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# Interreg Europe Peer Review on Smart City Testbeds

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Ministry of Industry and Trade of the Czech Republic

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## INTRODUCTION AND CONTEXT

In May 2021, the Czech Republic adopted its **national Smart Cities strategy**. The Strategy has been the first tangible outcome of an effort to grasp the development of Smart Cities in a systemic way and with top-down coordination from the government level. The role of central coordinator was taken over by Ministry of Regional Development, with other relevant ministries and stakeholders providing inputs and cooperation in particular areas according to their competences and responsibilities. Among cooperating ministries, those of Industry and Trade, Environment and Transport are most engaged. However, the Czech model embraces a very versatile approach to Smart Cities where even the less obvious topics, such as education, social services, healthcare (including mental health), community development or local entrepreneurship, are fully incorporated. Therefore, the understanding of “Smart City” used in the Strategy shall be described broadly as a complex, sustainable and human-centred approach to territorial development.

Yet, the concepts presented by the Strategy remain largely theoretical and their practical application in the Czech Republic faces several systemic deficiencies. One of the most important specifics of the country is a **significant fragmentation of local government** that results in the existence of **more than 6,200 municipalities** in the country of 10.7 mil. inhabitants (compared to approx. 100 in 5.9 mil. Denmark, 270 in 6.9 mil. Bulgaria, 300 in 5.5 mil. Finland, 300 in 10.3 mil. Portugal, 350 in 17.5 mil. Netherlands, 2,100 in 9 mil. Austria, 2,500 in 38 mil. Poland, 8,100 in 47 mil. Spain or 13,000 in 83 mil. Germany; the only EU countries with a similarly high number of municipalities per capita are Slovakia and France). This has practical implications for the development of Smart Cities, especially the **lack of expertise, capacities and also funding for innovative projects and piloting experiments within most local authorities**. Apart from the largest cities, such as Prague, Brno, and possibly Pilsen, Ostrava or Liberec, that have resources and other necessary prerequisites to cope with Smart City development on their own, most municipalities struggle and often lack even a basic understanding of what Smart City means and what potential benefits this concept brings, which results in their low engagement.

What particularly raises the interest of Ministry of Industry and Trade (MoIT) is **how this situation affects the innovation ecosystem and the competitiveness of Czech SMEs with regard to the uptake, upscaling and internationalization of innovative Smart City solutions**. From a systemic point of view, conditions in Czech municipalities leave a rupture in the quadruple helix that blocks the natural and desired flow of innovations designated mostly for municipal markets. Innovative SMEs find it difficult to start a dialogue with Czech municipalities and municipal representatives tend to shy away from collaborating on joint projects with the private sector. Consequently, it is not exceptional that companies are forced, too early, to start developing market for their new solutions abroad **without sufficient domestic experience, references and feedback from real-life deployment**. This is an extra obstacle for companies and the Czech Republic as a country loses opportunities to harness locally developed technologies and services for its own development. On the contrary, but at the same time, a confrontation with a challenging domestic environment may hinder some promising innovations from going international or even exhaust companies and make them shift focus to “safer business areas”.

## CHALLENGES AND GOALS ADDRESSED BY PEER REVIEW

In March 2022, the mostly theoretical Smart Cities strategy was followed by the adoption of its more practically oriented **Implementation Plan**. This document assigns tasks to particular ministries, with each ministry being responsible for developing and implementing a set of measures according to its competences with a 2030 time framework. Section of European Union and Foreign Trade at MoIT had been working with Smart City companies and solutions intensively thanks to its City For The Future project ([www.cityforthefuture.com](http://www.cityforthefuture.com)) and had witnessed **the dynamics between domestic references and internationalization** described above. This led to **MoIT being assigned to elaborate “Testbeds for new Smart City solutions” as one of measures under the Implementation Plan**. Although this measure is not the only one that incorporates piloting activities (there are other measures focused p. ex. on renewables or autonomous mobility that envision a piloting phase), it is the only one that **aims to set wider and generally applicable standards and processes and use piloting as a universal program-based tool to stimulate the uptake, upscaling and internationalization of Smart City business solutions in a systemic way**.

