



BUILDING STRONG INDUSTRIAL ECOSYSTEMS IN UKRAINE

**INTEGRATED
INTO EUROPEAN UNION**

**TOP-10 PROPOSAL
OF UKRAINIAN CLUSTER ALLIANCE
FOR INTERNATIONALIZATION
OF THE NATIONAL CLUSTERS AND SMEs SERIES**



**UKRAINIAN
CLUSTER
ALLIANCE**

FOREWORD

Ukrainian Cluster Alliance (UCA) was born in March 2022, just a few weeks after Russian aggression had started in Ukraine. Ukrainian clusters united to support their SMEs and critical industries. So far, literally speaking, we were 'born by the war', and it is a typical reaction of Ukrainians who proved many times their ability to be quickly united facing new threats.

In one year, UCA demonstrated remarkable growth and proved that clusters can play an important role not just in economic growth but also in economic resilience. Resilience of economic sectors is still priority #1 of UCA and we are focused on survival and support of SMEs as key priorities.

However, we believe in Victory and we start to think about the future. Ukrainian Government started the grand plan of [Recovery of Ukraine in June 2022](#). It creates big lines of recovery for destroyed regions, but it also considers main economic challenges in **Energy, Infrastructure, Building, Manufacturing and Logistic** in Ukraine. Overall recovery programs vary from 300+ bln US dollars and they will be performed with US and EU partners.

As the leading union of Ukrainian clusters, UCA comes into this arena of grand reconstruction with its own programs and projects. We believe in power of clusters to build resilient and innovative value chains. Today we start to rebuild these chains inside of the country but also to link them with our EU partners. We heavily promote the idea of **integrated value chains and ecosystems between Ukraine and the European Union** and we are the first to support this strategy at the level of our clusters.

That is why we developed series of brochures about initiatives and projects from Ukrainian Clusters Alliance. In this document, you find 7 big initiatives with regard to industrial innovative ecosystems. Other brochures that we prepared for 'Cluster meet Regions' forum in Kosice present projects of our Common Resource Centres in Agri-Food, Medicine, Engineering and Machinery, Dual-use and Smart.City.

It is time to build relationships now. We highly appreciate the support of the European Commission, European Cluster Alliance and of many European clusters, we saw in 2022. We believe that it was just the beginning of our collaboration and 2023 will discover many new opportunities. Special thanks to Slovakian partners, who took all organization charges of this conference.

Such collaboration and partnership is fundamental to support Ukraine and to build a better and peaceful Europe. See you in Kosice.

UCA CEO Alexandre Yurchak

About Ukrainian Cluster Alliance

Ukrainian Cluster Alliance (UCA), <https://www.clusters.org.ua/en/> is the leading national association in Ukraine, uniting 50+ clusters organizations, representing all major industries and regions of Ukraine.

UCA was created in March 2022 as a reaction of Ukrainian clusters community on war challenges. United into one, well structured, organization clusters became more resilient, more motivated and more strategically oriented. In 2022, UCA realized 50+ different activities mainly on the international arena. From its early appearance, UCA was immediately supported by DG GROW and by European Cluster Alliance.

The main results of UCA activities in 2022:

- International partnership – 14 partnerships with EU and US organizations.
- Innovative fundraising – 50+ involved SMEs, 700,000 euros.
- Aid to the Armed Forces of Ukraine, Territorial Defence Forces and population – more than 2 million euros.
- System policies – dozens of strategies, concepts and reports.
- Number of confirmed international events for 2023 – 7.
- Establishment of new services for clusters and SMEs – 6.

In 2022, UCA clusters proved that they can help both their own members, small and medium-sized enterprises (SMEs), and entire sectors of the economy at regional and sectoral levels. Ukrainian clusters are becoming important actors of economic stability, drivers of innovative development among SMEs and reliable partners of the government, territorial communities and business in supporting critical infrastructure and critical industries, as well as in planning Recovery programs.

UCA is organized by Common Resource Centres (CRC - Industries and Cross-sectorial level) and by Committees of experts, policy-makers. Today they include:

- Industry CRC: Agri-food, Healthcare / Medical, Engineering and Machinery.
- Cross-sectorial: Industry 4.0-5.0, Smart.City, Dual-Use.
- Committees:
 - Innovation and smart-specialization.
 - Digital and green transition of industrial SMEs.
 - Cluster policies and programs.
 - Export and Internationalization.

Most Ukrainian leaders of UCA come to Kosice CRM forum.

For more information, see <https://www.clusters.org.ua/en/>.

UCA vision of industrial ecosystems and roles of clusters

In 2022 UCA followed policies and practices developed previously at the Industry4Ukraine expert platform, and earlier by Digital Agenda Ukraine / Industry 4.0 strategies (2016-2018).

According to these policies, clusters are positioned as key orchestrators at the level of their regional or industry, fig.1.

