.[23] However, many of these individual investors are unfamiliar with technology business and tend to impose inadequate requirements on start-ups – and be perceived as 'business predators' or 'devils'.

[23] In 2020, the World Bank-backed 'Invest Readiness programme' in Georgia identified 80 individuals with interest in investing. Of them, 15 already had made one or several investments, incl. only two in tech start-ups.

There is also a dozen of Georgian emigrants or 'migrant business angels' living in the USA and supporting some interesting Georgian start-ups. International events like Digital Touch and Startup Grind are one of the points of connection start-ups with these or other foreign investors. Startup Grind Georgia brings a few promising start-ups annually to their event in Silicon Valley (these operations are 100% subsidized by the government).[24]

4.4.2 Public funding programs

Local government funding programmes

The Ministry of Economy and Sustainable Development of Georgia (MoESD) is the main responsible body for the innovation ecosystem in the country. To enhance its support, MoESD established a dedicated Agency, GITA, which implements the main start-up related support programmes as a source of financial and non-financial support.

Implementing this support strategy, the government introduced the Startup Georgia programme (implemented by GITA), including a state-owned fund in 2016, providing co-financing in projects at their initial stage of development -- from 15,000 GEL (€4,400) to 100,000 GEL (€29,100). The total budget of a particular project is not limited.

The program consists of an innovative component and a high-tech component, covering aerospace production, automobiles, artificial intelligence, biotechnology, bioinformatics, computer engineering, computer science, information technology, nanotechnologies, nuclear physics, electromagnetic radiation, robotics, semiconductors. As of June 2020, 20 start-ups received grants for 100,000 GEL (€29,100), in total 2,000,000 GEL (€583,000).

Under a separate state-funded grant programme, Georgian tech start-ups may receive support of around €2,000 for such purposes as prototyping, business traveling, etc.

Internationally-backed funding programmes

The most significant internationally-backed programme is 'Georgia National Innovation Ecosystem Project' (GENIE), funded by World-bank and implemented by state agency GITA. Besides its considerable role in ecosystem development support activities, it also provides start-ups with matching grants of up to €190,000.

This programme has had a tangible effect in awaking the Georgian start-up scene, which now features some 200 start-ups, up to a few dozen before GENIE started. However, GENIE's grant facility has been underused due to the matching requirement. A year before the end of the programme (2016-2021), only 86 start-ups had received grants, amounting to around €4 million in total, or around 10% of total programme budget.

This programme has also aimed to:

- Develop a network of innovation hubs and innovation centres in selected cities, towns, and villages;
- Design and implement, when applicable, a broadband-for-development programme targeting eligible households and MSMEs;
- Deliver innovation services tailored to project beneficiaries at various stages and levels of the innovation ecosystem.

The end of this programme in 2021 poses the question of the continuity of public support.

Table 34 Internationally-backed funding programmes in Georgia

Programme	Geographic coverage	Type of programme	Comments
Matching grant programmes from National Innovation Ecosystem support (GENIE) Project. https://bit.ly/386q8lD 2016-2021 Backers: World bank	National	Two main matching grants programmes have been provided: - Matching Grant Program 100,000 GEL (€29,100) - small matching grants to early-stage private and small- enterprises. 77 beneficiaries were granted €2.2 million in total. - Innovation Matching Grants 650,000 GEL (€190,000). 9 beneficiaries were granted (€1.7	GENIE has had a considerable effect to stimulate the emergence of the Georgian start-up scene. GITA seems to be administering the programme efficiently, including an effort to cover the regions. (The grants, however, are distributed

[24] At one of these San Francisco events, Georgian start-up PulsarAI to attract $1.2 million in total from 25 VCs and BAs. The biggest ticket $250,000 came from a US VC.

Programme	Geographic coverage	Type of programme	Comments
		million distributed in total). Additionally, small grants of 5,000 GEL (€1,450) and 15,000 GEL (€4,370) have been distributed to 9 and 139 selected innovation products prototypes implementation in 2016-2020. The project is administered and implemented by GITA. The total budget of the project (incl. other ecosystem support activities, not only grants) is €50,4m (of it €44,8m is funded by World bank)	centrally. The direct funding component of the GENIE programme has amounted so far to only around 10% of the total programme budget Continuation after the end of the programme (2021) is not assured.
R&D grant opportunities from Horizon 2020 http://h2020.md/en/projects 2014-2020 Backer: EU	International	Very few Georgian start-ups participate in the applications. The reasons identified during this research are the small number of start-ups in the country and, specifically, the lack of H2020-eligible ones; the programme's procedures which are perceived as being too heavy; the lack of information or processes to matchmake with EU partners.	

Sources: DISC research

4.4.3 Note on internationally-backed non-financial programmes

There is a range of non-funding opportunities backed by international organizations in the fields of entrepreneur or investor training, transfer and implementation of best practices, etc. Here are the most notable ones:

- **WB- and EU-backed:**
  - EU-funded **Startup Investors Program** is intended to help new and existing investors to improve their investing knowledge and skills, enabling them to make better investment decisions. The programme works in parallel with WB and EU-backed Investment Readiness (IR) Program, which prepares companies for engaging private investors, particularly equity investment. (https://bit.ly/3elJkOl)
  - EU-funded **Technology Transfer Pilot Program (TTPP)** aims to raise the capacity of GITA and public partner organizations in technology transfer and commercialization process, from the initial disclosure until deal closure. (https://gita.gov.ge/eng/static/155/ttpp)
  - EU- and WB-funded **Georgia: Increasing Institutional Capacity for Innovation** aims to increase GITA's capacity to effectively coordinate the government's approach to innovation and entrepreneurship policy formulation and implementation. (https://bit.ly/3eH63or)
  - The EU-backed **TWINNING with Shota Rustaveli National Science Foundation (SRNSFG)** aims to address the priorities and challenges in Georgia's Science, Technology and Innovation (STI) system. The goal is to ensure interdisciplinary approach, collaborative research and promoting evidence-based policy implementation in line with the EU-Georgia Association Agreement. (https://bit.ly/2Vq59Fa)
  - The EU-Georgia Joint Project on Intellectual Property (EUGIPP), a €1.2 million programme, aims to support the intellectual property system in Georgia, in particular, to advance the trademark and design system and to harmonize it with EU legislation and practice.
- **GIZ-implemented projects under EU-backed programmes:**
  - **Clusters 4 Development - Better Business Sophistication in Georgia** contributes to the EU-funded programme **Economic and Business Development in Georgia** by strengthening the policy framework, facilitating the development of SME clusters and developing clusters in three sectors.
  - The **Innovation Centre** project was created within the ERAMUS + program InnoCENS (Enhancing Innovation Competences and Entrepreneurial Skills in Engineering Education) to foster innovation in the university environment, develop entrepreneurial spirit and business awareness, etc. The project is coordinated by Sweden Technology Institute.
- **SIDA-backed:**

- **Increasing Competitiveness of SMEs in Georgia (GEclose2EU)** has set the following main objectives: identification of new sectors, products and services of SMEs with high growth and expansion potential, through market and sectoral research and analysis; increasing capacity of the entrepreneurship promotion agency, Enterprise Georgia, through capacity building, increased access to international markets and technical assistance of its beneficiaries.

- **UK-backed:**
  - **Creative Spark,** supported by the British Council, aims for creative skills development, start-ups functionality support. It supports incubation, stimulates business sector collaboration, knowledge sharing. The programme applies to Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Ukraine and Uzbekistan. (https://bit.ly/3i9XBA8)

4.4.4 Note on the availability of EU instruments

These EU instruments, in particular, are accessible locally: EIC, EIT Digital, ESIL, H2020, InnovFin. Available with restrictions: Invest EU. Not accessible: COSME.

4.5 Moldova

4.5.1 Private start-up investment

There is no local VC fund and extremely limited business angel activity. Although there is a local network of business angels (www.businessangels.md), there have not been more than 1-2 angel deals per year so far. Thus, in 2019, two deals took place ($8,000 and $25,000, respectively).

The main reasons for local investors' lack of interest lie in the absence of culture of investing in such ventures. Moldovan businessmen prefer to invest in traditional industries or real estates. Another issue is the absence of a legal mechanism to invest in a company other than buying a stake in its capital, and or an adapted type of legal entity for tech start-ups.

Table 35 Key numbers for Moldova

Inhabitants	Yearly start-up influx*	Yearly VC funding (Average 2017-2019)
3.7m	5	Little significant. Most start-ups not venture ready

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding. Source: DISC research*

How things could change

In 2020, private firm XY Partners launched an acceleration in partnership with USAID-backed Tekwill.[25] While the latter offers space and covers mentoring and other operational costs, XY Partners provides convertible notes to entrepreneurs at the very start of their project. These loans amount to $8,000 in exchange for a stake of 8% in the future company.

XY Partners believes that its financing and acceleration support can have a strong impact on the embryonic local start-up scene – bringing from currently half a dozen to up to 20 the number of quality start-up projects in the country. *"If we create the right programme, the probability that start-ups succeed is way higher,"* says CEO Traian Chivriga. Out of 85 applications, XY Partners selected nine projects for the acceleration programmes and already provided convertible notes to two start-ups. Of the seven remaining ones, up to five were expected to receive funding as of June 2020.

XY Partners is already preparing for the next stage, envisioning a venture fund of up to $5 million dedicated to Moldovan start-ups at the pre-seed and seed stages. Discussions are being held with local and international public institutions, owners of large companies as well as foreign tech funds already operating in neighbouring Romania and Ukraine.

4.5.2 Public funding programs

Local government programmes

No specific government-backed funding programme for tech start-ups has been identified in this research. However, the authorities launched the country's first dedicated support program for IT entrepreneurship, Startup Moldova, in May 2020, and are considering the creation of a start-up fund.

Besides, IT start-ups may benefit from government grant programs for women entrepreneurs,[26] for export-oriented and for innovation-oriented businesses. Market players hope the new law on alternative collective investment will stimulate private investment in IT (and deep tech) start-ups.

Government interest in IT innovation is illustrated by the adoption in 2018 of a 'Strategy for the development of the information technology industry and the digital innovation ecosystem for the years 2018-2023.'[27] This strategy is a strategic planning document that sets the objectives and priorities for the growth and diversification of the information technology industry. With this strategy, the government aims to develop the necessary conditions for increasing competitiveness, diversifying the IT industry, stimulating start-ups and focusing on digital innovation in all sectors of the economy. In order to achieve this, the strategy identified the following key areas of intervention:

- Competitive IT business environment – promoting the use of new technologies in the private sector to increase competitiveness;

[25] Interview with one of the XY Accelerator mentors, Olga Melniciuc. https://www.youtube.com/watch?v=UprN0UySDxQ
[26] Grants of 1,649,000 MDL for women entrepreneurs in the Republic of Moldova https://bit.ly/37M9XcM
[27] https://mei.gov.md/ro/content/competitivitatea-industriei-it

- Competitive human capital in the field of ICT – strengthening digital literacy;
- ICT based innovations – fostering the development and application of new ICT technologies;
- IT investment and export support – promoting greater investment and overall support to IT services including their export to other countries.

Even before 2018, the Moldovan government had already identified digitalisation as a key country priority to strengthen economic and societal development. The Digital Moldova 2020 Strategy[28] adopted in 2013 envisaged an advanced information society by 2020 in which the use of information and communication technology facilities, the extended access to modern ICT infrastructure, rich digital content and high-performance information services would lead to economic competitiveness, good governance and implicitly to increasing the well-being of the population.

Internationally-backed funding programmes

International organisations recently engaged in active support for innovation, infrastructure and ecosystem building. The effort concentrates on the Tekwill centre in the capital and a regional duplicate, Startup City Cahul. The previous is backed by the Moldova Competitiveness Project, which involves USAID, Sweden and the UK Aid while the latter is funded by EU4MOLDOVA.

Funding opportunities for tech start-ups - either included in these programmes or provided by USAID-backed funds covering both Ukraine and Moldova - do exist but are yet to be fully deployed. The modesty of the effort may be explained by the current embryonic stage of the Moldovan start-up scene.

Table 36 Internationally-backed funding programmes in Moldova

Programme	Geographic coverage	Programme description and comments
R&D grant opportunities from Horizon 2020 http:/h2020.md/en/projects 2014-2020 - Backer: EU	International	Moldova shows the highest participation level among Eastern partner countries (~10 projects) but this has concerned teams from scientific and academic institutions, not tech start-ups.
Funding opportunities from Startup Moldova https://bit.ly/2B0pFoQ Launched in May 2020. Backers: USAID and Sweden. Implemented under Tekwill programme	National	The overall program aims to support IT entrepreneurship. Besides the educational, mentoring and infrastructure opportunities, it also can offer start-ups small funding (up to €8,000-€10,000), mostly in kind services. A previous Tekwill grant programme provided micro-grants to cover travels…
XY Accelerator https://bit.ly/2zUivBV March - July 2020 Backers: USAID and Sweden Implemented under Tekwill programme	National	Under this programme. Each start-up will receive $13,000, of which $8,000 will be in financial form to cover salary, marketing, other operations and $5,000 in mentoring and consulting. 8 candidates (instead of 5 planned) have been selected. Each start-up is in the seed stage.
Funding opportunities from EU4MOLDOVA: Start-up City Cahul https://bit.ly/2zYHHHE 2020-2023 - Backer: EU	Local - Cahul city	This programme is a local extension of Tekwill project in the region of Cahul, which is a focal region for EU support to Moldova. Among other components, the programme will develop a seed funding and acceleration programme for ICT related start-ups.
PE/VC fund - Western NIS Enterprise Fund/Horizon Capital	Ukraine, Moldova	This regional facility covers Ukraine and Moldova. In recent years two specific *instruments were launched for*

[28] https://eufordigital.eu/library/digital-moldova-2020-strategy/

Programme	Geographic coverage	Programme description and comments
(WNISEF) https://wnisef.org/ Established in 1995 Backer: USAID		*start-up investments.* • In April 2016, USAID approved expanding the Legacy Program to $5m earmarked for direct investments in SMEs, primarily start-ups. • In November 2017, WNISEF launched **U.Ventures,** a $5m fund for early stage technology start-ups offering co-financing and scaling assistance for Seed to Series A start-ups with Ukrainian or Moldovan founders. No case of start-up investment from these two facilities had taken place in Moldova as of June 2020

Source: DISC research

4.5.3 Note on internationally-backed non-financial programmes

During the last years the significant efforts have been dedicated for start-ups ecosystem building within the country. International organizations have been significantly involved in non-financing public programmes aimed to support start-up innovation and ecosystem building.

The most significant has been the **Centre of Excellence in Information and Communication Technologies (Tekwill)** (2017-2020). At the moment, Tekwill is funded by USAID, SIDA, UK aid and some projects are financed by the state. The program aims to support the growth of economic competitiveness in Moldova through development of ICT skills, workforce and entrepreneurship by establishing and operating a fully functional and sustainable ICT Excellence Centre in Moldova.

Few non-funding programmes backed by international organizations may benefit start-ups, although they are not specifically intended to support them:

- **Dreamups Innovation and Entrepreneurship Accelerator,** backed by USAID, (https://bit.ly/2V924ch), has been organising meetups, bootcamps and acceleration programmes since 2016, in partnership with such international players like Founder Institute, spending MDL 4.5 million MDL in total in 2017-18 on such activities (about €220,000 - https://dreamups.com/raport-17-18/). Over 125 entrepreneurs participated in their recently launched Upcelerator, providing online all the start-up accelerator services *'from A to Z'* (https://upcelerator.md). However, these programmes included no or not significant funding for start-ups.
- **Moldova Competitiveness Project (MCP) (2015-2020).** Backed by USAID, Government of Sweden and UK Aid. Implemented by USAID contractor Chemonics together with ATIC. Total budget $21.85 million. The programme aims to increase sales, investments and exports in targeted industries (incl. ICT area). From October 2015 to September 2016, MCP has assisted more than 250 SMEs to adopt new technologies, strengthen targeted marketing, and make critical investments in equipment and human resources. (https://bit.ly/3fPSoLP)
- **'Girls Go IT'** contributes to the higher involvement of girls and young women in IT, through training and internships in vocational-technical institutions, so that a career option in IT becomes more attractive for them.

4.5.4 Note on the availability of EU instruments

These EU instruments, in particular, are accessible locally: COSME, EIC, EIT Digital, ESIL, H2020, InnovFin. Available with restrictions: Invest EU.

4.6 Ukraine

4.6.1 Private start-up investment

Although not negligible, the number of private funds and individual investors - all concentrating in the capital Kyiv - is far from being sufficient to meet the needs of the vibrant local start-up scene, especially at the pre-seed stage and starting from Series A. The funding gap is filled only partially by remote investors and an embryonic state funding support mechanism.

Table 37 Key numbers for Ukraine

Inhabitants	Yearly start-up influx*	Yearly VC funding (Average 2017-2019)
40m	200	Invested locally:** **$25m** If including made abroad: **$330m**

** Estimated number of quality tech start-ups emerging every year at the pre-seed or seed stages. Only a fraction of them actually raise funding. ** Invested locally: made in the country or involving a local investor. Source: DISC research, Crunchbase*

Table 38 Private investment in start-ups born in Ukraine: estimated amounts in million USD per stage, type and origin of investors (2017-2019)

Investor type	Pre-seed + Seed	Series A	Series B+
Locally-represented VCs	6,6	20,25	10,00
International VCs	31,5	64,25	817,50
Local Bas	6,6	-	-
International Bas	Little significant	-	-
Local accelerators	Little significant	-	-
International accelerators	N/A		
	3,64	-	-

Sources: DISC research, Crunchbase

Funds with local activity or representation

A dozen VC/PE funds operate in Ukraine on a permanent basis, investing mostly in digital high tech start-ups. Most of these funds are originated in Ukraine and backed by Ukrainian LPs. They generally invest domestically or in neighbouring countries.

