



**Prototyping policy measures
for a regional innovation strategy
Proposal for five interconnected
interventions in the innovation
ecosystem of the Košice Region**

Final report from Policy Lab III

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Abstract

The regional innovation ecosystem of the Košice Region faces persistent systemic challenges resulting from institutional fragmentation, including limitations on the powers of the state and the region, a mismatch between market demands and available skills, and a critical lack of targeted funding for projects in more advanced stages of technological readiness. This stage of development is often referred to as the "valley of death" for new innovative companies. This report summarises the outputs of Policy Lab III, which represented the final phase of a structured entrepreneurial discovery process. The final event in the Policy Labs series was designed to move from theoretical diagnosis to the creation of concrete policy proposals. Methodologically, a rapid four-hour design sprint was used, employing a template we created, with the aim of generating five policy prototypes specifically targeted at systemic transformation. The proposed concepts include: the introduction of a strategic talent development programme (P1), the implementation of a coordination structure for management through liaison officers (P2), and the creation of a public-private fund to finance innovation (primarily TRL 4/5+) (P3). The portfolio is further complemented by the establishment of an Eastern Innovation Platform for Technology Transfer (P4) and the creation of Centres for the Support of Digital Adoption for Citizens (P5). A synthesis of these concepts reveals a synergistically supportive portfolio of measures. The unified management structure (P2) brings the necessary horizontal management and communication axis to the ecosystem. This axis enables the innovation platform (P4) to institutionalise interfaces between the academic and market environments and the public-private fund (P3) to effectively allocate capital to critical stages in the development of innovative companies. This portfolio directly addresses systemic fragmentation and mitigates the high political and financial risks identified in earlier diagnostic phases of Policy Labs. The proposed measures represent a viable plan for structural transformation that is fully in line with the objectives of the Regional Innovation Strategy for Smart Specialisation.

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Introduction

Context of regional innovation in Košice

The Košice region is characterised by a post-transitional economic structure that is actively pursuing a strategic transition from a strong manufacturing base to a fully-fledged knowledge economy. The region boasts significant academic and technological capital, concentrated around key players such as the Technical University of Košice, Pavol Jozef Šafárik University in Košice, Košice IT Valley, the Košice Cultural Cluster and the East Slovak Space Cluster. Despite the obvious potential in the environment, fundamental structural deficits remain. One of the main problems is the apparent mismatch between the skills of graduates from the education system and current market requirements, leading to a permanent brain drain as qualified professionals leave for more economically and socially developed areas. Addressing these challenges requires targeted, strategic interventions that must be consistently aligned with the Regional Innovation Strategy for Smart Specialisation. The aim of these interventions is to catalyse sustainable economic growth and strengthen long-term regional competitiveness.

The logic of the Policy Lab series

The Policy Lab series was organised and implemented as part of the Label4Future project as a participatory mechanism aimed at operationalising the process of entrepreneurial discovery, which is a fundamental pillar of any modern regional innovation strategy.

- Policy Lab I served as a diagnostic phase that identified critical institutional weaknesses, particularly the fragmentation of actors, insufficient institutional coordination, and asymmetry in the development of specific competencies.
- Policy Lab II confirmed these findings and, through discussions with external experts, emphasised the need to define a long-term strategic vision, actively build mutual trust, and identify a neutral coordinating body to harmonise separate regional initiatives.
- Policy Lab III, as the final and decisive step in the entire cycle, had the task of overcoming the limits of abstract analysis and theoretical discourse and generating practical, implementable policy solutions. Using a simplified design sprint methodology, the workshop focused on creating interventions that would not duplicate existing regional efforts but would effectively

complement and reinforce them. The five key challenges addressed by the teams were directly derived from the diagnostic findings obtained in the two previous phases of the Policy Lab series.

Objectives of the final report

The aim of this final report is to provide comprehensive documentation and expert analysis of the results obtained from Policy Lab III. The report contains a detailed elaboration of the five resulting policy concepts () using a structured framework of a uniform template as an organisational tool. Subsequently, the report will focus on systemic analysis in the discussion section. In this analysis, we examine the synergistic interactions between the proposed policies and evaluate their collective potential to address the systemic failures previously identified in the innovation ecosystem.

Theoretical framework

Regional innovation systems and the quadruple helix model

The theoretical basis for the participatory policy prototyping carried out lies in the concept of regional innovation systems, which understands innovation capacity not as a purely linear process, but as a complex, adaptive network. Such a system requires robust institutional links and an effective flow of knowledge between diverse actors. The strategic orientation provided by a regional innovation strategy for smart specialisation is vital for addressing specific, localised market and system failures.

A key principle underlying the successful implementation of current strategic frameworks is the shift from the traditional triple helix model (academia, business sector, public administration) towards a more complex quadruple helix model. The quadruple helix model explicitly includes civil society, or the public, as the fourth pillar. Its integration is important because sustainable and inclusive growth outcomes depend heavily on social legitimacy, broad participation and the ability to respond to societal needs beyond purely technological or economic metrics.

The policy design process observed in Policy Lab III implicitly confirms this systemic requirement. The proposal for Digital Adoption Centres for Citizens (P5) and the emphasis on early engagement of human capital through informal youth education (P1) demonstrate a deliberate shift towards people-centred policies. These interventions directly address the low engagement of civil society that has been observed in the implementation of regional innovation strategies in the European Union. Given that the Slovak institutional environment has historically struggled to ensure the viability of even the triple helix model, the proactive integration of the citizens' perspective through these proposals provides a mechanism for increasing the legitimacy and broader ownership of the innovation agenda.

Policy prototyping and the entrepreneurial discovery process

The entrepreneurial discovery process is the participatory core of the regional innovation strategy for smart specialisation. It focuses on continuous dialogue between stakeholders to objectively identify competitive regional advantages.

Policy prototyping, implemented through a rapid design sprint methodology, serves as an effective mechanism for quickly translating analytical insights gained throughout the discovery process into tangible, actionable policy concepts. 's policy canvas tool (an adaptation of the business model canvas framework) provided the necessary framework structure for the prototyping phase. It was a predefined, one-page template that forced teams to simultaneously consider several critical components of their solution: understand the problem in a people-centred way, discover the key value proposition, devise measurable success criteria for it, identify the stakeholders involved, imagine the required policy mechanisms, design a rough visual representation, and not forget the inherent risks. This multifaceted approach ensures the coherence of proposals, prevents fragmented thinking, and facilitates the effective communication of complex ideas across diverse groups of experts, funders, and policymakers.

Systemic failures – fragmentation and the valley of death

The basic analysis preceding Policy Lab III led us to a pair of dominant systemic failures that clearly limit the development of the Košice ecosystem:

- Institutional fragmentation – characterised by the fact that several key regional actors (universities, clusters, public authorities) operate in relative isolation. This situation leads to duplication of effort, non-synergistic activities and a prevailing atmosphere of low mutual trust.
- Valley of death – represents a critical gap in the financial chain that specifically affects promising commercial projects transitioning from TRL 3 research validation to TRL 4/5 to 7 market prototyping and demonstration. Although seed funding has been available in recent years, the capital needed to bridge this gap, which is essential for commercialisation and scaling, is lacking. This is due to capital-constrained and young venture capital funds that prefer projects with proven market traction and established products.

Materials and methods

The Policy Lab III workshop was designed as a highly concentrated, four-hour design sprint. This shortened time frame was chosen because the preliminary phases of problem identification and diagnostic analysis had been worked out in detail and were available in the form of conclusions from Policy Lab I and II events. This allowed participants to move directly to the solution generation and prototyping phases. We managed the sprint according to a structured, three-phase plan:

- Problem definition and ideation. Transformation of predefined challenges into action-oriented questions such as "How could we...?". This was followed by brainstorming, which prioritised the quantity of potential solutions.
- Prototyping and policy creation. Selection of the most promising idea and its transfer to a policy canvas template, which led to a tangible, documented representation of the proposed policy mechanism.
- Validation and iterative feedback. A short presentation of the prototype, followed by feedback focused on identifying strengths, desired improvements, and future challenges related to implementation.