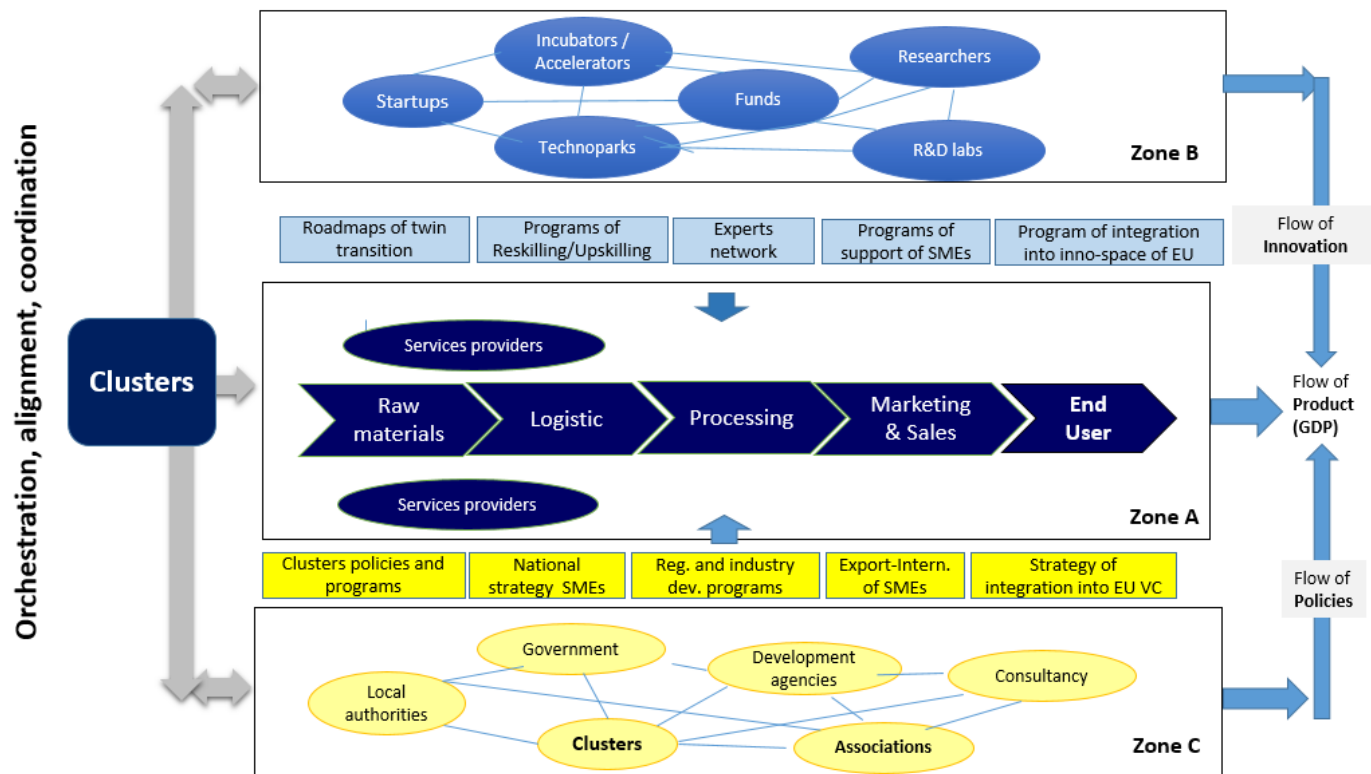


Fig1. Framework 'Clusters as orchestrators of industrial ecosystems'

Innovative clusters play a crucial role as orchestrators in the twin digital and green transition of industrial SMEs and which is often unable to be accomplished by other actors.

However, this role of orchestrators inside of value chains is very dependent on integration with innovative ecosystems and on proper balance of supporting instruments and institutions. Effective instruments of industrial policies (also innovation, digital and so on) come from strong institutions. In Ukraine, since 2016 clusters saw several waves of high-level discussions about instruments, policies and strategies. However, transition to implementation stage became a real challenge for all of them.

Proposals of Industrial clusters are [explicitly defined by Industry4Ukraine](#) in the National Economic Strategy 2030. Our [key priorities](#) are based on criteria of importance and availability (means, they are typically missing).

A. Necessary Instruments

- a. Special incentives to stimulate twin transition primarily of industrial end users, SMEs (developers and start-ups are both important categories but not #1, as it is defined today).
- b. Special programs supporting SMEs in digital and green transition. Focus on re-skilling / up-skilling SMEs should be clear and reflected by concrete programs to SMEs of target industries.
- c. Integrated and interacting network of certified experts, network of Centers of competence and support of SMEs, such as Digital Innovation Hubs; Incubators and Accelerators: Testbeds and shared R&D centres, supporting target industries.
- d. Strong Export and internationalization program supporting SMEs, and especially for the industrial hi-tech segment as the most struggling since 2014.

B. Necessary Institutions

- a. Strong State agencies with clear focus on development of Industry 4.0-5.0, and Agencies dedicated to development of target industries are the crucial component as all stakeholders struggle of lack of coordination and lack of policies.
- b. Network of innovative clusters and leading business associations should also be considered by the State as a key element in improving all relevant national policies, the industrial one, digital, innovation, regional and smart-specialization. Clusters can play a key role in the execution of such policies. But clusters need much more support to be important economic stakeholders.



The current state with regard to all abovementioned elements is rather poor. Lack of effective industrial policies is the reason #1 why Ukraine experienced **strong deindustrialization** during the last decade. Manufacturing decreased to 11% in the national GDP, which is twice lower than in countries of Eastern Europe, such as Poland, Slovakia or Czech Republic.