Among the most active funds on the Ukrainian start-up scene are:

- **Acrobator Ventures:** A fund co-founded by Bas Godska, a Dutch businessman living in Kyiv and probably the most prolific foreign business angel and mentor across the former Soviet Union (Ukraine, Russia, Kazakhstan). This fund plans to invest up to €20 million in the coming three years 'from pre-seed stage to later stages,' partly in these countries. Acrobator's sweet spots are SaaS, Big Data/ML/AI and HR tech, not excluding other segments. (https://bit.ly/2UMqN6n)
- **AVentures Capital:** This fund of $20 million (flexible) invests from $500,000 (late Seed) to $5 million (Growth). It targets Ukrainian start-ups (e.g. Augmented Pixels, Bookimed, NuPsys, Petcube, Spinbackup, Viseven) as well as IT outsourcing companies (e.g. Ciklum).
- **Digital Future:** A prolific Ukraine-born VC firm that invests at the seed and early stage (rarely at the pre-seed) from $50,000 to $500,000. Its sweet spots are adtech, AI, security, IoT, SaaS, marketplaces, B2B, B2C. The fund sometimes invests internationally. (https://bit.ly/2YqtRag)
- **TA Ventures**: Headed by Viktoriya Tigipko, the wife of a wealthy businessman, this fund has invested very actively outside Ukraine, from Europe, to the USA, to emerging markets.

- **U.ventures:** Launched in 2017, this Seed and Series A fund is tech agnostic. It was launched in 2017 by USAID-backed WNISEF, a $150 million facility covering Ukraine and Moldova. (https://bit.ly/31daXp8)

These Ukrainian funds are not in the capacity to provide the local start-up market with sufficient capital. They are not numerous enough and generally too small. Some of them, created several years ago, are in the divestment phase, having exhausted the better part of their capital.

The lack of funding is particularly sensitive at the pre-seed stage, as some local funds tended shifted from early seed to late seed and Series A in recent years. The available funding could increase in the future as a national start-up fund has started providing grants. Initially designed as a $1.8 million facility, this fund was launched in 2019 with a budget of $15 million and could have its capacity raised to some $70 million *(see Part I. Analysis, Section 4.6.2).*

At the seed, Series A and later stages, Ukrainian start-ups tend to seek funding abroad. Only 2% of the total Series A+ investment volume in 2019 came from Ukrainian investors *(see below).*

Individual investors

A report by the local industry association UVCA (https://bit.ly/2YAQRUe) identified very small numbers of deals involving individual investors in Ukraine (7 in 2018, 21 in 2019). The small membership and declining activity of UAngel, the local association launched in 2014, seems to confirm the little appeal of start-ups in the eyes of the country's wealthy individuals.

In reality, individual investment in Ukrainian start-ups is substantial – but it is hidden, according to attentive local observers. With several dozens of angels who put checks of $500,000-$1 million, the total angel investment amount could *match or even exceed* that of VC funds at the pre-seed and seed stages combined.

Two examples identified in the course of this research illustrate this activity:

- An individual who did not wish his name to become public invested $5 million at the seed stage in 2019;
- An executive from a local fund invested personally in nearly a dozen projects over the past few years with checks of up to $50,000. Not all these deals were disclosed.

Business angel practice is not always aligned with industry standards, e.g. with excessively low valuations imposed on start-ups. Founders may be forced to lose control over the company as early as the pre-seed stage.

Remote investors

As sufficient funding is not available locally, a number of Ukrainian start-ups manage to secure support from foreign investors.

There are many cases of successful crowdfunding operations, e.g. Time 4 Machine's metal mechanical models raising $430,000 on Kickstarter (https://bit.ly/2Yxc5m1).

For Ukrainian digital high-tech start-ups, the most used international financing channels are:

- Funding from start-up accelerators in Europe (notably Startup WiseGuys, Finnish Public Fund, Startup Bootcamp) and the USA (notably Techstars, Y Combinator and 500 Start-ups);
- Funding from US and EU investors, starting from the Seed stage and overwhelmingly from the Series A stage.

Analysis by investor origin

In 2019, the investment split by geographic origin looked as follows:

- **At the pre-seed and seed stages:**
  - $3.2 million out of $13 million (24%) of funding came from Ukrainian VCs and angels. Among notable investors are ICU, SMRK VC, Genesis Investments, TA Ventures, Michael Puzrakov, Petr Chernyshov, angels;
  - $4.6 million out of $13 million (35%) of funding came from US investors such as 500 Start-ups, Startup Wise Guys, Techstars, FundersClub, angels;
  - $5.3 million out of $13 million (41%) of funding came from EU funds such as Icebreaker, Starfinder, TMT Investments, Finnish Public Fund, angels.
- **In Series A:**
  - $4 million out of $15 million (27%) of funding came from Ukrainian funds such as TA Ventures, Genesis Investments, TAS Group;
  - $4.5 million out of $15 million (30%) of funding came from US investors such as Draper Associates;

- $6.5 million out of $15 million (43%) of funding came from EU funds such as EBRD, Flashpoint Venture Capital (previously Buran).

- **In Series B and later stages:**
  - $418 million out of $439 million (95%) of growth funding came from US investors such as Goldman Sachs, General Catalyst, Iconiq Capital, Andreessen Horowitz;
  - $10 million out of $439 million (2%) of total growth funding came from Ukrainian PE fund Horizon Capital.

Analysis over a five-year period shows that more than 80 US VC funds invested in start-ups with Ukrainian roots, but just 20 EU VC funds.[29]

Table 39 Investors in Ukrainian and Ukrainian-founded start-ups: Analysis by geographic origin (2019)

#	Locally-based investors	US-based investors	EU-based investors	Other investors	Total
Pre-seed & Seed	$3.2m (24%)	$4.6m (35%)	$5.3m (41%)	0	**$13m**
Series A	$4m (27%)	$4.5m (30%)	$6.5m (43%)	0	**$15m**
Series B+	$10m (2%)	$418m (95%)	0	$11m (3%)	**$439m**
All stages	**$17m**	**$427m**	**$12m**	**$11m**	**$471m**

Source: DISC research, Crunchbase

4.6.2 Public funding programs

In Ukraine – the largest of all Eastern partner countries in terms of population, economy, R&D and start-up potential – the local and international public response to the lack of private funding has been very insufficient so far.

Local government programmes

Since the 2013-14 revolution, which enjoyed large support among the tech-oriented communities, the Ukrainian government has accentuated its commitment to support the development of innovation with declared intention to stimulate start-ups, venture business, high tech and support small businesses. Thus, during 2013-2018, Ukraine approved almost 40 industry-specific strategic documents related to the development of innovations. However, during all these years, the country's difficult situation has not allowed the authorities to materialize any substantial financial effort to support the emerging start-up industry.

2019 saw the creation of the state-funded **Ukrainian Startup Fund** (USF; official name: Fund of Innovation Development), the only significant funding facility specifically dedicated to tech start-ups in the country. This fund provides Ukrainian start-ups with pre-seed and seed grants through competitions. The grant size ranges from $25,000 up to $75,000 The total budget is 440 million UAH (around $15 million, up from the $1.8 million initially considered - https://bit.ly/3eqIL67).

The government is also planning to launch a fund-of-funds to increase its involvement.

Target sectors include, but are not limited to: Artificial Intelligence (AI), Augmented Reality (AR/VR), Big Data (BigData), Blockchain, Cybersecurity, Defence, Medicine and Health, Travel, Financial Technology (FinTech), Educational Technology (EdTech), Robotics, Professional Services, Software as a Service (SaaS), Manufacturing, E-Commerce, Internet of Things (IoT). Since December 2019, the USF has received about 1600 applications. As of April 2020, there have been 5 pitches, during which the jury selected around 26 projects. As for now, the total financing for those winners amounts to about $1 million and two start-ups from the healthcare sector have received grants (DEWPOCKET, Caretech Human).

Several non-financing programmes supporting the start-up ecosystem are worthy of note. Among them are:

- **UkraineInvest** (Ukraine Investment Promotion Office), established in 2016, aims to attract foreign direct investments in Ukraine. It works closely with start-up support organisations, as exemplified by its cooperation with Kyiv's Unit City.

[29] Source: UVCA President Andrey Kolodyuk

- **Local municipal projects** may be significant, in particular:
  - **Kyiv Smart City.** The initiative by the city of Kyiv, which brings together residents, businesses and authorities of Kyiv for the development of smart urban infrastructure. The Initiative includes an accelerator and a hub for urban development projects.
  - **Smart City Lviv.** In 2015, Lviv City Council announced a course on innovation in the city through the use of the smart city approach and tools. Implementation of innovations involves cooperation between the authorities, public services, citizens, and business representatives.
  - **Dnipro Development Agency.** The Dnipro Development Agency was established by the decision of the Dnipro City Council and is engaged in developing the city's infrastructure and increasing its attractiveness for investors.
  - **Smart City Kharkiv**. Smart City Kharkiv is an image project of Kharkiv within the framework of the Invest Kharkiv Project, which promotes the introduction of innovations in the city.

Internationally-backed funding programmes

Ukraine is covered by a variety of public or publicly-funded international facilities that may potentially provide start-ups with financial support (USAID's CEP programme, Horizon 2020, EBRD VCIP, Earlybird Digital East funds, IFC, etc.). However, CEP is the only programme having reached a large number of tech start-ups so far.

Table 40 Internationally-backed funding programmes in Ukraine

Programme	Geographic coverage	Type of programme	Comments
PE/VC fund - Western NIS Enterprise Fund/Horizon Capital (WNISEF) https://wnisef.org/ Established in 1995 Backer: USAID	Ukraine, Moldova	This $150 million regional facility covers Ukraine and Moldova. In recent years two specific instruments were launched for start-up investments: • In April 2016, USAID approved expanding the Legacy Program to $5 million earmarked for direct investments in SMEs, primarily start-ups. • In November 2017, WNISEF launched U.Ventures, a $5 million fund for early stage technology start-ups offering co-financing and scaling assistance for Seed to Series A start-ups with Ukrainian or Moldovan founders	The fund already invested in several Ukrainian start-ups https://bit.ly/2YpaYV3
Grant funding within Competitive Economy Programme (CEP) https://bit.ly/3euHpY6 2018-2023 Backer: USAID	National	• Among many other components, this programme provides g**rants to early stage and product-level start-ups.** Grants are available only for locally registered entities and private entrepreneurs. • CEP **plans to launch a VC fund** in 2021 to work in tandem with the eo Business Incubators to provide funding for the incubator teams and other start-ups in the ecosystem. • In 2019 CEP supported the launch of **eō Business Incubators**. From autumn 2019 to spring 2020, eo residents have raised about $650,000 in equity investment, grants, and in-kind services. • Other CEP components focus on business training, trade and business missions, networking aimed for improving startups' products. In total the programme involves $41.9 million worth support to start-ups and SMEs.	During the last 18 months CEP has supported more than 100 IT companies and tech start-ups and is going to support another 150 IT companies and tech start-ups during the next 12 months.

Programme	Geographic coverage	Type of programme	Comments
R&D grant opportunities from Horizon 2020 2014-2020. Ukraine joined in 2015 Backer: EU	International	By the end of January 2019, Ukrainian participants had received 171 grants worth €29,690,000. The beneficiaries have been essentially teams from the scientific sectors. Very few tech start-ups have been concerned (example: https://bit.ly/2CymHs9). One of the reasons is that H2020 has an excessively demanding and long application procedure. In contrast, USAID has faster start-up grant and acceleration programs, which are more popular in the country.	
EBRD Venture Capital Investment Programme	International	Since 2014 VCIP invested in only 2 Ukraine start-ups: Allsetnow, Depositphotos ($5 million series A round, led by EBRD and with the participation of TMT Investments)	
EBRD-NIF voucher programme 2017-2018 Backer: EU	International	The CIV project was initiated by the EBRD's Finance and Technology Transfer Centre for Climate Change (FINTECC) programme, which is financed by the EU Neighbourhood Investment Facility (NIF). Ukraine was the first of the EBRD's countries of operations to benefit from the CIVs, where the project was implemented by Greencubator. It was expected that the CIV program, with a total budget of €1 million, will support around 50 innovative projects in Ukraine. Vouchers for individual projects ranged from €20,000 to €50,000. Examples of Ukrainian beneficiaries: https://bit.ly/319JPHE	
Considered EIB loan to Unit.City	Sub-national	In June 2020, the EIB agreed a €50 million loan to the capital's main innovation park, Unit.City. Purpose: *"finance the development of project documentation and building individual components of the innovative campus."* https://bit.ly/3dH2sp8	
EBRD unrealised Ukraine tech fund plan	National	In late 2014 the EBRD announced plans to launch a fund with a volume of $50 million-$60 million early in 2015 to invest in Ukrainian high-tech companies https://bit.ly/3ew0wRq. This project was not realised.	
DEG-backed new Da Vinci Capital fund	International	In early 2020 PE fund manager Da Vinci Capital agreed with DEG a €30 million contribution to its new fund, 'Da Vinci Capital Technology Fund III' as a contribution to its initial $100 million (€90 million) target. The fund will aim to participate mostly in Series B rounds across a broad range of segments It will target, in particular, Ukraine, Belarus and Kazakhstan. https://bit.ly/2Z4LGL4.	

Source: DISC research

4.6.3 Note on internationally-backed non-financial programmes

Two internationally-backed initiative aim to address the information and data gap:

- **Dealroom's Ukraine deal database:** supported by WNISEF, local investment funds and industry associations; (https://ukraine.dealroom.co/home - https://bit.ly/2AQT0lH)
- **TechUkraine:** An internationally-oriented information platform supported by GIZ. (https://techukraine.org)

4.6.4 Note on the availability of EU instruments

These EU instruments, in particular, are accessible locally: COSME, EIC, EIT Digital, ESIL, H2020, InnovFin. Available with restrictions: Invest EU.

5 Analysis: Eastern partner countries start-ups from local ecosystem failures to global success

5.1 Ecosystem failures

In the course of this research – which focused on the financial aspects of start-up development – local market participants have underlined multiple failures of the local ecosystems.

The most frequently cited issue is the lack of efficient incubation and acceleration capacities in most Eastern partner countries**.**

Table 41 Incubators and accelerators across Eastern partner countries

Country	*Incubators and accelerators across Eastern partner countries*
Armenia	A few incubators and accelerators with limited capacities. Mostly US-oriented international development mechanisms
Azerbaijan	A few incubators and accelerator with limited capacities
Belarus	1 main accelerator with limited capacities
Georgia	2 internationally-oriented accelerators
Moldova	Emerging acceleration capacities
Ukraine	4-5 local quality accelerators Mostly US-oriented International development mechanisms

Source: DISC research

The primary reason lies in the lack of expertise of most support organisations. Local accelerators tend to base their programs on the content of some famous international accelerators, like Y Combinator, Techstars, etc. But once the general knowledge is delivered, an individual approach for each team is needed -- and the lack of quality mentors makes this task challenging.

Rarely associated with a funding facility from public or private players, these incubators and accelerators are not in a position to provide substantial financial support to their graduates. Many of these support organisations are not themselves funded sufficiently, preventing them from providing programs and activities consistently.

With variations among countries, the other issues generally include:

- Limited access to local private capital *(see Part. I Analysis, Section 2 above);*
- Absence or very limited public funding support *(see Part I. Analysis, Section 3 above);*
- Limited size of the domestic market;
- Difficult access to foreign markets – for business, legal and cultural reasons;
- No or very limited involvement from corporations (except in Ukraine, at the starting phase);
- Weak or non-existent technology transfer mechanisms;
- An unfriendly legal environment and/or judicial environment in most Eastern partner countries.

As a result, even though most of these countries lack neither entrepreneurs nor engineers, these ecosystems fail to convert them into tech entrepreneurs and investable start-ups.

The summary of ecosystem failures is presented in the picture below.

Figure 12 Eastern partner start-up ecosystem failure map

Source: DISC research.

5.2 Eastern partner start-up path to global success

In these circumstances, successful start-ups from these countries tend to develop a specific, lean development model. Generally disconnected from local scientific research, they develop digital high tech (rather than deep tech) solutions without needing large initial capital injections.

This may explain with the rounds of funding of successful start-ups from Eastern partner countries generally involve small amounts until the late stage or even exit.

As discussed above *(see Part I. Analysis, Section 1-Insight #3, Part I. Analysis, Section 2),* deal analysis also reveals a remarkable performance after the Seed stage, with a high Seed-to-Series A conversion rate and Series A (28/111).

Another sign of performance for these successful start-ups from Eastern partner countries is that they take on average 3.48 years from inception to reach a Series A round. This is just under global average -- and faster than their European or Asian peers.

Due to the failures of the local ecosystems, these start-ups move abroad as soon as they can, leaving in their home country mostly R&D teams. The most successful companies generally establish themselves in the USA – mostly Silicon Valley. This is where they raise funds or are sold to US digital giants like Facebook, Google and Snapchat.

This US path to global success was followed by all the start-ups that completed large funding rounds ($30 million or more) or were sold to large US digital companies. These start-ups are AIFactory, AIMatter, Gitlab, Grammarly, Looksery, MSQRD, People.ai, and Workfusion. Amsterdam-headquartered Bitfury is the only partial exception.

6 Analysis: Legal environment challenges for investors and start-ups

6.1 General business and investments framework

With important variations among countries, the legal environment is often challenging to both investors and entrepreneurs. In this research, the broadly understood legal framework for venture investments and early stage business was investigated, by studying the most burning issues in each Eastern partner country from the viewpoint of legal experts, venture investors, and start-ups. The cross-country comparison was done to reveal the common challenges and the positive cases of regulation. The following components have been covered:

- General investment law, as an underlying framework governing venture investment and guaranteeing enforceability of property rights.
- Specific regulative framework for activity of business angels and venture capital.
- Taxation framework for business angels, venture capital and early stage innovative / IT companies (start-ups), providing additional incentives for innovative efforts.
- Framework and ecosystem for intellectual property rights (IPR) protection, which foster high-tech innovations by clear allocation of ownership of IPR.

