SMART CITY

ENTREPRENEURIAL DISCOVERY PROCESS

Setting-the-stage

REPORT

D7.2 of WP7 – Smart City Innovation Ecosystem and Business Modelling

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Technical references

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<thead>
<tr>
<th>Project Acronym</th>
<th>STARDUST</th>
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<tr>
<td>Project Title</td>
<td>Holistic and Integrated Urban Model for Smart Cities</td>
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| Project Duration | October 2017 – September 2022 (60 months) |

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<tr>
<th>Deliverable No.</th>
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<td>Dissemination level*</td>
<td>PU</td>
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<td>Work Package</td>
<td>WP 7 – Smart City Innovation Ecosystems and Business Modelling</td>
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<tr>
<td>Task</td>
<td>T7.2 – Task 7.2: Entrepreneurial Discovery Process (EDP) (M18-M60)</td>
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<td>Lead beneficiary</td>
<td>10 (EURAC)</td>
</tr>
<tr>
<td>Contributing beneficiary/ies</td>
<td>1 (CEN), 2 (PAMPLONA), 3 (TAMPERE), 4 (TRENTO), 5 (DER), 6 (KOZ), 7 (LIT), 8 (CLU), 9 (VTT), 12 (G!E), 13 (ZAB), 15 (OV)</td>
</tr>
</tbody>
</table>

| Due date of deliverable | 31 March 2020 |
| Actual submission date | 31 March 2020 |

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<table>
<thead>
<tr>
<th>Date</th>
<th>Beneficiary</th>
<th>Authors</th>
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<tbody>
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<td>Sonja Gantioler (EURAC), Silvia Tomasi (EURAC), Leyre Iriarte Oyaga (PAM), Maarit Vehviläinen (TAM), Alex Tomasi (TRE), Michael Heidenreich (G!E)</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EXECUTIVE SUMMARY</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>INTRODUCTION</td>
<td>5</td>
</tr>
<tr>
<td>2.1</td>
<td>The concept of the Entrepreneurial Discovery Process (EDP)</td>
<td>5</td>
</tr>
<tr>
<td>2.2</td>
<td>Challenges and pitfalls linked to EDP</td>
<td>8</td>
</tr>
<tr>
<td>2.3</td>
<td>Scope of the report</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>METHODOLOGY</td>
<td>10</td>
</tr>
<tr>
<td>3.1</td>
<td>Objectives and the ‘who’ and the ‘how’ of EDP in a smart city context</td>
<td>10</td>
</tr>
<tr>
<td>3.2</td>
<td>Interlinkages with Task 7.1, 7.4 and 7.5</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>VARIOUS STEPS FOR SETTING UP THE EDP</td>
<td>12</td>
</tr>
<tr>
<td>4.1</td>
<td>PHASE A: Screening of existing processes and groups</td>
<td>12</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Review of existing stakeholder engagement processes</td>
<td>12</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Analysis of existing stakeholder groups and their activation for EDP</td>
<td>12</td>
</tr>
<tr>
<td>4.2</td>
<td>PHASE B: Exploring EDP priority areas</td>
<td>13</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Formal economic analysis</td>
<td>13</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Collecting contextual knowledge and insider expertise</td>
<td>14</td>
</tr>
<tr>
<td>4.3</td>
<td>PHASE C: Development of EDP strategy and plan and its operationalisation</td>
<td>15</td>
</tr>
<tr>
<td>4.3.1</td>
<td>Exploring first potential projects</td>
<td>15</td>
</tr>
<tr>
<td>4.3.2</td>
<td>Policy design for EDP</td>
<td>15</td>
</tr>
<tr>
<td>4.3.3</td>
<td>Drawing the final EDP strategy and plan</td>
<td>15</td>
</tr>
<tr>
<td>4.3.4</td>
<td>Monitoring system for the operationalisation of EDP strategy and plan</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>FIRST INSIGHTS INTO STARDUST EDP IMPLEMENTATION</td>
<td>16</td>
</tr>
<tr>
<td>5.1</td>
<td>PAMPLONA</td>
<td>16</td>
</tr>
<tr>
<td>5.1.1</td>
<td>Existing stakeholder processes and groups</td>
<td>16</td>
</tr>
<tr>
<td>5.1.2</td>
<td>EDP priority areas - socio-economic context</td>
<td>19</td>
</tr>
<tr>
<td>5.1.3</td>
<td>EDP priority areas - Local expertise on favourable conditions</td>
<td>22</td>
</tr>
<tr>
<td>5.2</td>
<td>TAMPERE</td>
<td>25</td>
</tr>
<tr>
<td>5.2.1</td>
<td>Existing stakeholder processes and groups</td>
<td>25</td>
</tr>
<tr>
<td>5.2.2</td>
<td>EDP priority areas – socio-economic context</td>
<td>30</td>
</tr>
<tr>
<td>5.2.3</td>
<td>EDP priority areas - Local expertise on favourable conditions</td>
<td>34</td>
</tr>
<tr>
<td>5.3</td>
<td>TRENTO</td>
<td>37</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Existing stakeholder processes and groups</td>
<td>37</td>
</tr>
<tr>
<td>5.3.2</td>
<td>EDP priority areas – socio-economic context</td>
<td>41</td>
</tr>
<tr>
<td>5.3.3</td>
<td>EDP priority areas - Local expertise on favourable conditions</td>
<td>43</td>
</tr>
<tr>
<td>5.4</td>
<td>INSIGHTS FROM FOLLOWER CITIES</td>
<td>45</td>
</tr>
</tbody>
</table>
1 EXECUTIVE SUMMARY