Policy canvas template and documentation

The policy prototyping template, referred to as the policy canvas, served as our primary tool for systematic documentation and analysis. Its main purpose was to provide a standardised, comprehensive overview of each proposed solution, ensuring comparability between the details of the five different thematic groups. The key sections used for documentation and subsequent analysis in this report include:

- (A) Initial challenge – an action-oriented, people-centred statement of the problem.
- (B) Key policy concept – a summarised value proposition for the solution.
- (C) Expected outcomes and metrics – definition of success through specific, measurable targets.
- (D) Key stakeholders and beneficiaries – identification of primary and secondary target groups.
- (E) Key policy mechanisms – functional levers and tools (funding, regulation, organisation).
- (F) Prototype – conceptual visualisation for effective communication of the idea (diagrams, process flows).
- (G) Dependencies and risks – critical assumptions and potential complications.

Data collection and analytical approach

The data for the final report was obtained from the transcribed outputs of five expert working groups that met on 15 October 2025 at Kulturpark (Creative Industry Košice) in Košice, in

cooperation with the partner Košice Self-Governing Region and VAIA. The participating experts represented a variety of fields, including regional and municipal government, academia, innovation centres and the private sector. The analytical method used on the transcripts was qualitative content analysis, focusing on the precise extraction and contextualisation of the completed items within the policy canvas template. The subsequent analysis synthesised policy concepts with the aim of understanding their implicit links and assessing their collective ability to address the fundamental strategic objectives of the Košice regional innovation strategy.

Focus of the challenges selected for Policy Lab III

Based on the findings from previous events, a total of five different demands for new policy concepts (P1 to P5) were selected, each targeting one of the five systemic challenges identified in the previous diagnostic phases. The following table summarises this emerging portfolio.

Policy Lab III teams, composition and policy concepts.

Team	Systemic challenge – Policy focus area	Key policy concept	Team composition
P1	Talent retention and skills gaps	Strategic talent development through informal education and early involvement of talent in practice	Ján Tkáč (Facilitator, VAIA), Branislav Kršák (EIT Business Development Manager, TUKE), Michal Hudák (City of Košice), Alexandra Matiová (CIKE), Stanislav Sendek (City of Prešov), Lucia Koukolová (CIKE)
P2	Fragmented communication and cooperation	Unified management through a network of liaison officers	Barbora Kováčová (Facilitator, KSK), František Lenárt (UPJŠ), Matúš Binc (K13), Marcel Martončík (CSPV SAV), Slavomír Ondoš (CIKE)
P3	Access to early-stage financing	Public-private fund for TRL 4	Martin Polák (Facilitator, VAIA), Jana Končeková (SOPK), Maroš Halama (TUKE), Peter Mikula (AmCham), IPC Prešov, Marko Popović (CIKE).
P4	Inefficient technology transfer	Eastern Innovation Platform for Consolidated Technology Transfer	Oto Hudec (Facilitator, TUKE), Apolónia Pecka Sejková (CIKE), Mária Ház (MMK), Tomáš Pasternák (PSK)

P5	Digital transformation of public administration	Citizen-focused digital adoption of public services	Adam Gašparovič (Facilitator), Adriana Šebešová (City of Košice), Pille Vojčík (EIT), Vladimíra Pohorelcová (CIKE), Žofia Sinčáková (CIKE)
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The submitted portfolio of five new policy concepts was developed to address systemic failures in the innovation ecosystem in the Košice region. The concepts form a suitable conceptual basis for a balanced and coherent roadmap aimed at consolidating institutional fragmentation, overcoming funding gaps and addressing the mismatch of circulating skills. The entire portfolio structure is designed so that policies reinforce each other in a complementary manner:

- P2 (governance) and P5 (demand) provide the institutional prerequisites and are anchored in the market environment (demand structuring).
- P1 (talent) and P4 (intellectual property) activate the supply side of high-quality human capital and intellectual property with reduced risk (de-risking). This intellectual property is then ready for financing through P3 (fund).

Successful implementation will require a thoughtful approach that combines institutional changes that can be made immediately with targeted legislative advocacy at the national level.

(P1) Regional talent curriculum

Michal Hudák, Branislav Kršák, Alexandra Matiová, Stanislav Sendek, Ján Tkáč*

The Strategic Talent Development Programme is an initiative that focuses on the critical skills mismatch and talent drain through structural reforms in the regional education environment. At the core of this initiative is the creation of an informal talent curriculum that integrates demand-driven education into the formal system at the primary and secondary school levels. The key mechanism is a more open approach to teaching for practitioners who do not have standardised teaching qualifications and the introduction of an accreditation framework for the recognition of informally acquired skills. The aim is to enable pupils and students to have early and practical contact with the business environment and mindset, making P1 a key source of talent for innovative projects and spin-off companies in the ecosystem that complements P4. As a result, a measurable reduction in skills mismatch in the region is expected.

Policy Canvas	Detailed content
A. Initial challenge	How to improve the development of talent and key competences (including soft skills) from primary school onwards, ensure that they remain in the region, and at the same time effectively address the brain drain and systemic mismatch between the supply and demand for skills?
B. Key policy concept	It is proposed to introduce an informal talent curriculum as a complementary framework to existing state education programmes. This curriculum will focus on connecting primary and secondary school pupils with the labour market at an early stage. Integration will be achieved through systematic and targeted work experience in a business environment. The key infrastructure support for the entire system is the establishment of a talent centre, which will provide comprehensive career guidance and professional testing.
C. Expected results and metrics	Increased alignment between the field of study and labour market needs, measured by the proportion of graduates who remain in the region and work in their field of study or a related field. Measurable reduction in the brain drain from the region. Number of students involved in compensated internships as a key indicator of early labour market engagement. Level of student satisfaction with regional education and career opportunities, measured through a targeted survey.

D. Main stakeholders	Pupils in the 8th and 9th grades of primary schools, secondary school students, professionals involved in mentoring, school founders (the City and the Košice Self-Governing Region). Private companies (providers of internships and work experience), informal educational institutions, psychologists and qualified career counsellors.
E. Key policy mechanisms	Establishment of a talent centre as a central coordination point. Signing of a binding memorandum of cooperation between founders for the comprehensive and binding application of the curriculum. Securing funding through a public-private partnership model. Implementation of a system of compensated (paid) internships for students. Institutional reform aimed at facilitating the entry of professionals from the field into the educational process (e.g. eliminating the need for teaching qualifications for specialists from the field).
F. Prototype	Comprehensive conceptual diagram of the talent centre. Visualisation of the range of comprehensive services (professional testing, individual counselling) and process diagram for the implementation of the informal curriculum. Establishment of an information hub (e.g. online platform) with a calendar of relevant career and educational activities in the region.
G. Dependencies and risks	Dependencies: Stable political support from regional local government. Willingness of the private sector to participate in financing and securing internships. Risks: Political inertia and resistance from school management; lack of reliable data on actual student migration. Regional economic disparities (wage trap) as the main cause of talent drain, requiring additional economic policy interventions.

The proposed measure represents an integrated systemic response to the complex and interlinked labour market and education failures identified in the Košice region. The intervention focuses primarily on mitigating skills mismatches and addressing the persistent brain drain of skilled talent. An analysis of existing regional initiatives has shown that, despite the activities of several regional innovation entities and a number of fragmented measures, there is a lack of a unified and systemic solution that would consolidate efforts into a single targeted and effective intervention. The aim of this concept is to strengthen the chain of services focused on talent development from an early stage. The main strategic issue focuses on optimising the development of talent and key competences from primary school onwards, as well as ensuring their long-term retention in the regional economic environment.

