



EU4Digital

EU4Digital: supporting digital economy  
and society in the Eastern Partnership

**ICT Innovation Ecosystems for  
start-ups and scale-ups:  
policy recommendations:  
Republic of Moldova**

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## 1 Background

The EU4Digital Facility (a programme under the umbrella of the EU4Digital Initiative) was launched by the European Commission in January 2019. The EU4Digital Facility aims to extend the benefits of the European Union's Digital Single Market to the Eastern partner states – Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova (hereinafter – Moldova) and Ukraine. The Facility focuses its support across six key policy areas, including ICT innovation. The activities in the ICT Innovation policy area are aimed to support reforms and actions favouring the development of ICT research, start-ups & innovation ecosystems across the Eastern Partnership region, drawing from the EU experience and best practices.

In 2019 - the first half of 2020, the Facility focused its work to identify and share at the regional level the best EU practices for regulation in the policy areas pre-selected by the Eastern partner countries:

- Intellectual property rights management for digital innovations (Armenia);
- New organisational forms for supporting ICT Innovation (Azerbaijan);
- Digital innovation SMEs' access to finance (Georgia, Ukraine);
- ICT innovation ecosystems for start-ups and scale-ups (Moldova);
- Digitising industry (digital transformation of SMEs in traditional sectors) (Belarus).

This report provides the results of the gap analysis related to the policy area 'ICT innovation ecosystems for start-ups and scale-ups' in Moldova, and the recommendations for the development of relevant innovation policy. The recommendations formed the basis for elaboration of the national policy implementation action plan for Moldova.

## 2 Results

The scope and the information type sought during the gap analysis is explained by the scope of the EU4Digital Facility, as well as by the intervention logic of the Facility. Being one of the first endeavours of the EU assistance to the Eastern partner countries in harmonising digital market, the objectives of the EU4Digital Facility at this stage are to **identify the major gaps between the EU and Eastern partners** and to reveal the directions in which the interested stakeholders can take further active steps to overcome the gaps.

Based on the gap analysis and in tight cooperation with stakeholders, the **recommendations were developed** and can be used as the basis for further activities and possible joint projects. The EU4Digital Facility aims to keep the recommendations as practical and implementable as possible.

These recommendations formed the basis for elaboration of the **national policy implementation action plans** for each Eastern partner country. The action plans identified specific stakeholders in the Eastern partner countries, specific EU tools, platforms, practices that can be mastered by Eastern partner country stakeholders and possible counterparts in the EU countries.

The other activities of the Facility (training, study visit, networking events, promotion activities, etc.) will **support the interested stakeholders in their further activities** on overcoming the gaps.

## 3 Methodological note

The EU4Digital Facility identified the best EU practices for regulation in the policy areas selected by the Eastern partner countries. These best practices were systematised and formed the basis for analysis of the progress and gaps in the Eastern partner countries.

The gap analysis was performed by comparing the best EU practices and tools with those existing in the Eastern partner country, within the framework of the policy area selected by the country. The national experts in each Eastern partner country collected the field data by means of desk research (study of existing reports and documents), field research (collecting and analysing raw data in Internet space) and interviews with national experts from state bodies and relevant digital innovation ecosystem organisations (see Annex 1. 'List of organisations and experts consulted during verification process').

The sample of the ICT innovation infrastructure organisations from the ICT Innovation and Start-up Ecosystems: Study Report ([ICT Innovation Study \(2018\)](#)) was updated within the current study and used to collect the field data about the scope of services delivered by the existing organisations to businesses seeking digital innovations. The ICT innovation service logframe elaborated in the ICT Innovation Study on the basis of the identified benchmarking EU practices was used as a framework. The work on mapping particular organisations on the ICT innovation service map was performed with account of the very differing terminology and aggregation



level for differentiating the services used by the organisations both within and across the countries. The data on services was collected based on the available public data. This approach was selected to reconstruct the practical situation and conditions of individuals looking for specific services for their business development. Following this approach, primarily the data published on the websites of the selected sample of ecosystem organisations was used. It was complemented with the existing published reports and information from other publicly available documented sources. The information about the services that are only planned to be delivered was included in those cases when these plans were supported by relevant published documents. The intentions of delivering some services not supported by documents were not considered for mapping.

To ensure the data comparability, the methodological approach in 2020 fully follows the one from the ICT Innovation Study (2018).

Further analysis of the gaps and development of the recommendations was performed by the EU4Digital Facility expert team and aligned through consultations with national stakeholders.

## 4 Introduction to a framework supporting ecosystems for start-ups and scale-ups

Entrepreneurial activities are extensively affected by the framework conditions, in which they take place (the institutional, informational and socioeconomic factors). Policy actions designed to improve the outcomes of the entrepreneurial process should be tailored to the distinct needs of entrepreneurs along the different development stages (stand-up, start-up and scale-up).

**At the stage of the start-up creation**, public support should aim to buffer start-ups from adverse external conditions (resources constraints). Public support through buffering can include seed-stage access to financial capital, low-cost office space, tax deductions, and initiatives to lower the regulatory burden of establishing new firms, among others.

**At the stage of retention** of the business venture, buffering and sheltering barriers against the hostile external environment are no longer appropriate, – instead, the bridging public support is necessary, i.e. promotion and facilitation of networking relationships with external partners. Bridging facilitates collaborations and the flow of knowledge and resources across organisations.

**At the growth stage**, the policy support relates to the boosting of firms' organisational capacities to scale-up the business.

**Ecosystem for digital innovations** is seen as the one formed by people, start-ups and companies in their various stages and various types of organisations interacting as a system to create and support digital innovations.

**Ecosystem builders** are those ecosystem actors who:

- play a role in *creating an inclusive network* of entrepreneurs in the local community through running a co-working space, mentoring young entrepreneurs or organising networking events;
- play a role *in government* and are involved in making the policy that effects start-ups;
- play a role in the innovation and entrepreneurship *infrastructure and service* menu.

The **goal of the innovation ecosystem** is to enable the high level of innovative companies' productivity in the ecosystem through delivery of certain required services.

**Policy towards innovation ecosystem development** draws from the understanding that the main productivity sources of ecosystems are the *quality of institutions* (quality of regulation and framework conditions for innovations in the country), *quality of the actors* (through building competencies and skills of ecosystem actors) and the *quality of links* (through networking and developing relevant organisational forms) among them.

That is why **networking stakeholders** is seen as a major tool enabling that the stakeholders with diverse expertise and needs find each other with a strategic goal of establishment of collaborative partnerships apropos resources, activities and products (services). Networking is useful both in the mature ecosystems with a big number of stakeholders, and in the early-stage ecosystems, where the identification of those interested in innovations and bringing them together needs to be done. Developing more targeted and sustainable networks through **building communities** is one of the major vehicles of the ecosystem.

**Community** can be [defined](#) as “a social, occupational, or other group (of any size), sharing common characteristics or interests and perceived or perceiving itself as distinct in some respect from the larger society within which it exists” (e.g. the business community; the community of scholars). Communities are usually *led by common interests or shared challenges*. We treat digital communities as communities sharing the digital topics as their common interests (like Open Data, eHealth, Fintech etc.).





These communities can have different names (Networks, Communities, Clubs, Forums, Platforms) and *exist in various organisational forms*, including the individual or institutional membership. For the purpose of the innovation ecosystem development on the country scale, the most impactful are the open communities. Open communities may have some selection criteria (i.e. expertise or experience) and may in some cases restrict the number of the community members, but they are open in a sense that they *publicly declare*, announce their existence to attract the best talent and select it. Possibility to choose *appropriate organisational forms fit for purpose and suiting the interests of diverse stakeholders* is necessary for building of efficient communities and nurturing deliverables elaborated by these communities.

This explains the logic and the structure of the gap analysis:

- Section 5.1 updates the stakeholder map collected in the ICT Innovation Study (2018) – this work allows to better understand the current composition of organisations and actors making the ecosystem for digital innovations in the country. It builds upon the database from the ICT Innovation Study and looks whether a digital platform is available to link actors.
- Sections 5.2 and 5.3 review the existing communities on digital topics in the country both as the informal communities (most often these are to be sought in the social networks and relevant online resources) as well as under the umbrella of formal organisations. Also, those sections review obstacles for digital communities to be established and develop their activities in favour of digital innovations.
- Sections 5.4 and 5.5 research into the existing support for the innovation ecosystems development as well as availability of relevant training.

The structure of the policy recommendations within this report is a framework of four elements:

- the suggested actions are listed and elaborated where needed (answering the question what is to be done (*What?*);
- the reason why these actions are important is explained in terms of a broader context of the innovation ecosystem development (*Why?*);
- relevant EU organisations are suggested as potential partners exercising the good practice in the considered area;
- possible counterparts in the Eastern partner country are indicated as the parties potentially interested in taking over of the suggested EU best practices and in performing the recommended actions.



## 5 ICT Innovation ecosystem for start-ups and scale-ups in Moldova

### 5.1 The landscape of ecosystem actors and services in the country

In Moldova, six policy authorities and 15 public organisations contribute to the *institutional framework of the ecosystem*. 28 universities, 19 scientific research institutes, six ICT training centres and four digital hubs serve as the *centres of competence*, that can be approached by business for advanced digital innovations. Five co-working spaces, three fablabs, three high-tech parks, technology transfer agency, 20 incubators, five accelerators, 30 corporates, several business angels and their network and a venture fund provide the framework for *launching and development of businesses*. Nine business associations and three professional associations provide the framework for *networking and communities-building*.

In 2017, ICT Innovation Study has observed a gap in the activity of such ecosystem actors as Business Angels, Networks of Business Angels, Venture Capitalists, Corporate Venture Capitalists and Crowdfunding Platforms. In 2020, this landscape was updated by EU4Digital (Table 1).

Table 1. Digital innovation ecosystem actors in Moldova

	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	TOTAL
<b>No of Entities included in mapping, 2018</b>	28	14 <sup>1</sup>	21	3	4	3	0	1	0	1	23	4	7	19	5	3	1	2	7	3	1	3	<b>153</b>
<b>No of Entities included in mapping, 2020</b>	28	15	20	4	5	4	1	1	0	1	30	4	6	19	6	3	1	3	9	3	1	4	<b>168</b>

Source: Data collected by EU4Digital Facility as update of ICT Innovation Study (2018)

The newly mapped actors (additionally to those identified in ICT Innovation Study (2018) are: The National Regulatory Agency for Electronic Communications and Information Technology (ANRCETI); XY Accelerator powered by Tekwill; co-working space at Digital Park; one business angel; Business Angels Moldova network; a number of corporates relevant for the digital innovation ecosystem (XOR; Zerocode; Ellation; Mixbook; Fusionworks; AG COMPUTERS; Pentalog; Code Factory); DNT Educational Centre; Association for the development of electronic communications and innovative technologies; Generator Hub; Upcelerator powered by DreamUps. Some of these corporates are newly established, such as XOR, ZeroCode and Fusion Works, while the other are internationals localised to Moldavian supporting ecosystem development. See Annex 2 for the full list of mapped stakeholders.

The analysis of services provided by them allows describing the landscape of ecosystem available to innovative start-ups and SMEs on various stages of development. Figures 1 and 2 detail the ICT innovation ecosystem service landscape in Moldova (comparison of situation in 2017<sup>2</sup> and in 2020). They map the number of organisations identified as those delivering relevant services in Moldova.

1 The Ministry of Information Technology and Communications of the Republic of Moldova was liquidated in 2017; its functions were transferred to the Ministry of Economy and Infrastructure.

2 ICT Innovation Study, 2018.



Table 2. ICT innovation ecosystem service landscape in Moldova, 2017

	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	Total number of entities involved
<b>No of entities analysed during mapping</b>	28	14	21	3	4	3	0	1	0	1	23	4	7	19	5	3	1	1	7	3	1	2	151
<b>Resource Base</b>																							
Human resources	12	6	2	2	3						10	1	2	1	3				2	1	1	2	48
Technologies	4	4	3	2	1						5		2	1		1	1		2		1		27
Office premises	13	1	19	1	4									1	1	2					1	2	45
Production & R&D facilities	2	3	3		1						4	1	2		2	2		1			1	1	23
<b>Finance</b>																							
Access to public support		3	20	1	2							1	4		2	1					1	3	38
Access to private funding		2		1	2								2		1		1		2		1	2	14
<b>Reputation and trust</b>																							
Visibility	3	4	2	2	1						3		1						1		1	3	21
<b>SEED STAGE (IDEA)</b>																							
Trend-scouting and technologies foresight	1	4	7	2	2								1								1	3	21
Identify customers and develop value proposition	1	2	9	2									2						2		1	1	20
Building a balanced team and finding partners with complementary competencies	1	3	6	2	1						3		1								1	3	21
<b>START-UP STAGE (PRODUCT)</b>																							





	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	Total number of entities involved
<b>No of entities analysed during mapping</b>	28	14	21	3	4	3	0	1	0	1	23	4	7	19	5	3	1	1	7	3	1	2	151
Product development	1	3	14	2	2						2										1	3	28
Research and development		1	2	1															1				5
Value proposition and business concept testing and validation	2	2	2	2																			8
Intellectual property management	1	2	3	1																1			8
Product and Corporate Design		2	1	2	1										1						1		8
<b>ENTERING THE MARKET</b>																							
Marketing products and services		3	1												1					1		1	7
Distribution channels and sales		1													1	1							3
Innovation Management/Support of innovation processes (internal, external)		1	14	1	2											1			2		1	3	25
Accompaniment after entering the market		2	17		1														1				21
<b>SCALE-UP, SCOPE-UP, SPEED-UP</b>																							
Business services for growing and accelerating companies	1	1	8	1	2						4		2								1	3	23
Business scoping up		1			1									1	1				1			1	6
Business scaling up		2		1	1							1							1				6
<b>BUSINESS TRANSFORMATION AND STRATEGY</b>																							
Support to existing SMEs in managing the structural transformation and in developing business models		2		1	2								3								1	1	10



	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	Total number of entities involved
<b>No of entities analysed during mapping</b>	28	14	21	3	4	3	0	1	0	1	23	4	7	19	5	3	1	1	7	3	1	2	151
<b>Thematic expertise</b>		1																					1
<b>NETWORKING AND COLLABORATION (for innovation infrastructure organisations)</b>																							
<b>NETWORKING AND COLLABORATION</b>	4	2	21	2	4						5		1		1	1			2	1	1	3	48
<b>Number of services/activities provided by identified entities</b>	46	57	154	29	33	0	0	0	0	0	36	4	23	3	13	9	2	1	17	4	16	35	

Source: ICT Innovation Study (2018)

Note: Taking into account, that one entity can be involved into delivery of several services, the total number of services across the service map is much higher than the number of the identified actors and entities in the ecosystem.



Table 3. ICT innovation ecosystem service landscape in Moldova, 2020

	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	Total number of entities involved	
No of entities analysed during mapping	28	15	20	4	5	4	1	1	0	1	30	4	6	19	6	3	1	3	9	3	1	4	168	
<b>Resource Base</b>																								
Human resources	11	6	2	4	3		1				13	1	2	1	4			1	2	1	1	4	58	
Technologies	4	4	3	3	1						5		2	1		1	1		2			1	1	29
Office premises	11	1	19	2	5									1	1	2						1	3	46
Production & R&D facilities	2	3	3	1	1						4	1	2		2	2		1				1	1	24
<b>Finance</b>																								
Access to public support		3	20	3	2							1	4		2	1						1	4	41
Access to private funding		2		3	2		1			1			2		1		1		2			1	2	17
<b>Reputation and trust</b>																								
Visibility	3	4	2	4	3						3		1		1				1			1	4	27
<b>SEED STAGE (IDEA)</b>																								
Trend-scouting and technologies foresight	1	4	7	4	2								1									1	3	23
Identify customers and develop value proposition	1	2	9	3	1								2						2			1	2	23
Building a balanced team and finding partners with complementary competencies	1	3	6	4	2						3		1									1	3	24
<b>START-UP STAGE (PRODUCT)</b>																								



	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	Total number of entities involved
<b>No of entities analysed during mapping</b>	28	15	20	4	5	4	1	1	0	1	30	4	6	19	6	3	1	3	9	3	1	4	168
<b>Product development</b>	1	3	14	4	2						2										1	3	30
<b>Research and development</b>		1	2	1	1														1				6
<b>Value proposition and business concept testing and validation</b>	2	2	2	4	1																	1	12
<b>Intellectual property management</b>	1	2	3	2																1			9
<b>Product and Corporate Design</b>		2	1	3	1										1						1		9
<b>ENTERING THE MARKET</b>																							
<b>Marketing products and services</b>		3	1	2											1						1	2	10
<b>Distribution channels and sales</b>		1		1											1	1						1	6
<b>Innovation Management / Support of innovation processes (internal, external)</b>		1	14	3	3											1				2	1	3	28
<b>Accompaniment after entering the market</b>		2	17	2	1														1			1	24
<b>SCALE-UP, SCOPE-UP, SPEED-UP</b>																							
<b>Business services for growing and accelerating companies</b>	1	1	8	3	2						4		2								1	3	28
<b>Business scoping up</b>		1		21	1										1	1			1			1	8
<b>Business scaling up</b>		2		3	1							1							1			1	9
<b>BUSINESS TRANSFORMATION AND STRATEGY</b>																							



	Universities	Public Organisations	Incubators	Accelerators	Co-working spaces	Business Angel	Network of Business Angels	Venture Capitalist	Corporate Venture Capitalist	Crowdfunding Platform	Corporates	Influencers	Policy-making authorities	Scientific and research institutes	ICT training centres	High-tech parks	Technology transfer offices	Fablabs	Business associations	Professional associations	Competence centres	Digital innovation hubs	Total number of entities involved
No of entities analysed during mapping	28	15	20	4	5	4	1	1	0	1	30	4	6	19	6	3	1	3	9	3	1	4	168
Support to existing SMEs in managing the structural transformation and in developing business models		2		2	2						1		3								1	1	12
Thematic expertise		1		1	3						5											3	13
<b>NETWORKING AND COLLABORATION (for innovation infrastructure organisations)</b>																							
<b>NETWORKING AND COLLABORATION</b>	4	2	21	4	4						7		1		1	1			2	1	1	4	53
Number of services/activities provided by identified entities	43	57	154	50	44	0	2	0	0	1	47	4	23	3	16	9	2	1	17	4	16	51	

Source: Data collected by EU4Digital Facility





For assessing the scope of the function of the country ecosystem to provide particular service, the share of organisations mapped as delivering such a service was estimated among the total number of organisations collected as a sample in this country. This approach leans on the assumption that the *balanced ecosystem* is pursued. The best approximation that was achievable within the timeframe of this study was to measure the balance in the ecosystem by the evenness of distribution of organisations providing the services. This has allowed assessing the gaps in relative terms: not to compare the existing situation with an imaginary “ideal” level or with the differing EU level, but to *identify the weakest links within the ecosystem* of the country. On this basis, it was possible to identify the stages of the innovation process that are least developed in the country and compare the situation with the Eastern partner countries generally.