It is important to note that MoIT took on this task as a learning-in-process experiment and plunged ahead with no dedicated resources and only little experience in the Czech environment to build upon. Also, the primary motivation for this specific measure is to **facilitate the access of highly innovative SMEs and their solutions to municipal markets and generate references and best practices for local and international expansion**. The motivation of regional development is, to certain extent, rather secondary and a by-product. This gives priority to a **fast, flexible and simple piloting model** and sidelines robust testbeds that are burdened with administration and need long time to implement. The matchmaking session organised by the Policy Learning Platform in August 2022 revealed that **Helsinki’s agile piloting model** seems to be very close to what MoIT is looking for, and it might be worth exploring

how this model deals with typical challenges that arise once public administration gets involved (in the meantime, MoIT got further acquainted with the model thanks to Forum Virium's Pocket Book for Agile Piloting). Still, MoIT needs to **adjust the model used at a city level so that it could be employed at the national and/or regional level** and become available to a large number of municipalities that vary in size and resources. MoIT is also interested about other testbed models implemented elsewhere in Europe, especially if they have been used successfully in generating references for local SMEs and supporting their internationalization process.

As it is clear that future pilots will involve public (co-)financing, the key challenge is to **find a smooth way how to work in compliance with standard public procurement rules**. Therefore, one aspect is to set amounts of financial contribution high enough to make pilot projects viable and motivating for stakeholders while staying on the level that enables direct purchase. Even with this accomplished, it will be necessary to assure transparent and just selection of projects based on open calls or ideathons followed by expert assessment. Another aspect, which is necessary for the long-term operability of piloting programs and good results of pilots, is the **involvement of external experts**, probably based on a capacity-sharing principle, that will provide necessary guidance to municipalities and compensate for the inevitable lack of in-house Smart City expertise. This may require establishing a supportive program that will facilitate matchmaking between experts and municipalities and assure financing of experts' work. That seems to be the main added value the central government may bring into the environment with fragmented local government. Ultimately, MoIT is looking for ways to **incorporate piloting activities and participating stakeholders into a wider innovation & business ecosystem in order to generate companies and solutions suitable for internationalization**.

## PEER REVIEW NEEDS AND QUESTIONS

Therefore, MoIT perceived the added value of peer review in enabling to **look under the hood of agile piloting and other smart city testbed initiatives and to decompose these models to particular steps, processes and stakeholder's actions** in order to get as much practical insight as possible. At the same time, MoIT was looking for suggestions of international experts what adjustments should be made to the models in order to be **used efficiently at the national or regional level** in specific Czech conditions, and how to **maximise the models' internationalization potential**.

Two main topics were selected with subsequent questions:

- 1. Administrative processes including financing and selection of projects in the context of public procurement rules.**
  - How are financial sources & flows and public procurement processes organised and managed in agile pilots and testbeds in general? The goal was to understand the model step by step, even document by document, and highlight attributes and measures designed to facilitate public procurement.

- Who and how can submit project proposals and how is the assessment and selection organised? What controversies can be encountered and how to avoid them?

## 2. Involvement of experts and ecosystem cooperation of stakeholders towards best practice sharing and internationalization.

- What intensity of experts' engagement is needed for successful management of particular projects? What approach can be recommended if in-house experts are not available in municipalities?
- What happens / should happen when pilots are over and how to maximize their upscaling and internationalization potential in the long term? Are pilots and their participants actively promoted in their country and involved in internationalization support programs?