Diagnosis and systemic barriers to regional development

The analytical process revealed a set of interdependent structural problems that form a comprehensive diagnostic basis for the necessity of this intervention. The primary finding is the systemic institutional rigidity of formal education. Academic curricula chronically lag behind the dynamics of the labour market, while lengthy and inflexible accreditation processes prevent universities and secondary schools from adapting quickly to the current needs of the economy or technological progress. This problem is critically accentuated in vocational education, where there is a persistent critical shortage of qualified teaching staff. Institutional barriers further exacerbate the situation by preventing experienced practitioners from participating in the teaching process

without obtaining formal teaching qualifications. This legislative and qualification barrier effectively separates the academic sphere from current economic practice.

The brain drain is defined as a multidimensional phenomenon that includes not only traditional migration to more economically developed EU Member States, but also a significant internal movement of qualified talent within Slovakia, especially to metropolitan centres in the south-west of the country. A secondary factor that indirectly contributes to this trend may be the language barrier at regional universities, where compulsory teaching in the state language in some study programmes has a demotivating effect, leading highly qualified domestic students to prefer foreign educational institutions. A key finding is that improving the education system alone is not enough to retain talent. Without simultaneously addressing the fundamental economic reality of the region, which manifests itself in lower wage competitiveness and the absence of so-called anchor jobs (especially management, research and development positions), talent development would only lead to an acceleration of emigration. In response to this phenomenon, a key condition for the success of the new policy has been formulated: multinational companies benefiting from investment support should be obliged not only to employ local residents, but also to place them in key management and strategic positions, thereby increasing the regional absorption capacity for highly skilled labour.

Policy concept and expected results

The concept of the new policy itself is strategically focused on developing talent and key skills from an early age. This orientation was chosen for its direct compatibility with the existing competences of local and regional authorities, which minimises dependence on slow and unpredictable national legislative changes. The key intervention is the introduction of an informal talent curriculum. Its function is to effectively complement existing state education curricula. This supplementary, practically oriented education should enable students to engage early in complex practical scenarios and experimentation. Optimal implementation assumes the allocation of two hours of informal education per week. The effectiveness of this policy measure will be measured primarily by the reduction of identified systemic failures. Specifically, an increase in the professional alignment between the completed field of study and the subsequent profession is expected, as well as a reduction in the brain drain from the region. This reduction will be tracked by monitoring the migration flows of students after graduating from secondary school and their transition to tertiary education in their preferred field.

Implementation mechanisms and risk management

The implementation process is primarily entrusted to school founders (local and regional authorities). These entities are key players capable of enforcing systemic change through a hierarchical approach, thereby eliminating potential resistance from the heads of individual schools. This somewhat centralised approach requires formalisation through a binding memorandum of cooperation between the city and the region, which would ensure the mandatory and uniform implementation of the proposed talent curriculum in all schools within their jurisdiction. Funding

must be secured through a multi-source approach, ideally in the form of a public-private partnership.

Key implementation mechanisms include the establishment of a talent centre. This centre would provide specialised career counselling, psychological testing and comprehensive specialisation recommendations for 8th and 9th grade primary school pupils and secondary school pupils. The centre would serve the region by integrating the informal curriculum into students' individual development plans. Institutional and qualification reform aimed at removing current barriers is also key to the success of the policy, as it should facilitate the entry of professionals from the field into the education system. To increase market integration, it is necessary to create systems for paid and compensated internships that would also be economically attractive to the companies involved, and to establish an information hub for the consolidation and distribution of information on all existing informal development activities in the region.

Implementation is fundamentally conditional on the existence of stable political support and the willingness of the local private sector to engage in committed cooperation. The main risks identified include political inertia, potential resistance from school management, and a lack of reliable and up-to-date data on student migration. The most significant risk that this partial concept cannot eliminate is the persistent wage trap. Regional economic disparities, manifested in low wage competitiveness, may remain the primary cause of talent drain. This in turn requires complementary and parallel interventions in the area of economic policy that go beyond the scope of this new policy.

(P2) Unified management and communication

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The second proposed policy addresses one of the fundamental systemic failures – institutional fragmentation and a lack of mutual trust – that hinder effective regional cooperation. The key intervention is the establishment of a formal network of liaison officers within academic, local government and commercial institutions. These persons will have a formal mandate and clearly defined tasks to facilitate the transfer of strategic information, verify market demand and simplify access for innovative companies. The network of liaison officers will transform the current reliance on informal personal contacts into an institutionalised, transparent and measurable communication infrastructure. P2 is considered a prerequisite for the success of the entire portfolio of proposed policies, as it ensures resilience, strengthens coordination capacity and creates the consensus needed for long-term commitments, which are key to the successful implementation of policies P3 (financing) and P4 (technology transfer).

Policy Canvas	Detailed content
A. Initial challenge	How to optimise internal communication, ensure an effective, two-way flow of strategic information and innovation from the highest level of management downwards, while eliminating operational duplication of effort?
B. Key policy concept	A network of innovation liaison officers appointed in each key academic, local government and commercial institution is being implemented. The aim is to formalise a two-way communication channel: to ensure the dissemination of strategic management and vision (downward flow) and the transfer of demand for expertise and market requirements (upward flow). This system will serve as the primary point of contact for the external environment, thereby aligning the activities of institutions with the regional innovation strategy.
C. Expected results and metrics	Increased internal awareness of strategic objectives within the participating institutions is expected, as measured by a targeted survey. Measurable outputs also include a reduction in the number of duplicate initiatives (e.g. overlapping acceleration programmes) and the creation of an activity index for a catalogue of expertise – a central database of available skills. Effectiveness will also be reflected in increased dissemination of information after key meetings to middle and operational management.

D. Main stakeholders	Primary: Top management of institutions, rectors, senior staff, officially appointed liaison officers, relevant expert and operational staff. Secondary: Regional innovation centres (acting as a central coordination hub), external partners (private companies), representatives of civil society.
E. Key policy mechanisms	Mandate for appointment: Obligation to appoint a liaison officer imposed by the founder or management of the institution. Support: Establishment of a professional secretariat or manager for liaison officers to provide administrative and technical support to the network. Process change: Regular, mandatory internal meetings of liaison officers to disseminate topics discussed at a high level. Digital tools: Creation of a central database for the Catalogue of Expertise and introduction of a shared calendar of activities.
F. Prototype	Documentation of the management structure and schematic representation of the two-way flow of information and responsibilities. Design of a user interface (website mock-up) for the catalogue of expertise with clear profiles of the technical and research skills of employees across universities.
G. Dependencies and risks	Dependencies: Success is contingent upon the definition and implementation of a unified regional goal and thematic prioritisation at the regional level, as well as the willingness of institutional leadership to delegate real authority to liaison officers. Risks: The greatest risk is that the position of liaison officer will become a mere formal title without any real influence, which will not bring about a change in organisational culture. Other risks include the continuing reluctance of researchers to share their expertise transparently and ongoing political and institutional tensions.

The second policy concept presented directly addresses the key organisational deficits identified in the regional innovation ecosystem of the Košice region. These deficits are primarily defined by persistent institutional fragmentation, which leads to inefficient duplication of effort, and chronic failure in two-way strategic communication across institutional hierarchies. The proposed solution is therefore based on a pragmatic model of enforced and formalised institutional interconnection. This creates the necessary umbrella condition and coordination capacity for the success of all other interventions in our policy portfolio.