Figure 1. Relative weaknesses and strengths across the whole EaP sample (share in total number of infrastructure organisations) in 2017

SHARE IN TOTAL NUMBER OF INFRASTRUCTURE ORGS		AM	AZ	BY	GE	MD	UA	Average
RESOURCE BASE	Human resources	43%	30%	19%	57%	35%	20%	34%
	Technologies	12%	13%	12%	7%	20%	6%	12%
	Office premises	18%	8%	19%	35%	33%	12%	21%
	Production & R&D facilities	8%	9%	14%	23%	17%	11%	14%
	Access to public funding	47%	4%	30%	10%	28%	13%	22%
	Access to private funding	43%	8%	13%	12%	10%	24%	18%
	Visibility	31%	2%	7%	7%	15%	13%	13%
SEED STAGE (IDEA)	Trend-scouting and technologies foresight (ideas for i	16%	19%	21%	3%	15%	2%	13%
	Identify customers and develop value proposition	24%	19%	0%	8%	15%	4%	12%
	Building a balanced team and finding partners with co	37%	8%	1%	7%	15%	2%	12%
START-UP STAGE (PRODUCT)	Product development	24%	6%	0%	6%	20%	5%	10%
	Research and development	4%	2%	1%	2%	4%	3%	3%
	Value proposition and business concept testing and v	16%	6%	1%	2%	6%	4%	6%
	Intellectual property management	6%	6%	4%	4%	6%	7%	5%
	Product and Corporate Design	14%	8%	0%	1%	6%	2%	5%
ENTERING THE MARKET	Marketing products and services	18%	11%	4%	3%	5%	2%	7%
	Distribution channels and sales	18%	4%	2%	3%	2%	1%	5%
	Innovation Management / Support of innovation prod	18%	4%	0%	2%	18%	1%	7%
SCALE-UP, SCOPE-UP, SPEED-UP	Accompaniment after entering the market	18%	0%	2%	5%	15%	14%	9%
	Business services for growing and accelerating compa	18%	8%	3%	7%	17%	2%	9%
	Business scoping up	18%	0%	1%	2%	4%	1%	4%
BUSINESS TRANSFORMA	Business scaling up	18%	6%	8%	4%	4%	2%	7%
	Support to existing small and medium-sized compani	18%	8%	16%	2%	7%	4%	9%
NETWORKING AND COLLABORATION	Thematic expertise	6%	0%	10%	1%	1%	1%	3%
	Average	24%	6%	31%	6%	35%	21%	20%
		21%	8%	9%	9%	14%	7%	11%

Source: ICT Innovation Study (2018)

Assessing the scope of organisations delivering various services across the business lifecycle in 2017 exhibited that in the Eastern partner countries generally, the relative strength of ecosystems is concentrated on providing the resource base to innovative entrepreneurship and networking opportunities (over 10% of organisations are involved into these services). Herewith, the start-up stage and the later stages of the innovation process remain very weakly serviced. Thus, *except for accompaniment after entering the market, all service groups need to be developed in the Eastern partner countries tailored to the business lifecycle needs.*

Analysis of the landscape across the country shows that in Moldova, the less serviced stages of digital innovation development are the *R&D* and *entering the market* activities at the start-up stage as well as *consultancy* in scoping up and business transformation.

The biggest gap in 2017 was observed in access of businesses to thematic expertise. In 2020, this position shows progress because some ecosystem actors have started to organise thematic expert communities; yet this area still needs improvement.

The other changes have not been significant despite appearing of new actors on the scene – the service-oriented architecture of the innovation ecosystem still needs a lot of improvements.



Figure 2. Relative weaknesses and strengths in Moldova across the whole EaP sample (share in total number of infrastructure organisations) in 2020

SHARE IN TOTAL NUMBER OF INFRASTRUCTURE ORGS		2017	2020	2020-2017
RESOURCE BASE	Human resources	35%	35%	0%
	Technologies	20%	17%	-3%
	Office premises	33%	28%	-5%
	Production & R&D facilities	17%	14%	-2%
	Access to public funding	28%	25%	-4%
	Access to private funding	10%	10%	0%
	Visibility	15%	16%	1%
SEED STAGE (IDEA)	Trend-scouting and technologies foresight (ideas for innovative projects)	15%	14%	-2%
	Identify customers and develop value proposition	15%	14%	-1%
	Building a balanced team and finding partners with complementary competencies	15%	14%	-1%
START-UP STAGE (PRODUCT)	Product development	20%	18%	-2%
	Research and development	4%	4%	0%
	Value proposition and business concept testing and validation	6%	7%	1%
	Intellectual property management	6%	5%	-1%
	Product and Corporate Design	6%	5%	-1%
ENTERING THE MARKET	Marketing products and services	5%	6%	0%
	Distribution channels and sales	2%	4%	1%
	Innovation Management / Support of innovation processes (internal, external)	18%	17%	-2%
	Accompaniment after entering the market	15%	14%	-1%
SCALE-UP, SCOPE-UP, SPEED-UP	Business services for growing and accelerating companies	17%	17%	-1%
	Business scoping up	4%	5%	0%
	Business scaling up	4%	5%	1%
BUSINESS TRANSFORMATION	Support to existing small and medium-sized companies in managing the structural transition	7%	7%	0%
	Thematic expertise	1%	8%	7%
NETWORKING AND COLLABORATION	Networking and collaboration	35%	32%	-3%

Source: ICT Innovation Study (2018) and data collected by EU4Digital Facility (2020)

Interpreting the structure of these data should be performed only in qualitative terms, keeping in mind that the certain balance between the *specialisation* and the *competition* of organisations on particular services is needed. This means, that the services should be delivered by more than one organisation in order to provide the competition among the organisations fostering them to improve their services. At the same time, it should not be expected that all the services (taken on the disaggregated level) are delivered by all or overwhelming part of organisations even of the same type (all business incubators or all technoparks), because specialisation of organisations is a natural consequence of competition.

The following organisations are emphasised as the major digital innovation ecosystem actors in Moldova:

1. '404 not found' (co-working spaces);
2. 'Digital Park Starnet';
3. Agency for Innovations;
4. Allied Testing (IT dev. Company);
5. ArtCor (Creative Industries Hub), Orange Systems;
6. Association of Companies (FEZ Balti);
7. Balti innovation Hub;
8. Digital Park Starnet;
9. DNT (Cisco Academy, Arduino Courses, IoT, main founder of Generator Hub);
10. Dream Ups (UpFactory, Founder Institute projects);
11. Ellation (IT development company, supporting GenHub);
12. Endava (IT development company);
13. FunEasylearning;
14. Fusionworks;
15. Generator Hub;
16. iHub;
17. Ministry of Economy and Infrastructure (MEI);
18. Mixbooks;
19. Moldova IT Park (virtual);



20. Moldovan Association of Information and Communications Technology Companies (ATIC);
21. Pentalog (IT dev. Company);
22. SeedStars (Switzerland);
23. Tekwill;
24. TUM/UTM (the Technical University of Moldova);
25. XOR (Start-up);
26. Zerocode (start-up).

They can be considered as the main digital innovation ecosystem builders in Moldova.

[Tekwill](#)<sup>3</sup> has an extremely important role and is actively engaged in development of **digital innovation ecosystem**:

- high level concept of a Startup Moldova completed;
- seed funding opportunities model in process;
- start-up support programmes ongoing;
- community support ongoing;
- connection to international programmes/networks ongoing – mainly US based (EU programmes are considered as a possible option).

The other developments on the market are that Tekwill plans to replicate its services in five more locations in the regions, provide digital education, implementation of Startup Moldova Program; and thus could become the umbrella organisation for the ICT Sector (like an 'ICT Innovation Moldova'), attracting funding from USAID, Government of Sweden, EU.

Detailed description of Tekwill Action Plan is added as Annex 9.

There are several **acceleration programmes**, hosted by Tekwill, XY, Dreamups, YepMoldova (Garage 48), ZipHouse, upcelerator.md.

#### Gaps identified:

- Except for accompaniment after entering the market, all service groups need to be developed in the Eastern partner countries tailored to the business lifecycle needs. In Moldova, the less serviced stages of digital innovation development are the *R&D* and *entering the market* at the start-up stage as well as *consultancy* in scoping up and in digital business transformation, including *access to thematic expertise*.

## 5.2 Platforms serving as one stop shop for digital stakeholders and communities in the country

No single web platform exists serving as one stop shop for digital ecosystem actors, stakeholders and communities in the country. All stakeholders admitted it is needed, some being surprised by its absence.

There is only the [registry of residents of the Moldova IT Park](#) published online, that possesses their own platform (restricted access; functionality accessible only by the residents). Park-as-a-platform service is currently under construction in the Moldova IT Park, which envisaged the sections on company cards; ecosystem champions; tenders and projects; toolbox and events.

#### Gaps identified:

- No single open web resource exists serving as one stop shop for digital ecosystem actors, stakeholders and communities in the country.
- No single open web resource is mapping the innovation advisory and support services delivered by existing digital ecosystem actors, stakeholders and communities in the country in an easily searchable and comparable way.

<sup>3</sup> Tekwill is created with the support of the United States Agency for International Development (USAID) and the Government of Sweden through Sida/Swedish International Development Agency in the framework of the project 'Development of Moldova ICT Excellence Centre' implemented by Moldovan Association of ICT Companies (ATIC) in partnership with Technical University of Moldova.



## 5.3 Thematic digital communities and obstacles to their development

As the biggest gap observed on Moldavian ecosystem in 2018 was **access of businesses to thematic expertise** (such conclusion may be a result of absent communities or *not visible* communities), EU4Digital Facility has further tried to **identify the existing expert communities** (in order to facilitate that they are made visible to SMEs and policy authorities) and the obstacles to their further development.

When doing this exercise, we took different approaches and checked digital communities uniting certain types of stakeholders; communities formed around associations; communities under the co-working spaces as well as thematic digital communities.

In Moldova, **digital communities uniting certain types of stakeholders** include (most visible, *not exhaustive* list):

1. [ATIC](#) (Association of ICT companies);
2. [BEST](#) Chisinau;
3. [Business Angels Moldova](#) (Business professionals);
4. Communities active in [FabLab](#) (under the Technical University of Moldova) – [YouthMaker Club](#), [Atelier 99](#), [MicroLab](#) (Robotics enthusiasts);
5. [DeveloperMD](#) community (the biggest community of IT professionals in Moldova);
6. [DNT](#) (IT professionals);
7. [DreamUps](#) (IT Community & innovation accelerator);
8. [Generator Hub](#) (IT Communities & professionals);
9. [iHub](#) (IT businesses & professionals);
10. [STEP IT Academy](#) (providing the same portfolio as DNT);
11. [Tekwill](#) (IT businesses, communities, start-ups & professionals);
12. [XY Partners](#) (IT consultants);
13. [StartUp Moldova](#) (start-ups, business angels, venture investors);
14. [TECH Women](#) Moldova (women in technologies);
15. [Technovation Girls](#) Moldova (young women interested in technological innovations);
16. [Tekwill Ambassadors](#) – Mentors' Community Buildup – MentoMe (mentors);
17. Other IT centres that act similar to DNT.

### Communities formed around associations:

1. [ATIC](#) (Moldovan Association of Information and Communications Technology Companies);
2. [ACETI](#) (Association for the Development of Electronic Communications and Innovative Technologies);
3. [COR](#) (Association of Creative Industry Companies in Moldova).

For example, ATIC currently has several thematic Committees (Legal, Fiscal, HR&Education, Fintech, SmartCity, Hardware) focused on development of legislation, addressing common challenges of development, position papers, workshops.

### Communities under the co-working spaces:

1. [404 Moldova](#);
2. [Armenească 13A](#);
3. [Digital Park Starnet](#);
4. [Generator Hub](#);
5. [iHub](#);
6. [Tekwill](#).

These communities in most cases have a certain legal entity behind them that serves as a platform maintaining their links and relations. This also brings the results in forms of deliverables that can be referred to and used for considering partnerships by external organisations.

A number of **thematic digital communities** exist in Moldova:

1. [Blockchain Association of Moldova](#);
2. [Digital Communication Network](#);
3. [Drupal Moldova](#);



4. [JavaMD Community](#);
5. [MicroLab \(UTM\)](#), on FabLab premises (on dedicated electronic systems);
6. [Moldova Data Science Learning Circle](#);
7. [Moldova Python Community](#);
8. [OpenSource community](#);
9. [Social media in culise](#) (social media behind the scenes);
10. [Working Group on Open Government](#).

The interviewed stakeholders and start-ups have also mentioned some thematic digital communities that existed previously, but no information about their current existence was found:

1. AI Communications Network;
2. Balti innovation Hub (centre);
3. BEST (TUM IT students);
4. developers.md (Facebook community);
5. IoT and Microelectronics Community (GenHub);
6. IT.md (Facebook community);
7. Java Community (iHub);
8. Makers Community;
9. PASS Centre (eHealth related);
10. Rocket;
11. Ruby and Wine of TUM;
12. Ruby Chapter.

This shows the importance of a driving force that takes the leadership in maintaining the existing community - common interests are not enough for people to maintain regular communication.

On the other hand, some communities have shown remarkable progress – for example, blockchain community has developed into an institutionalised form of a [Digital & Distributed Technology Moldova Association](#).

During the field analysis, the data on the existing digital communities in Moldova was collected and systematised, covering communities formed around associations; communities formed around co-working spaces; digital communities uniting similar type of actors; thematic digital communities in Moldova (see Annexes 3-6). The following data was collected: name of the community; its organisational form (registered legal entity; project/programme/initiative operated by a legal entity; social community, other); type of membership (Individual or institutional); description of goals, composition, activities and deliverables (when available); contact and reference.

**Conferences and events** are the actively used forms of bringing together those interested in particular area related to digital technologies and innovations. Trainings, competitions and hackathons are the other most actively used forms of bringing together those interested in expanding their qualification in a digital area. See Annexes 7 and 8 listing them as an exemplary as activities targeting at the development of thematic digital communities.

An innovative form of trainings and discussion reaching out the wide audience is **audio podcast** 'Software Engineering Radio' (contact person Dan Iftodi). For example, its topics include Spring Boot, Microservices, Being a Software Engineer, API Security with OAuth 2.0, Automation and others.

The **obstacles** for development of digital communities are many-fold and cover both the demand and the resource base.

The most widespread approach of organising digital communities via conferences and trainings has both advantages and limitations. Advantages are the possibility to bring together the individuals who wish to acquire additional knowledge. Good bilateral contacts can be established under such circumstances.

The first gap is that most existing digital communities focus their activities on training. It means, the IT staff is trained for working in IT companies, but the efforts of bringing together the existing companies for the purpose of work in joint projects (including country-level) and consulting the government are underutilised (only ATIC is performing as such cluster organisation).

The other limitations are that though conferences and trainings are organised by the legal entities, the communities formed under such circumstances rarely receive the operational framework allowing to maintain





their relations at the large scale, exchange information and opinions, build consortia for specific topics; elaborate joint positions and suggestions to the government on the critical issues of the country development.

The conclusion is that thematic communities need more care in form of a coordination centre/secretariat. Yet, as these functions are usually time consuming, they are rarely performed for a long period by enthusiasts; in the long run, either they are slowly dissolved as communication flows slow down, or they get formalised and the resources are allocated under the framework of existing or newly formed organisation (coming from the state grants, membership fees, or the flow of projects around certain activities that allow for budgeting the capacity building expenses).

Table 4. The obstacles for development of digital communities

Types of obstacles	Clarification
Legal restrictions <sup>4</sup>	No legal restrictions for development of digital communities in the country were identified by respondents. However, lack of clear information on legal requirements which would apply to ICT communities and start-ups may be a constraint for those actors who wish to drive the development of such communities.
Lack of personalities	Lack of personalities driving the establishment of such networks/communities was mentioned by several respondents.
Lack of funding	Lack of funding as for support of work of the office (operating body) for the community was mentioned.
Lack of competent staff	Lack of competent staff with skills of networks development and management was mentioned by several stakeholders. Although local accelerators exist, there is a place for increase of their expertise level, said some stakeholders, including ex start-ups.
Lack of practical experience of the staff	Lack of practical experience of the staff and knowledge of practical problems of start-ups and scale-ups was mentioned by several stakeholders.
Insufficient development of collaboration with international networks	This was mentioned by all stakeholders although some of them have some extent of collaboration with such networks.
Lack of demand from relevant ecosystem actors	This was mentioned by most stakeholders. The positive cases are those of Ellation (IT Dev Co) and Orange Systems, which do support innovation and development of various ICT skills and communities (limited support).
Lack of the critical mass of the ecosystem actors interested to contribute in the work of communities	This was confirmed by most of the interviewed stakeholders. Another obstacle mentioned is the limited access to information and technological products in regions. (Although there are plans to replicate Tekwill in 5 more regional centres).
Lack of state support to establishment of the networks	This was also mentioned by most of the stakeholders except the MEI, Tekwill and several stakeholders which mentioned the favourable tax relieve for IT Parks. In opinion of some respondents, the state support is not needed as long as the state doesn't interfere.
Limitation connected to small domestic market	A few stakeholders mentioned that some ICT Communities disappeared over time, following the mass migration. Small domestic market with businesses having no interest in ICT Innovation and start-ups is also seen as a barrier. A huge issue for local start-ups is credibility in front of potential clients, being the start-ups from Moldova. Some register their businesses in other locations to overcome this (Estonia, Romania, etc.).
Limitations connected to conservative setting of educational system	Lack of entrepreneurial education in schools was mentioned as an obstacle. Teachers in universities need a scientific degree to be able to teach except for auxiliary teachers for labs practice. So, most of the IT Professionals do not bother to hold a PhD and can't teach, although there is readiness on their behalf. Hence, there is a fierce competition from the IT Companies on finding/hiring talents.