In 2020 experts of Industry4Ukraine came to the conclusion that institutions are much more important than instruments. Weak or missing institutions are the reason #1 why many policies instruments are missing or simply do not work in Ukraine.

Later in 2022, UCA raised again many of these issues in the special report '[Export-Internationalization: recommendation to the government](#)' where we repeated many of the above statements, going more deeply into some and also generating new proposals.

Many of these proposals are reflected by the series of 'Top-10 proposals of Internationalization' of several industries and sectors, prepared for the meeting in Kosice. This brochure contains mainly such proposals in the area of ecosystems common for most of

industries and sectors.

New challenges of the war in Ukraine

Deindustrialization is a powerful and strong trend destroying many still existing industrial and hi-tech sectors in Ukraine. Since 2016, we observe:

- Decreasing share of industrial hi-tech in export.
- Leak of talents from industrial sectors to emigration or to IT-industry (which was globalized much earlier and which pays twice more to local engineers).
- Sharp decreasing number of students studying engineering and industrial profession.
- Many obsolete education programs, which do not meet market demands.
- Inability of Scientific institutions to be integrated into real economic sectors because of lack of innovative policies and governance (most of researches are at the level of TRL 4-5).

On the positive side, we observed a real and big progress in start-up development and IT-industry. However, this progress cannot replace the mentioned economic imbalances in Ukraine and it has rather weak impact on economic indicators. Ukraine is proud of its series of 'Diya' products but this might be the brightest example of new, digital imbalance. The Ministry of digital transformation invested millions of euros into just 2 segments: public services and e-government. Regarding real economic sectors, the public support of SMEs is of quite low level. For instance, no cent of public money was invested into reskilling and up-skilling programs of thousands of SMEs in Agri-food, Textile, Furniture, Metalworking, Metallurgy, Machinery, Chemistry, Energy and so on, which are the basis of Ukrainian GDP.

The Russian invasion into Ukraine in February 2022 makes many of these imbalances deeper that may lead to even bigger lagging of Ukrainian SMEs.

In particular, UCA experts fix up the following trends:

- Demand for innovative products and solutions dropped in [local manufacturing at times](#) in all industries, with an exception of Miltech and, partly, Dual-Use. In the mode of economic survival, industrial end users decreased budget for innovation almost to zero.
- In spite of all effort and anticipating measures undertaken by the State, the number of exporters has also decreased. According to the [last survey of the National Institute of economic studies](#), the number of SMEs willing to export decreased from 8 to 1%.
- According to the mentioned study, SMEs experience barriers in 2 categories:
 - Long-term (lasting since 2014): as low competitiveness to satisfy demand abroad and inability to switch from post-soviet countries (Russian-speaking) to EU and worldwide markets.
 - Short-term and new barriers such as blocking sea and airway transport, difficulties for man under 60 to go abroad, problems on customs, difficulty to buy currency for export marketing operations and so on.
- State budget to support science and education decreased by 22 % in 2023.

In dual-use and defence technology, the war highlighted all industrial imbalances and lack of leadership at the State level. The Ministry of digital transformation predicted the character of the new war as 'the war of drones and unmanned autonomous vehicles' and declared creation of 'army of drones' in April 2022. After 1 year of the war we do not see this army and tens of Ukrainian manufacturers in this area remain at 'garage' level of production. Inability of the State to coordinate and launch serial and scalable manufacturing productions put the Armed Forces of Ukraine into a **huge dependence on all kinds of weapons**. Criticism is common today in Ukraine in expert communities. Such an example is just one of many showing how crucial are today well coordinated, strategic programs and policies.

To be correct, it is worth mentioning that in 2022 the Cabinet of Ministers of Ukraine launched a number of measures to react to new challenges. Multiple programs were launched to support SMEs including export-internationalization, record budget will go to dual-use and defence technologies in 2023 and multiple grant programs are starting to be reoriented to provide more support for real economic sectors.

However, the true question is about scale, focus and integrity of all supporting measures to tackle many old and new challenges.

Responses of Ukrainian Clusters Alliance

UCA has faced the mentioned challenges since its creation. Our experts were active participants of the government working group while preparing Recovery plans in May-June 2022. In June-22, we issued the report '[Export-Internationalization: recommendation to the government](#)' which gives a holistic and integrated vision in 4 categories:

- Export program (Buy Ukrainian).
- Internationalization of SMEs in EU value chains.
- Integration into Innovative space of EU.
- Standardization.

UCA started as well immediate launch of its own actions where we had enough capacities. The [Annual report of UCA 2022](#) mentions many international activities with support of EU / US partners, progress in innovation fundraising for SMEs, support of regional communities and providing services to Ukrainian clusters and SMEs.

We highly appreciate the support UCA, our clusters and SMEs had in 2022 from international partners. In particular, we want to mention the support from the European commission (DG GROW) and European Cluster Alliance, which were with us from the 1st week of the war in Ukraine. We have got strong support from clusters association and partners as well from Poland, Czech Republic, Lithuania, Romania, Spain, France, UK, US and other countries. In Ukraine we were supported by the Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ) GmbH who provide steady support to cluster development on the regular basis since 2020.

And, of course, UCA aimed to develop strong partnerships with Ukrainian ministries and regional authorities at many levels.