### PARTICIPATING CZECH STAKEHOLDERS

Ministry of Industry and Trade	<ul style="list-style-type: none"> <li>• Mr. David Müller – Director General, Section of EU and Foreign Trade</li> <li>• Mr. Miroslav Scheiner – Special Projects Manager, Section of EU and Foreign Trade</li> </ul>
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## INTERNATIONAL PEERS AND INTERREG EUROPE TEAM

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## OVERALL SUMMARY

For the first time, peer review was organized in a special format, with City of Helsinki becoming the factual host of the event as the owner of the best practice sought by MoIT as the content host. MoIT and the Czech delegation highly appreciated that Policy Learning Platform enabled this format, which proved efficient and impactful, despite the necessity to put in extra organizing effort. A key added value of the new setup was in **complementing the interaction with field visits**, which – apart from a standard peer review exchange – provided insight into how debated topics look in the real life and created opportunities for more profound one-on-one discussions within the group. The positive effect was further enhanced by a dinner reception held at the Embassy of the Czech Republic in Helsinki on the eve of the first day that gave participants an opportunity for informal interactions and brought in additional stakeholders from the Smart Cities professional's circle.

The addressed topic of Smart City Testbeds is **outstandingly complex**. Indeed, the pilot implementation of innovative Smart City solutions depends on processes that define Smart Cities in general and constitute a matrix of technological, economic, social and administrative and governance elements. On top of that, MoIT used the peer review not to address a particular problem as a particular entity but to **bring a systemic change into the country**, which can be barely reduced into small isolated steps and which requires collaboration of multiple stakeholders. Therefore, MoIT made an effort in this report not to merely take individual recommendations from peers but to **connect pieces of advice into larger and, most importantly, actionable packages relating to the current situation of the Czech Republic**. This approach was encouraged by the realization that despite the geographical and professional diversity of international peers, their contributions referred to the same or at least very

similar basic trends and principles that go beyond the scope of two initial questions. Arguably, combining lessons learned from all peers and best practices they presented together creates a sort of **general recipe for the effective implementation of innovation in urban development**.

MoIT took this recipe and proposed a **set of concrete actions to be taken within the Czech context**, especially from the national level. These actions vary in their time perspective and tangibility. While some of them can be performed immediately and with the involvement of a limited number of stakeholders (e. g. meeting between ministries) other consist rather in a long-term cultivation of the system and inevitably depend on the political will. Apart from this, MoIT undertook a major follow-up action by initiating and submitting as lead applicant a **project application to Interreg Danube**. The project named **PilotInnCities (Pilot-based Innovation Ecosystems for Smart Cities)** leverages know-how gained through peer review and aims to develop and test a tailored agile piloting mechanism for the Danube Region to support there the adoption and upscaling of innovative Smart City solutions. The consortium consists of 11 entities from the Czech Republic, Germany, Slovakia, Hungary, Romania and Serbia, with additional associated strategic partners from Ukraine and Bosnia and Herzegovina, thus promising a strong geographical impact of the peer review. The project already qualified for the second round (approx. top 25% of projects) and is awaiting the final assessment expected in October 2023.

## MAIN LEARNINGS

1. All innovations must be carried out in close collaboration of actors across the **quadruple helix** (academia, industry, public sector, civil society) and using experimentation and co-creation in **urban living-labs**. The process starts at the stage of identifying a problem in a territory. Innovations for cities should not emerge in isolation within companies, but should be **linked from the outset to the specific problem of a particular territory**. It is important to ensure public awareness of the problem (and projects responding to that problem) and to have the **end users of the solution on board** from the beginning. These end users then provide a live testing environment (Helsinki's "Trial Troops" model) and practical feedback during the development and debugging of the solution. Building long-term communication and collaboration with communities through dedicated capacities of **community coordinators** is essential.
  - a. ⇒ Support competitions, hackathons and other inclusive formats focused on identifying challenges and finding solutions. Allocate finances for the implementation of best ideas as a form of incentive (multiple possible sources: national level / ministries, regions, municipalities or private partners motivated by visibility and ESG).
  - b. ⇒ Systematically build awareness of quadruple helix along with capacities for project management in regions and municipalities. Discuss with the Ministry of Education and the MoIT's Section of Digitalisation and Innovation how to leverage the funding program OP JAK