6.2 Legal and taxation framework for start-ups

Registration process of a new company in all Eastern partner countries is currently simple and well managed. However, the legal regulation of registration and activities of start-ups is different across the region, as well as taxation. Broadly Eastern partner countries do not provide for any special regime for high tech and digital innovative companies' taxation. However, some tax and customs benefits may apply on a general basis.

Georgia provides one of the most favourable taxation framework in the world (14th place according to Doing Business) and the most favourable in Eastern partner, including the high-tech and digital innovative companies. The Georgian Law on Information technology Zones grants the special status of virtual zone with exemption from a number of taxes. Georgian enterprises can also be granted the status of a small business (a certificate of small business) paying from 1% to 5% of income tax. **Moldova** provides to its IT Park residents a unique single tax of 7% from the turnover replacing a set of taxes (corporate income tax, personal income tax, social security and medical insurance taxes, local and real estate taxes) under the law on. Another attractive jurisdiction is **Azerbaijan** with a 7-year exemption for SMEs that are residents of technology parks.

Other Eastern partner countries have certain tax regimes favourable for companies. In **Armenia**, a certification process was introduced for start-ups to reduce the corporate income tax (yet, with limitations in case of ownership in several start-ups). Since 2014, IT firms employing up to 30 people can be fully exempt from profit tax and are eligible for a preferential income tax rate for their employees. Nearly 430 IT start-ups have been granted the tax breaks, valid for five years, by a special government commission. In **Ukraine**, industrial parks, science parks, technology parks and their residents enjoy certain privileges (e.g. exemption from import duty of scientific and research equipment, as well as materials provided for science park project of equipment and materials; additionally, Draft Law of 18 December 2019 proposes CPT and VAT tax reliefs)). **Belarus** provides the full exemption from a number of taxes for High-Technology Park residents, as well as a number of privileges for residents of free economic zones, industrial park, business in small and Medium-Sized towns and rural areas. President`s Decree No. 8 ''On Development of Digital Economy' has provided the exemption from taxes of turnover and profit of Hi-Tech Park residents from activities on mining, creation, acquisition, alienation of tokens, and a number of other objects from the technology of block tokens, digital tokens until 2023.

6.3 Legal and taxation framework for business angels and for venture capital investments

Across Eastern partner region, there is no **legal definition on angel investors** as well as neither targeted regulatory framework, nor tax preferences for business angel investments. The activities of such investors are to be governed within the general legal framework.

To various extent, collective investment legislation regulating **venture investments** has been adopted in most Eastern partner countries. The most elaborated VC regulatory frameworks are observed in Georgia, Moldova and Ukraine, where the collective investment laws contain specific definitions of venture funds. In **Moldova**, the Law on alternative collective investment undertakings, coming into force in September 2020, defines and regulates forms of investment which might stimulate the development of venture funding. It covers provisions similar to UCITS-2009; AIFM – 2011; ELTIF-2015. In **Georgia**, the Law on Collective Investment Undertakings, amendment package and new draft Law on Investment funds prepared by the National Bank establish rules for formation and operation of investment funds and establish the procedure for loan security fund to submit and get approval on prospectus, with

respect to UCITS and AIFM principles. In **Ukraine**, Law On Collective Investment Institutions defines a **venture fund** (non-diversified collective investment institution of closed type that conducts solely private placement of collective investment institutions securities among legal entities and individuals); the favourable tax regime exempting venture funds from corporate profit tax is introduced. In **Armenia,** the regulatory framework for the operation of investment funds is provided under the Investment Funds Act (2010) and the Securities Market Act (2007). In **Belarus**, the Law on Investment Funds came into force in 2018, however, to date, no funds have been registered. In **Azerbaijan**, venture funds operate under general investment legislation.

The analysis of Eastern partner`s legal acts has demonstrated non-application in most Eastern partner countries of regulations similar to EU investment legislation: UCITS-2009, AIFM-2011, EuVECA-2013, EuSEF-2013, ELTIF-2015, PRIIPs-2014, Regulation (EU) 2017/1991-2017, Regulation (EU) 2019/1156- 2019. The EU`s experience shows that harmonization of investment laws, including collective investment, simplifies and facilitates cross-border capital flows, business activities and cross-country start-ups investment in the region. Thus, as investment experience in Eastern partner region matures, it is likely that cross-border transactions will expand and the need for harmonization of relevant legislation will grow.

Due to immaturity of the venture capital practice in Eastern partner region, and difficulty of regulatory enforcement under the general civil law, the typical venture deals structuring' instruments and terms (convertible permissible notes, advanced subscription agreements, indemnities, SAFE - Simple Agreement for Future Equity, KISS - Keep It Simple Securities, tag along and drag along clauses etc.) are practically not used in contracts. Such instruments should be covered by dedicated legislation, to guarantee investors' rights. An outstanding case here is **Belarus**, where the elements of English law structuring venture transactions (e.g. convertible loan, option, etc.) are introduced by President`s Decree No. 8 On Development of Digital Economy, while currently the need of extension of these instruments to all companies in the country is discussed.

6.4 R&D and IPR regulations

Current level of harmonisation of IPR protection rules in Eastern partner countries is comparable to the EU countries (Bulgaria, Romania, the Baltics). Eastern partner countries are the members of WIPO and a big number of treaties administered by WIPO, International Union for the Protection of New Varieties of Plants (UPOV), World Trade Organisation (WTO) and United Nations (UN). Participation in international IPR treaties gives investors' confidence in the protection and legal promotion of a product in other countries.

However, the issues of primary importance may arise with implementation and enforcement of IP legal framework. Because of a short practice, there is a need of capacity building of SMEs as for awareness about the IP legal framework usage as well as capacity building of lawyers and judges as for disputes resolution on IP infringement cases, especially on foreign markets.

Another issue relevant for venture investments into high-tech is the lack of clarity regarding the transfer of IP right developed with usage of public funds to a private start-ups / spinoff company and its subsequent entering into the relationships with equity investors. Benchmarking practices in this regard are elaborated in Belarus and Ukraine. In **Ukraine**, proprietary rights to objects created within an R&D process and benefiting from state grants belong to the recipient of the grant. Similarly, Ukrainian law acknowledges joint proprietary IP rights in agreements with employees and contractors involved in the development of technologies or other IP protected creations. However, according to another law, all proprietary rights belong to the employer. Such conflicting rules sometimes cause disputes and need to be addressed in the employment agreement. **Belarusian** legislation on commercialization of R&D results also recommends that not the organisations that have ordered the science and technology results should be considered as the priority owners of property rights to the results of science and technology activities, but rather the entities involved in creation of these results. Yet, the complexity of the rules does not provide a sufficient clarity for foreign investors as for deeptech IPR distribution in Belarus.

Currently in Eastern partner countries, the consultations for SMEs related to IPR mostly concentrate on patent applications; while the issues of IPR strategy, patent enforcement, freedom to operate on foreign markets, domain-related IP issues and other issues related to global market are rarely addressed; their importance is insufficiently communicated by innovation infrastructure organisations to innovative start-ups SMEs, and little first line free-of-charge guidance is provided.

7 Analysis: Conclusions

Stemming from the above Analysis, these conclusions are an essential basis for the proposed DISC strategy.

Conclusion #1: Few start-ups, but some successes and a considerable potential

While some Eastern partner countries are renowned as software development powerhouses, their potential in terms of start-up innovation has drawn less attention so far.

This research shows that these tiny local start-up scenes have generated or been associated with a series of successful entrepreneurs and start-ups. Among these success stories are Bitfury, Busfor, Grammarly, Gitlab, Looksery, Masquerade, People.ai, PicsArt, Revolut, Viber. Born in Eastern partner countries or backed by local R&D teams, these and other companies have either become unicorns, or been purchased by tech giants, or asserted themselves as global leaders in their field – mostly via the USA.

A close look to these start-ups reveal a specific, lean development model. Generally disconnected from local scientific research, they develop digital high tech (rather than deep tech) solutions without large initial capital injections. Deal analysis reveals a remarkable performance after the seed stage, with a high seed-to-Series A conversion rate and Series A deals secured faster than the international average.

Conclusion #2: Capital is lacking – especially smart money

This research shows that, in absolute terms, capital supply is not negligible across Eastern partner countries given the current small number of start-ups; and that some new private or public facilities under plans could increase this capital availability.

Currently capital is provided by a significant number of local venture funds (25 in a region totalling some 70 million inhabitants) and by internationally-backed facilities covering at least certain Eastern partner countries *(see country-level analysis in Part I. Analysis, Section 4).*

An attentive look at investment stages, tech segments and country situations leads to identify, however, a relative lack of capital supply. As seen below, the funding gap concentrates at the pre-seed stage and, if considering only the local investment funds, at the Series A and later stages.

In terms of segments, the local funds overwhelmingly focus on digital technologies. In Ukraine, a start-up working in such fields as hardware, or bio tech, has very little chances to secure funding locally.

Country-level analysis reveals:

- A lack of private funding in Belarus, Georgia and, to a lesser extent, Ukraine and Armenia (in Azerbaijan and Moldova, needs for capital are very limited for the moment).
- The uneven distribution of public funding across the region, with certain countries more strongly supported (Armenia, Georgia) than others (Belarus, Ukraine).
- The lack of efficiency (e.g. Belarus) and/or sustainability (e.g. Georgia) of some international support mechanisms.

The numerous entrepreneurs, investors, and stakeholders interviewed in the course of this research note that, even in countries where substantial private or public facilities have been put in place (e.g. Armenia, Belarus, Ukraine), it remains challenging for many emerging quality projects on the ground to raise funding. They also believe that, in a dynamic perspective, an increase in capital supply and quality start-up support could unlock the start-up potential of these countries, bringing the number of tech entrepreneurs to a new level.

Thus, the funding gap in these countries is not absolute but relative and plural (funding gaps depending on country, segment and investment stage), and the issue could be addressed only by combining differentiated approaches in terms of funding with entrepreneur empowerment, incubation and acceleration support.

Conclusion #3: Potential for pre-seed investments

Local private capital supply is concentrated at the seed or early stage (as per fund capacities or strategies as well as low business angel activity in these countries except Ukraine), generating a funding gap at the pre-seed level. Witnessing this lack of supply is the low proportion of pre-seed deals – three dozen out of more than 200 identified deals in the course of three years.[30]

[30] The number of pre-seed deals is underestimated due to a number of undisclosed deals, e.g. by Ukrainian business angels.

Conclusion #4: Potential for seed investments

The high number of seed-stage deals (111 out of 220 identified ones) suggests that, as start-ups have validated their business model with first sales, they attract the attention of local and international investors.

The local investment capacities at this stage are, however, limited, even though the majority of local funds address this stage. In Ukraine, in particular, the existing funds are relatively small, and some are in the divestment phase, limiting their actual intervention capacity.

Conclusion #5: Potential for Series A investments

The Series A deal ratio (28 Series A / 111 seed investments) suggests a rather high level of quality and attractiveness of start-ups from the region at the early stage.

Moreover, increasing the local availability of Series A funding would reduce the high reliance (80%) on foreign capital supply at this stage.

Conclusion #6: Potential for a fund-of-funds

As of June 2020, no less than eight opportunities for a fund-of-funds are identified in the region.[31] They illustrate the potential to deal with various types of players:

- **Local business angel networks**

In certain countries, individual investment activity is substantial: in Ukraine and Belarus, business angels' contribution to financing start-ups nearly matches the amounts brought by VC funds at the pre-seed and seed stages. Activity could develop considerably if individual investment were structured in well-funded and professionalised angel funds.

In the local context, fund-of-funds activity cannot go without capacity-building. Many individual investors and even some VC teams lack the knowledge, experience or mindset required to conduct their activity by international standards.

- **Local VCs**

There is a substantial number of local funds (25 across six countries of nearly 70 million inhabitants). As seen above *(see Part I. Analysis, Section 1-Insight #3)*, the high seed-to-Series A conversion rate seems to indicate that local funds have a strong capability to support the development of their portfolio companies at the early stage.

However, the data shows the limited investment capacity of local VCs, especially starting from Series A. Thus, quantitatively, a fund-of-funds could provide these VCs with more capacity to support their portfolio companies until the end of their investment cycle, at less risky stages.

These local VCs could also increase their investment capacities at the seed stages, diversifying their portfolio and better managing risks.

- **International VCs**

International VC teams are unlikely to come massively to Eastern partner countries even if incentivized by funding facilities. However, some talented teams familiar with the region do strive to localise their investment activity, as witnessed by several recent or considered fund launches. The backing from an international financial organisation could amplify their effort and, in certain cases, trigger newcomers to consider opportunities.

- **The emergence of state funds**

In Ukraine, Armenia and Moldova, the authorities are developing start-up funds or consider doing so, seeking support from IFIs.

Conclusion #7: Need to empower entrepreneurs and raise ecosystem support capacities

Pre-seed and seed investment numbers are low in the region essentially because of the ecosystem failure to create a sufficient number of investable start-ups.

Local incubators, accelerators and, in many cases, investors, fail to provide entrepreneurs and start-ups with critically-needed support at the required level in terms of incubation, acceleration, fundraising, etc. Even the capacities of many of them to administer grant programmes or an equity funding mechanism could be put in doubt in the informal local context.

[31] **In the public sector:** USAID's Ukraine-focused VC fund project to support eō Incubators; WB-backed $100 million biotech fund in discussion for Armenia; Ukrainian state fund to increase and fund-of-funds under discussion; Moldovan state start-up fund under consideration. **In the private sector:** underfunded Acrobator Ventures, which operates in Western Europe and the former Soviet Union; XY Partners pre-seed and seed fund project in Moldova; $70-$100 million Eurasia fund considered by Mangrove-ABRT.

Meanwhile, local governments launch praiseworthy initiatives to support the emerging innovation system, but not all local agencies have yet demonstrated their capacities to provide this support with full efficiency.

Hence, international support programmes should have a selective approach to local partnerships and synergies. While helping stakeholders raise their capacities and cooperate whenever possible, international programmes should not fully rely on them to achieve their goals.

Conclusion #8: A business and strategic opportunity for Europe

While Europe has been involved to a rather modest extent in the development of these emerging innovation markets, there is space and need for a more assertive presence:

- **In terms of venture investment**

European VCs lag behind their US peers at all stages, 12% vs. 72% of total transaction amounts involving start-ups from Eastern partner countries. Not because US funds actively scout there - but because of the appeal of the US market in terms of financing and business opportunities and because of established channels for start-up soft-landing, from Eastern Europe to the USA.

Europe could change this pattern by making more capital available locally, especially at the Seed and Series A stages, and offering alternative international development channels for start-ups from Eastern partner countries.

- **In terms of strategic development**

From AI/ML, to Blockchain, to IoT, to FinTech[32] the technology focus of many start-ups from Eastern Partner countries revolves around key enabling digital technologies. They have the tech talent, but no large market - while Europe does have this market and needs these technologies to embrace its digital future.

Europe may consider it a matter of strategic economic interest to raise new pools of innovators in its neighbourhood and integrate them to its emerging industrial value chains.

- **In terms of institutional presence**

As discussed in Part I. Analysis Section 2.2, the involvement of the EU in programmes supporting local start-ups or their ecosystems has been limited so far, in spite of several useful initiatives on the ground. The EU's effort seems to have been below that of such institutions as the World Bank, the EBRD or USAID – be it for direct start-up funding (in this field, this research identified EU programmes in the range of €10 million only across the six countries) or ecosystem development (above €60 million, incl. a €50 million EIB for a construction project in a Kyiv innovation park). Due to the small size of these young markets, modest amounts may be enough for the EU to play a more impactful role in the Eastern partner countries through well-designed support and international integration programmes.

[32] Based on the analysis of 100+ deals throughout 2017-2020, most start-ups from Eastern partner countries specialise in one of these fields.

Part II: Recommendations

These recommendations provide an articulated regional and country-level strategy to support start-up development with relevant funding instruments and private sector participation. Attention is drawn to the local specifics with suggestions on how to design the funding and portfolio support instruments correspondingly.

Also included are suggestions to channel the effort towards policy goals in terms of technology focus and EU-oriented development.

Finally, these recommendations also contain impact estimates as well as key financial and organisational principles to implement DISC successfully across Eastern partner countries.

Table 42 Part II. Recommendations - table of contents

Sections		Sub-sections	
		8.2	Azerbaijan
		8.3	Belarus
		8.4	Georgia
		8.5	Moldova
		8.6	Ukraine
9	**Additional suggestions**	9.1	A set of tools to increase programme efficiency
		9.2	Ecosystem support programmes
		9.3	Improving the legal and tax environment

1 High level programme presentation

1.1 Programme goals

By deploying DISC across Eastern partner countries, the EU may pursue the following main goals:

- Support the development and scaleup of tech start-ups from these countries;
- Stimulate private investment in local start-ups and involvement in the ecosystems;
- Foster the integration of these start-ups with the EU start-up ecosystems, investor and industry networks;
- Stimulate the development of specific types of technologies, in particular in the field of digital high tech, according to policy goals and industry needs.

1.2 Proposed strategy

The financial intervention should start from the initial funding stages to boost the number of investable start-ups in the concerned countries (see Analysis).

At the ideation and seed stages:

- Grant programmes should support entrepreneurs in the process of creating their start-ups and help them cover initial expenses;
- A pre-seed and seed facility, associated with incubation and acceleration programmes, should address the main funding gaps and start-up needs in these underdeveloped ecosystems.