However, it is clear that these efforts are not enough to cope with multiple and growing threats and challenges.

The main priorities of UCA in the international collaboration are split in 5 areas:

1. Creation at the national level of **strategic and well coordinated program of internationalization of Ukrainian SMEs**. Such a program is very necessary as many clusters and SME struggle with a big number of fragmented support programs with poor and missing coordination between them.
2. Developing **new forms of bi- and multilateral collaboration** with our Western neighbours and other countries of the EU.
3. **Increasing capacities of Ukrainian clusters** to be able to respond to new opportunities opened by EU partners.
4. **Funding of projects** targeted the most critical zone of innovative ecosystems supporting clusters and SMEs. The list of such projects is presented further in this document.
5. **Funding of projects closing gaps in Value chains**, supported by UCA clusters.

All these priorities are parts of our Roadmap 2023 supported in January 2023 by UCA clusters. We are glad to present in this document 7 initiatives and projects in the area of innovative ecosystems.



Initiative #1: Creation of the new program of cluster support in Ukraine together with Eastern European and Baltic countries

ClustersPartnership4Ukraine

National clusters associations from Czech Republic, Poland, Lithuania, Romania, Slovakia and Ukraine proposed to the European Commission and to other interested stakeholders to support a proposal about the creation of **the new program of cluster support, focused on inter-regional collaboration of Eastern European countries with Ukraine**. 'Joint Statements' are to be signed on 29/03/2023 in Kosice. National associations consider projects with long term goals of faster integration of Ukrainian clusters and SMEs into European value chains and innovation space.

Participants	<p><u>UA side</u>: Ukrainian Cluster Alliance, Ministry of economy, Ministry of digital transformation, Ministry of Restoration.</p> <p><u>EU side</u>: Czech National Cluster Association, Lithuanian Clusters Network Association, Polish National Cluster Association, Romanian National Cluster Association, Slovakian Cluster Union.</p>
Cluster challenges	<p>In 2022, Ukrainian clusters proved their ability to become a key institution of resilience and development of local SMEs. However, UA clusters struggle with low capacities, lack of institutionalization at the State level and they need much more powerful support. Current support programs are weak or not really oriented to challenges and projects considered by UCA (see the list in this brochure and by other sectors).</p>
Objectives	<p>The new CP4U program should be focused on 5 main broad goals facing the mentioned challenges:</p> <ol style="list-style-type: none">1. Building a long term, effective strategy of SMEs development where clusters are the key instrument of SMEs internationalization.2. Support and growth of 6 UCA's Common Resource Centres (CRC) with respect to clusters by target industries (Agri-food, EAM (Engineering-Automation-Machinery), Medical, Textile, Utilities, and Dual-Use).3. Growth of inter-regional cooperation with a clear focus on clusters / SMEs resilience and future Recovery projects.4. Better alignment and integration of Ukrainian clusters into all major existing EU programs of clusters / SMEs development.

	5. Acceleration of Ukrainian clusters and their members in twin digital and green transition.
Activities	<p>The following mechanisms / measures are proposed:</p> <ul style="list-style-type: none"> • Development and support of bi- and multilateral programs with a focus on Resilience and Recovery of Ukraine. • Set-up of regular clusters exchanges in the area of best practices and improving skills in cluster management / governance. • Alignment in policy-making and increasing cluster's role as important policy-makers of national levels. • Fostering of Innovative ecosystems in Ukraine / increasing integration processes between all 6 countries.
Outcomes	<p>Such program can bring many benefits to 5 target European countries and to overall cluster collaborations in EU:</p> <ol style="list-style-type: none"> 1) Being well familiar with EU norms and standards, 5 target cluster associations, coordinated at the level of European cluster alliance, will ensure much faster integration of Ukrainian clusters into EU industrial ecosystems. 2) These countries will have access to all Recovery programs and projects and will be able to better involve their members. 3) Regarding other European clusters, we can consider many aspects of better resilience, improving current programs and clarifying / profiling for all clusters future opportunities on Ukrainian markets, better connected to their neighbours.
Period and Budgets	3 years / budget to be specified.

Case to be considered: Being active participants of the programs of Eastern Partnership, Ukrainian clusters did not see big impact or support of these programs during 2022. In contrast, UCA got a lot of support from partners and cluster organizations from Poland, Czech Republic, Baltic and some other countries, all supported on a regular basis by the European Commission and European Cluster Alliance. If such an approach proved its effectiveness in the most difficult year, it should work further!



First stories of bilateral agreement come from Czech Republic

Initiative #2: To establish regular exchanges of industry policy-makers on bilateral / multilateral level

UCA originated from the [Industry4Ukraine platform](#), created in 2019 for policy-making in Advanced manufacturing. Earlier, in 2016 the Association of Industrial Automation (APPAU) started collaboration with the country's government to accelerate reforms in the key areas of industrial, innovation, digital and cluster policies. In 2018, we prepared a project of the Industry 4.0 strategy, and in the following years – up to a dozen more detailed proposals for changes in the specified policies and strategies. But all these policies move too slowly at the State level and we need much more support in this area.

Relevance to the wartime challenges: in general, this initiative can be attributed to the post-war period. At the same time, taking into account rapid degradation of industrial high-tech sectors, we believe that it is now necessary to lay foundations for these changes. If the war drags on, many of them may cross the point of no return.