Source: Developed by EU4Digital Facility based on interviews with stakeholders

<p><b>Gaps identified:</b></p> <ul style="list-style-type: none"> <li>• Low access to thematic expertise (absent or not sufficiently known communities).</li> </ul>
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4 I.e. some organisational forms are prohibited or too complex, high costs of establishment and running, etc.



- Low involvement by public authorities of experts from private sector on individual basis to avoid biases in judgements.
- Low availability of expert communities that develop the unbiased consolidated position that can be accepted by public authorities.
- Lack of critical mass of ecosystem actors interested to contribute to the work of expert communities; difficulty to involve experts from the regions.
- Lack of funding as for support of work of the 'administrative/communications office' (operating body/centre) for the community.
- Need of clarifications about application of the existing legal framework.
- Insufficient development of collaboration with international networks and ecosystem actors.
- Mass migration of start-ups from Moldova and IT specialists due to limited domestic market.

## 5.4 State support for innovation ecosystem development

Political acknowledgement of the need to support networking in various organisational forms (communities, networks, clusters) for digital innovations is stated in the policy papers. Most of the stakeholders agree that there is acknowledgement (at least at some level, through the Digital Strategies (Digital Moldova 2020, 2030 to follow, ICT Innovation 2018-2023); other stakeholders find it not so visible, except for the specific legislation for the IT Parks.

Public (state) support is available for development of innovative clusters, networks and communities) with certain limitations. There is support for innovative clusters and none for start-ups. Some stakeholders feel this support being more declarative (in policy papers (strategies). The positive examples of support are the premises provided for centres (like Tekwill building belongs to TUM, thus, to the state).

Though the size of support is admitted by stakeholders that receive this support as appropriate (allows to create the supply of services of a good quality), the *conditions of receiving this support are perceived by other stakeholders as not easy and transparent enough.*

The recent plans are that business incubators [will receive development subsidies](#) of over 2 million MDL.

Also, the Ministry of Economy and Infrastructure [is preparing](#) a comprehensive programme for digitising all economic processes – E-economy.

STRATEGY of IT industry development and digital innovation ecosystem for 2018-2023 (Excerpt from Appendix No. 1 to Government Decision No. 904 dated September 24, 2018) indicated the following challenges of Moldavian digital innovation ecosystem that are to be addressed by the state support:

- 2.1. The capacity and number of IT professionals do not match the needs of the local IT industry and potential large-scale IT investment projects
- 2.2. Limited investment in the training and development of IT professionals, as well as the emigration of qualified personnel create a constant shortage in the labour market in the field of IT and limit the ability to launch new start-ups.
- 2.3. A fragmented local IT industry focused on peripheral segments (testing, software development, business process outsourcing, etc.), with low added value in an underdeveloped digital economy.
- 2.4. The limited potential of local IT companies in digital innovation.
- 2.5. Lack of access to venture financing and philanthropist investors.
- 2.6. Inadequate marketing potential and underdeveloped practice of personnel certification.
- 2.7. Lack of co-working platforms and business development consultancy for IT start-ups.
- 2.8. Lack of branding and marketing strategies and investment in the IT industry.

Overall goal set in the Strategy is "Creating conditions for increasing competitiveness, diversification of the IT industry, stimulating start-ups and their focus on digital innovation in all sectors of the economy".

To achieve a common goal through the implementation of the Strategy, the Government assumes the implementation of actions in the following priority areas for the period 2018-2023:

- a competitive business environment for IT;
- competitive labour capital in the field of ICT;
- ICT-based innovations;
- support for investment and export of IT.



## Key activities foreseen in the Strategy are:

- creation of a network of ICT entrepreneurship centres based on centres of excellence in the field of ICT, business incubators and specialised educational institutions;
- development of IT parks with an infrastructure component that provide shared spaces and business development advice for IT start-ups;
- facilitating partnerships between educational institutions and IT companies to improve curricula;
- encouragement of private IT companies to provide training and certification for students of IT departments, as well as for attracted personnel;
- promotion of alternative digital skills development programmes;
- promoting the education of STEAM (science, technology, engineering and mathematics) in pre-university educational institutions (digital tools, digital library, elective courses, etc.);
- creating a favourable basis for the development of an innovative digital ecosystem in the Republic of Moldova by developing proposals and legislative measures;
- conducting research on the digitisation and technological automation of small and medium enterprises, the promotion of innovative models;
- development/approval of a package of financial incentives to encourage companies investing in the transition to digital business processes;
- creation of alternative financing mechanisms for innovation and business development projects based on ICT;
- launch, with the support of development partners, acceleration programmes for IT start-ups;
- development of a national network of innovation centres;
- facilitating the participation of local IT companies in conferences, summits, hackathons in target markets;
- providing assistance and support to local IT companies for selection and participation in international incubation programmes.

Additionally, **insufficient financing and lack of financing mechanisms for development of start-ups** was highlighted by Ministry of Economy and Infrastructure. Non-reimbursable financing is missing, and state grants are needed for successful start-ups.

Institutional competence building of policymakers in development of the innovation ecosystem, setting up the legal framework for early stage investments, innovation policy tools and financial mechanisms is also required.

### Gaps identified:

- Lack of dedicated mechanisms for financing IT start-ups.
- Lack of access to venture financing and business angels.
- There is a need for EU support for the development of seed fund (as in Bulgaria and Romania).
- There is a need for institutional competence building of policymakers in the development of the innovation ecosystem.
- There is a need for harmonisation of the legal framework related to Venture Capital, Seed Capital, Business Angels.

## 5.5 Existing trainings and consultations for ecosystem development

Development of ecosystem, including building the communities of experts, is not a trivial task. In the area of deep technologies, including digital technologies on the verge of IT and traditional sectors, it is even more difficult, and needs the leadership of a person who both knows the thematic area, the best practices, the enthusiasm and the ability to identify the common interests and drive collaboration. The rarity of such people is a challenge for the development of digital communities.

From the service landscape analysis (5.1) it is seen that except for accompaniment after entering the market, all service groups need to be developed in the Eastern partner countries tailored to the business lifecycle needs. The country stakeholder interviews have further indicated that when the services offered to SMEs are not addressing their specific needs (“general” networking, “general” training), entrepreneurs find them time-consuming and do not want to use these services further. Thus, there is a need for innovation infrastructure



organisations to accumulate more specific networks and toolboxes that are relevant for specific industries, and to train staff for delivery of better services to innovative businesses.

Trainings and consultations within the country as for development of ICT innovation communities in the country are available, but the stakeholders advised that their depth should be increased.

Table 5. Trainings and consultations within the country as for development of ICT innovation communities

Organisations delivering training	List of and reference to training programmes
<b>Tekwill/ATIC/iHub<sup>5</sup></b>	XY Accelerator, Start-Up Academy, etc.
<b>DreamUps</b>	Start-up Grind (Global community) 1/month, UpFactory Acceleration program, Founder Institute Accelerator (from Silicon Valley).
<b>Generator Hub</b>	FoodTech Start-Ups Event.

Source: Data collected by EU4Digital Facility

Generally, most start-ups face difficulty in recruiting specialists with necessary skills. Lack of alignment of educational institutions with the market was also mentioned, as well as poor connection with a few existing business angels, which justifies the need for development of training of ecosystem builders and ecosystem actors as well as deeper international cooperation and institutional competence building. The limitations connected to conservative setting of educational system include:

- lack of entrepreneurial education in schools;
- teachers in universities need a scientific degree to be able to teach except for auxiliary teachers for labs practice. So, most of the IT professionals do not bother to hold a PhD and can't teach, although there is readiness on their behalf;
- the capacity and number of IT professionals do not match the needs of the local IT industry and potential large-scale IT investment projects;
- there is a fierce competition among IT companies for talent.

**Gaps identified:**

- Lack of demand for services of innovation infrastructure organisations from start-ups and SMEs because of insufficient targeting their needs by existing services.
- Lack of leadership in establishing of thematic expert networks and communities in area of digital innovations.
- Lack of staff of innovation infrastructure organisations with network development and management skills and with practical experience knowledge of problems faced by start-ups and scale-ups.
- Limitations connected to conservative setting of educational system.

<sup>5</sup> [iHub](#) is a co-working space created with the support of the Ministry of Foreign Affairs of Norway through a public-private partnership between the Technical University of Moldova and the ICT Excellence Center – Tekwill, which was established within the project implemented by Moldovan Association of ICT Companies (ATIC).



## 6 Recommendations

### 6.1 Summary of recommendations

Following the status and gap analysis, the recommendations were developed, linked to the EU best practices, on how the ecosystem development in Moldova could be maintained. The summarised recommendations in Table 6 are further elaborated in Sections 6.2-6.9. The order of the recommendations in the below summary corresponds to the recommendations sequence in the sections.

Table 6. Summary of recommendations

Summary of recommendations
<b>1. Maintain the mapping and establish a platform for digital innovation ecosystem actors and expert communities</b>
1.1. Maintain (enable regular update of) the map of ecosystem players in the country, using the collected by EU4Digital Facility list of ecosystem actors and list of existing digital communities.
1.2. Develop a web resource (digital platform) serving as a one stop shop for digital stakeholders and communities in the country, to be accessible openly – not only by IT Park residents, but also by policymakers, start-ups, scientists. This online platform should serve as one stop shop for digital stakeholders and communities in the country.
1.3. Determine the operator for the platform.
1.4. Use innovation cluster building tools to support the operating company. In particular, support innovative cluster organisations as innovation infrastructure organisations and allow them to use the state aid.
<b>2. Develop the platform functionality including maintaining the digital innovation ecosystem service landscape</b>
2.1. Maintain (enable the regular update) the mapping of the landscape of services provided by ecosystem actors at one stop shop principle (marketplace of services).
2.2. Foresee at the platform mentioned in activity 2.1 the functionality of mapping the landscape of services provided by ecosystem actors (marketplace of services), using the data updated by EU4Digital Facility. This will allow start-ups and SMEs to find a specific service through business lifecycle stages. Consider allowing the other countries to register as service providers.
2.3. Foresee the functionality for infrastructure organisations to register and independently update their information (the wider framework of ICT Innovation service landscape developed in the ICT Innovation Study (2018) can be used for mapping). Display the aggregated landscape.
2.4. Consider the advanced functions of the similar EU platforms. Consider the international partnerships of the platform and the possibility to exchange the data via open API with the existing big-scale platforms, to ensure both the national data ownership and international visibility.
2.5. Within a platform-operating company, foresee the function of tracking the popularity and functionality of relevant foreign platforms in order to timely develop the international partnerships and improve the functionality of the national platform.
<b>3. Facilitate the development of lacking services in the digital ecosystem service landscape</b>
3.1. Foresee at the platform mentioned in activities 2.1 and 2.2. the functionality of assessment by businesses of the quality of the services received from existing organisations, to vote for existing and lacking services (express demand). This will foster competition among the suppliers of services to increase their quality and mark the gaps where the consultancy is requested by SMEs (a grounded reason for establishment of specialised accelerator or launching a new service).
3.2. Regularly inform the ecosystem actors about the gaps in the service landscape observed in Moldova and about the demand for services expressed by the start-ups and SMEs.
3.3. Develop for the platform mentioned in activities 2.1 and 2.2. an additional functionality enabling teambuilding for digital businesses and finding partners with complementary competencies (or enable this functionality to be provided externally in an interoperable mode with the platform).





Summary of recommendations
3.4. Develop for the platform mentioned in activities 2.1 and 2.2. an additional functionality enabling the networking of the R&D and innovation laboratories and centres for digital innovations among the Eastern partner countries and with the EU Member States (or enable this functionality to be provided externally in an interoperable mode with the platform).
3.5. Provide assistance and support to local IT companies for selection and participation in international incubation and acceleration programmes.
3.6. Transfer from the EU acceleration programmes specialised by sectors of economy most relevant to each Eastern partner country and customise (localise) them to partner countries.
3.7. Facilitate the development of a national network of digital innovation competence centres.
<b>4. Facilitate the development of expert communities, their involvement and impact</b>
4.1. For public authorities – consider using the collected by the EU4Digital Facility lists of stakeholders and existing digital communities and involve them in the discussions on regulation and request for possible support of public authorities in their regular activities.
4.2. Promote the positive cases, when the work of expert communities has led to practical results which have been implemented by government or business, for raising the interest of ecosystem actors to contribute in the work of communities.
4.3. For existing associations and public authorities – consider building of digital communities at the crossroad of various sectors of economy (i.e. club of accountants; lawyers; HR directors; CIOs of banks, etc.) for purposes of big scale projects, development of legislation, addressing of common challenges of development.
4.4. For organisers of events – consider offering to the participants of the digital tools (i.e. via event app) to define which community they would like to establish/join as well as the offering a service of a ‘secretariat/virtual coordination office’ for this community for the next period of its maturing vs small subscription fee (until participants understand whether they need a more formal outfit or they are not interested in maintaining relations).
4.5. Support existing ecosystem actors in replicating their activities in regional centres (i.e. by providing premises, access to digital infrastructure, co-funding training of trainers for the regions).
4.6. Propose to start-ups and expert communities the guidelines with clear information on legal requirements which would apply to ICT communities and start-ups on possible organisational forms of cooperation in line with national legislation (to be developed in consultation with lawyers and international consulting companies located in the country) (for example, the <a href="#">Italian Start-up Act clarification</a> ).
4.7. Use <a href="#">innovation vouchers</a> tool to support organisations wishing to drive the development of thematic communities.
4.8. Small grants may be provided on a competitive basis for funding of services to coordinate the expert community by an existing legal entity, plus additional grants for networking events (see <a href="#">Start-up Canada Communities</a> example).
4.9. Maintain an actual overview of funding sources for which Eastern partner country stakeholders are eligible and make the list public. This is a clear case for public service (may be subcontracted by the public authority to a scientific institute or technology transfer centre) – otherwise the organisations need to make a lot of effort trying to identify funding opportunities and their eligibility, which significantly reduces the amount of applications and increases the transactions costs.
<b>5. Training of ecosystem builders and ecosystem actors</b>
5.1. Join the specialised EU training programmes for development of cluster managers and innovation ecosystem builders (as <a href="#">Startup Commons</a> ). Training programmes for ecosystem builders need to be linked to advanced training programmes across the world and have an intensive practical component. Various channels and forms of trainings need to be provided.
5.2. Internships of innovation infrastructure organisations with start-ups and innovative companies of various stages of development for gaining practical knowledge of problems faced by start-ups and scale-ups.
5.3. Specialised decision-making tools for business angels, venture capitalists, venture fund managers, for example, <a href="#">InnoRate</a> project, are to be considered.



Summary of recommendations	
5.4.	Consider implementing pan-European qualification frameworks and training packages based on them, including: <ul style="list-style-type: none"><li>a. European Entrepreneurship Competence Framework;</li><li>b. European e-Competence framework;</li><li>c. DigiComp.</li></ul>
5.5.	Develop a mass-scale VET training and retraining for professionals to compensate for the weaknesses of the formal educational system; put emphasis on training at the crossroad of IT and traditional industries (not only coding or testing).
5.6.	Adopt frameworks of competences in education and labour market. Review the existing Pan-European and international frameworks that map various competences related to digital economy; their structure, applications, complementarity to each other, training packages (i.e. European e-Competence framework for ICT professions; SFIA for ICT professions; DigiComp for citizens at their workplaces; European Entrepreneurship Competence Framework for start-ups and enterprises). Consider using them as a basic framework for revision, restructuring and development of the training programmes at educational establishments of different level, as well as for certification of ICT professionals.
5.7.	Creation of a network of ICT entrepreneurship centres based on centres of excellence in the field of ICT, business incubators and specialised educational institutions. For example, merge the efforts of Tekwill (ICT excellence centre) with <a href="#">ODIMM</a> (the organisation for the development of the small and medium enterprise sector), which has a network of business incubators, the capacity of which (including consulting capacity), could be used to consult ICT businesses, start-ups, etc., for achieving synergy in Tekwill's access to IT companies and ODIMM's access to SMEs, also for enabling digital innovation in traditional sectors of economy.
5.8.	Promotion of alternative digital skills development programmes, also for traditional sectors, via dual and agile education complementary to classic education. Develop (at the request and with contribution of enterprises) a mass-scale VET training and retraining for professionals to compensate for the weaknesses of the formal educational system; aim at 'dual education' approach; put emphasis on training at the crossroad of IT and traditional industries (not only coding or testing).
<b>6. International cooperation of ecosystem builders</b>	
6.1.	For existing communities and ecosystem builders – connect with the diverse ecosystems of European regions via mapping, join the special activities in the EU.
6.2.	Cooperation actions with expatriates, inviting them to contribute their expertise to new start-ups in the country and to bring their networks for international projects.
<b>7. Institutional capacity building</b>	
7.1.	Creating a favourable basis for the development of an innovative digital ecosystem in the Republic of Moldova by enhancing the capacity of policymakers and implementers via: <ul style="list-style-type: none"><li>a. mastering REFIT toolbox on better (evidence-based) regulation;</li><li>b. mastering the 'Skills for evidence-informed policymaking: continuous professional development framework' (Joint Research Centre, 2017);</li><li>c. mastering the registry of policy case studies;</li><li>d. study visits and internships to the EU policy making organisations and innovation agencies for transfer of approaches to governance, public consultations, decision-making, collaboration with business and academia.</li></ul>
7.2.	Institutional capacity building for existing and proto- digital business associations in EaP region, to make them an integral part of the EU business community and international associations. Develop the capacity of innovation ecosystem actors to develop better services and value propositions for start-ups and SMEs.
<b>8. Develop the framework for financial support of digital innovation ecosystem</b>	
8.1.	Consider the policy recommendations on the topics 'Digital innovation SME's access to finance' (UA, GE) and 'Digitising industry (digital transformation of SMEs in traditional sectors)' (BY).
8.2.	Facilitate stakeholder consultations following the feasibility analysis (undertaken in the country); contribute to design of the operational toolbox of a Fund for support of digital innovation and tech start-ups; facilitate negotiations with potential co-investors into the Fund.



## Summary of recommendations

8.3. Facilitate the development of venture and alternative financing mechanisms for innovation and business development projects based on ICT.

Source: developed by EU4Digital Facility

## 6.2 Maintain the mapping and establish a platform for digital innovation ecosystem actors and expert communities

### Gap

No single open web resource exists serving as one stop shop for digital ecosystem actors, stakeholders and communities in the country.