At the initial commercial and scaleup phases:

- A Series A+ facility should aim to develop a locally-accessible alternative for the foreign sources of capital, and to support the most successful start-ups in their global development;
- An EU-oriented international acceleration mechanism should support portfolio start-ups in the commercial phase, connecting them in particular with European players and helping them integrate emerging industrial value chains.

As a rule, due to the lack of reliable local intermediaries, DISC should distribute funding directly. Local fund managers should also, in many cases, develop in-house incubation and acceleration programmes or get actively involved in designing and running them. Potential further capacity-building programmes could contribute to the emergence of a larger number of potential local partners.

Meanwhile, a fund-of-funds will stimulate the emergence of local funds, including angel funds, and incentivise foreign funds to invest in the region. To operate efficiently in the local context, the fund-of-funds should be associated with a capacity-building programme for private investors. In addition, to attract international VC teams to Eastern partner countries, the funds-of-funds may need to provide them with some local support.

DISC may ultimately aim for a game-changing impact on the start-up scenes of Eastern partner countries in terms of both start-up development and private investor involvement. As witnessed by recent initiatives in comparable countries in SEE/CEE, programmes that combine sufficient funding with efficient support instruments can bring spectacular results rapidly (one year in the case of Fil Rouge Capital in Croatia).

1.3 Key design principles

The following design principles are meant, on the one hand, to ensure programme coherence while considering country-level specifics; and on the other hand, to combine public funding with participation from private investors:

- **Regional-level funding facilities:** the funding facilities (grant programmes, Pre-seed and Seed stage Facility, Series A+ Fund, Fund-of-funds) should be designed centrally and deployed in all countries. There is no need to create distinct funds on a country basis. However, a certain latitude should be left to country-level fund managers in terms of investment strategy and programme implementation, in order to address local specifics efficiently.
- **Smart financing:** each funding instrument should be associated with portfolio support programmes (incubation, acceleration), addressing a crucial need of local start-ups and the lack of efficient local capabilities.
- **Limited reliance on local intermediaries and partners:** local incubators, accelerators and other support organisations are few and rarely meet quality requirements. DISC will need to provide direct access to funding, and to develop or co-develop portfolio support programmes. DISC may also consider capacity-building programmes to increase its reliance on local partners in the middle or long term.

- **Market-driven:** DISC should incentivise start-ups to keep activities in their country of origin rather than impose unrealistic requirements on headquarter location. While working with private VC teams, DISC should avoid imposing excessive requirements on investment strategies.
- **Private sector involvement** can be ensured at the key levels:
  - Co-funding the investment facilities through specially-designed, lower-risk investment vehicles;
  - Co-investing in start-ups not only on a case-by-case basis, but through a structured co-investment platform;
  - Jointly designing and running portfolio support programmes (incubation, acceleration) with both local and international private players;
  - Articulating the acceleration and scaleup processes with European industry players within emerging industrial value chains.
- **Middle- long-term strategy:** to harvest the benefits of investing in maturing ecosystems, the investment period of the instruments may be set at six years.

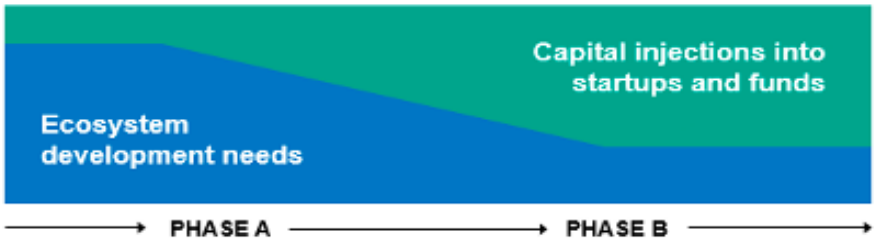
1.4 Sequencing

In none of the Eastern partner countries is the innovation ecosystem currently mature enough to support the emergence of start-ups at a large scale.[33]

This is why, while funding support is needed in these countries, large capital injections would not, in the short term, be fully efficient or necessary. Thus, two phases of the programme could be distinguished:

- **Phase A:** Maturing phase;
- **Phase B:** Funding boost.

Figure 13 Programme phases



Source: DISC research

Direct funding instruments should be established as early as in Phase A, with a strong smart money dimension; however, the volumes invested in start-ups and funds during this phase could remain modest until ecosystem maturation, supported by DISC and other capacity-building programmes, will allow to absorb efficiently more substantial amounts.

The parameters in terms of chronology, priorities and funding volumes may vary according to each country's specifics (for example, Phase A will be shorter in Ukraine than in Azerbaijan).

[33] The most advanced countries (Ukraine, Belarus, Armenia) benefit from strong scientific and engineering traditions with a substantial talent pool; however, their young start-up and venture ecosystems still need to be supported for these countries to fully realise their potential. In Georgia and Moldova, the ecosystems are at an even earlier stage, while the start-up scene is still embryonic in Azerbaijan. *(see Part I. Analysis, Section 4)*

2 Funding instruments

2.1. Suggested funding instruments

Funding support under the DISC programme may significantly stimulate the emergence, development and scaleup of strong start-ups in Eastern partner countries. The funding effort should be designed in a way that takes into account the specifics of these markets -- which largely differ from Western European ones.

While, in its initial design, the DISC strategy considers a focus on scaleup deals (Series A+), the Analysis showed that earlier deals (ideation, pre-seed and seed stages) should also be supported in order to operate in little mature ecosystems.

Funding instruments should be associated with quality incubation and acceleration programmes.

A later-stage facility may not be necessary, since at this stage of maturity the strongest start-ups from Eastern partner countries have already asserted themselves on the global markets, receiving access to international funding opportunities.

Meanwhile, a fund-of-funds would stimulate venture activity in the region, working with private and public players, classic funds and potentially corporate funds, both from within these countries and from abroad.

These recommendations present a distinct vehicle for each stage or type of funding. An alternative framing (one facility containing several instruments) may be chosen based on the practice of EU or other financial institutions.

2.1.1 Pre-seed and Seed-stage Facility

Combining funding with incubation and acceleration services, this facility aims to address, at a large scale, the lack of start-up support which is particularly acute in Eastern partner countries at the pre-seed stage, as seen in the Analysis.

Table 43 DISC facilities in Eastern partner countries: Pre-seed and Seed-stage Facility

Pre-seed and Seed-stage Facility (funding + incubation/acceleration support)	
Purposes of the instrument	• Address the funding gap at the pre-seed and seed stages • Combined with incubation and acceleration mechanisms to generate a large number of investable start-ups
Invested volume	• Facility size for 6-year investment period / 6 countries: around €90 million • Yearly invested amounts / 6 countries: from €7.5 million (Y1) to €19.5 million (Y6)
Number of investee companies	• Reaches on average 22.5% of emerging start-ups across Eastern partner countries • Total: around 956 investees / 6 years / 6 countries
Tickets	• Pre-seed deals (80% of deals): €50,000 on average • Seed stage deals (20% of deals): €250,000 on average • Average amount per investee company: €90,000
Instruments	• Facility open to direct start-up applications. In the largest countries, the pipe is developed at a large scale through regular acceleration batches as well as partnership with local start-up support organisations • Provides equity funding and loans, possibly combined with grants under the DISC or third-party grant programmes
Approach	• Co-investment preferred but not required • Avoid, or manage very accurately, restrictions on the creation of legal entities in other jurisdictions
Funders	• EU financial institutions • Potentially IFIs and other institutional investors • Potentially private LPs (seed stage) • Potentially local governments

Source: DISC authors

As a rule, the funding will match or complement investment from the private sector. However, it is advisable not to impose strict co-investment requirements, which in the local context could lead to underuse the facility *(cf. the case of RBF Ventures in Part I. Analysis, Section 3).*

Investment activity should be connected with support incubation and acceleration programmes – in-house or via existing or yet-to-be-created local incubators and accelerators. These support programmes will ultimately aim to provide companies with access to EU development opportunities *(see Part II. Recommendations, Section 3 below)* as well as to channel the best start-ups to co-investors or further investors through a dedicated platform *(see Part II. Recommendations, Section 7.2)*.

According to preliminary calculations, this Pre-seed and Seed-stage Facility could invest in around 100 start-ups per year across the six countries in the first two years. (The actual load would be between less than 10 investments per year in the smallest countries and around 50 in the largest one, Ukraine.) In the last years of the programme, the number of deals could near 200. At that stage, as ecosystem will have matured, the fund will be able to rely more on local partners and intermediaries to support its activity.

Technically, a split of the Pre-seed and Seed Facility into two distinct vehicles may be considered as a means to provide private LPs with an opportunity to invest in a less risky vehicle (excluding pre-seed investments). This approach has proven successful in Croatia as per the Fil Rouge experience.

2.1.2 Series A+ Fund

This fund will target Series A and later stages (follow-on), aiming to make capital more available locally (in the current situation, nearly 76% of the Series A and B+ amounts are provided by US investors – *see Part I. Analysis, Section 2*).

Such a facility should attenuate, or help manage, the move-abroad trend that characterizes start-ups from the region as they come to maturity.

This Series A+ Fund can also be justified by the fact that the seed-to-Series A conversion rate (28 Series A / 111 seed investments) is rather high, which suggests a rather high level of quality and attractiveness of start-ups from Eastern partner countries.

Potential follow-ons may be associated with DISC's continued support to achieve start-up business development goals in Europe until exit. Thus, DISC will increase the number of globally successful start-ups connected to Europe.

Table 44 DISC facilities in Eastern partner countries: Series A+ Fund

Series A+ Fund	
Purposes of the instrument	• Reduce the dependence of local ecosystems on remote sources of funding • Support the development and scaleup of a larger number of start-ups
Investment volume	• Fund size for 6-year investment period / 6 countries: around €270 million • Yearly invested amounts / 6 countries : from €26 million (Y1) to €67 million (Y6)
Number of investee companies	• Reaches 25% of start-ups from Eastern partner countries raising Series A+ • Total: 47 companies / 6 years / 6 countries
Average tickets	• Series A: €2 million • Further rounds: €10 million • €5.6 million on average per investee company
Instruments	• Develop the pipe via direct applications and via local partners • Provides equity funding, loans • Articulation with DISC EU-oriented acceleration mechanism
Approach	• Co-investment as a rule • Avoid, or manage very accurately, restrictions on the creation of legal entities in other jurisdictions
Funders	• EU financial institutions • Potentially IFIs and other institutional investors • Potentially private LPs • Potentially local governments

Source: DISC authors

2.1.3 Fund-of-Funds

A regional Fund-of-Funds may greatly stimulate local venture activity if associated with adequate investor support programmes. This Fund-of-Funds would work with private and public investors, both local and international.

Eight opportunities for a fund-of-funds were identified in the region as of June 2020.[34]

With local investors:

Aiming to stimulate the development of investment funds, the Fund-of-Funds will face two challenges: the tiny number of local funds and individual investors, and the lack of venture skills and practice of many existing or potential investors. Facing these challenges, the DISC Fund-of-Funds should not expect to make close many deals at the country level: its existence may be justified only due to its regional and international dimension.[35]

The Analysis shows the potential of a fund-of-funds to work both with individual investors and VC funds locally. While working with BA communities, the fund will encourage and empower them to create angel funds, providing funding as well as the required set of internationally-successful methodologies. This activity will contribute to raise local investment standards substantially.

The data also shows the limited investment capacity of local VCs. The fund-of-funds will empower these VCs to invest in more companies at the Seed stage and support their portfolio companies until the end of their investment cycle, at less risky stages.

With international investors:

Made available to international venture firms, the facility could attract more foreign capital to Eastern partner countries. For example, the Fund-of-Funds could invest in well-established EU funds, requiring them to dedicate a part of their means to Eastern partner countries. This may not represent a high number of cases, however, since extra LP funding will not be sufficient a motive to have many international VC teams invest in markets which they know little about. To address the issue, the Fund-of-Funds may consider helping these foreign teams identify and hire managers familiar with the region.

Another target could be international corporations and banks operating in Eastern partner countries. Some of them have experience in corporate venturing in their own country. The DISC Fund-of-Funds may team up with them to extend to Eastern partner countries the operations of these corporate funds or co-create new ones in Eastern partner countries.

It might not be wise to impose on international (or local) investors too strict obligations in terms of destination of their investments. The strategies of international VC firms may legitimately encompass other countries, e.g. in the former Soviet Union, Central and Eastern Europe or South-Eastern Europe. On the other hand, it is important to ensure that Eastern partner countries will be covered in practice, not only formally in fund mandates.[36]

Table 45 DISC facilities in Eastern partner countries: Fund-of-Funds

Fund-of-Funds	
Purposes of the instrument	• Drive more local investors from the private sector to financing start-ups. Help consolidate and grow local business angel communities. • Increase the investment capacity of local VC funds • Raise the standards of local venture investment practice • Support the emergence of local public start-up funds • Attract more international tech funds and VC teams to Eastern partner countries
Invested volume	• Fund size for 6-year investment period / 6 countries: around €300 million • Yearly invested amounts / 6 countries: from €39 million (Y1) to €59 million (Y6)

[34] **In the public sector:** USAID's Ukraine-focused VC fund project to support eō Incubators; WB-backed $100 million fund in discussion for Armenia; Ukrainian state fund to increase and fund-of-funds under discussion; Moldovan state start-up fund under consideration. **In the private sector:** underfunded Acrobator Ventures, which operates in Western Europe and the former Soviet Union; XY Partners pre-seed and seed fund project in Moldova; $70-$100 million Eurasia fund considered by Mangrove-ABRT. See details in the Analysis.

[35] In the course of this research, the suggestion to create a fund-of-funds was supported largely, but not unanimously. A fund-of-funds might not really be needed, some argued, given the relatively small number of funds to support across Eastern partner countries, and due to the lack of appeal of the region in the eyes of international funds. Of the risk of an underused fund-of-funds facility or that of failing to support the emergence of local venture funds, this research has concluded that the previous should be preferred to the latter. Moreover, the existence of a fund-of-funds in itself should have a motivational and triggering effect for the creation or consolidation of local funds.

[36] Avoiding a situation like that of IFI-backed Earlybird Digital East funds, the mandate of which includes Belarus and Ukraine without investments being actually made in these two countries.

Fund-of-Funds	
Average tickets	• Angel funds: €3.3 million • Pre-seed / seed funds: €10 million • Seed / Series A funds: €17.5 million
Number of funds funded	• 30 funds in total / 6 years / 6 countries (angel funds + private and public, local and international VC funds) • €9.8 million on average per fund
Approach	• Associated with a capacity-building programme for local private and public investors • Incentives / assistance for international VC teams to localise activity
Funders	• EU financial institutions • Potentially IFIs • Potentially other institutional investors

Source: DISC authors

2.1.4 Grant programmes

Three grant programmes with specific purposes should be considered to stimulate start-up emergence development and tech innovation in Eastern partner countries.[37]

Grants should be associated with DISC incubation and acceleration mechanisms as well as the Pre-seed and Seed-stage investment facility, complementing its financial support capacity. However, these grants are not reserved for start-ups and teams which are supported by this investment facility.

"Pre-Entrepreneur" grant programme

By supporting entrepreneurs even before company registration, this programme aims to bring the number of start-up projects (ideation phase) to another order of magnitude.

The rationale is that, in Eastern partner countries, only few people have savings or 'fools, friends and family' able to support their start-up project. Neither are there generous unemployment benefits that can help entrepreneurs feed themselves while creating a company.[38] The economic and social crisis triggered by Covid 19 is expected to make the population of these countries even more vulnerable in the next coming months and probably years.

This grant programme should be associated with online courses (English language and business education) as well as regular coaching support in the framework of the DISC incubation programmes *(see Part II. Recommendations, Section 3)*. The amount of the grant should be comparable with that of a correct remuneration (by local standards) but associated with regular assessment of project progression.

As an alternative, the same amounts may be offered by the Pre-seed and Seed Facility as loans convertible to a share in the company after registration.[39]

Table 46 DISC facilities in Eastern partner countries: 'Pre-Entrepreneur' grant programme specification

'Pre-Entrepreneur' grant programme	
Purposes of the instrument	• Support start-up entrepreneurship at the ideation stage. Bring the number of start-up projects to a new level
Number of beneficiaries	• Total 6 years / 6 countries: 15,000 • Average 2 beneficiaries per projects
Amounts	• From €300 to €500 per beneficiary and per month during up to six months, subject to regular assessments • Total programme cost 6 years / 6 countries: around €21 million

Source: DISC authors

[37] The grant approach may be uneasy to implement in practice in certain Eastern partner countries (Azerbaijan, Belarus) for legal reasons.

[38] The state unemployment insurance system is France's number one VC, the saying goes.

[39] In Croatia, Fil Rouge Capital offers €10,000 loans to teams "with a plan" in exchange for a 10% stake in the company.

'Just-Born Start-up' grant programme

This programme will allow many just-born start-ups to develop MVPs and achieve other steps required before pitching to investors or starting sales.

The grants may be offered, in particular, to the successful beneficiaries of the 'Pre-Entrepreneur' programmes, distributed through the DISC incubation network or via select intermediaries (incubators, event organisers, business angel associations, etc.).

As an alternative, the same amounts may be provided by the Pre-seed and Seed Facility as loans or equity investments, but under a simplified and fast procedure.

Table 47 DISC facilities in Eastern partner countries: 'Just-Born Start-up' grant programme specification

'Just-Born Start-up' grant programme	
Purposes of the instrument	● Help newly-created companies prepare MVP or achieve other initial steps
Number of beneficiaries	● Total 6 years / 6 countries: 4,500
Amounts	● €10,000 per beneficiary ● Total programme cost 6 years / 6 countries: around €45 million

Source: DISC authors

R&D grant programme

This programme aims to complement Horizon 2020 in a way that may be more adapted to the needs of many R&D teams and start-ups across Eastern partner countries.