How it can work: Eastern European partners, together with UCA and Industry4Ukraine platform committees, form several working groups with inclusion of representatives of relevant ministries and parliamentary groups, which during 2023 will launch cycles of exchanges (online and offline) to transfer experience and knowledge to Ukrainian policy-makers.

This initiative can be a part of the Initiative #1 or start earlier, as a separate project or program.

Project: establishing benchmarking policy-making processes in Industrial policies between Ukraine and neighbouring countries

Participants	<p><u>UA side</u>: Ukrainian Cluster Alliance, Chamber of commerce of Ukraine, committees of Parliament, Ministry of economy.</p> <p><u>EU side</u>: key national cluster associations / industry associations supported by worldwide-recognised actors, such as UNIDO.</p>
Problematic	Lack of industrial policies and strategies in Ukraine led to many economic imbalances and fast deindustrialization processes. The State tries to introduce some instruments of industrial policies such as industrial parks but all these processes are extremely slow, fragmented and not consistent.
Objectives	<p>The general goal is to move policy-making processes in Ukraine at the level of best EU practices and standards by:</p> <ol style="list-style-type: none"> 1) Setup of benchmarks for Ukraine in Industrial policies. 2) Aligning approaches and practices in Ukraine with the best EU practices. 3) Defining roadmap for necessary changes in Ukraine in industrial policy-making and strategies.
Activities	1) Exchanges and visits with 3 target countries of EU (Czech Republic, Poland and Lithuania); 2) Studies of policy-making processes / benchmark analysis; 3) Preparing roadmap of changes in Ukraine; 4) Final reporting and dissemination / communication campaign.
Outcomes	<ol style="list-style-type: none"> 1) Much better alignment and collaboration between Business support organizations and Public bodies in Ukraine with regard to Industrial policies. 2) Improved effectiveness in policy-making (number and quality of new law proposals). 3) Improved process of Industrial dialogue between EU and Ukraine. 4) New collaboration initiatives between participant countries supported by their governments.
Period and Budgets	1 year / 300k euros.

Cases to be considered: benchmarking studies have been done twice on the Industry4Ukraine platform. In 2018, in the frame of [Industry 4.0 strategy](#), APPAU presented a detailed benchmarking analysis, indicating lagging of Ukrainian policy makers in this area. In 2020, based on UNIDO's works, Industry4Ukraine experts elaborated and promoted the guide '[Instrument of Industrial policy](#)'. Being well perceived and consolidated at the level of expert communities, these works had a small impact on Public bodies. In last 2 years, policy-makers reached only 2 important changes at the level of legislations.



These are new laws about industrial parks and localization in manufacturing in public purchasing. Industry4Ukraine experts say, that these instruments are just 2 of 10+ necessary to adopt at the national level. The biggest deficit of such instruments is at the level of digital and innovation policies in Manufacturing where Ukraine is lagging behind all EU countries. Meanwhile all economic indicators show the growing de-industrialization of Ukraine and the war just accelerated these processes. This case proves that we need much more engagement of public bodies into policy-making processes.

For other options of Internationalization of Ukrainian clusters, see the [Internationalization Strategy of UCA](#).

Initiative #3: To accelerate integration of Ukrainian 4.0 Centres and DIHs into the European DIH network

Necessity and relevance to the challenges of the post-war period:

Innovative ecosystem of industrial hi-tech sectors need a special EU program that supports development of the Digital Innovation Hub (DIH) network in Ukraine. In previous years, APPAU tried to develop a network of Centres 4.0, concept of which is very close to DIH. But without State support and funding these tentative proposals were not successful. Today UCA tries to switch completely to DIH model. A special program would accelerate this process and it is needed because of backlog of Ukrainian universities in this area compared to the EU (UA has only 2 active DIHs).

How it can work:

Partners develop a joint program to create and develop a network of 5 to 10 DIHs in Ukraine and will receive appropriate support from the European Commission. Czech, Polish, Lithuanian and

Romanian eDIHs are becoming the main providers of knowledge and practices for Ukrainian DIHs.

Project: Development of 5 UA DIHs with integration into EU space (BOWI+)

Participants	<p>UA side: APPAU and 5 UA DIHs from Kyiv, Kharkiv, Zaporizhzhia, Mykolaiv and Lviv. Key partners – 5 EAM clusters from the same cities.</p> <p>EU side: 5 eDIHs from Czech Republic, Poland, Lithuania (+2 from Western Europe).</p>
Objectives	<p>1) Setup 5 DIHs for Ukraine as services organizations.</p> <p>2) Launch regular DIHs activities according to 4 major roles.</p> <p>3) Attract investments into regional innovation ecosystems – at least 2 mln euros in 2 years.</p>
Activities	<p>1) Exchanges / setup of blueprint (DIH model adapted to UA in 2 forms, - based on Technical University and as an independent NGO (UA DIHs go through a selection process); 2) Training of DIHs staff for UA DIHs; 3) Mentoring of activities in each of 4 roles; 4) Launch of modern labs for prototyping; 5) Regular exchanges of best practices; 6) Common participation in EU programs.</p>
Outcomes	<p>1) 5 times increased engagement and participation of UA innovative SMEs and start-ups in I4MS and similar programs (Digital / Horizon Europe; 100 SMEs participating in calls).</p> <p>2) Integration of Ukrainian SMEs and industrial SMEs' start-ups into European value chains and Innovation Ecosystems, providing opportunities to interconnect with key innovation stakeholders and networks across Member States and Horizon Europe Associated Countries.</p> <p>3) Growth in number of European SMEs, start-ups and BSOs proposing innovations in UA for Recovery & other after war programs (200 SMEs).</p>
Period and Budgets	2 years / 3 million euros.