As part of STARDUST’s activities towards the development and definition of smart city innovation ecosystems and business modelling, the project calls for the launch of an entrepreneurial discovery process (EDP). In the framework of such a process, it is envisaged that key stakeholders – from government to academia, industry, civil society or investors – are to be activated in order to set up future research and innovation priorities, reduce negative externalities and market failures, and increase the possibility to attract financial resources in the smart city context and regarding the project’s core domains of energy efficient buildings, e-mobility and ICT support.

The following report, deliverable 7.2, sets the stage for the EDP in a smart city, which is expected to be a structured inclusive and interactive bottom-up process that helps discover and produce information about potential new entrepreneurial activities. This builds on various insights on how an EDP can be and has been approached as a central element of the design and implementation of a Research and Innovation Strategy for Smart Specialization (RIS3) in EU Cohesion Policy Programming. It refers to the discovery of entrepreneurial knowledge, which is dispersed, decentralised and divided – hidden and to be discovered over many sites and by many organisations and stakeholders. As such entrepreneurial agents are one of the key components or fundamentals of the EDP, as no single body of knowledge or vision can be considered enough in uncovering future local priorities. However, existing definitions and experiences still leave many questions open on ‘who’ should be involved, ‘how’ the process should be designed and how particular challenges are to be addressed. Such challenges or pitfalls for example refer to different attitudes regarding enduring failure, the open sharing of knowledge, tendency towards calling for experts or short-termism.

With regard to STARDUST, the question emerged how to transpose the notion of the EDP and related experience in a smart city context, and more specifically as part of the creation of urban living labs in the involved lighthouse cities. What followed was the development of a methodology, the STARDUST EDP, consisting of three main phases. The initial phase includes screening current stakeholder processes, initiatives and groups, to build on already existing entrepreneurial activities and allow creating relevant synergies. The second phase consists of exploring EDP priority areas by getting a better understanding of the socio-economic context, in which the smart city evolves, and tapping into local expertise. As the project can only kick-off the process, the third phase contributes to the development of an EDP strategy and plan. This report contains insights into the initial activities carried out by the LHCs and FCs, as part of the first and second phase of the STARDUST EDP.

First results reveal that regarding future R&I priorities in smart cities the focus in the LHCs and FCs seems to be partly shifting, from a merely ICT smart to a sustainable city and from a technological to a people-oriented approach. Some challenges and pitfalls continue to test the process, especially dealing with failures, pre-defined agendas focused on outputs in the framework of a Horizon 2020 project, persisting emphasis on promoting ‘acceptance’ of the demonstration actions and difficulties in attributing equal worth to non-scientific expertise. The next steps of the STARDUST EDP process will be further challenged by the Covid-19 crisis, though it might also offer opportunities in unlocking the full potential of the EDP.
2 INTRODUCTION

2.1 The concept of the Entrepreneurial Discovery Process (EDP)

The approach of the Entrepreneurial Discovery Process (EDP) has evolved as a central element of the design and implementation of a Research and Innovation Strategy for Smart Specialization (RIS3). The latter was launched as a policy concept by the Knowledge for Growth Expert Group of the European Commission already in 2009. It provided a first basis for discussing how European Union (EU) regions, which are not leading on defined technological and scientific developments, should spread their R&I investment (Foray et al 2009). Since then, the RIS3 concept gained increasingly momentum, and was highlighted as a way to achieve the goals of the EU’s flagship initiative 'Innovation Union", to deliver a smart, sustainable and inclusive growth according to the Europe 2020 strategy¹. It subsequently entered the EU Cohesion Policy Programming period of 2014 to 2020, where it became a prerequisite to receive funding from the European Regional Development Fund (ERDF)². In 2011, also the Smart Specialisation Platform (S3P) was established, to assist Member States and their various regions to develop, implement and review their RIS3³.