- (Smart Accelerator) or other similar tools and provide methodological guidance to regions in order to assure they submit meaningful projects.
2. The efficient approach focuses primarily on **replicating existing solutions** and only secondarily on inventing new ones from scratch. It is therefore desirable to invest capacity and resources in strengthening the ability to **share best practices** at different levels (locally, regionally, nationally, and internationally). As part of the implementation of broader national programs, it is advisable to arrange meetings aimed at presenting best practices and, where appropriate, to use universities to extract the most appropriate examples from a larger number.
    - a. ⇒ Develop a methodology for documenting and sharing best practices and establish communication nodes for effective sharing (probably regional institutions). Primary responsibility: MoIT, CzechInvest and MoRD.
    - b. ⇒ Transform the URBIS fair in Brno into the central meeting point of the Smart City community in the Czech Republic and the CEE region. Primary responsibility: MoRD (municipal stakeholders), MoIT along with CzechInvest and CzechTrade (business stakeholders), MoEnv and MoTr (thematic inputs).
    - c. ⇒ Raise awareness of European grant projects and stimulate the participation of Czech entities. There is a large amount of relatively available international financial resources and know-how that Czech stakeholders have very limited knowledge how to use or even obtain. Ideally, an inter-ministerial team of project managers should map financial instruments and project opportunities and initiate and coordinate the involvement of Czech entities, including not only methodological but also content and networking support for applicants.
  3. In the case of a pilot project, the **owner of the problem and the future solution** (e.g. a transport company for a public transport solution) must be clearly identified at the outset and involved in the project as one of the main actors. Typically, this is done by the **urban innovation manager** in the role of a "broker" who connects stakeholders and mediates negotiations, including the aspect of **co-financing** on the part of the city and/or the owner to ensure adequate motivation. Each sufficiently large municipality (over 20,000 inhabitants) should ideally have its own innovation manager in-house. In the case of smaller municipalities, an alternative solution is to share capacities in a larger group (Local Action Groups) or in cooperation with regional institutions.
    - ⇒ Provide temporary assistance with the role of a broker from the state level (CzechInvest). In the long term, create capacities in regions, Local Action Groups and municipalities, leveraging the Smart Acceleration program.
  4. The availability of **venture capital for funding innovation** at city (Helsinki Innovation Fund) or regional/state level (Spain, Portugal) is a crucial factor that makes pilot projects possible. Experienced countries had usually started with EU funds in the past, but these are often bound by complicated rules and administrative requirements, which goes against the need for flexibility.



Therefore, in the EU context, there is a tendency to move towards **national funding sources**, which allows setting up an undemanding administrative framework (in particular an easy submission process for project proposals) with the possibility to draw even small amounts (that does not pay off in EU calls due to bureaucracy) and to cover a wide range of projects flexibly (launching differently focused narrow calls). The aim of innovation funds is not long-term development funding of infrastructure but initial support to bring innovation into practice, using merely a critical minimum amount of money to set things in motion. Once a solution is tested and proven, it becomes much easier to cover it from standard municipal or regional budgets.

⇒ Agree at the level of key ministries (MoRD, MoIT, MoEnv, MoTran) on the establishment of an innovation fund / subsidy program specifically focused on supporting pilot Smart City projects in Czech municipalities. The fund/program may be operated by MoRD or by CzechInvest, another option is a common co-financed fund shared by several institutions. In the beginning, it may not be a "fund" in the true sense of the word, but simply investment money intended to stimulate innovative experiments in the territory.

5. A wide range of innovative procurement practices are being used in the context of innovation. As default legal conditions (e.g. financial limits) are roughly the same in all EU countries, what makes the difference is the setting of **internal rules in organizations** and the ability to work with these rules flexibly. Helsinki sets the **weight of price as an evaluation criterion** at only about 10% for innovation calls (up to €60k, usually a set of several pilot projects). A higher value would undermine the innovative nature of the pilot projects. The emphasis on qualitative criteria is justified, inter alia, by the **involvement of experts** in the evaluation process.
  - a. ⇒ Invent and implement in cooperation with MoRD (DG Public Investment, Construction and Social Inclusion Section) a method to simplify small-scale public procurement by recognising innovative competitions as a proper selection process and by emphasizing qualitative evaluation criteria. Create a model clause for replication in internal guidelines of organizations.
  - b. ⇒ Include the topic of innovation procurement and innovative tendering procedures in the systemic training of municipal and regional representatives.
6. Lack of experts and project managers is a common default state of municipalities. In the first phase, it can be addressed by **outsourcing roles to universities** (example of University of Santander). In the second phase, it is strategic to focus on gradually building in-house capacity. This can be achieved, for example, by **engaging university staff** or young talents in public administration teams or through **intensive retraining**, whereby outdated positions in the organisation are identified and staff are selected one by one to be retrained for more relevant work (project management, innovation management, ecosystem coordination, etc.).
  - a. ⇒ Identify Czech universities capable of leading Smart City projects as an outsourced entity. Primary responsibility: MoRD in cooperation with MoEd and MoIT.