Cases to be scaled up: BOWI project (Horizon 2020), launched in 2021 is the 1st case about widening of mature Digital Innovation Hubs to less matured ones, incl. Ukrainian DIH «Centre 4.0 KPI». The project became a strong push to develop DIH network in Ukraine and it is coherent with APPAU initiative of [the deployment of I4MS programs in Ukraine](#). However, switching DIH KPI into implementing all 4 roles in servicing local SMEs is extremely difficult. Because of lack of

good governance, it is difficult for experts to be at the same time in several roles (e.g. professors in University, and innovation / technology brokers in DIH). Actual BOWI activities do not count this situation and we do not know how to cope with it, taking into account the almost impossible scenario of organizing DIHs beside Universities.



In February 2023, UCA together with 10 Leading Technical Universities called to the Government with a special [‘Join Statements’](#) about the necessity to speed-up in DIH initiative in Ukraine which has been addressed to the Ministry of Science and Education. The community is still waiting for reaction of the Ministry.

Initiative # 4: To create Eastern European network of Industry 4.0-5.0 experts

Necessity and relevance to the challenges of the post-war period:

A network of independent, qualified Industry 4.0 experts, able to diagnose enterprises according to the level of readiness and issue recommendations for development, is a key asset of most countries that are successfully implementing Industry 4.0 and 5.0 today. These experts are able to audit enterprises regarding the level of digital readiness and recommend the first steps towards digital transformation.

This practice was implemented by Western European countries, many Asian countries, today Poland is doing it. In Ukraine, such a network is completely absent. Big holdings move in an ad-hoc manner, while SMEs simply ignore the challenges, confusing digital transformation with usual automation of production and business processes. APPAU proposes creation of such a network in Ukraine, as well as in other countries of Eastern Europe, where it is absent, based on the [Singaporean government SIRI methodology](#), which is recognized as the key one by the EU today.

How it can work:

We propose to create a joint committee with partners to consider the best practices in this area in Eastern Europe and to create a single Eastern European project for preparation of such a network, including Ukrainian experts.

Project: launch of I4.0-5.0 network in Eastern Europe

Participants	UA side: main participants of Industry 4.0 ecosystems: APPAU, several EAM clusters, 5 UA DIHs, Incubator 'Sikorsky challenge'. EU side: leading business associations and clusters in Industry 4.0 from Czech Republic, Poland and Lithuania
Market challenges	Industrial markets in Eastern Europe are behind of the Western ones in rate of digitalization of Industrial SMEs. Ukraine is lagging behind them with a level of penetration of technologies 4.0 less than 10%. There is almost no relevant instrument at the national level to speed-up these processes. If starting from zero, set-up of the national network in Ukraine alone can take 3-5 years. Deployment of the common network can be beneficial for all countries.
Objectives	<ol style="list-style-type: none">1) To certify at least 10 experts per country.2) To form collaborative experts networks in 4 countries.3) To align and adopt to respective maturity level of the SIRI methodology.4) To setup initial roadmap 'how to start with digital transformation' for SMEs of low maturity sectors.
Activities	<ol style="list-style-type: none">1) Expert selection and training;2) Expert exchanges and networking;3) Market surveys;4) Collaboration and exchanges in the first pilot projects (audit of industrial SMEs);5) Adopting methodology to local context;6) Developing guide 'getting started' (beginners of digital transformation from early-late majority segments).
Outcomes	<ol style="list-style-type: none">1) Acceleration of digital transformation in traditional Industrial sectors in Eastern Europe.2) Improving resilience & innovation level, digitalization and greening of integrated and local value chains.3) Rise of demands for innovation on local markets / better integration of local innovators into domestic value chains.
Period and Budgets	2 years / 2,5 million euros.

Cases to be scaled up: expert network is a proven development instrument in many sectors worldwide. In Ukraine energy efficiency expert network has been prepared by several international donors and it's a recognized instrument of impact and development in different industries. It was also realized, that such a network (number of certified experts) is still in high deficit in the mentioned area. One of the reasons is lack of alignment with State / Public policy.



Regarding Industry 4.0-5.0, the idea of forming such a network was proposed by APPAU in 2016 in the program «Digital Agenda of Ukraine». Unfortunately, it was not supported by the Government or donors, and today we still stay alone, and without progress when neighbour countries seem to have good movement ahead. A common project can speed-up development such an instrument across all Eastern & Central Europe countries.

Initiative #5: Create industries roadmaps of digital transformation

Necessity and relevance to challenges of the post-war period:

Development of clear priorities for promotion of digital transformation for key economic sectors (energy, infrastructure, food, metallurgy, defence industry, construction, machinery - engineering). Individual attempts to build such roadmaps in Ukraine are known only at the level of large holdings (DTEK, MHP, Metinvest), but are practically absent among SMEs.