Diagnosis and systemic barriers in the innovation environment

The primary diagnosis defines the critical challenge of improving internal communication, ensuring an effective two-way flow of strategic information on innovation and objectives, and preventing extensive operational duplication. Analytical findings confirm that this challenge has deep systemic and cultural roots that go beyond a purely communication problem. The first structural barrier is cultural and academic isolation within the ecosystem. In many academic institutions, especially traditional universities, there is a strong focus on basic research. This focus sometimes generates a culture of detachment from practical commercial activity, which prevents university staff from becoming adequately involved in solving real-world problems in the private sector and meeting market demand. Existing links between the academic and commercial environments are thus often fragile, unsystematic and critically dependent on personal relationships and individual initiative rather than robust and scalable institutional channels.

A secondary problem lies in the failure of vertical communication and operational duplication. The regional ecosystem is characterised by an excessive frequency of collaboration-oriented meetings, which, however, fail to implement systemic change. Critical communication failures occur within institutions – strategic information agreed at the highest level of management (e.g. by rectors or local government leaders) is rarely effectively disseminated to executive staff and relevant technical experts. This information vacuum directly results in operational staff not being fully informed about institutional strategy or regional initiatives, which logically leads to unproductive duplication of work and waste of resources. The absence of a shared and consensual strategic direction also contributes to this operational fragmentation. The ecosystem lacks a clearly defined, unifying regional priority in the field of innovation. Without a clear common goal, each institution defines its own strategy, which is often non-synergistic, making collaborative work difficult and leading to a lack of transparency in innovation policy for both experts and the general public.

Policy concept and expected results

A unified management and communication model has been proposed to overcome the identified institutional fragmentation. At the core of this model is the introduction of a formalised network of liaison officers across all key regional institutions. We recommend that the network of contact persons be explicitly linked to the RIS3 KSK document and that unified monitoring and evaluation mechanisms be introduced. This will ensure that unified management is not only a formal framework but also a practical tool for coordinating regional priorities and sharing data transparently. The key added value of this model is the formalisation of an official, two-way communication channel. This channel is designed to ensure the dissemination of strategic direction from top management to lower, operational levels, while also transferring expert knowledge, demand and feedback from the grassroots level back to management. Key target metrics focus on quantifying the reduction of systemic failure: a measurable reduction in the number of duplicate initiatives within the ecosystem, a significant increase in internal awareness of regional strategy within institutions, and the degree of activation of the expertise catalogue.

Implementation mechanisms and risk management

The successful functioning of the liaison model depends on the introduction of several interconnected implementation mechanisms and cannot rely on voluntary participation. The first and most important is institutional mandate and authority. The system requires delegated authority from the founders and senior management (the City of Košice and the Košice Self-Governing Region) to enforce the official appointment of a liaison officer by each key institution. This person must be a professional employee with relevant technical background, not just an administrative worker, in order to be able to fully perform their duties. In order to provide the necessary administrative support and effective sorting of information for the network of liaison officers, a professional secretariat or specialised manager must be established to prevent overburdening of technical staff.

The second key mechanism is a centralised catalogue of expertise. To address the critical lack of transparency about available university capacities, the policy mandates the creation of this centralised system. This system includes a standardised section integrated into existing web profiles of staff across universities, which will briefly outline their primary technical and research capabilities. The aim of this mechanism is to make academic expertise easily discoverable and accessible to external partners, such as the private sector and public administration. Finally, the entire management structure requires thematic prioritisation and binding meetings. The success of the model is contingent on the definition of a unifying regional goal. Once this consensus has been established, the network of contact persons would institutionalise responsibility by holding regular internal meetings. These meetings should serve to disseminate the agreed action points and strategic objectives to a lower, working level in a rapid and structured manner.

This policy is an important pillar of governance, but it carries high institutional and political risks. Above all, there is a real risk that the position of liaison officer will be degraded to a formal title without any real delegated authority, thereby failing to change the prevailing organisational culture. The operational viability of the single management framework depends entirely on stable political consensus and the willingness of the leadership of key institutions to delegate real power. A sustained political commitment is essential to overcome the deeply entrenched culture of institutional isolation.

(P3) Public-private fund for TRL 4+

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The third proposed measure is a financial intervention aimed at strategically filling the financial gap known as the ‘valley of death’ in the process of developing new innovations with a technology readiness level of 4 to 6. The policy proposes the establishment of a public-private fund with a mandate to take on higher risk than traditional venture capital and strategically invest in emerging projects that have already demonstrably moved beyond the basic research horizon. The innovation of this fund lies in the introduction of a social agreement mechanism that commits successful portfolio companies to return a portion of future royalties or profits back to the fund, thereby strengthening its long-term sustainability. The public-private fund for TRL 4+ critically relies on the follow-up P4 (technology transfer) policy as a validation filter. This filter, together with existing acceleration programmes, provides it with a range of commercially viable projects at TRL 4 level with reduced risk. The control and quality assurance of input projects is key to attracting private capital and ensuring the overall sustainability of the fund.

Policy Canvas	Detailed content
A. Initial challenge	How can a stable, regional public-private fund be created that has a mandate to provide venture capital to innovative entities at the key technology readiness level 4-6, where private capital lacks willingness to accept risk and confidence?
B. Key policy concept	Establishment of a public-private fund with an exclusive mandate and competencies (including skills) to invest in projects starting from TRL 4 (prototyping/validation). The fund will operate with a minimum investment allocation of €200,000 or more per project, effectively bridging the critical financial gap between grant funding and later-stage venture capital funds.
C. Expected results and metrics	A tool that enables individuals and companies from the region to support local innovation with the aim of resolving the equity mechanism. It is necessary to quantify the financial return and long-term rotation of the fund. A social agreement on public sector contributions alongside private sector contributions, for example phasing in public and private sector contributions at a ratio of 1:1 until capital of EUR 1 million is reached, 0.75:1 until EUR 5 million is reached, and 0.5:1 until EUR 10 million is reached.

D. Main stakeholders	Primary: Košice and Prešov self-governing regions (as the main initiator and contributor), strategic industrial partners (e.g. US Steel, Volvo, LG – as private investors), commercial banks. Secondary: universities (as providers of intellectual property), the Košice Region Innovation Centre – ICKK (as a partner for the initial phase), start-ups in the TRL 4+ range, small investors/citizens.
E. Key policy mechanisms	Financing structure: Implementation of multi-source financing (KSK budget, state, EU funds, private capital). Mechanism to support local innovators that will bring economic growth to the region; improvement (more inclusive) of the innovation and investment environment in the region; Measures at national and EU level such as uniform rules for the establishment and operation of companies, simplification of access to research infrastructure and reform of public procurement to create predictable and targeted demand for technological solutions from the fund's portfolio in the public sector.
F. Prototype	Development of a financial flow chart that visualises the fund as a central hub between funding sources and start-ups (TRL 4-6), including capital rotation. Preparation of a basic contract template for the Social Agreement mechanism.
G. Dependencies and risks	Dependencies: Political and strategic stability that extends beyond four-year election cycles requires long-term regional and cross-sectoral agreement. It is essential to align the fund with national and European financial schemes such as the EIC Accelerator and the planned Scaleup Europe Fund. Risks: Persistent conservatism of Slovak companies and their distrust of the system, reluctance of private capital to invest; political instability and unpredictable decision-making at the highest level; global economic shocks and crises affecting venture capital.

The third proposed policy is designed to provide a structural solution to the critical funding gap that occurs at technology readiness levels TRL 4 to 6. This critical band is ignored by conservative-minded private investors in the regional environment and is also insufficiently supported by existing public funds. The aim of the intervention is to create a permanent, hybrid financial instrument that will systematically bring innovative ideas from proven research closer to commercial viability.