Aligned with technologies of DISC focus if any *(see Part II. Recommendations, Section 4.3)*, this programme will target two types of projects: first, those originating from select academic and research centres engaged in deep tech innovation.

Just a few dozen scientific and academic institutions across Eastern partner countries feature research with a substantial commercialisation potential.[40] DISC should select them carefully based on the assessment of this potential.

Grants should be provided after the concerned teams complete a dedicated incubation process to help them identify the R&D process which needs support – and based on very precise requests (verify the science, verify the big data process, make MVP…). It is also important to secure the active personal support of the head of the concerned scientific institutions.

These R&D support grants, however, should not be reserved for projects from scientific institutions and academia. These grants may also be offered to start-ups not connected with institutional research, e.g. in such fields as AI, blockchain, or cybersecurity.

Table 48 DISC facility in Eastern partner countries: R&D grant programme specification

R&D grant programme	
Purposes of the instrument	● Support deep tech R&D activity of start-ups or teams from within and outside academic and research institutions
Number of beneficiaries	● Total 6 years / 6 countries: Around 4,800
Amounts	● €25,000 per R&D project ● Total programme cost 6 years / 6 countries: around €120 million

Source: DISC authors

[40] Armenia, Belarus and Ukraine (as well as Georgia and Moldova to a certain extent) do have substantial scientific research capacities -- but many of them are underfunded, and few have developed efficient science-to-market strategies and methodologies.

2.1.5 Note about loans and debt instruments

Reimbursable loans

Reimbursable loans are used sometimes massively by certain development finance institutions to support start-ups even at their earliest stages. Such loans would be useful in Eastern partner countries, too:

- As non-dilutive instruments, loans are all the more relevant as start-up valuations tend to be lower in this region.
- In addition to helping companies financially, EU loans would bring local start-ups an asset in terms of image and trustworthiness. This is particularly crucial for companies from Eastern partner countries striving to develop internationally.

If included in the DISC financing offer, such loans are likely to be in high demand. As start-ups mature, loans may be considered in a wider range of situations: to address the working capital needs of certain types of start-ups, e.g. hardware; to address the cash flow issues of start-ups already generating revenues; to cover R&D needs, etc. Not fully 'financially correct', loans increase liabilities on company balance sheets. Equity or grant approaches may be preferred, but also have their drawbacks.

Venture debt

This instrument may be suitable financing innovative, high-risk companies reaching a certain level of maturity (Series A or later). It may be appreciated as non-dilutive alternative to pure equity financing.

To integrate such an instrument, DISC could use the corresponding EIB facilities, ensuring they are made available in Eastern partner countries.[41]

Loan guarantees

Loan guarantee programmes require the private banking sector to be open to financing innovation – which is even less the case in Eastern partner countries than in Western Europe. Even at the later stages, innovation-oriented loan guarantee programmes are unlikely to have substantial macroeconomic and structural effects[42] due to the small number of start-ups and innovation-oriented SMEs in Eastern partner countries.

In these circumstances, there is no need to create any specific loan guarantee programme to support innovation in these countries. However, DISC's Series A+ facility may channel existing programmes to the most mature start-ups which may need such guarantees as they might be dealing with banks locally or in foreign markets of expansion.

[41] https://www.eib.org/en/products/equity/venture-debt.htm

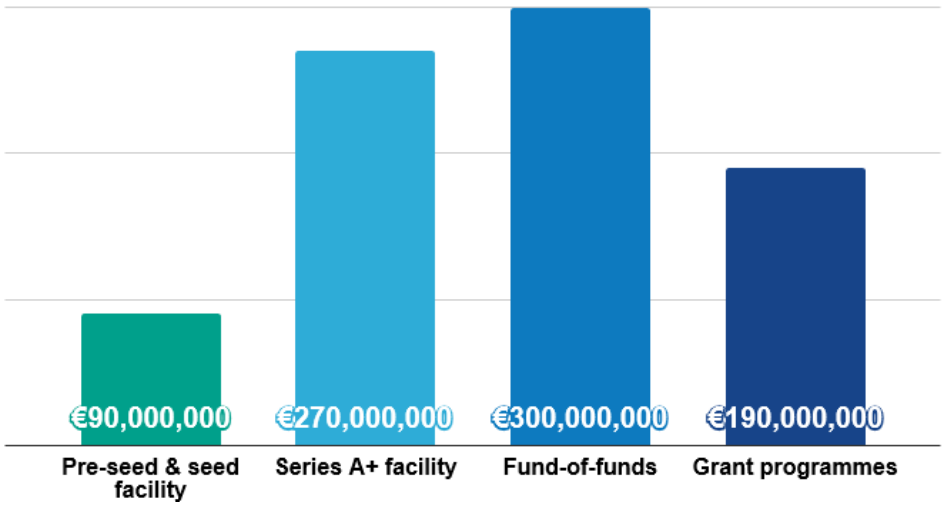
[42] Unlike the EIB's very impactful EFSI programme https://www.eib.org/en/efsi/index.htm

2.2 Amount estimates

According to preliminary calculations the above-mentioned funding facilities (Pre-seed and Seed-stage Fund, Series A+ Fund, Fund-of-Funds, grant programmes) could amount to around €850 million in total (or around €950 million including setup and management fees), spanning over an investment period of **six** years across the **six** countries.

This estimate includes neither the cost of the DISC organisation nor that of the incubation, acceleration and other support programmes.

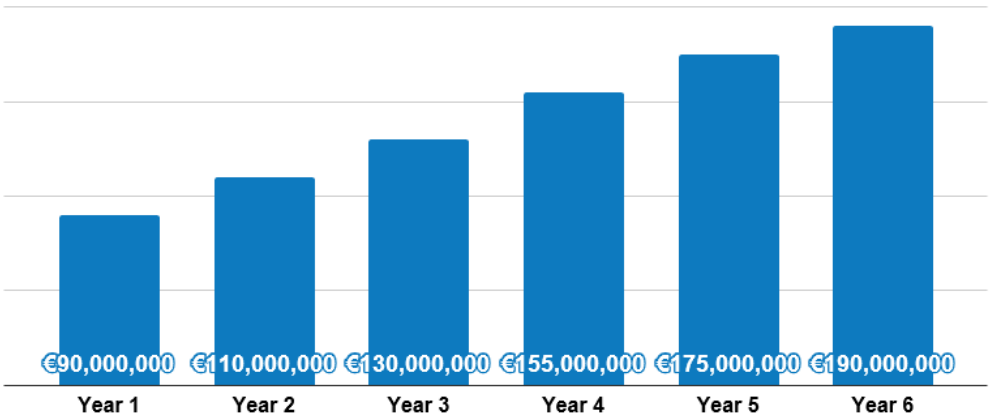
Figure 14 Amounts of the funding facilities (preliminary estimates for a six-year investment period)



Source: DISC research

The amounts invested tend to grow yearly, reflecting the increased number of investable start-ups resulting from natural ecosystem maturation and from the extra stimulation brought by the DISC grant and investment programmes.

Figure 15 Yearly invested amounts of DISC funding instruments (investments + grants)



Source: DISC research

These numbers should be regarded only as possible orders of magnitude. It can neither be ruled out that the proposed amounts will be above the absorption capacities of the ecosystems, nor that they will be insufficient to address the demand of increased numbers of start-ups following triggering effects of the programme.[43]

[43] The total suggested amount for DISC (€850 million, including a fund-of-funds and grant programmes) is proportionate to that of Fil Rouge in Croatia (€42 million, including neither a fund-of-funds nor grant programmes) per capita (€10-12) in a comparable context of ecosystem underdevelopment. However, Fil Rouge has started investing in a proportionally larger number of start-ups (47 investments in one year) than assumed for the DISC programme.

The actual amounts may also vary significantly as a result of an exclusive focus on specific tech segments, or stricter or looser selection criteria, etc.

These amounts include neither the management costs of the funding facilities, nor the costs associated with portfolio support (incubation and acceleration programmes), nor other programme costs.

2.3 Distribution of funding

2.3.1 Country-level fund managers

In the specific context of Eastern partner countries, strong reliance on local intermediaries cannot be considered in the short term. As seen in the Analysis, not only are incubators and accelerators rare in these countries, many of them fail to fulfil their tasks with sufficient efficiency or transparency.

This is why, while developing operational partnerships with a variety of local organisations, DISC should avoid assigning intermediaries any substantial role in the distribution of funding.

DISC may appoint country-level private fund managers, who should be responsible for investment decisions and organise the distribution of the funding in the framework of the general DISC strategy *(see Part II. Recommendations, Section 6.1 below).*

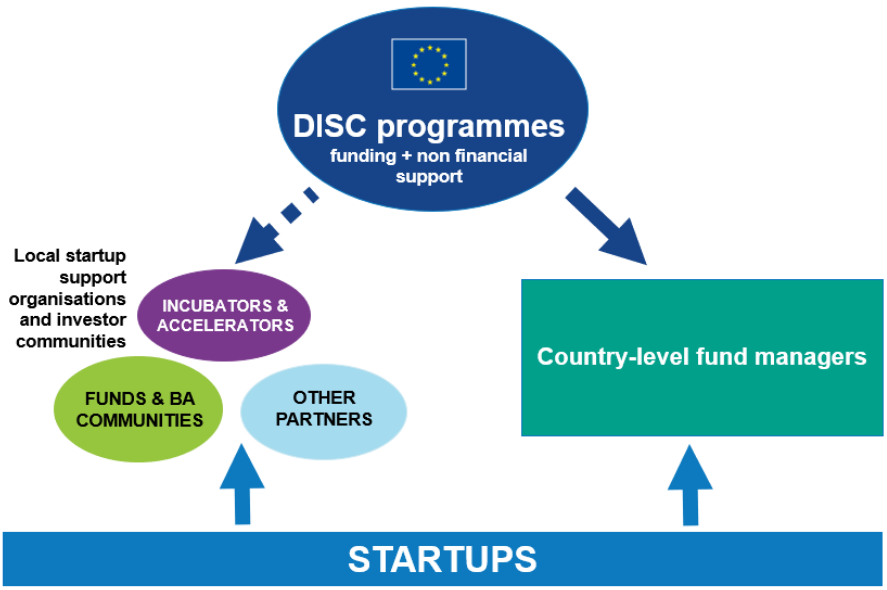
2.3.2 Ensuring DISC accessibility on the ground

Due to the lack of reliable local intermediaries, DISC should provide local entrepreneurs and start-ups with direct access to its facilities – through a physical representation in each country.

DISC may team up with some established organisations that act as one-stop-shop for entrepreneurs and investors, potentially opening its office in their venue. In Georgia, such a partnership may be considered with the public agency GITA, which already operates the World Bank-backed programme GENIE. In Armenia, World Bank-backed Enterprise Incubator Foundation (EIF) might be a potential candidate for this role.

In the absence of such opportunities, DISC may suggest creating such one-stop-shops jointly with local authorities and stakeholders. In addition to providing access to DISC funding programmes and support services, these venues will also help local players navigate across the variety of other available forms of public support and private sector opportunities.

Figure 16 Ensuring DISC accessibility at the country level



Source: DISC authors

3 Associated support instruments

Due to insufficient local capacities, DISC should set up on its own, or jointly with partners, incubation and acceleration instruments for its portfolio companies.

While working with investors, especially business angels, DISC should also associate its Fund-of-Funds with a capacity-support programme, aiming to raise the local investment standards.

3.1 Incubation

The DISC financing instruments deployed at the pre-entrepreneur and pre-seed stage should be backed by quality incubation at the very start.

Depending on countries and opportunities, three options may be considered:

- In rare cases, existing quality incubators may be accredited and possibly supported to strengthen their offer.
- Larger agreements may be sought with one or several existing, internationally-oriented players with a proven track record in the region.[44] These types of agreements would allow to quickly launch a multi-country incubation network.
- In-house lean incubation and acceleration processes may be set up by the country-level teams (fund managers). This option could be especially relevant in small markets, where the number of pre-entrepreneurs or portfolio start-ups to support remains limited.

The incubation programme can be made available through physical venues *(see Part II. Recommendations, Section 2.3 hereinabove).* Online options may also be considered to address the needs of entrepreneurs living outside the concerned cities and manage the flow of beneficiaries of the Pre-Entrepreneur grant programme.[45]

Incubation programmes include business training and coaching, networking support, legal advice, information on support programmes available locally, international opportunities, etc.

In addition to a main generalist approach, the incubation programme should include two special tracks, articulated with the corresponding DISC grant programmes (*see Part II. Recommendations, Section 2.1.4*):

- **'Pre-Entrepreneur' track;**
- **'R&D' track.**

While these programmes are crucial to DISC success, the related organisational effort might be substantial, even relying on existing contents and capacities to the maximum extent.[46]

3.2. Acceleration

Associated with the investment activity from pre-seed to Series A, acceleration mechanisms will address three crucial issues which Eastern partner start-ups face even more than many others: the lack of funding at the earliest stages; the scarcity of quality acceleration capacities in most Eastern partner countries; the vital needs of local start-ups to be supported in their internationalisation effort.

DISC may become the perfect framework to address these needs due to its position as the region's main start-up funding provider, to its focus on smart financing, and to its capacity to provide start-ups from Eastern partner countries with strong development opportunities in the EU.

These acceleration mechanisms should include a local and international dimensions.

Acceleration support on the ground

This mechanism will provide mentoring and support services on the ground. Funding will be provided by the DISC Pre-seed and Seed-stage Facility, the DISC grant programmes and/or third-party sources.

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[44] Examples: Demium from Spain, US-managed eō Business Incubators from Ukraine, Startup Wise Guys from Estonia, could potentially qualify for such a partnership with DISC.

[45] In Croatia, Fil Rouge Capital has set-up its own incubation programme with no physical space, mostly online. The acceleration programme leverages a network of 30 mentors. No physical space is offered to start-ups. Legal and marketing support operations are outsourced to carefully selected local providers.

[46] In particular, in terms of content. In spite of the plethora of existing business education content in the EU, Eastern partner countries and elsewhere, the provision of relevant content will pose challenges. Existing content may need to be checked for quality; adapted partly to business and legal country specifics; updated regularly to keep aligned with the ever-changing environment; translated into local languages. Business training programmes also require the involvement of experienced trainers, mentors, entrepreneurs and investors -- which are rare in Eastern partner countries.

Similarly to the incubation offers, these acceleration offers may be set up in-house or in partnership with select international or local partners meeting strict requirements.

In small markets, acceleration support will be offered to limited numbers of start-ups. In the largest ones (Ukraine and potentially Belarus and Armenia), acceleration is likely to become a large-scale process, integrated with the funding facility as per the Y Combinator or 500 Start-ups models.

These acceleration mechanisms will further channel the portfolio companies to a co-investment platform, aiming to structure the participation of co-investors and later investors *(see Part II. Recommendations, Section 7.2).*

EU-oriented acceleration

DISC acceleration will also feature a European integration mechanism, aiming to provide start-ups with access to EU accelerators, business and institutional networks. It will seek, in particular:

- integration to EU industry networks and partnerships with EU corporations *(see Part II. Recommendations, Section 4.3);*
- partnerships with EU research centres and universities for R&D purposes;
- matching with EU investors;
- obtention of grants from the EU and EU member states;
- legal support to create legal entities in the EU, raise funding, protect intellectual property, etc.

To these ends, the mechanism should be connected with EU-backed acceleration and other start-up support programmes, such as the EIC accelerator[47] or EIT Digital,[48] or an SME support programme like COSME.[49]

Partnerships with industry-specialized accelerators throughout the EU should also be sought. These would receive cohorts of start-ups from Eastern partner countries under their standard programmes, or through specific, jointly-organised programmes and batches, whenever relevant on a thematic or geographic basis.[50] [51]

The EU orientation may be strong, but not exclusive: start-ups should also be supported in their effort to expand to other markets whenever relevant. These include other Russian-speaking countries and Asia, in addition to the USA.

From networking to matchmaking

Increased networking and connections opportunities, both locally and internationally, may bring a considerable contribution to supporting the emergence and the funding of successful start-ups in Eastern partner countries. Here are sensitive types of connections which DISC support instruments should seek to stimulate:

- Matchmake entrepreneurs and investors: As shown in the field research, local players feel a lack of connection opportunities in their own country (this may even concern such a small country as Georgia) and even more internationally, i.e. within Eastern Europe and with other countries in the EU and beyond;
- Pool investors to syndicate deals;
- Matchmake foreign founders with local IT teams, this type of relationship might lead to the emergence of new waves of successful start-ups.

International connections are key: not that much to generate numerous deals involving foreign investors, but to trigger a blending process that will infuse business culture, transfer knowledge, and generate (or demonstrate) success stories.

3.3. Capacity building for investors

The DISC fund-of-funds activity should be associated with a capacity-building programme targeting local investors, in particular business angels.

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[47] https://ec.europa.eu/easme/en/eic-accelerator

[48] https://eit.europa.eu/our-activities/entrepreneurship/eit-digitals-offer

[49] The “Opening markets” part of the COSME programme is currently accessible only to Armenia, Moldova and Ukraine. The “Access to finance” part is not accessible yet. https://ec.europa.eu/growth/smes/cosme_en

[50] For example, the French accelerator Impulse Labs https://impulse-partners.com offers quality programs on such topics as smart city, mobility, and construction. It may accelerate foreign start-ups operating in these fields, providing access to a wide range of corporate partners and city authorities for technology experimentation and adoption. There is a large number of such potentially partnering accelerators throughout the EU.

[51] In addition to its own operating expenses, the suggested acceleration mechanism will require covering, fully or partly, the cost of the services provided by EU accelerators or other providers. It may also require providing grants to participating start-ups, unless these receive funding through other mechanisms such as those mentioned above.