In 2019-2020, APPAU proposed its own format of preparing such roadmaps, which is focused specifically on SMEs and is based on 3 components (in stages):

1. Development of industry business cases.
2. Their consideration and proposal of solutions by conducting trainings, hackathons and technological innovation days (TID).
3. Creating catalogues of innovative solutions at industry level and launching series of trainings for SMEs.

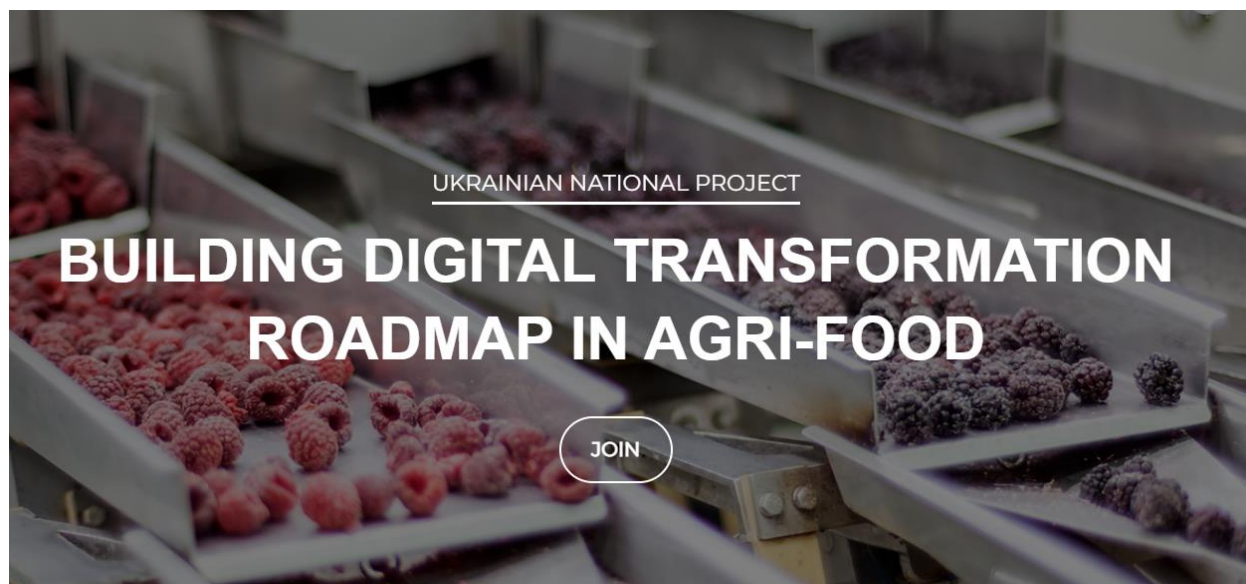
How it can work:

Eastern European countries already have considerable experience in digital transformation of individual enterprises and industries, including at the level of SMEs. APPAU proposes to introduce regular exchanges at bi- and multilateral level with definition of best practices in this area, followed by their wide distribution among countries participating in this project.

Project: Creation of roadmap of digital transformation for FOOD industry

Participants	UA side: APPAU, 5 clusters and 2 DIHs. EU side: 5 clusters and 3 DIHs.
Market challenges	Low maturities and low rate of penetration of new digital technologies into key industries of Ukraine.
Objectives	1) Creation of DT roadmaps for 5 key segments (milk, beverages, natural oil, elevators and floury, poultry). 2) Building maps of innovators / solutions and use-cases. 3) Set-up of collaboration between UA and EU clusters.
Activities	1) Engaging campaign for 5 target sectors; 2) Building map of strong business cases (10 per sector); 3) Exchanges with international clusters / best practices and benchmarks; 4) Engaging UA SMEs into relevant EU program; 5) Series of sectoral Technology and Innovation days; 6) Training for decision makers from end users; 7) Strategic session of building roadmap.
Outcomes	1) Acceleration of food sectors in digitalization and sustainable development. 2) Improving collaboration and better integration in value chains and ecosystems with EU. 3) New innovation projects between EU and UA clusters and DIHs in Food.
Period and Budgets	2 years / 1,5 million euros.

Cases to be scaled up: such a project was founded by APPAU in 2019, It was oriented mainly towards local players, see <https://agri-food.appau.org.ua/en/home-page/>. The project has not been launch because of lack of financing, just some activities (as survey and seminars) have been carried out with a limited scope. New proposal is oriented towards much larger and international scale.



Initiative #6: Set up joint initiatives in the field of Circular Economy

Necessity:

As noted in the new annual study The Circularity Gap Report: “The global economy is now only 7.2% circular and it’s getting worse year on year — driven by rising material extraction and use. The global economy increasingly relies on materials from virgin sources.” In Ukraine, the numbers are noticeably lower in terms of Circularity. Russia's aggression also affected the field of recycling of secondary raw materials.

The Ukrainian economy is focused on the market of the European Union, including in the context of the dual green and digital transition. These things are described in some detail in the new EU Green Deal.

Relevance to the wartime challenges:

New circular business models can give the economy a boost. Especially in conditions of limited resources. This is particularly noticeable in the example of the sharing economy.