Diagnosis and systemic failures in capital allocation:

The analytical discussion identified several interrelated failures that collectively prevent innovative ideas from successfully transitioning from the basic research phase to the commercial viability phase. The main structural problem is the financial gap in the TRL 4–6 range itself. Unlike economically strong venture capital ecosystems, Slovakia lacks the culture and capacity to accept the risks associated with projects in this area: we have a few venture capital funds that are starting up – small private capital and companies that make independent investment decisions in the region. This phase is characterised by the necessary prototyping, validation and demonstration of technology. The gap persists despite the existence of basic pre-seed support, which means that viable intellectual property is held back at the very moment of its highest commercialisation potential.

The problem is exacerbated by low levels of corporate reinvestment in research and development and innovation.

Slovakia has long been among the EU countries with the lowest total R&D expenditure as a percentage of GDP, at only around one per cent. The share of corporate expenditure is well below the EU average, which is insufficient to create a competitive and knowledge-based economy. At the same time, existing national fiscal incentives designed to support R&D expenditure, such as the super-deduction mechanism, are perceived as administratively burdensome and impractical. As a result, they are largely underutilised by small and medium-sized enterprises, which lack the internal capacity to navigate complex bureaucratic requirements. Furthermore, the historical allocation of public resources has focused on basic research, failing to financially follow projects through to the necessary higher TRL levels that are key to successful product launch and commercialisation.

Policy concept and innovative financial instrument

The proposed policy solution is to create a specialised public-private fund with a clear mandate to invest in projects specifically at TRL 4 and above. The fund is designed to operate with a significant minimum investment threshold of EUR 200,000 or more per project, ensuring sufficient capital injection to effectively bridge the financial gap between early-stage grants and the national venture capital market at a later stage. The purpose of this fund is explicitly to fill the venture capital gap at a key stage of commercialisation.

Implementation mechanisms and sustainability of the fund

Critical implementation mechanisms are necessary to establish the fund as a sustainable, long-term financial instrument capable of overcoming prevailing conservative thinking. The initial impetus must come from regional leadership, with the Košice Self-Governing Region defined as the primary trigger actor, allocating its own budgetary resources to support research and development. In order to achieve the fund's self-sufficiency and reduce its dependence on public subsidies alone, it is proposed to introduce a social agreement with start-ups and companies that may be potential recipients of innovation. This agreement would oblige successful start-ups to return a predefined percentage of their net profits or licence fees for patented technologies back to the fund. This mechanism guarantees capital rotation and long-term financial resilience, while redefining the local business culture towards a model of collective contribution to the ecosystem.

Another mechanism is the introduction of the regulatory sandbox principle to reduce bureaucratic friction for innovation processes. An experimental environment in which rules are temporarily relaxed for a predefined period allows for rapid testing of innovations without immediate, long-term legislative barriers. In this regard, reference can be made to models used, for example, by the National Bank of Slovakia for the fintech sector. In addition, the fund's market impact is linked to strategic companies in the region and public procurement reform, making the public sector a predictable and stable client for innovative solutions developed by companies in the fund's portfolio.

The engagement model for the fund is inclusive, involving public, academic and private entities. A key aspect of the plan is to include major strategic industrial partners and important companies as key investors and partners. The aim is to create strong cooperation between domestic and multinational companies, offering multinationals effective entry into the local ecosystem and mitigating internal competition with their foreign subsidiaries. The policy also emphasises the need to open the fund to citizens with the possibility of investing smaller amounts, thereby promoting a philosophy of long-term capital formation rather than dependence on grants and cultivating community co-ownership of the innovation agenda.

Projected results and risks

The projected results focus on creating a sustainable source of venture capital for TRL 4+ projects, ensuring the financial return and long-term sustainability of the fund through a social contract, and achieving a measurable strengthening of the regional innovation ecosystem. However, the primary threats are not market-related, but primarily political and institutional. The biggest risk is that the policy will be derailed by the short four-year political cycle, as the fund requires long-term cross-sector agreements and stability that goes beyond a single election cycle. The persistent conservatism and mistrust of Slovak companies in systemic solutions are a major obstacle to the mobilisation of private capital. Finally, the systemic fragmentation of the ecosystem poses a risk of duplication, as many existing entities may favour and protect their own narrow interests rather than contributing in a consolidated manner to the creation of a systemic solution. This policy is therefore conceived not only as a financial instrument, but as a comprehensive intervention designed to shift the regional culture of capital management and allocation towards a collaborative risk-sharing model anchored in long-term financial stability.

(P4) Eastern Innovation Platform for Technology Transfer

Mária Ház, Oto Hudec*, Tomáš Pasternák

The fourth proposed policy focuses on the development of technology transfer offices, as well as on increasing the visibility and coordination of transfer, which is currently carried out mainly through individual contacts between researchers and partners. This leads to a scattered and difficult-to-measure flow of academic intellectual property into the field of commercialisation. It is proposed to establish an Eastern Innovation Platform, which will function as a joint, unified regional platform for technology transfer and matchmaking for the Košice and Prešov regions. The key mechanisms of the platform are innovation challenges that systematically align the supply of academic research with the real demand of private companies and regional governments. The VIP will implement proof-of-concept vouchers to finance projects in the early stages of TRL 2–4. The platform provides a key institutional framework and technological validation, generating low-risk projects that serve as an essential upstream filter for P3 fund investments while effectively integrating trained students from the P1 curriculum.

Policy Canvas	Detailed content
A. Initial challenge	How can the transfer of intellectual property from academia (including the humanities) to the commercial sector be streamlined and institutionalised, reducing bureaucratic burdens and merging asymmetric technology transfer workplaces into a single effective regional mechanism?
B. Key policy concept	Establishment of the Eastern Innovation Platform as a concentrated and unified platform for technology transfer and matchmaking for the regions of Košice, Prešov and neighbouring cross-border areas (Hungary, Poland, Ukraine). The main objective is to institutionalise the division of labour and specialisation between universities in order to achieve collective regional benefits in the quadruple helix.
C. Expected results and metrics	Increased number of official spin-off companies and patents from the academic environment, combined with the reform of measurable indicators for university staff. Increased volume of funds obtained from complex international grants, such as Horizon Europe. The quantity and quality of innovation challenges implemented that respond to real demand from companies, regional and local authorities.
D. Main stakeholders	Primary: Researchers and teachers at universities (as intellectual property holders), regional and local governments, private companies, small and medium-sized enterprises, large corporations (as call issuers). Secondary: Existing technology transfer offices at universities, students (involved in project internships), innovation council with international expert supervision.

E. Key policy mechanisms	<p>Innovation calls: Systematic collection of market demand from companies and local governments in order to focus academic research. Management: Establishment of an innovation council (Košice-Prešov bi-regional council) with international membership for impartial verification and prioritisation of projects. Early-stage financing: Implementation of vouchers for concept verification – financial support to reduce risk in the early stages of TRL 2–4. Motivation: Change in the motivation system at universities – mandatory integration of technology transfer activities into measurable indicators for academic staff. Student integration: Creation of a system of project internships as an alternative to traditional theses. In the first phase, the contracting authority is the regional and local government of KSK and PSK, while the applicants are consortia of the university, corporate and non-profit sectors.</p>
F. Prototype	<p>Processing of a process diagram of the technology transfer cycle. Visualisation of the flow of intellectual property from demand (through an innovation challenge) to matchmaking, concept verification with vouchers, and commercialisation. Concept of an innovation council – proposal for its composition, mandate, and prioritisation process.</p>
G. Dependencies and risks	<p>Dependencies: University funding needs to be changed – a larger share should be linked to commercialisation results (TT, licences, spin-offs). The financial sustainability of the voucher system for concept verification is essential. Risks: Reluctance of existing technology transfer offices to give up their autonomy and share resources and expertise. Low market absorption capacity. Risk of misuse of innovation challenges for political self-promotion.</p>

The proposed policy concept aims to remove structural inefficiencies surrounding the transfer of intellectual property and research results from academia to the commercial sector. This concept, which is based on cooperation between key regional experts, directly addresses the region's weak institutional environment and low intellectual property-based business output.