To evangelize and inspire them, and to raise their professional level, DISC may consider:

- Providing offline or online training sessions, as well as relevant materials, sometimes in local languages;
- Inviting them to advanced EU tech hubs, including exchanges with EU entrepreneurs and investors;
- inviting successful investors from the EU (both advanced and emerging markets) to investor events in Eastern partner countries.

4 Additional considerations

In addition to above recommendations, these considerations may be useful for DISC designers to reach the key programme goals (involving the private sector involvement, developing business and technological flows with the EU) while keeping DISC as adapted and attractive as possible to players on the ground.

4.1 Addressing start-up drain

Startup development in Eastern partner countries is characterized by what may be called "biased international integration:" the major part of local start-ups register a legal entity in a foreign country even at their very early stages of development. As seen in the Analysis, they use this foreign entity to receive funding from investors (even local ones) and develop the business internationally, leaving in their country of origin just some support functions.[52]

The winner is the USA: with Silicon Valley exerting a magnetic influence on local start-up communities, almost all of the most successful start-ups from across Eastern partner countries end up in America.

Startup drain does not help consolidate the local ecosystems, since a substantial part of their entrepreneurs, intellectual assets and related revenue flows land abroad. However, relocations are not entirely negative for the country or origin, which usually keep hosting R&D teams and sometimes benefit from capital and know-how injections from émigré entrepreneurs after they sell their first company.

A dilemma is posed to local and international policy makers. While acknowledging and even encouraging go-global strategies, they are legitimately concerned by the massive move-abroad trend, and willing to retain in the country as much as possible of its innovation forces.

This may translate into restrictions posed by certain public support programs -- typically, requiring start-ups to keep their headquarters in the country and use a locally-registered entity to receive public support money. Thus, in Ukraine, the benefits of the currently deployed USAID Competitive Economy Program (CEP) are not accessible to start-ups that relocate abroad. The managers of this programme claim that their anti-relocation clauses do not reduce its attractiveness in the eyes of Ukrainian start-up entrepreneurs.

But these anti-relocations policies are not always to the point. The problem lies not in entrepreneurs' Silicon Valley obsession but in the fact that international investors -- and even many local ones -- are reluctant to inject money into local vehicles and unwilling to deal with a local judge in case of a conflict.

Anti-relocation restrictions are also vain because the best start-ups will always prefer venture funding from Silicon Valley to public money with anti-relocation clauses that might restrict their moves and ultimately make private funding more difficult.

"Some 20 years ago, a country like Israel had the same relocation problem," reminds Almaz Capital founder Sasha Galitsky, a widely-respected international venture capitalist with Russian and Ukrainian origins. *"At that time, this country had not yet asserted a credible image in international circles, so many local innovative companies tended to create legal entities abroad to raise funding and pursue their global development goals."*

Like most entrepreneurs and investors from the region, Galitsky recommends avoiding or minimizing anti-relocation restrictions: *'There are certain phases in ecosystem development that a developing country needs to go through,'* he concludes.

Considerations for DISC

DISC designers need to address the start-up relocation issue with due attention. Available options may look as follows:

Table 49 Possible approaches to the start-up relocation issue

Possible approaches	Expected consequences
Strict pro-local restrictions: Funding is reserved for start-ups keeping their headquarters and main activity locally.	• The program will fail to attract many of the best start-ups and might lead to supporting weaker ones

[52] This research (Analysis) established that 76% of start-ups born in Eastern partner countries and having received funding have their headquarters abroad, and 100% of the 10 most well-funded ones.

Possible approaches	Expected consequences
Funding can be received only by a vehicle registered locally.	● The move-abroad trend will not stop, but it could be slightly or apparently reduced ● Certain categories of start-ups will still benefit from the program: those targeting mainly the local market; those unable or not needing, for any reason, to attract private international investors.
Pro-EU attraction: Funding can be received only by a vehicle registered locally or in the EU. This approach may be combined with incentives to keep maximum possible activities in the country of origin.	● A part of the go-global flow may be diverted to the EU, should proper incentives be set up. ● The program will fail to attract some of the best start-ups, which will still move to the USA
Laissez-faire: No restriction is imposed to beneficiaries in terms of headquarter location and international activity. Funding can be received by a vehicle registered anywhere. This approach may be combined with pro-local and/or pro-EU incentives.	● The program will be appealing to the best start-ups ● A part of the go-global flow may be diverted to the EU, should proper incentives be set up. ● Many strong start-ups will still tend to move abroad, in particular to the USA. This might not be a negative thing as local governments will feel more pressure to address the causes of the problem, which are essentially domestic.

Source: DISC authors

It might be wise to opt for the laissez-faire approach in terms of headquarter location and reception of funding. It may be enough to require, as does the EBRD, that *"a majority of development/engineering function [be] based in [the] countr[y]."*

Such a soft requirement may be combined with strong incentives to:

- dedicate a part of the funding to local employment with the required training effort;
- develop business, R&D or other ties with EU and/or other Eastern partner countries;
- comply with corporate social responsibility principles and requirements.

It would also be useful to make an in-depth legal and business analysis on the possible combinations of legal entities (in the country of origin and abroad) that can best facilitate a start-up's international development -- while maximizing or maintaining brains, activities, and revenue flows in the country of origin.[53]

Optimal legal and business patterns could be identified and recommended for use by start-ups receiving funding from DISC, other public programs and private investors, as well as by governments for policy purposes.

4.2 Digital high tech: from programme focus to industrial integration

In their initial intention for Eastern partner countries, DISC designers have considered a focus on digital deep tech or digital high tech.

Focusing on one or a few areas is undoubtedly a good thing – and the brilliant example of Lithuania, which has become in just a few years the fintech tiger of the region, may be inspiring to Eastern partner countries.

Digital high tech is a relevant topic in the majority of these countries: Armenia, Belarus and Ukraine, as well as Georgia and Moldova to a lesser extent, have a potential in this field. As established by this research (Analysis), some 54% of start-ups from Eastern partner countries having raised funding operate in the digital high tech field.

While offering several ways to deal with digital high tech start-ups from the region, the proposed strategy supports a non-exclusive approach, taking into account the progressive emergence of market-driven specialisations or prioritisation strategies by country.

[53] The analysis should cover such points as: foreign registration and soft-landing options for Eastern partner start-ups, including in the EU; legal and tax consequences of the coexistence of two or several legal entities; IP right property and transfers; etc. The patterns may differ among Eastern partner countries depending on their legislation, IP protection systems and tax regimes.

4.2.1 From "digital deep tech" to "digital high tech"[54]

Should DISC target mainly technologies developed by scientific and academic institutions, it will not be able to find a substantial number of marketable projects. As established in the course of this research, few universities and research systems in Eastern partner countries are able or even aiming to generate commercially viable deep tech products and start-ups. Many fail to keep their students and researchers as salaries are low and academic prestige decreases.

If targeting these institutions, DISC faces the risk of entering a cumbersome relationship with many of them. DISC would also have to develop financing instruments specially adapted to academic innovation, generally associated with longer development and investment cycles.

This approach is made even less realistic by the current lack of local corporate involvement, which is viewed as a crucial factor[55] in the development of deep tech ecosystems.

This is why the R&D grant programme proposed in these recommendations *(see Part II. Recommendations, Section 2.1.4)* targets only 30 scientific and academic institutions with a substantial commercialisation potential across Eastern partner countries – alongside a much larger number of digital high tech start-ups.

Enlarging the focus to these start-ups does make sense. As shown in the Analysis, many start-ups from Eastern partner countries operate in such fields as artificial intelligence, blockchain, IoT and fintech. To support such start-ups, DISC may:

- dedicate a part its investment capacity to these segments;
- develop thematic, rather than tech-agnostic, acceleration programmes;
- offer development opportunities across the corresponding EU industry and investor networks;
- impose on local investors, via its fund-of-funds, a similar technological orientation, to a certain extent.

An even more powerful way of supporting and leveraging digital high tech start-ups from the region may be envisioned, as shown below.

4.2.2 Integration into industrial value chains

This is a demand-oriented approach, aiming to address unmet market needs and seize emerging opportunities, filling gaps with critical business- or technological elements.

The core idea is that innovation can best be leveraged from start-ups not as stand-alone tech providers, but as stakeholders of new value chains, usually on a vertical basis.

Typically, an integration programme is designed and run with active involvement from interested corporations, investors, research and other public stakeholders, which bring in their needs and capacities to support an emerging or new value chain. Start-ups able to offer the required technologies will integrate the programme, which provides them with investment, R&D, commercial and exit opportunities.[56] An associated venture activity is structured specifically towards the programme -- from scouting, to accelerating start-ups, to designing and executing merger and exit strategies.

One or several such integration programmes could be designed to leverage the digital high tech innovation potential of several Eastern partner countries. Two paths seem possible:

1. Stemming from the needs of European industry and research: DISC may identify existing consortia, associations or other programmes aimed at redesigning value chains with use of digital high tech. The DISC investment and acceleration instruments would be used to channel the relevant technologies from Eastern partner start-ups and R&D institutions.
2. Stemming from the priorities of Eastern partner countries: DISC could assist Eastern partner countries in designing new international value chains around their sectors of focus/development priorities, associating them with EU regions with similar focuses.

[54] 'Digital deep tech' solutions are based on substantial engineering innovation or scientific advances and generally require lengthy R&D with important capital injections. 'Digital high tech' refers to solutions not requiring such efforts, e.g. in the fields of artificial intelligence, computer vision, blockchain, cybersecurity, IoT, etc.

[55] https://media-publications.bcg.com/BCG-The-Dawn-of-the-Deep-Tech-Ecosystem-Mar-2019.pdf

[56] Pioneered by such organisations as BCG Digital Venture https://www.bcgdv.com, these concepts have been emerging for the past few years. They may be associated harmoniously with such programmes as Horizon 2020, sharing the goal of coupling research and innovation. However, integration programmes stem from designing new industrial value chains associating corporations, investors and start-ups with potentially lesser R&D depth brought by research.

For example, international tourism is a strong focus shared in particular by Armenia, Georgia and a range of EU cities and regions. Should these regions or countries associate to design new value chains around "tourism of the future," a variety of Eastern European start-ups working in such fields as Big Data, computer vision or blockchain could bring their valuable technologies to the endeavour.

Synergies should be sought with existing EU and member state programmes in the related fields – typically, the recently announced EU Blockchain and artificial intelligence fund.[57] Their approach, too, insists on going beyond just funding *("incentivising private sector investments")* and on *"making Europe more attractive for start-ups to stay and grow in Europe."*

Based on these synergies, DISC could become an efficient instrument to cross-fertilise and catalyse technology development in specific sectors across EU and Eastern partner countries.

4.2.3 Why the focus on digital high tech should not be exclusive

An exclusive focus on digital high tech may not be fully relevant, however, because other promising themes are emerging or may emerge in the young and evolutive ecosystems of Eastern partner countries. For example, robotics innovation seems to be kicking off now in Ukraine, and local hardware start-ups could develop as this country might assert a competitive alternative to China on the global market.

In Armenia, as seen in the Part I. Analysis, Section 2, World Bank-backed fund Granatus considered a focus on deep tech – but this orientation could be implemented only partially due to the lack of such projects in the country. Developing AI companies in this country may be a good bet, but the local R&D and academic landscapes would need to be consolidated first, the World Bank noted more recently.[58]

In Azerbaijan, the digital high tech focus would appear as somehow artificial. In this country, digital high tech start-ups hardly even exist, mostly due to the absence of deep scientific research and engineering traditions. Alternative priorities for this country could include, for example, technologies related to energy, agriculture or tourism, which would correspond to the most developed sectors of the local economy – or e-commerce, in which the majority of existing Azerbaijani start-ups tend to operate.

Thus, ideally, differentiated approaches should be considered on a country basis, in line with the priorities of national development strategies[59] and taking into consideration European integration goals and industry needs. However, such national priorities are not always defined and/or applied yet (Azerbaijan, Belarus, Ukraine); and if defined, they seem to lack a clear focus (Armenia, Georgia, Moldova).[60]

Finally, it seems advisable for DISC to consider the following approach:

1. **In the initial stage,** in the absence of clear market-driven specialisation or country prioritisation strategies, it would be premature to define an exclusive focus on any area, be it at the regional or country level. DISC may adopt a segment-agnostic approach combined with a partial digital high tech focus at least for those of Eastern partner countries where it is most relevant. (For example, in these countries, one half of the founding amount may be reserved for digital high tech start-ups or for even more specific sectors such as AI or blockchain.) DISC may also identify or foster the creation of new value chains in Europe, where strong digital high tech start-ups from Eastern partner countries could be channelled.
2. **In a further stage,** as the start-up ecosystems of Eastern partner countries will mature, market-driven specialisations and/or prioritisation strategies may emerge. DISC may then concentrate an even larger part of its means to more clearly identified areas within digital high tech or outside this area.

These recommendations are grounded by the below analysis of the main possible approaches.

[57] https://bit.ly/2YT6GV0

[58] In its recent report *"Realizing Armenia's High Tech potential,"* WB examined opportunities for *"upgrading into AI research and engineering, building on Armenia's competence in mathematics and computer science."* However, Armenia's potential in this and other high-tech sectors is *"closely tied with its R&D development landscape and tertiary education framework,"* the report acknowledged, and *"both are in need of targeted reforms."* https://bit.ly/3i8qexK

[59] For example, Ukraine has plans to support such sectors as AI and financial technologies https://bit.ly/3fqb9I9. The government is also in the process of designing a national development strategy for the digital economy.

[60] The EU may consider supporting local governments in their efforts to design, adjust, fund or deploy strategies in the field of tech innovation, taking into account the EU's interests as far as EU support may be involved.

Table 50 From exclusive focus to no tech focus: Possible approaches

Possible approaches	● Pros and ● cons
Focus on digital high tech	● Relevant for certain Eastern partner countries, especially those needing to support their R&D effort ● May contribute to strengthen Europe's competitiveness in decisive fields ● Avoids the dispersal of support means ● Not relevant for all countries
Segment-agnostic approach	● Will allow local ecosystems to evolve "naturally" towards a market-oriented set of specialties ● May allow DISC to integrate a diversified and evolutive set of EU policy priorities and EU industry needs ● Dispersal of support means
Country specific prioritisation or specialisation strategies	● May address both country specifics and EU integration goals ● Limits the dispersal of support means ● Subject to the availability of prioritisation strategies at the country level

Source: DISC authors

4.3 Maximising the attractiveness of public funding programmes

In a more general perspective, when designing financing facilities, one should not lose sight of the fact that the funding gap, in most Eastern partner countries, is only relative *(see Part I. Analysis, Sections 2 and Section 3)*; and that start-ups, if they are strong, still have a choice among different funding opportunities.

In this competitive context, DISC designers should take care of making their instruments truly attractive to market players, betting on positive incentives rather than undesired restrictions.

Programme attractiveness and efficiency do not only relate to requirements to the country of start-up registration or to the use of the provided funding. They also relate to the target selection criteria, the co-investment requirements, and to the "agility" of the programmes, i.e. their ability to quickly identify opportunities and close deals.

Cases of underused funding support instruments are not rare, as witnessed by the following examples from this research *(see Part I. Analysis, Section 3)*:

- In Ukraine, the IFC's attempts to invest in innovative tech companies have been little successful to date. Either the targeted start-ups were too young under the IFC's criteria or they quickly found other sources of funding, leaving the IFC no chance to jump in.
- In Belarus, a $10 million state-own Belarusian-Russian fund made only one local deal in three year, partly due to the rigid requirement for a co-investor for at least 25% of the amount.
- In Georgia, not all start-ups can benefit from large World Bank-backed grants under the GENIE programme due to 50% co-investment requirement.

Public fund-of-funds facilities may also be concerned:

- In Belarus, the IFC considered backing a local PE fund, but no agreement was reached.
- Acrobator Ventures, a recently-created Western European fund seeking to invest a substantial fraction of its capital in Ukraine and other former Soviet states,[61] has failed so far to reach its €20 million target. However, it has not even tried approaching EU-related fund-of-funds facilities, like the EIF, in fear of excessively long procedures.
- A prominent Western European VC firm is now preparing to raise a $70 million - $100 million early-stage tech fund dedicated to the former Soviet Republics. The team is sceptical about potential funding from public financial institutions, based on an experience of complicated discussions with their legal teams and irrelevant requirements to investment strategies.[62] As a result, this new fund could rely, to a substantial extent, on Russia-connected sources of funding.

[61] https://bit.ly/2UMqN6n

[62] Requirements forbidding start-ups to register abroad would be considered a no-go. The venture firm even fears – based on previous experience – that excessive hurdle rate demands from the funding institutions might force the fund to seek premature exits.

5 Impact

5.1 Quantitative estimate

The suggested programme seeks the following key effects on start-ups:

1. Large-scale stimulation of start-up entrepreneurship at the ideation level: more than 15,000 beneficiaries of small "pre-entrepreneur" grants over six years across six countries.
2. Effective support of start-ups at the earliest stages: nearly 1,000 pre-seed and seed investments, supported by large-scale acceleration programme in the largest countries.[63]
3. Support of the best projects at the further stage through a Series A+ funding facility: around 50 investments.

Table 51. Estimated DISC impact across Eastern partner countries

Programme components	Number of beneficiaries / 6 countries / 6 years	Average amount per beneficiary
Grant programmes	**24,593 beneficiaries**	
Pre-Entrepreneur grants	15,208 entrepreneurs	€300 to €500 per month
Just-Born Start-ups	4,562 start-ups	€10,000
R&D grants	4,823 start-ups or R&D teams	€25,000
Investment facilities	**1,003 start-ups, 30 funds**	
Pre-seed and Seed-stage facility	956 investee companies	€90,000
Series A+	47 investee companies	€5.6 million
Fund-of-funds	30 local and foreign, private and public funds	€9.8 million

Source: DISC research

Meanwhile, the R&D grant programme will support some 5,000 teams from within research institutions or the start-up ecosystems.