How it can work:

We are ready to consider a potential partnership with companies working in the field of secondary materials recycling, repair/restoration of equipment and machinery, ICT Standardisation supporting Circular Economy, Disclosure and data analytics on the Circular Economy etc. The Ukrainian side is ready to provide up-to-date information on state and market participants, organize legal and economic preparation of joint projects at the local and national levels.

Project: Collaboration of clusters of Europe with a focus on circular economy

Participants	<u>UA side</u> : APPAU, 5 EAM regional clusters, members of the Sustainable committee of UCA. <u>EU side</u> : key clusters and business associations from Europe having direct relation to circular economy.
Market challenges	Low maturity and low rate of penetration of circular economy principles and practices into key industries of Ukraine.
Objectives	1) To unite and coordinate EU-UA alliances in circular economy. 2) To ensure faster 'go-to-market' processes with regard to circular economy. 3) To enforce and grow UA industrial sectors in terms of circularity.
Activities	1) Series of C2C/B2B events / defining, profiling and prioritizing challenges, opportunities; 2) Forming cluster initiatives and funding projects; 3) launch of 5-7 projects between UA-EU clusters (incl. possible production facilities in Czech Republic and Poland).
Outcomes	1) Launch of Eastern Europe cluster collaboration in circular economy. 2) Improving level of circularity in industrial sectors of Ukraine and other EE countries.
Period and Budgets	TBD.

Cases to be scaled up: *there are no (yet) circular economy cases in UCA member clusters. Circular economy has been on the agenda in Ukraine only in recent years, so there are no bright examples yet. This, in turn, means that there is a potential in this field and an opportunity to become a leader of change.*

Initiative #7: the Professionals4Ukraine network

Necessity:

12 million Ukrainians left the country at the beginning of the war in 2022. Many of them come back but many others still stay in Europe and in other countries. Therefore, in Europe we have hundreds and thousands of active people, scientists, developers, civil activists who can be very useful in supporting and promoting industrial ecosystems of Ukraine. We have hundreds of foreign partners who want to help Ukraine and they are looking for relevant mechanisms and instruments.

What if we can link these people together and start coordinating them with regard to the priorities and needs of key cluster segments in Ukraine?

Relevance to the wartime challenges:

Because of the low level of integration into EU value chains and innovation space such a network would be really very helpful for Ukraine. Ukraine is almost not presented in multiple conferences, forums and trade fairs, which are considered as main tools for networking and professional exchange. The war imposed new barriers blocking visits to foreign countries for Ukrainian men under 60. Thus, an existing and strong network of Ukrainian ambassadors can be a real solution to support Ukrainian SMEs and clusters abroad.

How it can work:

The main idea is to organize and coordinate professionals by segment of their activities and by relevant projects, e.g. as presented in this document. Criteria of segmentation can be different: as vertical industry as Agri-food or Textile, or cross-sectorial as Industry 4.0-5.0 or Smart.City, more oriented to resilience of value chain, or to innovative ecosystems.

Project: development of the Professionals4Ukraine network (previous name: Ambassadors4Ukraine)

Participants	<u>UA side:</u> Common Resource Centres and Committees of Ukrainian Cluster Alliance. <u>EU and US/Canada side:</u> key clusters and business associations willing to support Ukraine during wartimes and after war period.
Market challenges	Ukrainian business communities and SMEs need much bigger support in their internationalization which is considered as #1 strategy for survival.
Objectives	1) To unite and to coordinate the network by specific goals and projects in each target segment. 2) To synchronize and align the activities with strategic goals set by the European Commission and Ukrainian governments. 3) To speed-up integration of Ukrainian SMEs and clusters into Euroatlantic countries and to prepare partners for Recovery programs.
Activities	1) Series of C2C/B2B events / defining, profiling and prioritizing challenges, opportunities; 2) forming projects initiatives and search of funding projects; 3) coordination activities and meeting.

Outcomes	1) Acceleration and higher effectiveness of Ukrainian SMEs' and clusters' integration into EU industrial ecosystems. 2) Establishing and improving long-term relationships at the level of business communities. 3) Preparing foreign partners to Recovery projects in Ukraine.
Period and Budgets	2 years / 400k euros budget is mainly oriented to support of business trips and participation in existing conferences/ forum / trade fairs).

Cases to be scaled up: UCA started to create such a network in April 2022. The program called '[Ambassadors4Ukraine](#)' united 30+ professionals from Ukraine, EU and US. Later it was renamed into 'Professional4Ukraine' emphasizing the role of individuals and leaders not just at the level of communities but even a separate business or an organization. [UCA awarded 13 best professionals](#) with the highest contribution to resilience of Ukraine clusters in December 2022. These professionals helped UCA in internationalization programs, helped to find funding or just sponsored cluster activities and built strong relationships. At the same time, UCA was unable to organize a strong network among Ukrainian professionals abroad. The main obstacle was, and it remains now, about funding their visits to business events to represent UCA and our clusters.



USEFUL LINKS AND REFERENCES

1. [Marshall plan for Ukraine](#), proposal of GMF.
2. [The Strategic proposal of UCA for the Ukrainian government in Export-Internationalization](#).
3. [Recovery program of Ukraine](#).
4. The white paper '[5 role of clusters during wartimes](#)'.
5. [Annual report of UCA](#) (2022).
6. Website of [Ukrainian Cluster Alliance](#).

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