Diagnosis and systemic failures of technology transfer

The main problem was defined by two critical systemic issues: the low number of official spin-off companies and the fragmentation of the institutional environment for technology transfer.

UPJŠ, TUKE and UVLF have technology transfer offices, but most transfers (cooperation with companies, agreements, spin-off activities) take place outside their official channels – through individual and informal contacts between researchers. This results in low visibility and poor documentation of results, scattered know-how, duplication and a weakened negotiating mandate for universities vis-à-vis industry. The innovative and social potential of the humanities and social sciences remains outside the main streams of technology transfer. The new model should therefore extend the TTO framework to social innovation, cultural and data services, enabling the full involvement of non-technical disciplines.

Currently, research staff are predominantly motivated only by academic publications. This system does not sufficiently reward the practical application and commercialisation of research results. This institutional disconnect means that patents often remain unused. The technology transfer s that do take place are mostly informal – individual scientists set up small private companies – and are

not officially recognised as spin-offs, contributing to a systemic underestimation of the region's actual innovation capacity.

This internal academic challenge is exacerbated by the structure of the regional economy, which continues to focus primarily on production. The level of business expenditure on research and development (BERD) is among the lowest in the EU, indicating that regional firms generate only limited demand for applied research and innovation. There is a lack of strategic focus on higher value-added activities that would naturally generate demand for academic intellectual property. Without organised market demand, the commercial viability of existing intellectual property is also limited, deepening the overall innovation gap in the economy.

Policy concept: Eastern Innovation Platform

The proposed solution is to create an Eastern Innovation Platform, which is a unified, bi-regional innovation platform with a mandate to serve the Košice and Prešov regions, taking into account the prospect of cross-border cooperation. The main philosophy of the platform is to institutionalise the division of labour and specialisation between regional universities, in line with the RIS3 smart specialisation strategy, thereby consolidating expert capacity into a single shared mechanism. This unified approach – including vouchers for concept verification (TRL 2–4) – overcomes bureaucratic burdens, creates a strategic agreement and space for external partners, and increases the transparency, speed and efficiency of technology transfer.

The innovation platform is built on strong functional levers designed to activate the dormant commercial potential of regional research. The first mechanism is the introduction of Innovation Challenges. These challenges institutionalise market demand by requiring specific definitions of problems and needs directly from local companies and, crucially, from regional and local authorities. By framing research needs as practical challenges, the platform ensures that academic work will be focused on application in a regional context. The challenges are evaluated and prioritised by a joint innovation council of the Košice and Prešov self-governing regions. This council must include international experts and figures from industry and academia, providing impartial, practical verification of potential projects that ensure alignment with the research and innovation strategy for smart specialisation.

To bridge the gap between pure research and market readiness in the TRL 2-4 range, the platform will distribute financial vouchers for concept verification. These vouchers are specifically designed for proof of concept, reducing early-stage risk and making projects more attractive for follow-on investment, such as the fund proposed in the previous P3 policy concept.

The most fundamental structural reform is the change in the incentive scheme for universities. Indicators for academic staff could be revised to reward contributions beyond traditional academic publications, explicitly recognising technology transfer activities, spin-off creation and measurable socio-economic impact on the region. The mechanism also directly integrates student engagement by introducing a system where project internships can replace traditional theses. This ensures that human capital is trained in practical, demand-driven research, which accelerates the readiness of

projects for higher TRLs while training future company founders. The platform has the potential to link student start-up activities (ICKK, UVP Technicom, etc.) with the research activities of academics, creating continuity from idea and experiment to a proven innovation project ready for implementation.

We propose that the Eastern Innovation Platform for Technology Transfer should have a modular structure divided into thematic sections. The sections can be linked to the RIS3 KSK priorities:

- Energy and energy communities
- Digitalisation and smart solutions
- Circular economy and sustainability
- Technology transfer and business models
- Political and legislative frameworks

This structure will enable a more targeted approach to addressing needs, better connections between actors, and practical applications in technology transfer. We recommend that the platform also function as a digital hub with a project database and a practical tool for matchmaking.

Projected results and critical dependencies

The proposed process is systematic: Demand, which is first defined by public administration and then by companies, is directed through a bi-regional innovation council to matchmaking with universities. Vouchers are then available to verify the concept for implementation, and the entire cycle culminates in prestigious innovation awards for successful commercialisation. The expected success metrics focus on systemic change, in particular a measurable increase in the number of official patents and spin-off entities, a significant increase in external funding obtained, especially from complex European programmes (such as Horizon Europe), and an increase in the number and quality of innovation challenges implemented.

The success of the platform is fundamentally dependent on overcoming institutional and legislative barriers. A key factor is a change in the financing of universities and within universities, which will enable the proposed motivational reforms. Another critical dependency is institutional cooperation, specifically the willingness of existing technology transfer offices to give up their autonomy and share resources and expertise for the collective regional benefit. Political integrity also poses a risk, as innovation challenges can be exploited for political self-promotion, with visibility taking precedence over actual innovation, and low market absorption capacity resulting from a lack of active companies capable of adopting and exploiting innovation. The Eastern Innovation Platform therefore represents a robust, market-oriented solution designed to remedy the structural failures of academic isolation and fragmented transfer mechanisms, provided that the necessary legislative and institutional coverage can be secured.



(P5) Citizen-focused digital adoption of public services

Adam Gašparovič*, Adriana Šebešová, Pille Vojčík, Vladimíra Pohorelcová

The fifth policy concept focuses on the delay in the digitisation of public administration, with a critical focus on digital inclusion and the level of adoption by citizens. The main intervention is the creation of a network of digital assistance centres in municipal offices that provide citizens with direct, personalised assistance in transitioning to digital services, initially in the area of local taxes. The new P5 policy addresses deep-rooted trust deficits and low digital literacy, which lead to operational inefficiencies, such as the annual printing of more than 50,000 tax assessments. The policy sets an ambitious target of achieving 100% digital tax assessments by 2030. The success of the P5 measure in its first pilot phase lies in removing bureaucratic barriers for taxpayers and, later, for all residents of the self-governing region. One of the added benefits is the creation of opportunities for introducing further digital innovations in the digital public administration environment, enabling the regional government to create conditions for piloting initiatives from measures P4 or P3. The success of the measure will also support the creation of a functional open data system, which can serve as a catalyst for the emergence of new digital services and products.

Policy Canvas	Detailed content
A. Initial challenge	What methods can be used to effectively educate and motivate citizens to use digital services, such as electronic local taxes and fees, in order to reduce the administrative burden on the city, generate savings and increase digital inclusion?
B. Key policy concept	Establish a network of digital assistance or adoption centres for citizens that will provide direct, personalised assistance support to citizens. In its pilot phase, the initiative will focus on the digitisation of local taxes and fees as a service with a significant impact on operational efficiency. Help centres can be set up in local offices, currently unused spaces or existing service centres.
C. Expected results and metrics	The goal is to achieve 50% digital tax assessments by 2027 and strategically focus on 100% digital services in the pilot area by 2030. Measurable savings in city operating costs – postage, printing. Increased satisfaction of citizens and employees, assessed through surveys before and after implementation.
D. Main stakeholders	Primary: Citizens and taxpayers (including seniors and the digitally illiterate); city tax and fees department; digital assistance centre staff. Secondary: City IT department (including external contractors); strategic companies (as potential partners/solution providers); volunteers (secondary school and university students as human capital for assistance).
E. Key policy mechanisms	Digital assistance centres: Establishment of physical contact points with trained staff to overcome the barriers of trust and low digital literacy. Staff training: Targeted training for existing tax department staff for digital transition and assistance work. Community involvement: Involvement of volunteers (students) in assistance practice to strengthen the human capacity of the centres. IT support: Introduction of a key indicator for the IT department – ensuring 100% online accessibility of taxpayer profiles and system stability. Mapping current processes as a key step in digitisation.
F. Prototype	Process diagram for digital citizens – a graphical representation of a simplified procedure in which citizens use the digital assistance centre as a support point. Conceptual poster of the centre – visualisation of the assistance point at the office.