### Recommendations

#### ❖ What?

1. Maintain (enable regular update of) the map of ecosystem players in the country, using the collected by EU4Digital Facility list of ecosystem actors and list of existing digital communities. The following data might be considered for publication on the platform:
  - a. thematic digital community (i.e. IT for education, eHealth, eTrade, FinTech, Blockchain, AI, Open Data, eGovernment, Cybersecurity etc.)/Digital community per stakeholder types (i.e. Business angels, Venture Capital, Accelerators, Start-ups);
  - b. approximate size;
  - c. organisational form (e.g. registered legal entity; project/programme/initiative operated by a legal entity; social community, other);
  - d. types of stakeholders in the community;
  - e. individual or institutional membership;
  - f. description of goals;
  - g. typical activities;
  - h. joint results published as joint achievements;
  - i. contact;
  - j. references.
2. Develop a web resource (digital platform) serving as a one stop shop for digital stakeholders and communities in the country, to be accessible openly – not only by IT Park residents, but also by policymakers, start-ups, scientists. This online platform should serve as one stop shop for digital stakeholders and communities in the country. The following issues are to be discussed before launching it:
  - a. operating organisation (including costs of maintaining and business model);
  - b. functionality for stakeholders (service-providers, service-consumers, scientific analytics, policy feasibility studies, etc.);
  - c. functionality for communities.
3. Determine the operator for the platform.
4. Use innovation cluster building tools to support the operating company. In particular, support innovative cluster organisations as innovation infrastructure organisations and allow them to use the state aid.

#### ❖ Why?

Mapping of ecosystem actors is the tool which makes these actors visible to each other and allow them to quickly identify relevant partners with minimal transaction costs. Mapping is also used for provoking competition and revealing the market gaps.

Mapping the existing thematic or sectoral expert communities is necessary for SMEs that want to use the opportunities of digital economy. Such communities can contribute their practical understanding of challenges and possibilities and be the major conceptual source for advanced regulation. In the EU, expert communities, including those operating on the platform of business associations, are highly involved into elaboration of regulatory framework (even on the EC level).



## ❖ Relevant EU practices (non-exhaustive list):

- Approaches to mapping of local ecosystems via websites:
  - [EDCI](#) – European Digital City Index;
  - [Startup Hubs](#) – dynamic mapping of tech start-ups: 20 start-up ecosystems analysed dynamically using APIs, maps, and official company data;
  - [European start-ups](#) – map of ecosystem builders: accelerators, investors, corporates programmes, public programmes, coworking spaces;
  - [European Startup Initiative](#) – a heatmap on the attractiveness of start-up hubs in Europe, mapping cities' perceived attractiveness and patterns.
- [Startup Europe Networks](#) under Startup Europe Initiative:
  - [Startup Europe Central and Eastern Europe Network](#);
  - [Startup Europe Western Balkans Network](#).
- EU practice of state aid for innovative clusters (EU 'Framework for State aid for research and development and innovation' (Commission Communication 2014/C 198/01)) includes:
  - investment aid to cover several costs in tangible and intangible assets;
  - operating aid to cover personnel and administrative costs, which also includes overhead costs, in association with:
    - facilitation of collaboration, information exchange and channelling support of specialised and personalised business support services to the clusters;
    - support of the cluster in its marketing to increase active partaking of new undertakings or organisations, as well as its visibility;
    - effective management of facilities of the cluster;
    - organising training programmes, workshops and conferences for supporting knowledge exchange, networking and transnational collaboration;
    - increasing the intensity of aid for innovative clusters in the EU ranges from 50 to 65% contingent to the region and size of supported businesses, including large enterprises.

## ❖ Potential counterpart(s) in Moldova:

- Ministry of Economy and Infrastructure;
- ATIC/Tekwill;
- Moldova IT Park.

## 6.3 Develop the platform functionality including maintaining the digital innovation ecosystem service landscape

### Gap

No single open web resource is mapping the innovation advisory and support services delivered by existing digital ecosystem actors, stakeholders and communities in the country in an easily searchable and comparable way.

### Recommendations

#### ❖ What?

1. Maintain (enable the regular update) the mapping of the landscape of services provided by ecosystem actors at one stop shop principle (marketplace of services).
2. Foresee the functionality of mapping the landscape of services provided by ecosystem actors (marketplace of services), using the data updated by EU4Digital Facility. This will allow start-ups and SMEs to find a specific service through business lifecycle stages. Consider allowing the other countries to register as service providers.
3. Foresee the functionality for infrastructure organisations to register and independently update their information (the wider framework of ICT Innovation service landscape developed in the ICT Innovation Study (2018) can be used for mapping). Display the aggregated landscape.
4. Consider the advanced functions of the similar EU platforms. Consider the international partnerships of the platform and the possibility to exchange the data via open API with the existing big-scale platforms, to ensure both the national data ownership and international visibility.



5. Within a platform-operating company, foresee the function of tracking the popularity and functionality of relevant foreign platforms in order to timely develop the international partnerships and improve the functionality of the national platform.

### ❖ Why?

The services that are actually suggested by the existing innovation infrastructure organisations to businesses are currently very poorly systematised. For a start-up or an SME to be able to quickly find a service they need, to compare it with the similar services of the other suppliers, there should be a common marketplace.

As shown in ICT Innovation Study (2018), “the innovation ecosystems can be considered as *comprehensive*, if they offer businesses the services covering the complete value chain and complete lifecycle of innovative businesses: offering companies the resources to generate first sales of their products and services at new markets, to expand the sales within the respective countries and regions, and finally to prepare for further expansion of the business activities.

The ecosystems can be considered as *mature*, if they offer basic services on a competitive basis, that is, there are several organisations offering basic services on a continuous basis. Measuring the degree of ecosystem maturity is possible by means of measuring the number of organisations delivering such services (in absolute and relative terms).

The ecosystems can be considered as *innovative* (at the world, regional, country level), if some services offered by them have not existed before (on the world, regional, country level); per definition, there will be only one or a few organisations delivering such services”.

Mapping of digital innovation ecosystem service landscape and equipping the mapping platform with proper functionality helps in practice to *improve the accessibility of the existing infrastructure organisations by start-ups and innovative businesses* in the Eastern partner countries and to *improve the quality of services provided by ecosystem actors*. It can serve “as a one stop shop website for start-ups to find a specific service through business lifecycle stages with functionalities for infrastructure organisations to register and independently update their information and for businesses to vote for existing and lacking services”.

Because of small domestic markets in the Eastern partner countries (and hence the suboptimal size of the innovation ecosystem and impossibility to provide a full scope of service at the world level), it is advisable that the platform is equipped with the functionality of dynamic data exchange with advanced international platforms.

### ❖ Relevant EU practices (non-exhaustive list):

- [F6S](#) is home to over a million tech founders, 800,000 start-ups and more than 10,000 start-up programmes globally. F6S delivers founders growth through start-up programmes, opportunities to drive traction, grants and services. F6S founders apply to start-up programmes (including accelerators), pitch for investment, post or apply for jobs, get free founder benefits and grow on F6S every day. We're all about tech, getting stuff done and growing. F6S delivers millions of dollars in government grants and R&D tax relief to tech start-ups and SMEs’.
- [Gust](#) is the “world’s largest start-up network, with over 800,000 founders and 85,000 investment professionals”, connecting them to the start-up ecosystem.
- [European start-up network](#) embraces 28 national start-up ecosystems, stakeholders and experts as well as over 30,000 accessed start-ups.
- [Our crowd](#) includes 39,000 registered investors, 10,000 companies vetted from 183 countries.
- [Business Angels Europe](#) involves 250 structured angels networks uniting 40,000 business angels.
- [EcosystemOS](#) is a platform of Startup Commons developed to support an open architecture of start-up ecosystems. It targets the needs of public sector organisations (e.g. regional and municipal development agencies), corporations driving dedicated business vertical ecosystems internationally for innovation and private start-up services that operate start-up and entrepreneurship ecosystems and offer services to start-ups, investors, and other stakeholders. The platform includes APIs with documentation for user data portability, API connections, data models and data sharing principles to develop applications for start-up ecosystems; a partner application marketplace for connected ecosystem applications and third-party API functions.

### ❖ Potential counterpart(s) in Moldova:

- Ministry of Economy and Infrastructure;
- Tekwill / ATIC;
- Virtual IT Park.





## 6.4 Facilitate the development of lacking services in the digital ecosystem service landscape

### Gap

Except for accompaniment after entering the market, all service groups need to be developed in the Eastern partner countries tailored to the business lifecycle needs. In Moldova, the less serviced stages of digital innovation development are the R&D and 'entering the market' at the start-up stage as well as consultancy in scoping up and in digital business transformation, including access to thematic expertise.

### Recommendations

#### ❖ What?

While the advanced services for start-ups and SMEs can be developed by the market, there is a necessity for public support by creation of framework including the following activities:

1. Foresee at the platform mentioned in Section 6.3. the functionality of assessment by businesses of the quality of the services received from existing organisations, to vote for existing and lacking services (express demand). This will foster competition among the suppliers of services to increase their quality and mark the gaps where the consultancy is requested by SMEs (a grounded reason for establishment of specialised accelerator or launching a new service).
2. Regularly inform the ecosystem actors about the gaps in the service landscape observed in Moldova and about the demand for services expressed by the start-ups and SMEs.
3. Develop for the platform an additional functionality enabling teambuilding for digital businesses and finding partners with complementary competencies (or enable this functionality to be provided externally in an interoperable mode with the platform).
4. Develop for the platform an additional functionality enabling the networking of the R&D and innovation laboratories and centres for digital innovations among the Eastern partner countries and with the EU Member States (or enable this functionality to be provided externally in an interoperable mode with the platform).
5. Provide assistance and support to local IT companies for selection and participation in international incubation and acceleration programmes.
6. Transfer from the EU acceleration programmes specialised by sectors of economy most relevant to each Eastern partner country and customise (localise) them to the Eastern partner countries.
7. Facilitate the development of a national network of digital innovation competence centres.

#### ❖ Why?

At each stage of their lifecycle, innovative businesses have different needs, including the needs for resources, needs for competencies, needs for infrastructure and tools. If only the human resources are available in a country, but there's no support for innovative ideas and start-ups, the *brain drain* will be observed in the country.

If the start-up stages are covered (hackathons are organised, ideas are presented to foreign capital), but business growth within the country is not maintained by corresponding ingredients (resources, competencies, infrastructure, tools, testing and prototyping opportunities, friendly legislation), the *business drain* will be observed from the country (the young companies will choose establishment abroad in a country with necessary ingredients and favourable treatment; they will pay no taxes to the country where the grounders were educated and where the idea was born).

If the digital transformation of traditional businesses will not be backed up with necessary consultancy, there will be a digital divide in the country, with the labour productivity and salaries in traditional industries much lower than those in IT. That is why ecosystems should either provide the full scope of services within the country, or, in case of small domestic economies, to source these services from outside and make them available to the businesses operating in the country.

#### ❖ Relevant EU organisations (non-exhaustive list):

- [European Cluster Collaboration Platform](#) offering a [database](#) searchable for particular sectors;
- a list of benchmarked innovation infrastructure organisations delivering services for digital innovations:

#### Estonia

- Estonian Connected Health Cluster;
- Estonian ICT Cluster;

#### Sweden

- Future Position X;
- Compare – Competence area ICT;

#### USA

- The U.S. Economic Development Administration: Regional



- Tallinn Science Park Tehnopol;
- Start-up Incubator;
- Prototyping Fund Prototron;
- SPRINGBOARD – business acceleration programmes and B2B matchmaking.

## France

- Aerospace Valley;
- Cap Digital;
- EMC2;
- Minalogic;
- MOV'EO;
- Secured Communicating Solutions cluster;
- Systematic Paris Region;
- ViaMéca.

## Germany

- CyberForum e.V.;
- Automotive-bw;
- Hamburg Aviation e.V.;
- Virtual Dimension Centre (VDC);
- Navispace;
- Cloudzone – Messe Ltd.;
- EuroCloud Deutschland\_eco e.V.;
- CLOUDING SMEs;
- Cloud for Europe;
- Mittelstand 4.0;
- RAMI 4.0.

## ❖ Potential counterpart(s) in Moldova:

- Ministry of Economy and Infrastructure;
- ATIC/Tekwill;
- Moldova IT Park;
- Accelerators.

- Dataföreningen i Norr;
- Fiber Optic Valley;
- Hudiksvalls Hydraulikkcluster;
- Media Evolution Southern Sweden;
- Mobile Heights;
- ProcessIT Innovations.

## Ireland

- Irish Software Innovation Network (ISIN);
- Financial Services Innovation Centre;
- Irish Data and Cloud Cluster;
- Digital Hub;
- WESTBIC Business and Innovation Centre;
- UK;
- North East Automotive Alliance Limited.

## European initiatives

- 33/17 European Cluster Collaboration Platform;
- EIT ICT;
- EIT Digital Academy.

Innovation Strategies (RIS) Program;

- Silicon Valley Corporate Accelerator.

## South Korea

- accelerators, funding, and government initiatives;
- G3 LABS;
- SVIK (Smart Venture Institute) in Daegu.

## Japan

- Japan's 5th Science and Technology Basic Plan (2016-2020);
- The EU-Japan Centre for Industrial Cooperation;
- JEUPISTE (Japan-EU Partnership in Innovation, Science and Technology);
- EU-Japan clusters helpdesk.

## 6.5 Facilitate the development of expert communities, their involvement and impact

### Gaps

The identified gaps that can be addressed using the EU best practice include:

- Low access to thematic expertise (absent or not sufficiently known communities).
- Low involving by public authorities of experts from private sector on individual basis to avoid biases in judgements.
- Low availability of expert communities that develop the unbiased consolidated position that can be accepted by public authorities.
- Lack of critical mass of ecosystem actors interested to contribute to the work of expert communities; difficulty to involve experts from the regions.



- Lack of funding as for support of work of the ‘administrative/communications office’ (operating body/centre) for the community.
- Need of clarifications about application of the existing legal framework.

## Recommendations

### ❖ What?

1. For public authorities – consider using the collected by the EU4Digital Facility lists of stakeholders and existing digital communities and involve them in the discussions on regulation and request for possible support of public authorities in their regular activities.
2. Promote the positive cases, when the work of expert communities has led to practical results which have been implemented by government or business, for raising the interest of ecosystem actors to contribute in the work of communities.
3. For existing associations and public authorities – consider building of digital communities *at the crossroad of various sectors of economy* (i.e. club of accountants; lawyers; HR directors; CIOs of banks etc., following the good practice of ATIC), for purposes of big scale projects, development of legislation, addressing of common challenges of development.
4. For organisers of events – consider offering to the participants of the digital tools (i.e. via event app) to define which community they would like to establish/join as well as the offering a service of a ‘secretariat/virtual coordination office’ for this community for the next period of its maturing vs small subscription fee (until participants understand whether they need a more formal outfit or they are not interested in maintaining relations).
5. Support existing ecosystem actors in replicating their activities in *regional centres* (i.e. by providing premises, access to digital infrastructure, co-funding training of trainers for the regions).
6. Propose to start-ups and expert communities the guidelines with clear information on legal requirements which would apply to ICT communities and start-ups on possible organisational forms of cooperation in line with national legislation (to be developed in consultation with lawyers and international consulting companies located in the country) (see for example the clarifications on the [Italian Startup Act](#)).
7. Use [innovation vouchers](#) tool to support organisations wishing to drive the development of thematic communities.
8. Small grants may be provided on a competitive basis for *funding of services to coordinate the expert community* by an existing legal entity, plus additional grants for networking events (see [Startup Canada Communities](#) example).
9. Maintain an actual overview of funding sources for which Eastern partner country stakeholders are eligible and make the list public. This is a clear case for public service (may be subcontracted by the public authority to a scientific institute or technology transfer centre) – otherwise the organisations need to make a lot of effort trying to identify funding opportunities and their eligibility, which significantly reduces the amount of applications and increases the transactions costs.

### ❖ Why?

Networking is a tool enabling stakeholders with diverse expertise and needs to find each other with a strategic goal of establishment of collaborative partnerships apropos resources, activities and products (services). Networking is useful both in the mature ecosystems with a big number of stakeholders, and in the early-stage ecosystems, where the identification of those interested in innovations and bringing them together needs to be done.

Developing more targeted and sustainable networks through building communities is one of the major vehicles of the innovation ecosystem.

The first step is to understand who are the people that have already been organised into communities (that is, they are ready to act collectively for some purpose) and to involve them into activities where the collective voice/action is needed.

The possibilities for emergence of new thematic communities or communities of actors sharing the same interests should be seen and used strategically.

This is in the interest of policymakers who want to have a collective unbiased vision of the market structure and needs of regulatory developments.

This also is in the interest of traditional sectors of economy that want to utilise the opportunities of digital economy.



The organisational forms of communities evolve on their path to joint temporary (contracts for projects within one legal entity or contracts among several legal entities in a consortium) or lasting (long-term contract relations) activities. Coordination of participants of community members, information exchange, tracking the community action plan fulfilment is a time-consuming work that needs special skills. Providing to the newly formed communities the services of coordination at the early stage is a useful tool to increase their survival rate.

Expert communities can exist in various organisational forms, including the individual or institutional membership:

- communities without a legal entity using some physical (club, coworking space) or information infrastructure (group in communicators; account in social networks; common working space in clouds etc.) for enabling their communication and exchange of ideas;
- communities within a legal entity (normally a big company or organisation), with an operational centre being assigned from the existing departments of the organisation or being established as an organisational subunit without a separate account);
- distributed membership (individual or institutional) with secretariat and technical maintenance being operated by a legal entity:
  - legal entity can be a non-profit organisation which can only fund its activities from membership fees or donor funding;
  - legal entity can be a commercial company that can request payment for the provided communication space and facilities from the members, and/or projects.

Possibility to choose appropriate organisational forms fit for purpose and suiting the interests of diverse stakeholders, and the possibility to change the organisational form as the community evolves is necessary for building of efficient communities and nurturing deliverables elaborated by these communities.

The legal peculiarities of establishing such communities and governing their joint resource sharing can differ from country to country. Usually the communities are not obliged to have a legal entity until they do not operate capital (money) – thus, for exchange of merely intangible assets (knowledge, publications, views and opinions), communities may act without registering themselves under a legal entity. However, many communities are driven by the joint work, which in most cases requires consolidation of resources and reimbursement of time and efforts – thus, the organisational forms of communities evolve on their path to joint temporary (contracts for projects within one legal entity or contracts among several legal entities in a consortium) or lasting (long-term contract relations) activities.