- b. ⇒ Identify positions (staff slots) in municipalities, regions and departments to be retrained for 21<sup>st</sup> century activities and to build the core of project-innovation teams.
7. An important aspect of Smart Cities is the **data strategy**. Data is a fundamental basis for informed decision-making and enables to create effective and understandable **marketing**. Actors in the territory often do not have even basic **access to data sources** sorted out.
  - a. ⇒ Propose a model clause for tender documents and contracts with suppliers that will serve as a guide for contracting authorities or can be directly adopted in the tender documentation.
  - b. ⇒ Educate contracting authorities on the need to ensure access to data (phase 1) and on the effective use of data in spatial development and marketing (phase 2).
8. The emphasis within Smart Cities is shifting from technology (the original understanding as a digital city) to **social aspects** (e.g. the CommuniCity initiative) and to **new governance models** based on project management and broad participation (Smart Citizens instead of Smart Cities).
  - a. ⇒ Strengthen the focus on social aspects and governance in outreach.
  - b. ⇒ Establish closer and more conceptual cooperation with the Ministry of Labour and Social Affairs, which is newly running a pilot programme on social innovation.
9. Reliable and widespread coverage of the **internet network** (can be seen as one of the strengths of the Czech Republic) is a key prerequisite for the development of Smart City in a more advanced concept – e.g. remote working as a way to reduce the need for mobility and energy savings.
  - ⇒ Continue to support 5G projects of MoRD and MoIT. Emphasize more the less obvious benefits and support activities with well targeted marketing (e.g. home office).
10. **Cooperation with developers**, who are heavily involved in the development of the territory and can implement innovative solutions in the projects themselves in the public interest, can have a significant practical impact. The second option is to set fixed rules, e.g. investing 1% of the budget in art installations required by Helsinki.
  - ⇒ Initiate meeting with the Association of Developers of the Czech Republic.
11. The deployment of certain new solutions (e.g. autonomous vehicles) requires **national authorisation**. Flexible vertical cooperation is vital, especially with the involvement or relevant ministries. In special cases, legislative modifications may be needed.
  - ⇒ Identify key ministries and their specific departments responsible for relevant topics. Build a stable network of contacts with links to the ecosystem in which pilot projects in the territory will be discussed and addressed. In the long term, develop the capacity to implement flexibly even larger actions, such as legislative amendments. CzechInvest is a suitable actor to identify

a need and forward it for sorting out to a relevant ministry, using contacts involved in the Smart City ecosystem (if necessary with the mediation of MoIT and/or MoRD).

12. Pilot programs may function **internationally**. For example, in Helsinki more than half of the applicants are from abroad. A welcoming testing environment brings interesting innovative companies to the country/city and can become the basis for creating an **innovation hub**.

a. ⇒ Identify foreign cities that run pilot programs with the possibility of participation of Czech companies (activity for CzechTrade or reach Interreg Europe for guidance). Provide information to Czech companies and assist those interested in participating.

b. ⇒ Open future Czech national/regional/city pilot programs at least partially to foreign applicants (procedural and administrative tuning to be done beforehand).

13. Significant innovation initiatives do not usually emerge without an initial (public) actor willing to take **political responsibility** and consciously make/support an **initial risk investment** (e.g. in a pilot or retraining program) that will help generate innovation in the long term.

⇒ Provide financial, methodological, production and marketing support from the state level to innovation-minded mayors and other public representatives (creating lighthouses from islands of positive deviance).