G. Dependencies and risks

Dependencies: Stable political will of the city and Košice region leadership for long-term investment in human assistance. Adequate and stable IT support and coordination with external suppliers. Risks: Persistent resistance to change on the part of employees and citizens. Loss of trust in the digital system due to security failures or low literacy. Low recruitment and retention rates of volunteers/students for assistance work.

The new policy concept focuses on the digitisation of public administration, which is considered a key element of regional smart specialisation. The intervention does not primarily focus on the acquisition of new technologies, but on ensuring the adoption of digital services by citizens and supporting digital inclusion. The team behind the measure found that investments in infrastructure often precede the ability and willingness of users to engage, leading to systemic inefficiencies and unjustified public funding. The main objective is therefore to shift the focus from technology to social and cultural adoption.

Diagnosis and dual systemic failure

The considerations focused on a pair of interrelated systemic failures that prevent a complete digital transition. The first problem is the rigidity of internal processes and the bureaucratic preference for paper. One of the obstacles to true paperless digitisation is the law on archives and registries, which requires physical copies to be stored in physical archives. The rapid introduction of digital technologies in such a system often indirectly leads to the creation of additional physical copies. Despite some progress, key administrative processes remain tied to physical documents. Critically, the approval and processing of applications still requires the physical location and securing of signatures from responsible persons. This inefficiency is rooted in complex administrative processes, particularly outdated records management and filing systems, which hinder an effective digital agenda.

The second failure is the resistance of part of the community and the digital divide. A significant part of the population, influenced by generational habits or, more importantly, low levels of digital literacy, prefers personal payments and services at the municipal office. Previous unsuccessful attempts by public institutions to introduce digital solutions have also discouraged part of the population from trying public digital services. Citizens with lower digital literacy continue to have a deep-rooted lack of trust and a belief that digital payment methods are less reliable or secure. This resistance is economically costly: the city must still print and mail an estimated 50,000 tax assessments annually, which generates significant time and financial losses. These findings have led to a central challenge that needs to be addressed: How can citizens be effectively motivated and educated to adopt and use digital services?

Policy concept: Citizen digital adoption centres

The proposed intervention focuses on a citizen-oriented digital adoption model that shifts the emphasis from the technical system to the user journey. The key concept, based on internationally

recognised practice, is to establish a network of Digital Assistance Centres located in municipal offices or other premises owned by the municipality. These centres would provide direct, personalised and practical assistance to citizens in using digital services. Their aim is to convey a positive experience of the new service and thus overcome mistrust or fears of digital solutions. As a result of this measure, the level of support available to citizens in fulfilling their obligations to the city or region will increase. As a high-impact pilot project, it is proposed to use the digitisation of local taxes and fees, which will enable measurable savings and rapid verification of the concept.

Implementation and sustainability mechanisms

The success of the digital assistance centre model depends on the creation of complementary mechanisms that reduce external friction for citizens and internal friction for city employees. Physical assistance centres, staffed by qualified personnel, will serve two purposes: actively helping residents use electronic services and simultaneously guiding the tax department's processes towards full digitisation. An essential part of this is capacity building, which includes targeted training for existing tax department employees to manage the digital transition and provide effective assistance to citizens.

The policy further promotes the use of external talent for effective implementation, in particular by involving university and secondary school students in practical internships and volunteers. This mechanism links digital training directly to the talent chain, reflecting the themes of the P1 concept. Finally, the system requires data-driven accountability, where the city's IT department must adopt clear key performance indicators, such as ensuring that 100% of taxpayer profiles are digitally accessible online. This step is necessary to guarantee the basic database needed for the universal provision of digital services. The entire mechanism is designed not only to improve services but also to generate savings in the city's operating expenses.

Projected results and risks

The new policy sets measurable targets – to achieve 50% digital tax assessments by 2027 and the ambition to achieve 100% use of digital services by 2030. Success is defined in two ways – operational efficiency and a measurable increase in citizen satisfaction, which is monitored through surveys of both citizens and employees. Successful pilot projects will also contribute to building citizens' trust in digital public administration. The use of volunteering will indirectly support social dialogue and potential cohesion. However, the risks and dependencies are considerable. These mainly concern resistance to change in established processes on the part of citizens and employees. Discussions within the authoring team revealed conflicting but logical findings that employees of the local tax and fees department would like to change the current processes, but at the same time fear that the change will bring them uncertainty and more work. Trust and motivation are therefore critical – the success of the centre depends on actively building trust with citizens with low digital skills and ensuring adequate political motivation on the part of the city leadership. There is also a risk of relying on volunteers, as the feasibility of the model is conditional on the active involvement of external capacities and students, an area where local capacity is still underdeveloped. This policy

concept confirms that digital transformation is primarily a social policy challenge that requires human assistance and trust-building mechanisms, not just a technical implementation problem. The establishment of a help centre is a critical intervention necessary to achieve the economic benefits and inclusive goals of the digital public sector.

Discussion

Systemic interactions and impacts on the innovation ecosystem

In the final section of the report, we go beyond the individual frameworks of the five proposed policy prototypes (P1 to P5) and analyse them as a single interconnected portfolio of interventions. The aim is to predict their expected (not guaranteed) collective synergistic effects and the extent to which they jointly address the deep-rooted structural shortcomings of the innovation ecosystem in the Košice region and Eastern Slovakia as a whole. The proposed solutions demonstrate a deliberate, flow-oriented structure focused on the smooth transfer of human capital, knowledge and risk financing across the ecosystem.

Causal interactions between the five proto-policies

A complementary analysis identifies potentially strong causal relationships based on the mechanisms defined in the individual policy concepts (policy canvas). These interactions can be divided into three main pillars that ensure the functionality of the portfolio:

- Activation of the supply side – focused on generating high-quality intellectual property and talent.
- Bridging function of financing – focused on venture capital and commercialisation.
- Structuring the demand side – focused on creating a stable market for innovation.

Supply-side activation and generation of innovation flow

Concepts P1 (informal talent curriculum) and P4 (Eastern Innovation Platform) form a critical "upstream" segment aimed at fundamentally changing the quality of generated human capital and commercially viable intellectual property. The function of measure P1 is to act as the primary talent feeder for the entire innovation system. This intervention directly addresses the persistent skills mismatch and academic alienation from practice by promoting informal learning and the practical involvement of experts from the field in teaching.

The output of P1, which is students with an entrepreneurial mindset and applicable skills, is precisely the key input required by the technology transfer mechanisms defined in P4. P4, in turn, provides the institutional structure necessary for the formalised commercialisation of intellectual property and for the advancement of projects to a higher level of technological readiness. The planned integration of vouchers for concept verification (P4) with a system of project internships for students (P1) formalises an educational ecosystem focused on progress in TRL. Students trained in P1 in practical application are integrated into real projects that address problems obtained through the innovation challenge mechanism (P4). This iterative process simultaneously accelerates technological readiness and develops human capital, transforming basic academic research into projects ready for TRL 4.

Bridging function of financing and intellectual property validation

Measure P3 (public-private fund) directly addresses key market failures in financing the critical TRL 4-6 range. However, its successful implementation is fundamentally linked to the validation capacity of P4 (innovation platform), which serves as an essential upstream validation filter for financing.