#### ❖ Relevant EU organisations (non-exhaustive list):

- [The Knowledge and Innovation Communities](#) led by the European Institute of Innovation and Technology (EIT). The EIT's Innovation Communities are partnerships that bring together businesses, research centres and universities. EIT Innovation Communities are the largest innovation networks in Europe – and one of largest in the world. Since 2010, eight Innovation Communities have been launched, each focusing on a different societal challenge. One of them – **EIT Digital**, a pan-European network of co-location centres in Berlin, Eindhoven, Helsinki, London, Paris, Stockholm, Trento, as well as in Budapest and Madrid. EIT Digital also has a hub in Silicon Valley. Its head office is located in Brussels. EIT Digital provides Pre-incubation services and **Scaleup acceleration**.
- The [EIC Community Platform](#)<sup>6</sup> is a virtual meeting-place where companies funded by the [European Innovation Council \(EIC\) pilot](#) can connect, share their experiences and leverage potential businesses partnerships. The Community brings together all the people that interact around the EIC. They can also find investors through the Find investors [ScaleUp EU](#) tool.
- [ScaleUp EU](#) is an automatic match-making tool based on investor and company profiles, to facilitate partnerships between EIC funded companies and investors<sup>7</sup>.
- Additionally to the EU experience, the experience of [Startup Canada Communities](#) highly recommended because of its well described, transparent and efficient operational mechanism on developing start-up communities across the regions as well as on building a coast-to-coast network diverse in community size, demographics, and industry sectors.

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<sup>6</sup> For the moment the Community is open for EIC pilot-funded small companies under [Fast Track to Innovation](#), [Pathfinder](#), [EIC Accelerator](#), and investors. The platform will soon also include [Horizon Prizes](#), Coaches, Corporates, Evaluation Jury Members, Key Account Managers and Project Officers.

<sup>7</sup> ScaleUp EU is open to EIC funded companies as well as active investors established in a country that participates to [Horizon 2020](#) and who respect professional and ethical standards (these are detailed in the Terms and Conditions).





- ❖ Potential counterpart(s) in Moldova:
  - Ministry of Economy and Infrastructure;
  - ATIC.

## 6.6 Training of ecosystem builders and ecosystem actors

### Gaps

The identified gaps that can be addressed using the EU best practice include:

- Lack of leadership in establishing of thematic expert networks and communities in area of digital innovations.
- Lack of staff of innovation infrastructure organisations with network development and management skills; with practical experience knowledge of problems faced by start-ups and scale-ups.
- Limitations connected to conservative setting of educational system:
  - lack of entrepreneurial education in schools;
  - teachers in universities need a scientific degree to be able to teach except for auxiliary teachers for labs practice. So, most of the IT professionals do not bother to hold a PhD and can't teach, although there is readiness on their behalf;
  - the capacity and number of IT professionals do not match the needs of the local IT industry and potential large-scale IT investment projects;
  - there is a fierce competition among IT companies for talent.

### Recommendations

#### ❖ What?

1. Join the specialised EU training programmes for development of cluster managers and innovation ecosystem builders (as [Startup Commons](#)). Training programmes for ecosystem builders need to be linked to advanced training programmes across the world and have an intensive practical component. Various channels and forms of trainings need to be provided.
2. Internships of innovation infrastructure organisations with start-ups and innovative companies of various stages of development for gaining practical knowledge of problems faced by start-ups and scale-ups.
3. Specialised decision-making tools for business angels, venture capitalists, venture fund managers, for example, [InnoRate](#) project, are to be considered.
4. Consider implementing *pan-European qualification frameworks* and training packages based on them, including:
  - a. European Entrepreneurship Competence Framework;
  - b. European e-Competence framework;
  - c. DigiComp.
5. Develop a mass-scale VET training and retraining for professionals to compensate for the weaknesses of the formal educational system; put emphasis on training at the crossroad of IT and traditional industries (not only coding or testing).
6. Adopt frameworks of competences in education and labour market. *Review the existing Pan-European and international frameworks that map various competences related to digital economy*; their structure, applications, complementarity to each other, training packages (i.e. European e-Competence framework for ICT professions; SFIA for ICT professions; DigiComp for citizens at their workplaces; European Entrepreneurship Competence Framework for start-ups and enterprises). Consider using them as a basic framework for revision, restructuring and development of the training programmes at educational establishments of different level, as well as for certification of ICT professionals.
7. Create a network of ICT entrepreneurship centres based on centres of excellence in the field of ICT, business incubators and specialised educational institutions. For example, merge the efforts of Tekwill (ICT excellence centre) with [ODIMM](#) (the organisation for the development of the small and medium enterprise sector), which has a network of business incubators, the capacity of which (including consulting capacity), could be used to consult ICT businesses, start-ups, etc., for achieving synergy in Tekwill's access to IT companies and ODIMM's access to SMEs, also for enabling digital innovation in traditional sectors of economy.
8. Promote alternative digital skills development programmes, also for traditional sectors, via dual and agile education complementary to classic education. Develop (at the request and with contribution of





enterprises) a *mass-scale VET training and retraining for professionals to compensate for the weaknesses of the formal educational system*; aim at 'dual education' approach; put emphasis on training at the crossroad of IT and traditional industries (not only coding or testing).

## ❖ Why?

Development of an ecosystem for innovations requires special skills, approaches and tools, organised in a framework. *Elaboration of common language* (common understanding of terms, definitions, problems, tools) is helpful for ecosystem actors to lower the costs of interaction.

To enable a wide international stage for start-ups from small countries, national training programmes should be linked to diverse training programmes across the world.

Besides, training opportunities should be provided through multiple channels, enabling the remote training.

## ❖ Relevant EU organisations and tools (non-exhaustive list):

- [Startup Commons](#) is an initiative providing an “open standard framework, innovation entrepreneurship education and training, ecosystem development consulting and enabling start-up ecosystem operators to drive digital transformation to connect, visualise and make data flow within and between start-up ecosystems globally”. In the future, it is seen as a “global network of digital start-up ecosystems, operated and co-owned locally, connected by open standard data models, global API infrastructure and shared licensing. Where all data belongs to their rightful owners.”
- Practical training through networking in the [soft-landing 1-week missions for start-ups and scale-ups](#), organised by StartupEurope, allow connecting ecosystems of various EU countries in order to open wider markets and provide integration into the local context. Participation in the programme is free of charge, and travel expenses are reimbursed up to 400 EUR per participant. Such missions are organised not only for start-ups, but also for ecosystem builders who can “explore the other ecosystem, meet leaders, and establish long-lasting connections.”
- [Training package](#) for ecosystem builders from Startup Commons includes:
  - *Growth Academy for Support Providers* – proven and repeatable methodology to help start-ups to grow;
  - *Growth Academy + Certification programme (individual trainer)* – the certification programme includes an online course to train future trainers + interview with the team + listing in the website as a certified trainer;
  - *Ecosystem Development Academy* – the most complete and globally neutral training programme to educate and empower the next generation of ecosystem developers, builders and operators and in general to any individual and entity focus on economic growth via entrepreneurship, innovation, job creation and attracting investments as well as any supporting function like incubators, accelerators, corporates, universities, investors, tech parks, business schools, researchers, etc.;
  - *Growth Academy for Business Creators* – repeatable methodology to build a start-up without falling into the most common mistakes.
- The other possible sources of relevant European expertise for other industries include:
  - [European Data Portal](#) – a training centre on how to re-use open data and a database of success stories from European and international re-users. Open Government Data and PSI. <https://www.europeandataportal.eu/en/resources/more-training-materials>;
  - [Digital skills and learning \(VET centres\)](#) – the overall objective is to support the establishment and development of transnational cooperation platforms of Centres of Vocational Excellence (CoVEs) to connect Centres operating in a given local context at European level;
  - [The Knowledge Bank](#) – Workplace innovation;
  - [Guide for Educators on European Entrepreneurship Competence Framework](#) – a shared definition of entrepreneurship as a competence. The framework develops 15 competences along an 8-level progression model and proposes a comprehensive list of 442 learning outcomes.
- Specialised decision-making tools for business angels, venture capitalists, venture fund managers: Horizon 2020 project “[INNOSUP-09-2018 - Design and development of a tool to support and improve the decision making process of investors for financing high-growth potential innovative SMES](#)”(end date – 31 December 2021).



- [InnoRate](#) project will deploy “a trusted, objective and recognised service platform across the EU and AC” including the package of digitally enabled decision support tools and services provided through the platform (based on semantic technology and existing data sources).
- ❖ **Potential counterpart(s) in Moldova:**
  - Ministry of Economy and Infrastructure;
  - ATIC/Tekwill/iHub;
  - Generator Hub;
  - DreamUps.

## 6.7 International cooperation of ecosystem builders

### Gaps

The identified gaps that can be addressed using the EU best practice include:

- Insufficient development of collaboration with international networks and ecosystem actors.
- Mass migration of start-ups from Moldova and IT specialists due to limited domestic market.

### Recommendations

#### ❖ What?

1. For existing communities and ecosystem builders – connect with the diverse ecosystems of European regions via mapping), join the special activities in the EU.
2. Cooperation actions with expatriates, inviting them to contribute their expertise to new start-ups in the country and to bring their networks for international projects.

#### ❖ Why?

Making the national ecosystem actors and digital communities visible internationally and linking them with the international communities will enable the Europe-wide cross-border knowledge exchange, joint activities and projects, facilitating the attraction of the EU investors to the Eastern Neighbourhood market of ideas, and thereby extending the resource base for development of start-ups, scale-ups and SMEs in general. Herewith, it is important to ensure the national data ownership and possibility for the stakeholders to quickly update their profiles. This will safeguard national actors from the situation when the foreign platforms maintenance is ceased because of their framework project ending, and the whole mapping of the country’s ecosystem is ceased, too.

Networking with existing professional actors will allow the Eastern partner countries to quickly learn about the progress and failures in regulation and business models, to map EaP platforms and raise interest of the EU investors and collaborate in joint cross border projects.

#### ❖ Relevant EU organisations (non-exhaustive list):

**Events** where local action and local policy making could be showcased:

- [Startup Europe Week](#) – 250 cities connected by a single event across the EU with 400 simultaneous actions;
- [Startup Europe Awards](#) – the Eurovision for start-ups.

**Programmes** empowering start-ups:

- [SEC2SV](#) – Silicon Valley;
- [SEU-IN](#) – Startup Europe India Network;
- [SEC2LATAM](#) – Startup Europe Latin America Network;
- [SEC2A](#) – Startup Europe comes to Africa.

**Mapping** of local ecosystems via websites:

- [EDCI](#) – European Digital City Index;
- [Startup Hubs](#) – dynamic mapping of tech start-ups: 20 start-up ecosystems analysed dynamically using APIs, maps, and official company data;
- [European Startup Initiative](#) – a heatmap on the attractiveness of start-up hubs in Europe, mapping cities perceived attractiveness and patterns.

**Territorial networks:**

There are currently two [Startup Europe Networks](#) united under Startup Europe Initiative:



- [Startup Europe Central and Eastern Europe Network](#);
- [Startup Europe Western Balkans Network](#).

### Connecting similar actors:

There are many examples of initiatives trying to *connect the alike ecosystem players* (the same types of stakeholders or sharing the same interests). While most of them have member networks on the national level, the bigger scale of the EU is perceived to provide much bigger effects:

- [Startup Europe Partnership \(SEP\) Investors Forum](#) brings together top Investors from all over Europe with the goal of fostering a more scale-up-friendly ecosystem in Europe;
- [Social Innovation Community portal](#);
- [The European Trade Association for Business Angels, Seed Funds and Early Stage Market Players \(EBAN\)](#) is the pan-European representative for the early stage investor community gathering over 150 member organisations in more than 50 countries;
- [Business Angels Europe](#) is the European Confederation of Angel Investing, representing the European Business Angels' Federations and Trade associations in Europe of over 40,000 angel investors;
- [Accelerator assembly](#) is an industry-led network, created by the European Commission, that connects accelerators, entrepreneurs and policy makers;
- [Startup Europe Universities Network](#) is an initiative to showcase the commitment of European universities to create a strong culture of entrepreneurship and innovation across the university community;
- [EU Cluster Partnership Platform](#) – part of Executive Agency for Small and Medium-sized Enterprises (EASME);
- [EU-wide network of Digital Innovation Hubs \(DIHs\)](#), mapping one-stop-shops across Europe, serving companies within their local region and beyond to digitalise their business.

### Connecting certain types of ecosystem actors:

The other initiatives try to connect the explicit types of ecosystem actors, for the sake of explicit goals:

- The [Startup Europe Partnership \(SEP\)](#) is a “pan-European innovation platform that helps the best scale-ups grow by linking European start-ups with large and medium corporates who are committing capital, seniority and procurement channels”. Startup Europe Partnership is realised via Scaleup Summits and Investors Forum.
- [Erasmus for Young Entrepreneurs](#) is a cross-border exchange programme which gives new or aspiring entrepreneurs a chance to learn from experienced entrepreneurs running small businesses in other Participating Countries. From the Eastern partner countries, local contact points are [existing](#) only in Moldova and Ukraine.

### Connecting all the possible types of ecosystem actors, to enable their joint endeavours across sectors:

- [Startup Europe](#) is an initiative of the European Commission designed to connect start-ups, investors, accelerators, entrepreneurs, corporate networks, universities and the media through an array of networks. It intends to *connect local start-up ecosystems around Europe* and enhance their capacity to invest in other markets such as Silicon Valley or India.
- [Startup Europe Club](#) is the website established under the initiative of the EC to bring together start-ups, investors and ecosystem builders. The Startup Europe Club is embracing the information from building partnerships to getting start-up investment and funding.

The [Startup Scaleup](#) initiative sets as its main objectives to remove barriers to scaling up in the single market with ecosystem building projects and develop [networking opportunities](#), enhancing the start-up ecosystem – by connecting clusters, people, and local ecosystems across Europe. Through the [One Stop Shop](#), start-ups and ecosystem builders have easy access to all the funding services and other support offered at the EU level.

#### ❖ Potential counterpart(s) in Moldova:

- Ministry of Economy and Infrastructure;
- Virtual IT Park;
- ATIC/Tekwill.



## 6.8 Institutional capacity building

### Gaps

The identified gaps that can be addressed using the EU best practice include:

- Institutional competence building of policymakers in development of the innovation ecosystem, setting up the legal framework for early stage investments, innovation policy tools and financial mechanisms is required.
- Lack of demand for services of innovation infrastructure organisations from start-ups and SMEs because of insufficient targeting their needs by existing services.

### Recommendations

#### ❖ What?

1. Creating a favourable basis for the development of an innovative digital ecosystem in Moldova by enhancing the capacity of policymakers and implementers via:
  - a. mastering REFIT toolbox on better (evidence-based) regulation;
  - b. mastering the “Skills for evidence-informed policymaking: continuous professional development framework” (Joint Research Centre, 2017);
  - c. mastering the registry of policy case studies;
  - d. study visits and internships to the EU policy making organisations and innovation agencies for transfer of approaches to governance, public consultations, decision-making, collaboration with business and academia.
2. Institutional capacity building for existing and proto-digital business associations in EaP region, to make them an integral part of the EU business community and international associations. Develop the capacity of innovation ecosystem actors to develop better services and value propositions for start-ups and SMEs.

#### ❖ Why?

For the government, it is important to build relations with cluster support organisations, accelerators, digital innovation hubs, as independent counterparts. While these new organisational forms perform some functions (play some roles) in the national innovation system, and have responsibilities towards their tenants and partners within the contractual law, it has to be acknowledged that those entities are mostly private entities and the government cannot assign responsibilities to them directly, unless it is agreed mutually on contractual terms linked with financial aids, grants or other means of government support.

Public administrations do not hold the monopoly on the delivery of public services, and can benefit from interaction with other stakeholders, including but not only public-private partnerships. In order to help grow innovation systems, governments should always seek to work with the private sector in the design, implementation, and governance of innovation policy instruments, while avoiding capture. It is critical to involve the private sector in the governance of innovation policies, ensuring the accountability of government policies while having strong processes to avoid capture and the influence of vested interests. Good innovation policy practices can be learned provided that there is a framework for innovation policy cooperation.

The good policy should be evidence informed. Policymakers should have Outcomes Based Accountability. There are proven principles and tools for making regulation more efficient and effective while reducing burden”, embracing [policy planning](#); [impact assessment](#) (including [financial programmes and instruments](#) and [Risk assessment and management](#)); [preparing proposals, implementation and transposition](#); [monitoring](#); [evaluation and fitness check](#); [stakeholder consultations](#), that need to be mastered by policy-makers.

Thus, capacity building of policymakers and implementers is crucial for successful setup and implementation of the innovation policy in collaboration with the stakeholders.

For example, at the national level, development of expert communities is best facilitated by associations that perform targeted networking with the international community. However, such facilitation is a complex job. The difficulty to extract the benefits from international membership is a wide-spread reason for EaP business associations to not consider/quit the memberships. The problems are multifaceted:

- Existing practices of supporting the members in international associations are oriented to mature businesses and the historically inherited traditions of contribution of the business community to the policy framework.





- For most EaP businesses, that are mostly on the early stages of development, the capital accumulation period (orientation on internal pragmatic goals) has still not been transformed into a stage of investments into the external ecosystem.
- Thus, the services that could satisfy individual businesses in the Eastern partner countries are not normally delivered by international associations/there are limits in their delivering to businesses that are not English-speaking/oriented on international markets.
- The work on identification of such services and on developing the proper value proposition thus lays on the executive office of EaP associations that are acting as direct members of international associations. Herewith, the financial and staff availability restrictions as well as the time needed for understanding the problem and building an organisational mechanism are the usual constrains for EaP business associations – especially for those that are recently established around new technological trends.

Hence, specialised institutional and individual capacity building programmes with targeted support to EaP digital business associations is needed, to make them an integral part of the EU business community and international associations. This is a necessary precondition for the dissemination of good business ethics across EaP region as well as for intensive network-building.

❖ Relevant EU organisations and tools (non-exhaustive list):

- [European Digital SME Alliance](#);
- [DIGITALEUROPE](#);
- [Enterprise Europe Network](#);
- [EIT Digital](#);
- [European Maker Week](#);
- [European Startup Initiative](#).