## OVERVIEW & TIMEPLAN OF FOLLOW-UP ACTIONS

The following page presents a spreadsheet where proposed follow-up actions from the previous chapter are set into a **matrix** that indicates the time perspective of their implementation along with the expected difficulty of each task, nature of the action that is required and synergy with existing Czech projects and stakeholders. As MoIT did not take isolated recommendations, but integrated them into more comprehensive measures that had been adjusted to the Czech context, **all listed measures are intended for implementation**. However, they considerably differ in how much time their implementation will require, how many stakeholders need to be engaged and to what extent the default conditions are favourable. Arguably, some of the measures are of a highly systemic nature and depend on the political will and the ability of multiple institutions to work hand in hand. On the other hand, a part of proposed measures are already being implemented to some extent and need only **reaffirming or further expanding ongoing projects, platforms and activities** (see Available synergies). It is positive that very few measures require starting from scratch. The likelihood of success is reflected in a more complex way (see Time perspective, Type of action and Difficulty). In general, long-term, systemic and more difficult actions are less likely to succeed, while short/mid-term, concrete and less difficult actions can be considered low-hanging fruit. As all challenges seem **closely intertwined**, solving any of them shall bring a positive effect into all other areas and facilitate further actions. It is clear that the action plan has to be a **live document** that will undergo regular updates reflecting factual progress and development of other circumstances. For this reason, its purpose is only **indicative**.

Recommended measures	Time perspective	Type of action	Difficulty	Available synergies	Already in progress	H2 2023	H1 2024	H2 2024	2025 & on
1.a. Support quadruple helix competitions with funds for implementation	long-term	mixed	medium	PilotInnCities				x	x
1.b. Raise awareness of quadruple helix (esp. Smart Accelerator program)	long-term	systemic	medium	MoIT RIS 3 team		x	x	x	x
2.a. Create methodology and network for best practice sharing	long-term	systemic	medium	PilotInnCities				x	x
2.b. Transform URBIS Smart City Fair in Brno into a central meeting point	short/mid-term	concrete	high	City For The Future	x	x	x	x	x
2.c. Raise awareness of EU grant programs and stimulate CZ participation	long-term	systemic	medium	PilotInnCities	x	x	x	x	x
3. Train urban innovation managers and provide temporary substitutes	long-term	systemic	high	CzechInvest	x	x	x	x	x
4. Create state innovation fund / subsidy program for piloting experiments	long-term	concrete	extreme	MoRD	x	x	x	x	x
5.a. Simplify small-scale innovation procurement	short/mid-term	concrete	easy	MoRD	x	x			
5.b. Include innovation procurement in the training of local actors	long-term	systemic	medium	MoInt	x	x	x	x	x
6.a. Identify CZ universities suitable for outsourcing project management	short/mid-term	concrete	easy	-		x	x	x	
6.b. Identify positions in public institutions for retraining	long-term	mixed	extreme	-				x	x
7.a. Propose a model clause on data access for tender documents	short/mid-term	concrete	medium	MoInt, OICT			x	x	
7.b. Educate local representatives on the importance and use of data	long-term	systemic	easy	Otevrena mesta	x	x	x	x	x
8.a. Strengthen the focus in Smart Cities on social and governance aspects	long-term	systemic	medium	-					x
8.b. Establish closer cooperation with Ministry of Labour and Social Affairs	short/mid-term	concrete	easy	-		x	x		
9. Continue to support 5G projects and emphasize links to Smart Cities	long-term	mixed	easy	5G alliance	x	x	x	x	x
10. Initiate meeting with the CZ Association of Developers	short/mid-term	concrete	easy	-			x		
11. Build a network to grant national approvals and amend legislation	long-term	systemic	extreme	Citya case				x	x
12.a. Identify and inform about cities running piloting programs abroad	short/mid-term	concrete	easy	Interreg Europe		x	x	x	
12.b. Open Czech piloting programs to foreign applicants	long-term	concrete	medium	-					x
13. Provide support to innovation-minded local and regional actors	long-term	mixed	high	CzechInvest	x	x	x	x	x