According to the EU regulation 1301/2013, RIS3 specifically means the national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts. However, the RIS3 has also been more widely described as a strategy ‘that reflects the capacity of an economic system (a region for example) to generate new areas of development and new options through the discovery of new domains of opportunity and the local concentration and agglomeration of resources and competences in these domains’ (Foray 2016:8). In a nutshell, this definition argues for a shift of focus, from the adoption of a horizontal research and innovation policy, which supports general investment in preferred technological and scientific domains, to the activation of specific, regional capabilities and resources following a vertical, bottom-up approach. As such, it aims at a diversity of regional research and innovation approaches, especially for those regions in a situation of transition or economically less advanced. Such a smart specialisation strategy targets the development of policies which ‘support the emergence of micro-systems of innovation: the network of companies, research institutions, specialised services and complementary capabilities that are mobilized to explore collectively a certain new domain of opportunities’ (Foray 2016:6).

The entrepreneurial discovery process (EDP) itself has been described as the main forward for delivering a Smart Specialisation Strategy and support the emergence of micro-systems of innovation. According to the EU definition and the developed EU guidelines (EC 2012), it generally requires the involvement of key innovation actors such as research institutions and universities, and businesses, to identify the most promising areas of specialisation, though also the weaknesses that might hamper innovation in those areas.

³ https://s3platform.jrc.ec.europa.eu/home
More explicitly, EDP can be defined as the \textit{main process for generating information to identify priorities, [...] where the emergence of micro-systems of innovation will be strongly supported and large resources will be concentrated} (Foray 2016:10+8). The generated information can be described as \textit{knowledge 'of time and place'}, referring to \textit{local knowledge which is dispersed, decentralised and divided – hidden and to be discovered} over many sites and by many organisations and stakeholders (Foray 2016:10). Such \textit{entrepreneurial knowledge} represents the driver of the discovery process and is assumed to be composed by different visions and bodies of knowledge, to be integrated by the building of connections and partnerships. The following table provides and overview of potential tools, according to policy objectives, market failures to be addressed and main agents to be involved.

<table>
<thead>
<tr>
<th>Policy objective</th>
<th>Market failure addressed</th>
<th>Main agents involved</th>
<th>Tools</th>
</tr>
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<tbody>
<tr>
<td>To avoid ill-informed policy decision</td>
<td>Information externalities</td>
<td>Entrepreneurial actors</td>
<td>• Creating platforms and mechanism to facilitate -intra and -inter regional interactions</td>
</tr>
<tr>
<td>To increase knowledge spill overs</td>
<td></td>
<td>The remainder of society</td>
<td>• Providing key information about emerging technological and commercial opportunities</td>
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<tr>
<td></td>
<td></td>
<td>Public Administration</td>
<td>• Providing incentives to involve non-traditional actors</td>
</tr>
<tr>
<td>To learn about costs and opportunities and engage in strategic coordination</td>
<td>Coordination externalities</td>
<td>Entrepreneurial actors</td>
<td>• Networks &amp; associations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The remainder of society</td>
<td>• Cluster policies</td>
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<td></td>
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<td></td>
<td>• Technologies banks</td>
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<td></td>
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<td>• Public-private partnerships</td>
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<td></td>
<td></td>
<td></td>
<td>• Sectoral platforms</td>
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<td></td>
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<td>• SME support organisations</td>
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<td></td>
<td></td>
<td></td>
<td>• Demonstration projects, technology extension services</td>
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<tr>
<td>To reward entrepreneurs who discover new domains</td>
<td>Incomplete appropriability</td>
<td>Entrepreneurial actors</td>
<td>• Prizes for inventions and discoveries (e.g. government-funded research)</td>
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<td></td>
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<td>• IPRs</td>
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According to various definitions and outlines (EC 2012, Foray et al 2011, Foray 2015+2016, Rodriguez-Pose and Wilkie 2016, Ditterbeck 2018), entrepreneurial agents or actors are one of the key components or fundamentals of the EDP, considering its understanding as an inclusive and bottom-up process and the complexity of the endeavour. No single body of knowledge or vision can be considered sufficient in uncovering future local priorities. Following JRC-GID (n.d.), entrepreneurial agents assume any number of forms (e.g. firms, higher education institutions, public research institutes, independent innovators). According to EC (2012), entrepreneurial actors are understood to go beyond the triple helix way – the tripartite governance model based on the involvement of industry, education and research institutions, and government. The guidance document requests the shift to the quadruple helix (see Deliverable 7.1), which envisages the involvement of innovation-user or interest groups to guarantee a livelier and truly place-based entrepreneurial process (EC 2012:37). JRC-GID (n.d.) (see Table 1) and Rodriguez-Pose and Wilkie (2016) also differ between three types of classes and actors, which cover a defined role in the EDP. Besides those acting as entrepreneurial agents, it includes the policy makers and facilitators of the smart specialisation strategy, and the remainder of society. The former are responsible for aggregating, synthesising and processing the knowledge. The latter does not imply the organisation of a standard process of stakeholder engagement but is focused on collecting very specific information from society members to inform future policy decisions.