Through these grant programmes and the large-scale intervention of the pre-seed and seed stage facility - as well indirectly via the fund-of-funds - DISC could reach the majority of quality entrepreneurial projects and start-ups emerging from the region.

Table 52. Estimated DISC impact on the quantity of start-ups across Eastern partner countries

	Direct effect	Indirect effect
DISC reach / total number of quality entrepreneur projects	**90% or more** (via the three grant programmes)	**Triggering effect** with many new entrepreneurs attracted to start-up activity
DISC reach / total number of quality start-ups in the region	**20%** (funded directly funded by the pre-seed and seed-stage facility)	**50% or more** (funded directly or indirectly via the fund of funds)

Source: DISC authors

[63] By contrast with such countries as Azerbaijan, Georgia and Moldova, where incubation and acceleration programmes will remain at a modest scale due to the limited number of start-ups in the foreseeable future.

The fund-of-funds itself also aims for a substantial impact, with around 30 local and foreign, private and public funds backed in the span of the six-year period.

Table 53. Estimated impact of the DISC fund-of-funds across Eastern partner countries

	Number of funds supported by the DISC fund-of-funds facility	Average amount of support per fund
Angel funds	11	€3.3 million
Pre-seed / seed stage funds (private, public, local, international)	Around 10	€10 million
Seed / Series A+ funds (private, public, local, international)	Around 10	€17.5 million

Source: DISC research

5.2 Where and how DISC could have catalytic effects

Beyond the numbers, DISC might have a triggering effect on some of the currently underdeveloped ecosystems of Eastern partner countries – following the path of several countries of Southern-Eastern and Eastern Europe.

- In just a few years, **Lithuania** - formerly the least advanced Baltic state in terms of start-up innovation - transformed itself into a regional fintech tiger. This spectacular evolution came as a result of government decisions in the field of financial regulation (regulatory sandboxes introduction) and increased support of the ecosystem via new tech hubs and acceleration programmes.
- Most recently in **Croatia,** Fil Rouge Capital, backed by the EIF and private LPs, triggered the emergence of an unexpected number of start-ups in just one year: 'From 0 to €42 million, you change the world,' says Fil Rouge's co-founder. This large financial capacity has been combined with smart start-up incubation and acceleration support. This experience is cited several times in these recommendations.

By focusing on the ideation and first stages of start-up development (with further support until the Series A+ stage), the proposed strategy aims for similar triggering effects in Eastern partner countries.

As detailed in the Part I. Analysis, Section 4 and Part II. Recommendations, Section 8 below, this research identified several specific levers which could be activated to bring some of these countries to a new level in terms of start-up development:

- In **Armenia,** the suggested DISC pre-entrepreneur grant programme and incubation network could significantly increase the number of investable start-ups from the current low numbers, opening the way to further ecosystem growth in association with large international funders.
- In **Azerbaijan,** the least advanced country of the group, the current number of investable start-ups (or simply start-ups) is so small that no significant investment activity can be envisioned in the short term. However, a well-targeted and promoted entrepreneur grant programme could trigger initially more than 300 start-up projects (at various levels of quality), then generate more than 100 new ones per year. This could be a modest, but realistic and perhaps promising start for the local start-up scene.
- In **Belarus,** the ecosystem has not reached a large scale yet, but there are already several international success stories and a well-organised investor community. This community has suggested DISC to consider precise measures to radically boost the involvement of local private investment and support international start-up integration.
- **Georgia** features a double opportunity. First, DISC may team up with other IFIs to ensure the continuity of the GENIE programme after its end in 2021 -- this programme having already started awakening the local start-up scene. Second, the EU, alongside local and international stakeholders, could consider a 'Startup Chile-style' strategy to attract numerous entrepreneurs to this country. This influx of entrepreneurial energy and international experience could change the game in terms of local start-up development and international market integration
- In **Moldova,** as IFIs are supporting the development of the local ecosystem, a group of private investors believes in the possibility of accelerating dramatically start-up development – in roughly the same way as Fil Rouge in Croatia.

- The potential of **Ukraine,** the largest Eastern partner country, is considerable in terms of start-up development. The country features a substantial number of professional VCs, which could do much more to invest locally with support from the DISC fund-of-funds. Moreover, a DISC intervention could have a catalytic effect on the local angel scene, by helping individual investors structure and professionalise their activity, which is already very substantial in terms of volume invested.

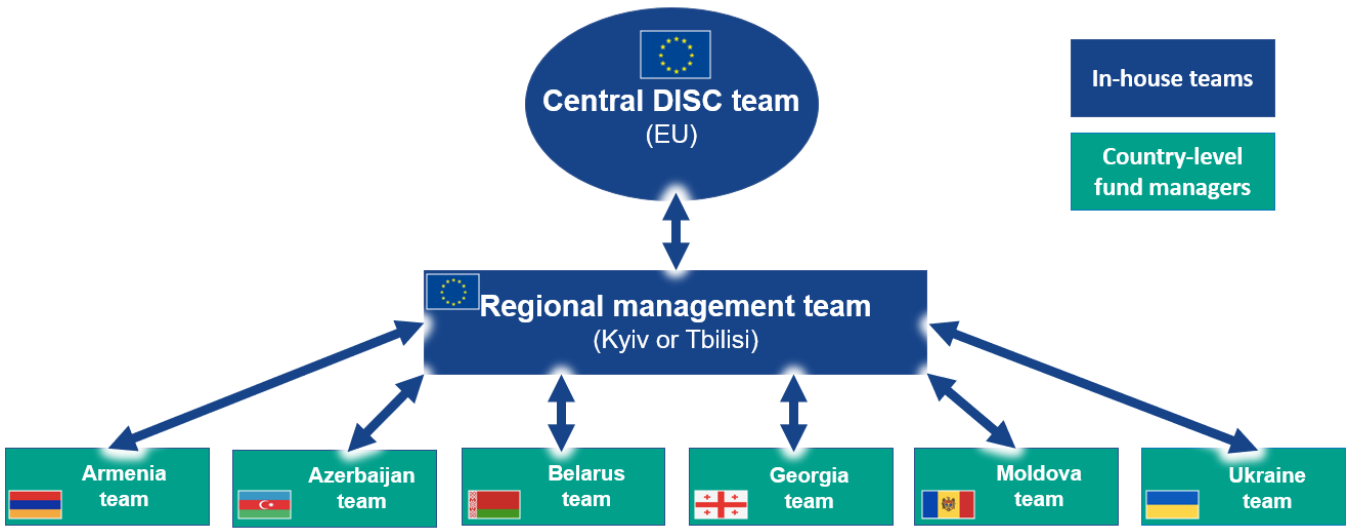
It is unlikely that the DISC programme will change the game in each of the six Eastern partner countries - but it may be considered successful if it will do so in at least a few of them.

6 Organising DISC

6.1 Three-level organisation

To achieve simultaneously programme consistency and adaptation to ground realities, DISC may consider this three-level organisation:

Figure 17 DISC three-level organisation structure



Source: DISC authors

Central DISC team (Brussels)

The existing central DISC team – or a new one dedicated to deploying the programme in Eastern partner countries – would, in particular, **design in details the funding facilities** as well as the related general financial, legal and ethical guidelines.

This central team would seek to involve **key international stakeholders** in the programme. These stakeholders may include IFIs (co-funding opportunities, programme synergies), private international finance institutions (co-funding); EU member states (cases of coordination or synergies in target countries), and others.

The central team should ensure **proper articulation of the programme with EU institutions, existing EU facilities and programmes**. It should also leverage **European industry networks** for acceleration and industrial integration purposes.

The central team should also:

- appoint an in-house regional management team;
- select and appoint private fund managers to lead the operations at the country level.

Regional managing team (Kyiv or Tbilisi)[64]

An in-house regional managing team would, in particular:

- organise coordination and synergies between the six countries;
- set-up and manage multi-country programmes (e.g. the EU-oriented acceleration mechanism)
- supervise and assist the country-level fund managers;
- partner with international public and private players at the regional level;
- report to the central team on all potential issues at the country or regional level.

[64] For political, geographic and logistical reasons, these cities appear as the best candidates to host this regional management team.

Country-level fund managers

In each country, a private team of fund managers should be the sole responsible for investment decisions, with a certain latitude to adapt the general investment strategy to the local realities.

The fund managers would also:

- deploy the grant programmes locally;
- set up and manage locally, in-house or outsourced, the incubation and acceleration support programmes;
- work with local stakeholders, operating synergies as well as potential capacity-building programmes;
- organise local coordination or synergies with international or local public start-up support programmes;
- work with international private players (corporations, investors...) operating locally;
- promote actively the DISC programmes and tools, including outside the capital cities;
- etc.

6.2 Selecting and remunerating private fund managers

The country-level fund managers may be selected through competitive tenders.

Mixing nationals and foreigners is important. The managers should have relevant multi-year international investment experience from developed ecosystems like the US, Israel, UK, with a strong deal track record. These international inputs and connections will be crucial to support local entrepreneurs, who will be looking primarily for guidance, access to key markets, and clients. As a rule, those cannot be brought by local professionals.

Meanwhile, nationals will bring in their intimate knowledge of the local realities in terms of start-up development and business practices. Their linguistic and cultural assets will allow for fast and nuanced communications with local entrepreneurs and stakeholders.[65] [66]

The remuneration of the country-level fund managers should be correlated to their investment activity (avoiding potential 'ghost teams'), with carried interest based on portfolio and exit performance.

6.3 Central design, local implementation

While it is not necessary to create specific financial instruments by country, it would be wise to leave a certain latitude to the country-level fund managers teams in terms of implementation.

Within the centrally-designed framework, the country-level fund managers may decide, for example, the proportions in which each type of instrument (equity funding, matching loans and grants) should be used, or perhaps excluded in the local context. They may also need some flexibility regarding co-investment, including the possibility for DISC to be a single investor in certain deals, potential variations in the respective contributions of co-investors, etc.

[65] The international mix may also take place between the country-level DISC fund managers. These will naturally cooperate to support multi-country tools or programmes, or involve foreign players operating in several countries. Teams from different countries may also fruitfully work together on pipe management, investment decisions, incubation, acceleration support, etc.

[66] In Croatia, Fil Rouge offers a valuable point of reference in terms of international team. Headed by a foreigner (a Frenchman with twenty years of local experience in Croatia), as requested by the Croatian side, this organisation employs a majority of locals, as requested by the EIF, which backs the fund.

Table 54 DISC framework design and local implementation

Centrally-designed framework	Local implementation
Types of facilities (as per these recommendations: Pre-seed and seed stage fund, Series A+ fund, fund-of-funds, grant programmes, sponsorship programme)	All the facilities are made available locally.
Types of instruments offered (equity funding, loans, grants)	Instrument mix: e.g. in country A, X% is invested in in the form of capital injections, Y% in the form of loans, Z% are grants; in country B the mix is different.
Co-investment targets and recommendations (no rigid rules)	Co-investors' contributions may vary on a country or case-by-case basis. Co-investment is preferred, but deals may be closed without co-investors.
General methodologies (e.g. on selection criteria, start-up analysis, due diligence, valuation, deal terms...)	The methodologies are applied uniformly in all countries. But the local fund managers are invited to provide their return of experience to fine tune the methodologies.
No responsibility for investment decision	Exclusive responsibility for investment decisions.

Source: DISC authors

After one or two years, the return on local experience may lead the central DISC team to provide more specific recommendations, or restrictions, or more precise modalities on the instrument mix, co-investment, etc. These evolutions could be managed through a coordination mechanism associating the central team and the country-level fund managers, taking into consideration the observations and suggestions from the local investor and start-up communities.

7 Financing DISC: from co-funding to co-investment

The DISC initiative may be positioned not as an EU-backed investment programme, but as an EU initiative to catalyse public and private funding with the shared goal of supporting start-up development across Eastern partner countries.

This initiative could materialize in co-investment platform with two levels:

- Co-funding the DISC start-up funding facilities;
- Co-investment in start-ups involving, in particular, local and international private investors

7.1 Co-funding the DISC facilities

The EU may seek to co-finance the programme from both public and private sources.

Partnering international finance institutions

As shown in the Analysis (Sections 3 and 4), several IFIs are involved in financing start-ups and/or innovation ecosystems across Eastern Partnership countries. Among these institutions are, notably, the EBRD, USAID and the World Bank. The latter is currently discussing with the Armenian government the potential creation of a $100 million tech fund.

Also worthy of note are the involvement of Germany's DEG, Dutch FMO and Russia's RVC as funds-of-funds, and that of Germany's GIZ and Sweden's SIDA in support programmes at country-levels.

Some other institutions might be willing to increase their activity (IFC) or to get involved in these countries (Mubadala Investment Company expressed intentions to launch an Armenian tech fund).

The launch of DISC could be presented as an opportunity for these institutions to consider their further involvement in the region in a coherent multi-country and multi-party framework – rather than the individual and country-focused approach which have often prevailed thus far.

The dialogue with these institutions may aim at least to coordinate the respective efforts, and potentially to co-fund new facilities, including the DISC programmes.

The discussion with the World Bank would be particularly important, due to the dimension of its past, present and considered future involvement. The potential $100 million Armenia fund could be articulated with the DISC strategy and potentially considered as part of the multi-party framework. In Georgia, the continuity of the World Bank-backed GENIE programme (which is ending in 2021) could also be considered within such a framework.

Local governments

In Armenia, Ukraine and Moldova, local governments have launched, or are considering launching substantial grant programmes or funds for start-up (or even a fund-of-funds in Ukraine), as seen in the Analysis. In Belarus, the authorities co-funded a $20 million start-up fund which is little active. There is no such fund in Azerbaijan, but the government might be interested in contributing to a local facility.

The EU may engage in a dialogue with these governments at least to articulate the DISC programmes with the local support effort, and potentially to consider co-funding and/or co-investment approaches.

Private sector

Involving private investors might seem challenging, if judging by their limited participation in funding programmes in the Eastern part of the EU over the past decade.[67]

At first glance, Eastern partner countries might be perceived as little appealing: their innovation and venture markets are tiny; they are not even integrated to the single EU market; and their legal environment does not always inspire trust.

However, private involvement is possible, as witnessed by the experience of Granatus in Armenia when the fund was formed in the mid-2010s (private LPs contributed slightly more than the World Bank's $3.3 million).

[67] For example, the second Digital East Fund of Earlybird, a VC firm operating from Turkey and Germany, expects to be backed mainly by international finance institutions – just like the first one. In spite of the latter's exceptional track record, the firm does not expect to attract many private LPs to the second fund. Beyond the financial rationale, their reluctance is explained by the lack of interest in the region among mainstream investors, the fund's managers say.

More recently in Croatia, Fil Rouge Capital managed to attract even conservative private LPs[68] to its start-up investment fund, which operates in a little developed ecosystem. To achieve this, Fil Rouge split the funding programme into two facilities. While the EIF's funding concentrated on the riskier compartment, dedicated to super-early-stage companies, private players have been invited to participate in a less risky vehicle for seed and follow-on investments.

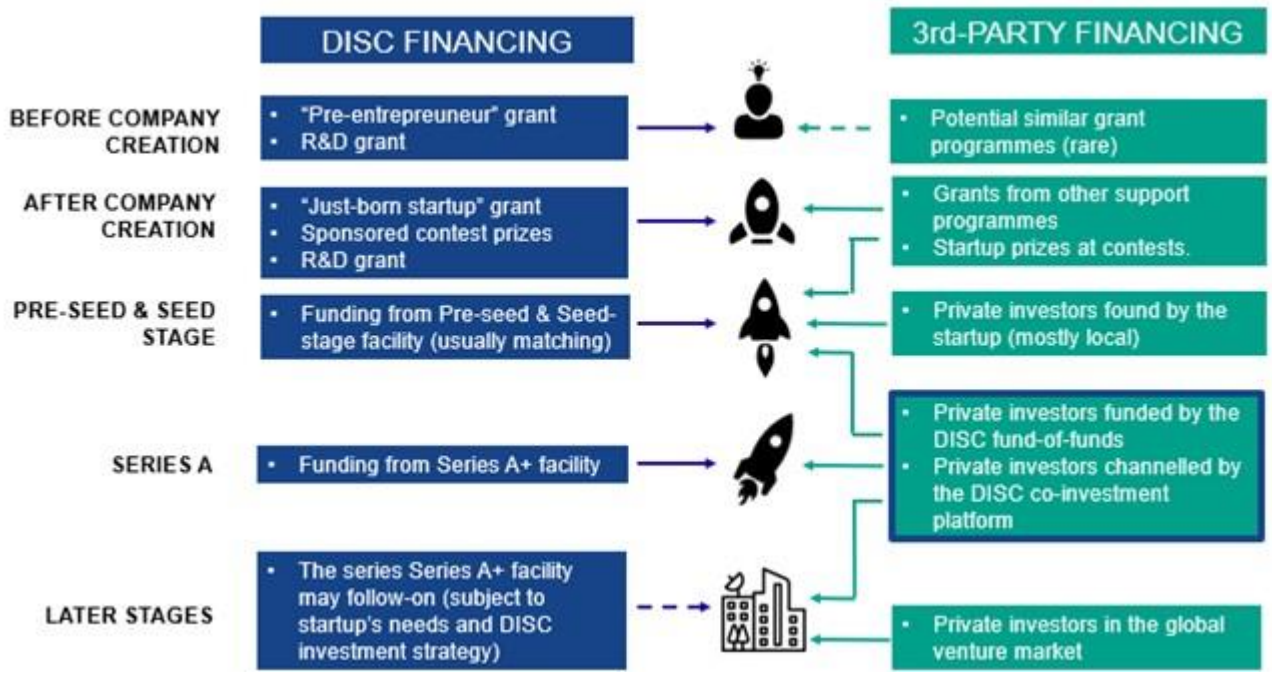
Should DISC use the same approach for Eastern partner countries, the Pre-seed and Seed stage facility considered above *(see Part II. Recommendations, Section 2.1)* would be split into two distinct vehicles.