❖ Potential counterpart(s) in Moldova:

- Ministry of Economy and Infrastructure;
- ATIC/Tekwill/iHub;
- Generator Hub;
- DreamUps.

## 6.9 Develop the framework for financial support of digital innovation ecosystem

### Gaps

The identified gaps that can be addressed using the EU best practice include:

- Lack of dedicated mechanisms for financing IT start-ups.
- Lack of access to venture financing and philanthropist investors.
- There is a need for EU support for the development of seed fund (as in Bulgaria and Romania).
- There is a need for harmonisation of the legal framework related to Venture Capital, Seed Capital, Business Angels.

### Recommendations

❖ What?

1. Consider the policy recommendations on the topics 'Digital innovation SME's access to finance' and 'Digitising industry (digital transformation of SMEs in traditional sectors)' that were developed by the EU4Digital.
2. Facilitate stakeholder consultations following the feasibility analysis (undertaken in the country); contribute to design of the operational toolbox of a Fund for support of digital innovation and tech start-ups; facilitate negotiations with potential co-investors into the Fund<sup>8</sup>.
3. Facilitate the development of venture and alternative financing mechanisms for innovation and business development projects based on ICT.

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<sup>8</sup> Currently the establishment of such Fund for support of digital innovation and tech start-ups is considered in Moldova and the various schemes of its operation are studied.





### ❖ Why?

Innovation ecosystem development inevitably needs to be underpinned with financial package. The rules of providing state aid (grants, innovation vouchers) to innovations of start-ups and SMEs as well as to innovation support organisations; the general setting of financial incentives (taxation) and opportunities (loans, guarantees, equity investment opportunities) need to be developed in comparison with competing jurisdictions, but also with account of country budget size and international economic relations. Setting of a non-contradictory system of financial framework for innovations is a big separate task.

### ❖ Relevant EU organisations and tools (non-exhaustive list):

- IFIs (World Bank, EBRD, European Investment Bank).

### ❖ Potential counterpart(s) in Moldova:

- Ministry of Economy and Infrastructure;
- National Bank of Moldova;
- Banks and financial intermediaries.



## Annex 1. List of organisations and experts consulted during verification process

Organisation	Expert
Ministry of Economy and Infrastructure	Head of Information Society and Digital Economy Department
Ministry of Economy and Infrastructure	National HDM Coordinator
Ministry of Education, Culture and Research	Main Consultant of General Education Department
Ministry of Education, Culture and Research	Main Consultant of Information and Communications Technology Service
Moldova Competitiveness Project, Funded by USAID, Sweden and UK aid. Implemented by Chemonics International Inc.	ICT Education and Entrepreneurship Development Manager
Moldovan Association of ICT Companies (ATIC) / Tekwill	Strategic Projects Director
Moldovan Association of ICT Companies (ATIC) / Tekwill	Entrepreneurship Programme Manager
DreamUps	President
DreamUps	Executive Director
iHub	General Manager
XY Accelerator	Chief Executive Officer



## Annex 2. List of stakeholders identified in the digital innovation ecosystem in Moldova

### Institutional framework of the ecosystem

#### Policy-making authorities:

27. Ministry of Economy & Infrastructure;
28. Ministry of Finance;
29. State Chancellery;
30. Ministry of Education, Culture and Research;
31. Ministry of Agriculture, Regional Development and Environment;
32. Ministry of Health, Labour and Social Protection.

#### Public Organisations:

1. MiLab;
2. ODIMM – Organisation for the Development of Small and Medium Enterprises;
3. Research and Education Association Moldova (RENAM);
4. Agency of Public Services;
5. eGovernment Centre;
6. Standardisation Institute of Moldova;
7. State Agency for Intellectual Property (AGEPI);
8. Academy of Sciences;
9. Centre for International Projects;
10. Information Society Development Institute (IDSI);
11. The Moldovan Investment and Export Promotion Organization (MIEPO);
12. Molddata;
13. Syslab;
14. State Tax Service;
15. Academy of Science;
16. Research and Development Agency;
17. The National Regulatory Agency for Electronic Communications and Information Technology (ANRCETI).

### Centres of competence

#### Universities:

1. State University of Moldova;
2. Technical University of Moldova;
3. 'State University for Medicine and Pharmacy' N. Testemiteanu;
4. Academy of Economic Studies (university);
5. State Agrarian University of Moldova;
6. Free International University of Moldova;
7. 'Ion Creanga' State Pedagogical University;
8. Balti State University 'Aleco Russo';
9. Cahul State University 'Bogdan Petriceicu Hasdeu';
10. Tiraspol State University located in Chisinau;
11. State University for on Physical Education and Sport;
12. Trade- cooperative University of Moldova;
13. The Academy of Science University;
14. Slavonic University;
15. Comrat State University;



16. Taraclia State University 'Grigore Tamblak';
17. University of European Studies of Moldova;
18. University 'UNIVERS-MOLDOVA';
19. International Institute for Management 'IMI-NOVA';
20. The Nistean Institute of Economy and Law;
21. The Institute of International Relations 'Perspectiva';
22. Academy of Public Administration;
23. Academy of Music, Theatre and Plastic Arts;
24. 'Academy of Transport, Informatics and Communications';
25. University 'Higher Anthropologic School';
26. Academy 'Ștefan cel Mare' of the Ministry of Internal Affairs of Moldova;
27. The Military Institute of the Military Forces 'Alexandru cel Bun';
28. Institute of International Relations of Moldova.

#### **Scientific and research institutes:**

1. Information Society Development Institute;
2. Institute of Cultural Heritage of the Academy of Sciences of Moldova;
3. National Institute for Economic Research;
4. Institute for Zoology;
5. Institute of Microbiology and Biotechnology;
6. Institute of Mathematics and Computer Science;
7. Institute of History;
8. Ghitu Institute of Electronic Engineering and Nanotechnologies;
9. Institute of Geology and Seismology of Academy of Science of Moldova;
10. The Institute of Genetics, Physiology and Plant Protection of the Moldovan Academy of Sciences;
11. Institute of Physiology and Sanocreatology of the Academy of Sciences of Moldova;
12. Institute of Applied Physics of the Academy of Sciences of Moldova;
13. Institute of Philology of the Academy of Sciences of Moldova;
14. The Institute of Power Engineering of the ASM;
15. Institute of Chemistry of the Academy of Sciences of Moldova;
16. Institute of Ecology and Geography of the Academy of Sciences of Moldova;
17. Institute of Juridical and Political Research of the Academy of Sciences of Moldova;
18. Botanical Garden (Institute) of the ASM;
19. A. Lupan Central Scientific Library.

#### **ICT training centres:**

1. Information and Communication Technologies;
2. Centre in Education 'CTICE';
3. VANAR, Computer training Centre;
4. AiTEC;
5. The Educational Centre PRODIDACTICA;
6. Centre for entrepreneurial education and business support;
7. DNT Educational Centre.

#### **Competence centres:**

1. Tekwill.

#### **Digital innovation hubs:**

1. MiLab;
2. Tekwill;
3. iHub;



## 4. Generator Hub.

### Framework for launching and development of businesses

#### High-tech parks:

1. The Academic-Technological Park 'Academica';
2. The 'Micronanoteh' scientific and technological park;
3. Science and Technology Park INAGRO.

#### Technology transfer offices

1. The agency for innovation and technology transfer.

#### Fablabs:

1. Atelier 99 FabLab Moldova;
2. <http://youth.md/tag/fablab/>;
3. Fablab Chisinau.

#### Incubators:

1. Innovation Incubator 'Inovatorul' (as part of STP 'Academica');
2. Innovation Incubator 'Nord';
3. Innovation Incubator 'Innocenter';
4. Innovation Incubator 'Inventica-USM';
5. Innovation Incubator 'Politehnica';
6. Innovation Incubator 'Antreprenorul Inovativ';
7. Moldovan-Lithuanian Innovation Incubator 'Media Garaj';
8. Innovation Incubator 'IT4BA';
9. Incubatorul de Afaceri din Soroca;
10. Business Incubator Stefan Voda;
11. Business Incubator Leova;
12. Business Incubator Rezina;
13. Business Incubator Sangerei;
14. Business Incubator Ceadir-Lunga;
15. Business Incubator Nisporeni;
16. Business Incubator Calarasi;
17. IA 'Casa Antreprenoriatului' (Ungheni);
18. IA 'Impuls' (Bălți);
19. Business Incubator Cimisia.

#### Accelerators:

1. Dreamups;
2. Business Innovation Lab;
3. Moldova Platform Empowering Women in Technology (Girls Go IT);
4. XY Accelerator powered by Tekwill.

#### Co-working spaces:

1. Tekwill;
2. Generator Hub;
3. 404 Not Found;
4. iHub;
5. Digital Park.

#### Crowdfunding Platforms:

1. Moldova Social Innovation Lab (MiLab).

#### Business Angels:

1. Alexander Minza;





2. Veceslav Caburgan;
3. Traian Chivriga;
4. Andrian Valeanu.

#### **Network of Business Angels:**

1. <https://www.businessangels.md/>.

#### **Venture Capital:**

1. Credits Guaranty Fund.

#### **Corporates:**

1. Orange Moldova;
2. Moldcell;
3. Moldtelecom;
4. Unite;
5. Endava;
6. SLAVANS-GRAFICA S.R.L./DEEPLACE;
7. S.C. DAAC SYSTEM INTEGRATOR S.R.L.;
8. RITLABS S.R.L.;
9. FORS COMPUTER S.R.L.;
10. S&T Mold SRL;
11. Arax-Impex SRL;
12. Bass System;
13. Starnet;
14. Accent Electronic;
15. Sun Communications;
16. Dekart;
17. S.C. ALFASOFT S.R.L.;
18. Allied Testing;
19. Bina Systems;
20. Microsoft;
21. NetInfo SRL;
22. Q Systems;
23. Simpals;
24. XOR;
25. Zerocode;
26. Ellation;
27. Mixbooks;
28. Fusionworks/ AG COMPUTERS;
29. Pentalog;
30. Code Factory.

#### **Influencers:**

1. Universul Dezvoltarii S.R.L.;
2. Centre for Special telecommunications;
3. State Tax Service;
4. Granat.

#### **Networking and communities-building**

##### **Professional associations:**

1. National Association of Young Managers;
2. National Association of Professional Translators;



3. The Association of Professional Accountants and Auditors of the Republic of Moldova (ACAP RM).

**Business associations:**

1. Moldovan Association of Private ICT Companies;
2. Chamber of Commerce and Industry of the Republic of Moldova;
3. AMCHAM Moldova The American Chamber of Commerce in Moldova;
4. Business People Association of Moldova;
5. Small Business Association;
6. European Business Association;
7. National Association of Tourism Agencies;
8. The foreign small enterprise alliance;
9. Association for the development of electronic communications and innovative technologies.



### Annex 3. Digital communities formed around associations

Digital community	Organisational form <sup>9</sup>	Approximate size	Typical activities	Joint results published as a joint achievement
<a href="#">ATIC</a> Moldovan Association of Information and Communications Technology Companies	Association	About 65 member companies (more than 3000 followers on Facebook)	Moldovan Association of ICT Companies promotes the development of the ICT sector in the Republic of Moldova. This is done in line with various activities such as: <ul style="list-style-type: none"> <li>• Lobby and Advocacy initiatives for continuous development of the ICT Sector (e.g. Law on IT Parks, Data Protection, Educational Code, Labour Code etc.);</li> <li>• ICT project implementation (e.g. Tekwill). Workforce interventions;</li> <li>• International and export promotion activities;</li> <li>• Improving and determining a better fiscal environment;</li> <li>• Bringing the sector players together;</li> <li>• Intellectual property rights;</li> <li>• Training and excellence support for the companies;</li> <li>• Expert Committees (Legal, Fiscal, HR&amp;Education, Fintech, SmartCity, Hardware).</li> </ul>	Tekwill
<a href="#">ACETI</a> Association for the Development of Electronic Communications and Innovative Technologies	Association	More than 20 member companies; 666 Facebook followers	An initiative group brought together to create an atmosphere of efficient development of the fields of innovative technologies and electronic communications. The Association for the Development of Electronic Communications and Information Technologies was launched on 13 September 2019, on the occasion of the International Day of Programmers. Being a public association, it represents a non-governmental, non-profit, apolitical union. It is constituted by the free manifestation of the will of the associated persons, in order to achieve common goals proposed. The following individuals can become members: entrepreneurs in the field of IT, teaching and scientific-teaching staff, technical and university bodies, IT experts, students, development partners and others willing to contribute to the development of the mentioned fields. Typical activities: <ul style="list-style-type: none"> <li>• promotion innovations in engineering and digital technologies;</li> <li>• collaboration between the natural and legal persons involved in the field;</li> <li>• maintaining interaction between educational institutions of different levels;</li> <li>• growth of interest in studies, employment and business start-up.</li> </ul>	Association for the Development of Electronic Communications and Innovative Technologies 666 Facebook followers
<a href="#">COR</a> Association of Creative Industry Companies in Moldova	Association	About 30 member companies	Support and represent the companies and NGO-s of the creative industries sector in Moldova by ensuring their growth, education and connection at the local and international levels.	

<sup>9</sup> Registered legal entity; project/programme/initiative operated by a legal entity; social community, other (please specify)



## Annex 4. Digital communities formed around co-working spaces

Digital community	Organisational form <sup>10</sup>	Approximate size	Types of stakeholders in the community	Membership type	Typical activities	Joint results published as a joint achievement
<a href="#">Tekwill</a>	ATIC project and TUM (building owned by Public Institution)	About 20 employees, 30,000 community access (13,000 followers on Facebook)	IT businesses & professionals	Mixed (Individual and institutional)	Coworking, Accelerators, Trainings, networking.	Start-up Academy, XY Accelerator, Startup Moldova, Tekwill Travelers, Tekwill Ambassadors Community/Scholarships programmes, Startup Weekend, SeedStars, etc.
<a href="#">iHub</a>	Private Institution Seed Forum Moldova	About 4 people, 150 co-workers, approximately, 2,000 community size	IT businesses & professionals	Mixed (Individual and institutional)	Coworking, Accelerators, Trainings, networking.	Tech Pizza – UI/UX How to be creative effectively, Mentor Hours, Office Hours, Seed Forum Global etc.
<a href="#">Generator Hub</a>	DNT Project	About 10	IT Communities & professionals	Mixed (Individual and institutional)	Co-working, specialised development programmes, including events, workshops with opinion leaders from various fields, “inspirational” seminars, business and technical training programmes.	Generator Hackathon; IoT (Internet of Things) Hackathon; The 5th Power – Media Hackathon – two editions; KidsHub; Startup Europe Week (co-organisators); Game Factory (co-organisators); Eco-hackathon.
<a href="#">404 Moldova</a>	Workplace and office	About 10	IT Communities & professionals	Mixed (Individual and institutional)	Co-working	Co-working
<a href="#">Armenească 13A</a>	Workplace and office	About 10	IT Communities & professionals	Mixed (Individual and institutional)	Co-working	Co-working
<a href="#">Digital Park Starnet</a>	Starnet project	More than 20	IT Communities & professionals	Mixed (Individual and institutional)	Co-working/Offices/Events	Co-working

<sup>10</sup> Registered legal entity; project/programme/initiative operated by a legal entity; social community, other (please specify)



### Annex 5. Digital communities uniting similar type of actors

Digital community	Organisational form <sup>11</sup>	Approximate size	Types of stakeholders in the community	Membership type	Typical activities	Joint results published as a joint achievement
<a href="#">DeveloperMD</a>	Facebook Community	1,950 Facebook followers	IT professionals+	<a href="#">Individual</a>	DeveloperMD is a Moldavian developer community that unites IT specialists from different domains from all over the country. DeveloperMD Community is the place where discuss IT-related topics are discussed and experience is shared online and offline during the events. Typical activities: #ITCoffee; DeveloperMD Community Offlines; DeveloperMD Events Calendar.	Moldova Developer Conference
<a href="#">DreamUps</a>	Private Institution (non-profit)	About 10	IT professionals+	Mixed (Individual and institutional)	Trainings, Networking Events, Educational programmes, Hackathons.	Upcelerator.md, Start-up Grind (Global community) 1 month, UpFactory Acceleration programme, Founder Institute Accelerator (from Silicon Valley)
<a href="#">FabLab communities</a> <a href="#">YouthMaker Club</a> , <a href="#">Atelier 99</a> , <a href="#">MicroLab</a>	PPP	2,425 Facebook followers	Robotics enthusiasts	Individual	Manufacturing & Robotics Lab	International Conference on Electromechanical and Energy Systems
<a href="#">STEP IT Academy</a>	Training/educational organisation	About 20 in MD	IT Professionals	Student, Teacher	Professional education & courses; Junior Step It Academy	IT courses for professionals
<a href="#">Business Angels</a>	group	About 10	Business professionals	Individual	Funding, Mentorship, Networking Spaces, Events, Legal Support.	Early stage investment
<a href="#">XY Partners</a>	LLC	About 10	-	-	Information technology consultancy, information technology services, Business and management consultancy,	XY Accelerator powered by Tekwill TechVillage

<sup>11</sup> Registered legal entity; project/programme/initiative operated by a legal entity; social community, other (please specify).





Digital community	Organisational form <sup>11</sup>	Approximate size	Types of stakeholders in the community	Membership type	Typical activities	Joint results published as a joint achievement
					Advertising, Market research and public opinion polling.	
<a href="#">DNT</a>	Association (NGO)	About 10	IT professionals	Individual	Trainings	Generator Hub, trainings, Cisco Networking Academy
<a href="#">BEST Chisinau</a>	Non-profit, non-governmental and non-representative organisation	Thousands of students	Students	Individual	BEST – Chisinau is a member organisation of BEST Board of European Students of Technology. Since its founding it has developed hundreds and thousands of students from Technical University of Moldova and from other universities where BEST is present.	BEST Chisinau has organised over 80 successful local and international events and is constantly improving.
<a href="#">Technovation Girls Moldova</a>	Community	967 subscribers		Individual	The Moldova chapter of Technovation Girls, the global programme for girls to solve problems using technology.	
<a href="#">TECH Women Moldova</a>	Community in a social network Individuals	1,358 subscribers		Individual	TECH Women, an initiative dedicated to attracting, supporting and promoting women in the IT field.	
<a href="#">Tekwill Ambassadors - Mentors' Community Buildup - MentorMe</a>	Community	15,267 subscribers		Individual	The MentorMe team has been accumulating experience since the beginning of 2018, offering inspirational interviews to Moldavian students, entrepreneurs and diaspora professionals on the MentorMe Facebook page.	Developing the MentorMe Show via Facebook Lives about inspirational and successful professionals from all over the world.