The voucher system for concept verification and matchmaking in P4 aims to fuel the innovation flow by transforming asymmetric and informal intellectual property (identified as a problem in P4) into commercial concepts with reduced risk, validated at least at TRL 4.

This key service provides P3 with a portfolio of investable projects that have demonstrably progressed beyond the early research phase. This mitigates the extremely high risk that P3 is mandated to absorb. This structured risk reduction (de-risking) makes the public-private fund significantly more attractive to conservative private investors who are currently unwilling to enter the market.

In addition, P3 introduces an innovative sustainability mechanism – a social contract. This stipulates that a portion of the profits or patent royalties must be returned to the fund, ensuring its long-term vitality and resilience to subsequent political cycles. This mechanism has the potential to fundamentally disrupt the prevailing conservative and short-term financing culture in the region.

Managing and structuring the demand side

Policies P2 (unified management and communication) and P5 (digital adoption by citizens) focus on the institutional environment and the demand side, effectively addressing the chronic institutional failures identified during the diagnostic phases.

Measure P5 focuses on the comprehensive digital transformation of public administration processes, thereby addressing a dual challenge: reducing bureaucratic complexity and streamlining the delivery of existing services. The mandate to achieve 100% digital public services (P5) primarily pursues the goal of improving access and user experience for citizens and businesses. The implementation of this mandate requires innovative technological solutions to secure and deliver existing public services (e.g. tax payments, permits, etc.), creating space for the application of modern technologies. This pressure for digital efficiency is closely linked to P3 (public procurement reform) and is forcing the public sector to transform itself from a bureaucratic obstacle into a modern, data-oriented service provider. A secondary effect is the possibility of creating open data platforms, which could then serve as a basis for the emergence of new, private sector-led services and applications.

Policy P2, which establishes a network of liaison officers, is an institutional prerequisite for the success of the entire portfolio. Previous Policy Lab events have repeatedly emphasised that a systemic lack of trust, reliance on ad hoc personal relationships and institutional fragmentation undermine all strategic efforts. P2 policy therefore directly mitigates these failures by formalising mandates, tasks and information flows, thereby providing institutional predictability and transparency. Without P2, the interregional cooperation required for P4 (the Košice and Prešov Innovation Council), the sustainable political support necessary for the financial mandate of P3, and the internal coordination of departments for the implementation of P5 would be exposed to an unacceptably high risk of organisational resistance or communication failure.

Aligning the policy portfolio with systemic failures in the ecosystem

The five prototypes of proposed new policies are not a set of isolated measures. They are designed as targeted interventions at the intersection of five key systemic failures identified during the diagnostic phases of the Policy Lab series of events. Each policy addresses one of the key problems while structurally contributing to the success of the others, creating an effect of interconnected solutions:

Systemic Challenge	Policy Portfolio Solution
Institutional fragmentation and trust deficit	P2 (network of liaison officers) provides a mandate-covered communication infrastructure, shifting reliance from personal networks to institutional roles. P4 (innovation platform) formalises inter-institutional cooperation under a bi-regional innovation council, forcing technology transfer offices to share resources.
Valley of death (TRL 4–6) and capital gap	P3 (public-private fund) provides direct financial capacity at the TRL 4+ stage, strategically filling the gap between existing pre-seed grants and the attractiveness of national venture capital. P4 ensures the quality of capital by generating validated projects with reduced risk (de-risking) at TRL 4+.
Skills mismatch and brain drain	P1 (informal talent curriculum) ensures exposure to practical skills at an early age, accelerated by a mechanism that allows experienced practitioners to enter the education system. P4 (project-based learning, motivational reform) structurally links academic output with commercial relevance.
Asymmetric technology transfer	P4 (Eastern Innovation Platform) consolidates fragmented, uneven expertise in technology transfer into a single, unified platform and systematically applies market-driven tools such as innovation challenges to align research supply with regional demand.
Lagging behind in digitalisation and bureaucracy	P5 (Digital Assistance Centres) adopts a quadruple helix perspective, focusing on citizen adoption and digital inclusion.

Implementation and resilience: Addressing structural risks

A joint review of the dependencies and risks identified in the policy portfolio reveals that the most significant threats to the entire portfolio are primarily political and institutional, rather than financial or technical. Political instability and institutional resistance to change dominate the risk environment, confirming the findings that a stable institutional foundation must precede massive capital deployment.

Paradoxically, the successful implementation of P1 (curriculum) and P4 (Eastern Innovation Platform) depends on regulatory changes that go beyond regional competence. P1 proposes to facilitate the entry of practitioners into education without typical university teaching degrees. Similarly, P4 requires a fundamental reform of university incentive schemes and the recognition of non-monetary contributions such as intellectual property. These changes potentially require amendments to the Higher Education Act. Institutional rigidities act as structural blockers that

regional policies cannot overcome without external intervention. As a result, the successful deployment of innovative economic policies such as P3 (fund) and P4 (Eastern Innovation Platform) critically depends on P2 (unified governance) prioritising advocacy and coalition building. The established network of liaison officers must formalise its mandate to generate political momentum and coordinated lobbying.

Lobbying, led by the region, VAIA, and academic leaders, is essential for liberalising national legislation. Without this advocacy and the institutional stability provided by P2, the regional economic policies of P1 and P4 would likely be constrained by entrenched bureaucratic and legislative inertia. This confirms that the governance solution (P2) is not just a coordination tool, but indeed an essential mechanism for achieving policy resilience and systemic regulatory change.

Conclusions and implications

The participatory and analytical exercise carried out within Policy Lab III successfully transformed the findings of the regional entrepreneurial discovery process into a strategically strong and balanced portfolio of five prototypes for new policies. Together, these interventions form the basis for a structured roadmap to mitigate the chronic systemic failures of the Košice innovation ecosystem – institutional fragmentation, a funding gap in the critical TRL 4–6 range, and persistent human capital mismatches.

The analysis confirms that the portfolio of policies is internally interconnected and mutually reinforcing. Policy P2 (unified management) is positioned in this arrangement as an essential institutional prerequisite that anchors trust and transparency. These attributes are absolutely crucial for the long-term strategic financial commitments required by P3 (fund) and for the complex inter-institutional cooperation necessary for the functioning of P4 (Eastern Innovation Platform).

In the area of finance, there is strong financial synergy: the complementary relationship between P4 (intellectual property validation, de-risking) and P3 (risk capital deployment) creates risk reduction, a potentially self-sustaining financial mechanism for TRL 4+ projects. This mechanism directly addresses the systemic challenge of the "valley of death". At the same time, the emphasis on citizen engagement (P5) and talent development at a young age (P1) extends the innovation framework to the necessary quadruple helix domain, ensuring social relevance and future talent supply. The key implication for the implementation of the regional innovation strategy for smart specialisation is that immediate political action must be twofold:

- Phase I – anchoring. It is essential to secure political commitment to pilot and anchor the institutional changes proposed in policies P2 (governance) and P5 (demand/adoption). These two measures address basic governance and infrastructure on the demand side. Their successful anchoring will enable the safe deployment of other, more capital-intensive policies.
- Phase II – regulatory design. At the same time, resources need to be allocated to formally design the legal and financial mechanisms required for policies P3 and P4. It should be recognised that



their success critically depends on regulatory flexibility, which P2 must promote at the national level through lobbying.

Future activities should first focus on developing operational protocols and measurable performance metrics for the network of liaison officers (P2), as well as analysing and tracking the long-term effectiveness and scalability potential of the social agreement mechanism (P3). This agreement represents an innovative concept for keeping regional capital funds in the economy, and if it proves successful in Košice, it has the potential to be replicated in other similar post-transitional environments.