Another way to consider private involvement is to position DISC not as a facility to fill-in with money, but as mentioned below as a venture catalyst through a co-investment platform. By bringing considerable amounts to start-ups – in case of success – investors would not fuel the DISC facilities, but their contributions would reduce the amounts required from DISC itself to reach its goals.

7.2 DISC as a co-investor

DISC should aim to involve third-party investors from the pre-seed-stage to Series A and potentially further.

Figure 18 DISC facility in Eastern partner countries - co-investment with third parties



Source: DISC authors

The involvement of co-investors is preferred not only for the sake of a "market validation" of DISC's investment decisions: it is part of the plan to strengthen the capacities of business angels and fund managers and bring their practices closer to international standards.

To stimulate co-investment, DISC may consider contributing to deals with a mix of equity funding and grants (the latter avoiding diluting both founders and investors).[69]

However, the co-investment strategy should be applied with flexibility. It might be a mistake to impose a matching rule: this could make some deal more difficult to close. Moreover, DISC should not hesitate to take a lead investor role in order to simplify and shorten the negotiation process with co-investors - thus maximizing its own investment agility.

[68] Fil Rouge has raised €13 million to date from local and foreign banks, pension funds and family offices as part of its €42 million funding facilities.

[69] In the course of the research, representatives of the Belarusian investor community suggested to offer pre-seed and seed investors a partial cash-out option as early as Series A. The measure may be perceived as non-standard, but these representatives see in it a powerful incentive for local investors to invest in start-ups.

Another mistake would be to exclude cases of single-investor deals in the context of a lack of local investors *(see example of failure in Part II. Recommendations, Section 4.3).*

Co-investment platform

Going further than standard co-investment practice, DISC may consider creating a co-investment platform to catalyse private investment.

Portfolio companies will be channelled to this platform, where they will be matched with potential co-investors or further investors. The large number of start-up supported at the pre-seed stage will allow DISC to provide a permanent and substantial pipe, usually on a thematic basis.

Such a co-investment platform is currently being experimented by venture firm ABRT, which operates in Eastern Europe and internationally, in partnership with major international VCs.[70]

Among the venture partners of the platform, it is advisable to build a strong relationship with venture funds with Russian roots operating internationally, which were identified in the Part I. Analysis, Section 2.[71] These venture capitalists are the rare ones combining a confirmed international expertise with knowledge of the business and cultural specifics of Eastern Europe. Their track record in taking start-ups from the former Soviet Union to the global market will be invaluable for some of DISC investing companies.

Another natural participant in the platform could be the planned EU Artificial Intelligence and Blockchain fund,[72] whose tech focus is in line with the capacities of many Eastern partner start-ups and engineering teams.

This venture catalyst platform articulates very well with integration programmes *(see Part II. Recommendations, Section 4.2 hereinabove).* Channelled to thematic streams (e.g. 'computer vision for next-gen tourism,' 'big data for disaster preparedness') alongside a variety of stakeholders, start-ups are called to fill specific technological needs in emerging international value chains.

[70] https://www.abrt.vc/#rec95597172 (instrument 'Limpid')

[71] Almaz Capital, Altair, Runa Capital, RTP Global, TMT Investments, etc.

[72] https://bit.ly/2YT6GV0

8 DISC at the country level

The recommendations presented above are generic in the sense that they may apply, with some variations and few exceptions, to all Eastern Partner countries.

Some specific considerations should nevertheless be kept in mind when designing in detail DISC's plans for each country.

The notes below complement the country-level information provided in the Part I. Analysis, Section 4.

8.1 Armenia

Ecosystem development

The potential of this country was highlighted recently in a series of announcements or statements (World Bank, UAE sovereign fund), industry reports, media publications and international events. This research found, however, that in their current state, the local scientific and start-up ecosystems are insufficiently efficient to realise this potential at the desired scale.

Thus, DISC should cautiously consider the real absorption capacity of the local ecosystem. To increase the number of investable start-ups from the current low numbers, focus should be made on smart funding at the earliest stages. The Pre-Entrepreneur grant programme and the incubation network are among the recommendations *(see Part II. Recommendations, Section 3 hereinabove)* that could address this need.

Going further, DISC may participate in a national and international effort to tackle more broadly the inefficiencies of the start-up ecosystem, making it:

- more sustainable;
- more connected to the national economy;
- and more diversified in terms of international development than the current, almost exclusive US focus.

Coordination or synergies with public players

With due considerations to the above, DISC may engage in a dialogue with the government and the World Bank about their potential $100 million national PPP venture fund. The DISC fund-of-funds may consider an involvement, should it adhere to this fund's strategic orientations.

DISC may also approach Mubadala, the UAE sovereign fund, in case its last year's statements about a potential Armenia fund would be confirmed.

In terms of start-up support, DISC may deploy its instruments in partnership or jointly with such existing public or publicly-backed programmes as the EIF and ImpactAim. Synergies should be made with the EU-funded SMEDA programme, should it resume activities.

DISC may also engage in a dialogue with the Armenian government around its draft development strategy, in order to review potential articulations or synergies in terms of potential technologies of focus *(see Part II. Recommendations, Section 4.2 hereinabove).*

8.2 Azerbaijan

In terms of start-up development, this country is the least advanced in the Eastern Partnership, with just a few dozens of start-ups.

There is a pool of up to 200 start-up people, including 60-70 founders, who have created or made attempts to create a company, often with support from local support organisations like the Barana and SUP accelerators. DISC may consider helping these organisations better serve these entrepreneurs with adequate capacity building programmes.

These entrepreneurs should also be offered direct access to the DISC funding and capacity support programmes.

To enlarge the pipe, several groups may be converted into tech entrepreneurs. A key goal in the first years would be to reveal and realise this potential:

- The first pool of potential tech entrepreneurs can be found among **IT graduates.** These are around 1,500 per year, which can make a recurring yearly influx of 50-100 new start-up projects every year, based on a 5% conversion rate.
- Some **IT professionals working in the traditional sector** may also be interested in creating a start-up, should they receive adequate support. This research has estimated their number at up to a hundred (not recurring).

- Some **young entrepreneurs** without a pre-existing connection with the tech sector could embrace start-up creation with enthusiasm. These entrepreneurs can be found, in particular, in youth organisations (for example, the Azerbaijani chapter of AIESEC has 200 members, including a quarter with an entrepreneur mindset). With realistic conversion rates, the number of tech entrepreneurs which could emerge from these communities could be around 50, partly recurring.

Table 55 Entrepreneurs in Azerbaijan

Type of entrepreneur	Number of start-ups	Status
Existing start-up founders	60-70	Existing, partly recurring
Potential start-up entrepreneurs among IT graduated	50-100	Recurring
Potential start-up entrepreneurs among IT professionals	Up to 100	Partly recurring
Potential start-up entrepreneurs among young entrepreneurs	50	Partly recurring

Source: DISC research

Thus, DISC may set for itself the goal of supporting around 350 entrepreneurs in the first year and generate 100-150 new start-up projects each following year.

Such results may be achieved by raising awareness and capacities on start-up entrepreneurship and through pre-entrepreneurship grants *(see Part II. Recommendations, Section 2.1).*

8.3 Belarus

The number of start-ups is still limited in this country: this research has estimated at around a hundred the number of noteworthy, but not necessarily investable projects emerging each year. However, some of these start-ups made the news in the past few years, having been acquired by US giants (Facebook, Google), not to mention Viber which has strong roots in this country.

Belarus also hosts a small, but very active and organised investor community. Thus, supporting this research, the AngelsBand network and several venture funds have contributed valuable insights about the local scene, beyond any existing report or data set. They consider a potential DISC initiative in their country to be extremely useful, in particular for funding and internationally-oriented acceleration.

This community has formulated precise suggestions which may be summarised as follows (regardless of their full or partial articulation with the recommendations made by the DISC research team):

An accelerator for pre-seed stage digital high-tech start-ups

Underlining the absence of fully-satisfactory local capacities, the Belarusian community representatives suggest DISC to consider internationally-oriented accelerator with financial, methodological and EU networking support. The investments through this accelerator may amount to €10 million over four years. The accelerator may get 5% equity shares in exchange for €100,000 capital injections. The target is to fund 80 digital high-tech start-ups (20 start-ups per year). The accelerator should also offer support services to start-ups applying to international programmes.

The accelerator may find valuable partners among such organisations as AngelsBand, HTP Business Incubator, Imaguru Business Hub, Rocket DAO, EnCata, AWS, Google.

Seed stage, Series A and later investment

The amount for Belarus -- through a dedicated fund or from the DISC regional facility -- has been estimated by the Belarusian community representatives at €20 million. The ticket size could be €300,000- €500,000 plus follow-ons. Over a three-year investment period, more than 15-20 Belarusian digital high-tech start-ups may receive funding.

It is suggested to include a partial cash-out option for the investors who were involved at the pre-seed stages. According to the Belarusian investors who contributed these suggestions, such a mechanism would be very efficient to stimulate private start-up investment in the country.

Among the organisations which could be associated to the Series A funding activity are:

- on the private side: AngelsBand, Bulba Ventures, Haxus, Zubr Capital;

- on the public side: High Tech Park, the State Committee of Technology and Science, Belarusian innovation Fund, RBF Ventures.

While designing and deploying its programmes in the country, DISC should seek to partner with USAID, which is launching a five-year $10 million programme to support the ecosystem in the country (without direct funding). It is also advisable to closely associate the local start-up and investor communities to co-design the local DISC strategy and take an active part in its implementation.

8.4 Georgia

Coordination or synergies with IFIs

The GENIE experience in Georgia is an example of an impactful international programme at the very early stages of ecosystem development. If Georgia now hosts some 200 start-ups, up from a few dozens five years ago, much of the credit is due to this programme.

GENIE's grant mechanism, however, has been underused due to restrictive co-matching requirements *(see Part I. Analysis, Section 4).* How to expect a start-up to secure equity investment from a third-party in a country where private start-up investment virtually does not exist?

DISC should get involved, along with the World Bank and other IFIs, in a discussion on how to ensure the sustainability of the international support effort after the end of the GENIE programme in 2021.

These IFIs might consider supporting a DISC initiative in Georgia as part of the required continuing effort.

'Startup Chile strategy' for Georgia?

While deploying in the country its funding, soft infrastructure and capacity-building instruments, DISC may consider a specific strategy inspired by Startup Chile, as suggested by tech expats in Georgia who were interviewed in the course of this research.

Georgia's natural and cultural conditions are favourable, according to them, combined with the government's strong commitment to support start-up development.

Should such a strategy be adopted, the EU could bring considerable value by promoting Georgia as a "cool start-up destination" among EU start-up entrepreneurs and investors and providing incentives to generate a substantial incoming flow.

8.5 Moldova

DISC's pre-entrepreneur grant programme *(see Part II. Recommendations, Section 2 hereinabove)*, its incubation and acceleration mechanisms are among the instruments (Section 3) that may stimulate tech entrepreneurship, enlarge the pipeline and support start-up development in Moldova.

These instruments should be carefully articulated, or even operated by or merged with existing public or public initiatives in Moldova (USAID-backed Tekwill, EU4Moldova's Start-up City Cahul, XY Partners accelerator).

To make capital more available to local innovators, the DISC fund-of-funds may consider backing the government's planned national start-up fund, as well as XY Partners' potential $5 million private fund *(see Part I. Analysis, Section 4).*

DISC may engage in a dialogue with USAID-backed U.Ventures for a coordinated investment or co-investment approach in the country. (This fund, intended to cover Ukraine and Moldova, has not yet backed any tech start-up from this country).

DISC may also engage in a dialogue with the Moldovan government around its development strategy, with a review of potential articulations or synergies in terms of potential technologies of focus, programme mechanisms, etc.

DISC may not expect its financing, acceleration and other instruments to be used massively in Moldova in the immediate term. DISC should nevertheless aim to reach a catalytic effect jointly with the above-mentioned private and public players.

8.6 Ukraine

This research *(see Part I. Analysis, Sections 2, Section 3 and Section 4)* identified a variety of cooperation opportunities or potential synergies with both public and private players:

Cooperation with the government

- Co-investment with the recently created Ukrainian Startup Fund as well as potential further additional capital injections from the DISC fund-of-funds facility;
- Dialogue around the government's development strategies in the field of innovation (which are currently in the process of being defined) with a review of potential articulations or synergies in terms of technologies of focus, programme mechanisms, etc. *(Part II. Recommendations, Section 4.3 hereinabove)*

Cooperation with IFIs

- Dialogue with USAID and its fund U.Ventures for potential co-investment approaches.
- Potential financial contribution from USAID-backed WNISEF to the DISC facilities and/or, conversely, potential contribution of the DISC fund-of-funds to the USAID-backed eo Business Incubators fund;
- Cooperation with USAID's CEP start-up and ecosystem support programme;
- Work with the venture facilities of the EBRD and the IFC to have them invest more actively in Ukrainian start-ups and funds.

Opportunities with local private investors

- The DISC fund-of-funds may consider supporting local VC funds that are efficient but limited in size (e.g. AVentures, Digital Future, SMRK, TA Ventures). Such a support would allow them to increase their investment capacity and invest more in Series A, thus increasing their portfolio and better managing their risks.
- Supporting the creation of an angel fund could be very impactful: while the current activity of individual investors is substantial *(see Part I. Analysis, Section 4),* DISC could be ideally positioned to help structure it, bringing co-funding, expertise, international opportunities within a neutral and protective framework.

Opportunities with international investors

- Potential support of the underfunded Acrobator Ventures (the only private one with a permanent local representation) and the considered Eurasia fund of ABRT and Mangrove.
- Cooperation with the IFI-backed, Earlybird-managed Digital East funds, encouraging (co-)investment in Ukraine as well as Belarus -- where these funds have not invested so far in spite of the inclusion of these countries in the mandates.
- Cooperation with Da Vinci Capital's new fund, backed by DEG, which could be involved in later-stage investments in companies from Ukraine and Belarus.

9 Additional suggestions

9.1 A set of tools to increase programme efficiency

Complementing the above recommendations, DISC may consider creating specific tools to increase programme reach and efficiency:

- An internationally-oriented, multi-country online platform to matchmake start-ups with investors; investors with one another for syndicated deals; founders with IT or R&D teams or other professionals; etc.
- A globally-connected data platform, addressing the lack of industry data that prevents market players to make informed decisions in most Eastern partner countries.

More specific suggestions about such tools can be shared with DISC designers.

9.2 Ecosystem support programmes

In order to reach a deeper and more sustainable impact on the ecosystems, DISC may consider supporting or setting up **capacity-building for local stakeholders:** incubators, accelerators, industry associations and networks, etc. Such programmes will aim to raise a new generation of partners and intermediaries -- ultimately providing DISC with opportunities to scale up its effort.

DISC may also consider sponsorship programmes:

- For events: supporting start-up selection processes for pitches, covering costs associated with international speakers, etc.
- For local media: aiming to bridge the information gap that makes local start-up activity almost invisible to domestic and international business audiences.

More specific suggestions about such programmes can be shared with DISC designers.

9.3. Improving the legal and taxation environment

DISC may consider sharing expertise and best practice with local governments to help them address challenges in the legal environment of start-up and venture activity.

- **For a clearer and enforceable regulation protecting the interests of venture investors and investees** - setting up of necessary safeguards for private investments in line with international standards and with specific attention to venture investments as well as to enforcement institutions is a primary step to ensure the inflow of foreign investments on market conditions. Harmonisation with EU legislation of specific definitions, rules and principles for activity of diverse types and operations of investment funds EU legislation would provide additional clarity and comfort of cross border deals for European investors.
- **Taxation environment for start-ups and individual investors** - start-ups have generally tend to indicate the complicated regulation of start-up activity as a big priority. While there is no legal definition of a start-up in most of Eastern partner countries, or the start-ups certification procedure is complex (Azerbaijan) or restrictive (Armenia), the simplification of taxation regime and compliance would benefit innovative start-ups in all Eastern partner countries. Making tax regimes more favourable to individual seed and early stage investors is another strategic action that can foster business angels contribution and help the start-ups to prepare for bigger venture investments.
- **Developing an IPR framework to support the protection of innovation in international markets** - across the Eastern partner countries, the countries which already have accumulated a bigger experience in venture investment deals and have developed the core regulation of investment funds, have generally assigned a higher priority to the IPR-related improvements than the countries with a less developed investment framework. IP protection issue have been indicated as major by all interviewed investors. The lack of clarity in IP right ownership is needed by developing a set of rules for commercialisation of R&D results from universities and public research institutes via private commercial enterprises (spin-offs and spin-outs). Also, IPR expertise should be made more accessible to innovators by developing the ecosystem for support of SMEs in IPR management across the innovation process lifecycle.
- **Capacity building on legal and judicial matters** - the research has shown that business angel investors and start-ups are influenced by an inefficient/unfair judicial system. The country stakeholders' consultations have additionally revealed that the major step is to be done on capacity building of those actors who take part in examination, decision making on applicability of criteria for beneficial taxation, law enforcement and compliance. The capacity building programmes are needed for all types of actors, including policy-makers; lawyers and judges; start-ups; venture fund managers and investors, to maintain their efforts in design,

implementation, enforcement and usage of a legal framework that fosters both the cross border investments and the global innovative businesses residing in Eastern partner region.

More specific suggestions about such assistance to local governments in these fields can be shared with DISC designers.