## Annex 6. Thematic digital communities in Moldova

Thematic digital community	Organisational form	Individual or institutional membership	Description of goals, composition, activities
<a href="#">StartUp Moldova</a>	Community	Individual	StartUp Moldova group was created to bring together start-upers, businessmen, investors, analysts and IT-specialists into a local Moldovan community. With the help of this community, successful Moldovan start-ups tell about themselves and share the secrets of success, beginner start-ups find their business “angels” and team, and businessmen are able to find a project for highly profitable venture investments. The community operates with information support <a href="http://www.allmoldova.com">http://www.allmoldova.com</a> Community Technical Advisor <a href="http://fruitware.ru">http://fruitware.ru</a>
<a href="#">Blockchain Association of Moldova</a>	Community	Individual	The Blockchain Association of Moldova (BAM) has been the voice of Blockchain technology in Moldova since 2017. They speak for an industry that aims to touch the daily lives of Moldovans in every corner of the country — by providing jobs, career opportunities, and by investing in the communities they serve. BAM is a not-for-profit, industry-funded association representing one of the fastest growing industries on the planet. BAM is a strong advocate for Blockchain Technology in Moldova and works with all levels of government and other stakeholders to support employment growth and career opportunities in Blockchain technology and crypto-economy, to promote and sustain community development initiatives from coast-to-coast, and to enhance consumer safety and industry competitiveness. BAM also provides its members with a full range of services and programmes including education and training, benchmarking and best practices, networking, advocacy, and industry information.
<a href="#">Moldova Python Community</a>	Community	Individual	Organising meetings every three months and a PyCon conference for the first time in Moldova. They are already organising the first python meet-up ( <a href="https://www.facebook.com/events/413519479333355/">https://www.facebook.com/events/413519479333355/</a> ). At each meet-up a specific topic will be addressed and local speakers with tangent presentations on the given topic will be invited, for example: Scalable applications, Machine learning, Data science, IoT in Python, System Administration. To organise the conference, they will partner with the Python Software Foundation and bring in international speakers.
<a href="#">OpenSource community</a>	Community	Individual	The concept is straightforward, to be able to create a healthy IT climate in Moldova, lack of good IT specialists should be covered. To achieve that OpenSource community wants to involve them in top companies by doing OpenSource contribution.
<a href="#">JavaMD Community</a>	Community	Individual	JavaMD is a community for Moldova Java developers to share their knowledge and provide help for beginners.
<a href="#">Digital Communication Network</a>	Non-profit	Individual	DigiComNet is a global not-for-profit communication association that facilitates and accelerates collaboration of software developers, journalists, civic entrepreneurs, members of the business community, governments and other professionals around the ideas of digital innovation, entrepreneurship and open Internet. The basic principle of the association is that digital information technology is the future and knowledge and practice gaps need to be bridged, in order to advance quicker towards that future, without leaving people, professional fields or countries behind. Typical activities: Digital Communication Consulting, Training, Media event management, Conference, internet, journalism, social networks, new media. Deliverable example: RockIT Academia – Influential Hub.



Thematic digital community	Organisational form	Individual or institutional membership	Description of goals, composition, activities
<a href="#">Drupal Moldova</a>	NGO (Association)	Individual	<p>Drupal Moldova Association is a Not-for-Profit Organisation that started on 22 May 2013 with the main purposes of promoting the Drupal Content Management System and Open Source technologies in general, on both local and global scales; initiating and organising Drupal related events; supporting the local Drupal Community; promoting the Moldovan IT and Drupal communities globally, building strong partnerships with IT companies, public institutions, and other NGOs.</p> <p>Typical activities: meetups, trainings, camps.</p> <p>Deliverable examples: <a href="http://drupalmoldova.org/projects/">http://drupalmoldova.org/projects/</a></p>
<a href="#">MicroLab (UTM)</a>	NGO	Individual	<p>The Public Association 'The Micro Lab Engineering Club' is a non-governmental, non-commercial, apolitical organisation, founded on 20 September 2011.</p> <p>The Micro Lab Engineering Club is oriented towards organising an environment of interest for designing and making various kits in the field of Dedicated Electronic Systems, training and educating specialists at the same time.</p> <p>In this sense the Club:</p> <ul style="list-style-type: none"> <li>• encourages students to participate in events and activities related to microcontroller applications such as student competitions, specialised exhibitions;</li> <li>• coordinates students in intra and extra-university competitions at national and international level;</li> <li>• provides assistance and coordinates young engineers in choosing useful technical solutions;</li> <li>• stimulates and supports the development of real practical applications and resources for innovative projects;</li> <li>• tends to obtain productive feedback, in exchange for practical knowledge and specific moments of MCU applications;</li> <li>• informs and guides young engineers towards areas of interest;</li> <li>• creates and develops suitable environment for implementing the knowledge of young beginners;</li> <li>• creates a small community that involves students with shared visions and interests;</li> <li>• initiates internal projects in the field of Microcontroller Applications, in which young engineers can be recruited to accumulate experience in the field;</li> <li>• tends to obtain a vast informative support of all the technical innovations for all users.</li> </ul> <p>A very important moment for the practical implementation of the knowledge accumulated from the university banks is that individual projects included in the university curricula and projects for student competitions are implemented within the club. At the next steps the Club will initiate larger projects such as Bot Colony, Smart House or Electro Car, where young engineers will be able to work extracurricular hours or during summer practice.</p> <p>The Micro Lab Engineering Club is seeking contacts with some industrial companies to accommodate the design methods and principles according to global standards. Productive connections will contribute to forming links of interest for employers of large industrial companies and young engineers. This moment will certainly be an incentive for beginners to accumulate experience in the field, and as a result will attract investments and sponsorships received from abroad, necessary for the purchase of the equipment and electronic components for the laboratory setup.</p> <p>The Public Association 'The Micro Lab Engineering Club' is always open for new contacts and recruitment of new members within it.</p>



Thematic digital community	Organisational form	Individual or institutional membership	Description of goals, composition, activities
<a href="#">Moldova Data Science Learning Circle</a>	Community in a social network Individuals	Individual	<p>Deliverable example: <a href="#">Moldova Data Science Community Manifesto</a></p> <p>The immediate goal of the Moldova Data Science Community is to organise meetings (meet-ups) of people interested in such areas as: Data Science, Machine Learning/Deep Learning and, accordingly, AI, natural language processing (NLP), work with large volumes of data/at high speed (Big data/Fast data), data visualisation and other. The idea that they are promoting is the creation of a group of enthusiasts in Data Science, who throughout the events will share their experiences using various tools, algorithms and data analysis and processing techniques.</p> <p>Therefore, as a format for community meetings, they chose the Learning Circle model (<a href="https://en.wikipedia.org/wiki/Learning_circle">https://en.wikipedia.org/wiki/Learning_circle</a>), in which all members of the group are actively involved in exchange of knowledge/experience through presentations, workshops and technical discourses that will facilitate the development of each member as a professional in the field of Data Science.</p> <p>It is not necessary that community members are already familiar with the field of Data Science, but an important condition is the desire to learn. Learning Circle model involves the active involvement of participants in the educational process, respectively, each member of the community has the opportunity to choose and prepare presentations, as well as get involved in discussions of the presented materials. We believe that this way the field of Data Science can be studied faster and easier. Since the field of Data Science is quite voluminous, with many concepts and various algorithms, before each meeting Moldova Data Science Community will publish a small glossary of technical terms on their page to provide a basic level of knowledge for all participants – this will facilitate both the process of presenting information to presenters and the process of understanding to listeners.</p> <p>Typical activities: exchange of information; promotion of events; seeking advice or contacts etc.</p>
<a href="#">Working Group on Open Government</a>	Under Open Government institute and E-Government Centre		<p>The group acts as a Coordination Mechanism of the Open Government Partnership for Moldova, being involved at all stages of co-creation, implementation and monitoring and evaluation of the National Action Plan on Open Government years 2016-2017.</p> <p>The coordinating body will bring representatives of public, private sectors, civil society representatives, academia, individual experts, etc. It will have regular face-to-face meetings, as well as will interact online on a regular basis. The future Working Group will bring up to seven representatives committed to the principles of openness, transparency, citizen engagement and accountability, who are going to be selected through an open call process by e-Government Centre and Open Government Institute, the two founding institutions of the Working Group.</p> <p>The responsibilities of the members of the Working Group include but are not limited to:</p> <ul style="list-style-type: none"> <li>• Perform the national governance role for the Open Government initiative in the context of co-creation of NAPOG 2016-2017 and play an active role in the process by chairing meetings, organising consultative events, raising awareness among the community at large, and mobilise participation of all relevant partners, etc.</li> <li>• Represent the concerns and interests of both the Government and civil society in the National Action Plan on Open Government related processes as well as to identify and flag any challenges that might occur during the implementation process providing guidance and expertise.</li> <li>• Engage strategically at the national level, exercising good judgement and engaging effectively with senior government officials and civil society representatives.</li> <li>• Make the results of all meetings public/available online.</li> </ul>



Thematic digital community	Organisational form	Individual or institutional membership	Description of goals, composition, activities
			<ul style="list-style-type: none"><li>• Prepare and share updates on the processes in Moldova with the OGP community.</li><li>• Be part of current OGP working groups.</li><li>• Work closely with the IRM researcher during the evaluation of 2016-2017 NAP.</li></ul>
<a href="#">Social media in culise</a> (social media behind the scenes)	Community		The largest social media marketing community in Moldova.





## Annex 7. Selected conferences and events as activities targeting at the development of a thematic digital community (indicative, non-exhaustive list)

Activity targeting the development of a thematic digital community	Contact	References	Description of goals, composition, activities
Startup Weekend Moldova	Maria Nemciuc	Tekwill <a href="https://www.facebook.com/swmoldova">https://www.facebook.com/swmoldova</a>	Startup Weekend Moldova, Chisinau, Moldova.
Product Management conference	Vadim Jeleascov	Tekwill	Product Management Conference.
PPC DAY 21 November 2020, Imaginarium	Tudor Placinta	Tekwill <a href="http://ppcday.md">http://ppcday.md</a>	Second edition of the PPC DAY conference on clicks, ads and performance, where they intend to bring eight local and international experts to talk for one day about PPC ads (Google, Facebook, Instagram, Yandex) through case studies, examples, figures and results for the audience of over 300 entrepreneurs and specialists and marketing managers or freelancers.
Engineering Talks	Papaluta Vasile	Tekwill <a href="https://www.facebook.com/events/759705381171465/">https://www.facebook.com/events/759705381171465/</a>	Three speakers from different fields are invited to share their experience in this field, offering cases that have trained them as professionals in the given field, inspiring young students to embrace the given field.
Micro Lab Open Day	Papaluta Vasile	Tekwill <a href="https://www.facebook.com/events/747642425664490/">https://www.facebook.com/events/747642425664490/</a>	Presentation of the successes achieved by the participants in Tekwill projects.
Ruby Wine 2.0	Tekwill	Tekwill <a href="https://www.facebook.com/rubywineruby/">https://www.facebook.com/rubywineruby/</a> <a href="https://www.rubywine.org/">https://www.rubywine.org/</a>	Every year there is a conference in Chisinau dedicated to the Ruby programming language. Speakers from Moldova as well as from Eastern Europe come there. The conference brings together over 200 participants (Ruby developers, IT professionals and students interested in Ruby programming language) from various countries in Europe. In carrying out this project they collaborate with Ruby Meditation, an organisation in Ukraine that helps attract IT professionals and enthusiastic students from Ukraine, Belarus and Poland. One of the goals is to encourage students to start studying Ruby programming language (for students they have a separate section, a panel discussion and introductory presentations).



Activity targeting the development of a thematic digital community	Contact	References	Description of goals, composition, activities
Programmer's Day	Anisoara-Ionela Plesca	Tekwill	Technical worksheets on different topics in parallel tracks, which will be held by UTM graduates currently working abroad and/or in large companies. One of our goals is to encourage students to start studying different languages/frameworks/fields that are not taught at university, and to participate in international programmes with employment potential.
Ignite Chisinau: Terra 112 14 March	Irina Grisca	Tekwill	<p>Ignite is an event that takes place in several cities of the world and intends to "put the public". Its specificity consists of dynamic and carefully timed presentations, making available to the speakers 20 slides that change at intervals of 15 seconds. The challenge is that each presentation lasts no longer and no less than five minutes. At 'Ignite Chisinau: Terra 112', they intend to bring 15 speakers on stage to talk about ecology and sustainability, addressing the following topics:</p> <ul style="list-style-type: none"> <li>• electric cars;</li> <li>• air quality in Chisinau;</li> <li>• conscious shopping;</li> <li>• the process and the recycling points in Chisinau;</li> <li>• how innovation and ecology go hand in hand.</li> </ul>
Future Energy Leaders National Conference	Razvan Razlovan	Tekwill <a href="https://web.facebook.com/events/351041549101797/">https://web.facebook.com/events/351041549101797/</a>	The future of sustainable development in the energy field.
FinTech Moldova 72 Facebook followers		Tekwill <a href="https://fintechmoldova.co/">https://fintechmoldova.co/</a> <a href="https://www.facebook.com/fintech.md/">https://www.facebook.com/fintech.md/</a>	<p>FinTech Moldova. These are technological projects in the field of financial services. There are two main types of products based on FinTech. The first one, introduced to the market long time ago, provides software and services to financial services, i.e. uses the B2B model. The second one, which has been actively developing recently, is focused on the end consumer, that is, it covers the B2C market and seeks to fulfil the extremely ambitious task of competing with traditional suppliers.</p>
Rockit Conference	Artur Gurau	<a href="https://www.facebook.com/groups/rockitmoldova/">https://www.facebook.com/groups/rockitmoldova/</a> <a href="https://rockit.digital/">https://rockit.digital/</a>	Rockit Conference, one of the savviest regional conferences, takes off at full speed to supercharge one's brain with the best toolkit, insights and solutions to the new arising difficulties brought by the shifts in the digital environment.



**Annex 8. Selected trainings, competitions and hackathons as activities targeting at the development of a thematic digital community (indicative, non-exhaustive list)**

Activity targeting the development of a thematic digital community	Contact	References	Description of goals, composition, activities
Tech Women Program	Natalia Ursu	Tekwill <a href="https://www.fac ebook.com/TechWomenMoldova">https://www.fac ebook.com/TechWomenMoldova</a>	Developing programmes that meet the needs of girls and women in the ICT industry, but also those who want a career in IT and are just beginning. The programmes will focus on topics such as: career advancement, leadership, and improvement of technical knowledge. The programme will include informal monthly events, conferences, socialising sessions, career guidance, mentoring, exchange of experience and other forms of meetings open to all those who wish to know, explore and capitalise on professional affirmation opportunities in the IT field.
EUROAGROMARKET	Tudor Ursachi	Tekwill <a href="https://drive.google.com/open?id=1WIF52NmAtIEcxscMunVIJZPo-XyHz-N5">https://drive.google.com/open?id=1WIF52NmAtIEcxscMunVIJZPo-XyHz-N5</a>	Young people who benefit from government programmes and launch businesses in agriculture often do not have the experience or skills needed to evaluate the possibilities of automation and/or digitisation of certain internal processes, which would allow them to streamline their costs or improve the quality of the products and services delivered. The project aims to train at least 50 entrepreneurs in the agricultural sector, as well as adjacent, on the possibilities of automating certain production processes, but also to connect these entrepreneurs to IT service providers who could provide them with innovative digitalisation opportunities, which would allow them to streamline their production costs and increase their competitiveness vis-à-vis their external competitors. Entrepreneurs will benefit from trainings and practical sessions in which they will be able to develop practical concepts and projects to digitise the economic sector in which they operate, as well as innovative concept of developing their own businesses through the information technologies. Sessions will also be organised with the invitation of IT specialists who will discuss the problems and ideas of the entrepreneurs, offering them viable technical proposals and solutions (including indicative costing). All the activities of the project will be recorded and placed on available online resources to be accessed by people who were not present at the trainings.
The future of machine vision training for UTM students	Viorica Sudacevschi	Tekwill <a href="https://drive.google.com/open?id=1nJw08G2NhfAzzEJwzl8vIhevCdmjsEQ4">https://drive.google.com/open?id=1nJw08G2NhfAzzEJwzl8vIhevCdmjsEQ4</a>	Within the disciplines of the curricula of the Faculty of Computers, Informatics and Microelectronics, several disciplines are studied which include the aspect of artificial vision, namely, within the disciplines Artificial Intelligence, Applications of Robotic Systems, Robotics Engineering, etc. The training topics are: processing and recognizing images (applications in Python and Java), eight academic hours; management recognition techniques (.NET applications for video stream processing), eight academic hours. Also, a visit to the 'Machine Vision' laboratory at the University of Stefan cel Mare Suceava, Romania is planned for teachers and a group of students.



Activity targeting the development of a thematic digital community	Contact	References	Description of goals, composition, activities
European summer course 1-9 July 2020, Front End	Liniuc Cristina	Tekwill <a href="https://www.fac ebook.com/BEST.Chisinau/">https://www.fac ebook.com/BEST.Chisinau/</a>	<p>The European Summer Course 2020 is a 10-day course, organised annually by the Public Association Local Group BEST Chisinau for students with a technical profile in Europe, in order to promote the culture of volunteering, to provide complementary education for future engineers and to make intercultural exchange for youth. The participants will be selected through the BEST international site best.eu.org according to the following criteria: motivation, field of activity, interest in the topic.</p> <p>The 25 young people selected will study the topic proposed by us that will include both theoretical hours (research, problematisation, concept), as well as practical work, taught by professional teachers and tutors. In addition to the basic activity, to support and strengthen the accumulated knowledge, young people will have study visits to companies, trips and fun activities designed to motivate students.</p> <p>The course provides participants with new knowledge and skills in a field through the entire process of carrying out a project.</p> <p>The participants will explore the tourism potential of the country, the space and the local traditions, they will interact with the people, we will benefit from their originality and diversity in identifying and solving problems. Thus, in addition to the consistent information from the course, young people will make a real physical product, but will also discover a new side of our country through the traditions, places and people they will meet during this period.</p>
Django Girls	Gleb Tocarenco	Tekwill <a href="https://djangogirls.org/chisinau/">https://djangogirls.org/chisinau/</a>	Django Girls (djangogirls.org) is an international organisation that offers teaching materials, promotional materials, IT platform for organising web programming trainings for women worldwide. The syllabus contains topics such as: web, HTML & CSS, Python, Django. During the training of each group of participants a mentor is assigned who helps with the passage of the course. The participants aim to initiate in the IT field, awakening the interest and passion for the field, finding out the opportunities of this field in the Republic of Moldova. The mentors, in turn, will ensure the connection between the participants and the new field embraced.
Building BIM skills (Business Intelligence Model)	Vadim Turcan	Tekwill <a href="https://www.fac ebook.com/tinc o.utm/">https://www.fac ebook.com/tinc o.utm/</a>	Skills building courses
Online marketing course for start-ups	Oxana Camerzan	Tekwill	Half-year course for young entrepreneurs. Two groups of 25 people each. Meetings two days a month. Start-ups like to use exercises when training and even working directly on the computer.



Activity targeting the development of a thematic digital community	Contact	References	Description of goals, composition, activities
Hackathon – IT solutions for social problems	Munteanu Silvia	Tekwill <a href="https://utm-my.sharepoint.com/:p/g/personal/silvia_munteanu_calc_utm_md/EUFPGeEw3R5CtY7Wff5LtToB2s1QR5BuVILf83z5W98MWA?e=PPGpRn">https://utm-my.sharepoint.com/:p/g/personal/silvia_munteanu_calc_utm_md/EUFPGeEw3R5CtY7Wff5LtToB2s1QR5BuVILf83z5W98MWA?e=PPGpRn</a>	<p>The basic concept of the project is to involve young people in the process of analysis and identification of the most current problems in the social field and to propose models and real methods of solving them using ICT technologies. Participants in the competition will register online, forming teams of four-five people. Teams will be familiar with the requirements and purpose of the project. For example, problems related to:</p> <ul style="list-style-type: none"> <li>• problems and solutions in smart cities: energy consumption, data security, traffic safety, intelligent parking, etc.;</li> <li>• low rate of inclusion of people with disabilities;</li> <li>• dependence on the virtual environment of young people and lack of communication.</li> </ul> <p>Participants are given 24 hours to identify and solve the social problem. After that they present the obtained results. A number of software products and hardware devices (Raspberry Pi and sensor sets) can be set up to meet the specified objectives. Each team will prepare a PowerPoint presentation that will show all the issues addressed in the course of solving the selected problem.</p>
Technovation Girls Moldova	Livia Turcanu	Tekwill <a href="https://technovationchallenge.org/">https://technovationchallenge.org/</a>	<p>Technovation Girls is a global competition where teams of girls aged 10-18 develop mobile applications to solve problems in their locality. Teams are assisted by mentors who are usually high school teachers in which they study, parents, volunteers, etc. At the same time, a team of technical mentors is available to participants and guides them on the programming of applications. All teams have four months to complete the curriculum developed for this competition. It includes the following modules: identifying social problems in the community, researching the problem and identifying solutions, creating a business plan for the technological product, branding and visual identity, pitching and presenting the product. The deadline for global application submission was 20 April 2020. In May the regional judging events are planned, and within them the teams of girls came to Chisinau to present the application in front of a jury. In June and July there is a global jury, and in August the finalists of the competition are announced. The teams that reach the final participate in the World Pitch Summit.</p>
European BEST Engineering Competition 2019 (local stage Chisinau)	Irina Potinga	Tekwill <a href="https://www.facebook.com/EBEC.Chisinau/">https://www.facebook.com/EBEC.Chisinau/</a>	<p>EBEC (European BEST Engineering Competition) is the largest engineering competition for students in Europe. It is designed on three levels (local, regional and final) and is based on two types of tests:</p> <ul style="list-style-type: none"> <li>• Team-Design: a practical test in which the participating teams, having certain material resources at their disposal, have to sketch, build and present a prototype that will meet certain requirements established initially, all within a limited period.</li> <li>• Case-Study: is a theoretical test in which the participating teams, having presented certain situations in the field of engineering, economic or social field, have to analyse, conceive and present the most feasible solutions, all of them, also, within a limited range of time.</li> </ul>





## Annex 9. Action Plan of Tekwill related to digital innovation ecosystem development (up to 2020)

### Activity D1. Support the Development of the Startup Ecosystem

#### Expected results:

ER 3.1. ICT entrepreneurship culture and community are strengthened.

ER 3.2. Acceleration facilities and programmes for technology start-ups are created.

ER 3.3. Start-ups connected to the international markets.

Indicator 15. Persons participating in entrepreneurship related activities.

Indicator 16. Entrepreneurship development initiatives completed.

Indicator 17. Companies/teams and products developed with USG assistance.

Indicator 18. Number of start-ups connected to the international markets.

Indicator 19. Value non-USG funds raised by the start-ups, as a result of participating in activities supported by ICTEC project.

#### Milestones:

##### *Milestone 1. Develop Startup Moldova concept*

With the recent ATIC restructuring, ATIC will be focused more on members' needs which encounter the biggest IT and C companies in Moldova who afford to fight for legislation and regulation issues. Start-ups do not either have time, or knowledge for any kind of participation in legislative modifications. Their main needs comprise of:

- favourable regulation and taxes;
- easier access to talents;
- better access to financing;
- education promoting entrepreneurship and tech skills;
- start-up friendly infrastructure;
- help in exposure on global market;
- validation support.

Tekwill has been one of the few entities supporting technological only start-ups in most of their above-mentioned needs over the past three years, however Tekwill has never had the chance to invest into start-ups due to the operation and statutory model. Some of the existing financing programmes in Moldova, among which ODIMM or CEP II as most relevant, hardly cover any tech investment, just because of the difficulty of the sector. A separate Startup Moldova concept either within ATIC, Tekwill or any other feasible platform will be able to provide capacity and cooperate both to Government organisations, regional centres and stand-alone business only tech related.

The purpose of this component is to ensure instigation of the entrepreneurship community and development of technology start-ups and products. Startup Moldova will be built upon the success of fellow programmes that happened in other countries. The best example is Startup Chile. The programme launched in 2010 and accelerated more than 1,600 start-ups with a combined 2018 valuation at \$1.4 billion. Startup Moldova will seek to emulate the results of Startup Chile and boost significantly the number of successful start-ups incubated and accelerated in Moldova. Apart from delivering value to the ICT industry, start-ups have a direct impact on the cities they make their homes. Employment opportunities for youth increases and new employment patterns arise. Entrepreneurship will also give local youth new opportunities to pursue and retain talent in country.

##### *Milestone 2. Develop premises for seed funding opportunities – for tech only start-ups*

As previously mentioned, the start-ups do not require grants or loans, the typical mechanisms working for them are seed funding/venture funding and other funding opportunities. Tekwill team has raised this issue with the start-ups, with the business angels' community and with operating models of funding/loans in Moldova. None of them are suitable for the start-ups, therefore in most successful cases, the start-ups will seek funding and find it outside Moldova (Romania, UK, USA, Belgium as successful examples in the past).

Tekwill proposes to revise the existing legislation, and to facilitate the creation of the first mini seed fund in collaboration with other international financing organisations, but via a viable model possible to grow beyond Moldovan borders. The platform will clearly define each partner role, seek new investment partners, however, will not invest directly any money on any equity base functions.



Tekwill project will serve as a facilitator in attracting and channelling other's resources, creating connections, financing programmes that can build the capacity of attracting seed funding to the start-ups. It will not act as a seed fund and will not benefit of any equity in the start-ups. The team will assist to attract seed funding, thus provide a whole screening and necessary spectre of activities by need:

- business, marketing, tech, financial consulting;
- mentorship;
- acceleration programme (3-6 months programme with international expertise based on previous track record of the team);
- connection to international markets;
- connection to investors.

### *Milestone 3: Bring foreign know-how to local entrepreneurs with 'In Residents' Program*

In Residents Program is a programme that intends to bring international professionals who are interested to come over for approximately one month in order to mentor, interact and invest in various start-ups and communities. Foreign mentors will take start-ups through a complex and intensive mentorship programme to help them fix potential flows, find ways to enter the local and international markets, get legal advice and much more.

### *Milestone 4. Develop Strategic External Partnerships*

During Year 5, Tekwill project will identify relevant partnerships between Moldova and potentially three countries selected by the assessment run under the Startup Moldova concept development. This initiative will further develop cooperation and mutual dissemination of knowledge and know-how in fields of mutual interest in order to agree, encourage and enhance dialogue on innovation.

In order to build innovative and creative economies through enhanced cooperation within R&D, science, including life sciences, technology and innovation, start-ups and digitalisation of industry and service sectors.

### *Milestone 5. Develop and implement Startup Support programmes*

Based on the report released in May 2019 about Needs and Challenges of start-ups in Moldova, start-ups mentioned the importance of creation of an office providing answers to basic questions like where to get information on registering a legal entity and all the steps related to this process or how to submit tax reports. The most important aspects that will be worked on are: Due diligence Consultancy, Investors deck advice, Investors approach, Finance, Pitching, ExO Course.

Supporting early stage and A-series start-ups, besides investing in and mentoring with innovative business partnerships, also runs several industries and prototyping programmes generating commercial opportunities between the start-up ecosystem and corporations. We intend to implement three months accelerations by deepened work on sales, marketing and investment through several boot camps and developed Startup Academy concept. Tekwill team will develop and implement a programme aiming at supporting start-ups at their core needs at the beginning aiming at increasing their business and sales.

Beginner start-ups need deepened support in how start-up is launched, managed and developed. The fiscal system of Moldova, and the bureaucratic procedures required when founding a legal entity are uncharted territory for many. The unknown gets deeper when it comes to paying taxes or doing accounting.

Their main needs target support in:

- favourable regulation and taxes;
- easier access to talents;
- better access to financing;
- education promoting entrepreneurship and tech skills;
- start-up friendly infrastructure;
- tax and legal consultancy;
- advice on accounting for start-up specificities;
- external audit consultancy;
- make it easy for companies to hire outside their home countries.

### *Milestone 6. Develop premises for international employment opportunities in Moldova under the Startup Moldova programme.*

Employment opportunities for youth increases and new employment patterns arise. Entrepreneurship will give local youth new opportunities to pursue and retain talent in the country.

- Bring the best brains back home (launch targeted campaigns aimed at bringing talent back home, through research grants, logistical support and public recognition).



- Employment Gold Card (which combine an Alien Resident Certificate, resident visa, work permit, and re-entry permit).

## Activity D2. Community support initiatives

### Expected results:

ER 3.1. ICT entrepreneurship culture and community are strengthened.

ER 3.2. Acceleration facilities and programmes for technology start-ups are created.

ER 3.3: Start-ups connected to the international markets.

Indicator 15. Persons participating in entrepreneurship related activities.

Indicator 16. Entrepreneurship development initiatives completed.

Indicator 17. Companies/teams and products developed with USG assistance.

Indicator 18. Number of start-ups connected to the international markets.

Indicator 19. Value non-USG funds raised by the start-ups, as a result of participating in activities supported by ICTEC project.

### *Milestone 1: Continue involving the community with Tekwill Ambassadors*

In order to increase the image of Tekwill and optimise the community engagement, the executive team will continue developing the Ambassador's Program, launched during Year 3. Within the Community round of the programme, the team will reach out and engage active leaders of the local and international community, and from Diaspora. The purpose of the programme is to empower community leaders to develop and conduct various initiatives for the community's benefit, supported by us with whatever is needed.

### *Milestone 2. Community driven initiatives*

ICTEC will further support the community expansion via its existing and/or new initiatives like Shared Breakfast, Silicon Drinkabout, Tekwill Visionary Club, and others. The ICTEC building has a special area designated for start-ups, whether these are teams or products. Tekwill will support third party initiatives such as Lean Start-up Methodology, Design Thinking, Pitching Training, etc.

### *Milestone 3: Broaden the audience with live transmissions and digital sharing*

ICTEC will make use of what the current technology provides and share most of our events and sessions online via live transmission on various platforms, including YouTube, Facebook, and Privesc.eu. Also, ICTEC will make sure that the presentations will be open to the large public in order to provide easy access to knowledge to those who prefer to consume it from the comfort of their home.

### *Milestone 4. Develop and run trainings for ecosystem players from all regions*

ICTEC strongly believe that the founders of incubated and accelerated start-ups will act as teachers to other entrepreneurs as we see clear signs of their intent to give back to communities. The work on ICTEC's side will be to foster experienced start-ups involvement in training entrepreneurs in Chisinau and in the regions (Cahul, Balti, Comrat) and facilitating their introduction into modern technologies and entrepreneurship.

### *Milestone 5. Develop and support impact and inspiring events*

Tekwill project has already developed a track record of quality content aggregated under various start-ups support events. During Year 5, Tekwill will organize and support a series of own- and third-party events aiming at contributing towards the community and start-up ecosystem development. Among some of the planned activities are:

- TechVillage;
- Chisinau Startup Week;
- Demo Days;
- Startup Weekend;
- Grants and funds fair.

## Activity D3. Accelerate new tech product development and start-ups

### Expected results:

ER 3.1. ICT entrepreneurship culture and community are strengthened.

ER 3.2. Acceleration facilities and programmes for technology start-ups are created.

ER 3.3. Start-ups connected to the international markets.

Indicator 15. Persons participating in entrepreneurship related activities.



Indicator 16. Entrepreneurship development initiatives completed.

Indicator 17. Companies/teams and products developed with USG assistance.

Indicator 18. Number of start-ups connected to the international markets.

Indicator 19. Value non-USG funds raised by the start-ups, as a result of participating in activities supported by ICTEC project.

Following prior year experiences, Tekwill team will seek design acceleration programmes for start-ups, that will include mentorship, coaching, placing the products/teams on market, and assistance in seeking funding in partnership with international partners. Tekwill will cooperate strongly with the local business community and partners abroad to institute a team of mentors, who will share their private sector experience with the young teams. To help these start-up businesses get exposure, gain knowledge, and seek funding, Tekwill will encourage and co-fund their participation in international events for technology start-ups, including in the region and the EU. To start with, Tekwill plan to undertake a feasibility study of funding opportunities available in the region and internationally, as well as identify relevant entrepreneurship technology events. Tekwill will work closely with the project partners, to offer access to various entrepreneurship useful tools (such as Amazon WebServices or Microsoft Bizspark other shared resources).

#### *Milestone 1. Continue supporting and expanding Moldova Business Angels*

The entrepreneurial programmes developed during the existing phase of the project have led to a critical need of continuously investing into start-ups and even creating funding opportunities. The project team has managed to attract and convince existing Moldovan Business Angels to commit for investing into promising start-ups, this money being potentially matched by international venture funds from Romania. The next phase will include expansion of current programmes and offering access to finance mechanisms.

Among the activities the following steps will be undertaken:

- develop seed funding opportunities;
- support to business angel network creation;
- investment in a minimum 20 start-ups per year;
- raise investment of approximately \$1 million for supported teams over a period of one year.

#### *Milestone 2. Development of quality driven programmes*

Tekwill will continue with deployment of quality driven programme. The following is an example proposal for a programme to implement funding and development opportunities for early-stage start-ups in Moldova.

#### *Milestone 2. Enhance the network of mentors and influencers*

During Year 5, ATIC will continue building the network of mentors to directly contribute to the development of local start-ups, helping them gain experience and grow. We aim to maintain a group of, at least, 30 mentors with various relevant entrepreneurial expertise, with representation both locally and abroad.

#### *Milestone 3. Facilitate pitching to potential investors and clients of new products and incubated teams*

The graduating teams will be encouraged and supported to seek investment and clients in Moldova and abroad. ATIC will facilitate pitch training and mentorship, to ensure the teams are prepared and confident in their pitches. Among other important topics, Startup Academy programme will include the Pitching module. The participants will learn what are the premises and principles of the success, what are the skills a professional should develop, in order to manage and to expand their business, what are the tools and techniques they should know and use for accomplishing the established set objectives. Later, ATIC will create opportunities for start-ups to practice their pitch in the form of competitions and other pitch events. Teams can present their ideas to an audience of investors and/or potential clients. ATIC will co-fund participation to start-up summits (TechCrunch Disrupt, SeedStars Chisinau, etc.), where the start-ups will present their company from the stage or will be part of the Moldova pavilion. Within such events, teams can connect and interact with visionary IT managers, entrepreneurs and investors. During Year 5, ATIC will facilitate, at least three pitching opportunities for the start-ups.

#### *Milestone 4. Support international investment attraction via Tekwill Travelers programme*

Following the successful and positive feedback from the start-ups part of the Tekwill Travelers programmes, as well as considering that in previous experience of ensuring trips to start-ups at international events and visits, were applications not only from start-ups but from related companies, government, community and key people creating the ecosystem. Also, during the support, we cover not hole budget but split with other donors most of the times. That means we can supervise more detailed trips by agreeing cheap tickets with organisers of events, organise Moldovan pavilion, elaborate national package for investors, make connections.

For this action we will launch a national programme of tech travellers to be able to manage all this process and build more attractive picture of tech Moldova outside. We aim at supporting 40 teams during Year 5.



### *Milestone 5. Develop synergies between Tech and non tech companies*

For a national coverage, the team understands that the presence of IT is mostly concentrated in Chisinau, therefore to reach the impact and educate other markets as well, Tekwill will invest into collaborative projects between non ICT (agriculture, smart cities, energy, textile, manufacturing, logistics, etc.) and ICT solutions. It will seek to join efforts with other USAID, UNDP and other programs available on the market.

Under its current operations, Tekwill project has already started addressing verticals in its activities by bridging ICT and non-ICT sectors (e.g. Fintech conference and support provided to Fintech Community, Future HR conference and appliance of technologies in recruiting, WineTech as a concept of uniting wine making and wine industry with technologies, EdTech – appliance of technologies in Education, and other).

Together with UNDP, ATIC has previously launched a call in 2019 to support innovative projects by matching private money with the donor provided money to private sector with the goal to implement various projects in the area of education, agriculture and smart energy.

For the next phase, Tekwill project will align with existing initiatives from the private sector, as well as develop its own. Tekwill will serve as a connecting platform for the best and most innovative ideas, while developing own suitable programmes for market enhancement.