Despite one of the key principles of the EDP – inclusiveness – is largely recognised, ‘how’ this can be achieved has been deemed a critically important question, which has not been addressed yet sufficiently. According to Rodriguez-Pose and Wilkie (2016), there is no single, standardised way forward or best method to initiate a dialogue and collaboration between different stakeholders. However, all approaches should take into due consideration aspects such as financial constraints, time limits or other capacity issues that might have a substantial impact on the process. This also refers to those factors that have a major influence on the involvement of different stakeholders, and to the methods applied and how they affect interactions between stakeholders and allow creating long-standing relationships between policy-makers and those providing entrepreneurial knowledge and insights (Rodriguez-Pose and Wilkie 2016). The following difficulties in engaging private and public actors with each other have to be considered to better operationalise an EDP, also in a smart city context.

<table>
<thead>
<tr>
<th>The remainder of society</th>
<th>Regulatory failures</th>
<th>Entrepreneurial actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>To incentive entrepreneurial actors to engage in innovative activities</td>
<td>● Innovation for public sector innovation (e.g. Innovation-oriented procurement)</td>
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<tr>
<td>• Fiscal incentives</td>
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<td>• Public web consultations</td>
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<td>• Regional workshop</td>
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<tr>
<td>• Innovation vouchers</td>
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<td>• Internationalisation support services</td>
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Table 1: Typology of policy instruments to encourage EDP
Adapted from JRC-GID (n.d.)

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement N° 774094.
### 2.2 Challenges and pitfalls linked to EDP

With regard to the involvement of a diversity of stakeholders in the EDP, Grillo (2016: 62) refers to the necessity of overcoming for example the **paradox** of involving actors such as civil servants, whose ‘job description does not entail making choices, taking risks and enduring failures’, in an innovation process. It also concerns the potential contradiction of including companies in the decision-making process, trying to avoid at the same time to get captured by (conflicts of) interests. Or it raises questions of how to shift the attention of private actors to think more strategically and long-term than is normally the case. Grillo (2016: 66-74) compiles a list of the major challenges and pitfalls with regard to the EDP, in order to define problem-solving approaches. His conclusions have been synthesised in Table 2.

<table>
<thead>
<tr>
<th>Challenge or pitfall</th>
<th>Detail</th>
<th>Problem-solving approach</th>
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<tbody>
<tr>
<td>1. Different approaches to knowledge</td>
<td>Private sector tends to restrict sharing of knowledge for competitive advantage whereas the public sector sees it as a common good.</td>
<td>A. Do not overstretch the EDP: Avoid of being too ambitious and focus on issues where all are commonly failing.</td>
</tr>
<tr>
<td>2. Different visions of failure</td>
<td>Failure and uncertain outcomes are fundamental part of an innovation process, whereas public administrations are legally not allowed failing.</td>
<td>B. Give value to failure: Consider the knowledge that failure produces and promote an adequate knowledge management system.</td>
</tr>
<tr>
<td>3. A different propensity towards decision-making</td>
<td>Private sector takes decisions allocating scarce resources, whereas public sector focuses on equal treatment.</td>
<td>C. Formalise spill-over effects: Create mechanisms that allow value to spread across scales, sectors &amp; departments.</td>
</tr>
<tr>
<td>4. Different skill sets</td>
<td>There is the danger of picking only the winners and/or dinosaurs.</td>
<td>D. Foster international cross-border partnerships: Introduce people who are capable of working internationally, and share methodologies in partnerships.</td>
</tr>
<tr>
<td>5. Organisation gaps</td>
<td>Public sector tends towards horizontal organisation, businesses towards units and matrices.</td>
<td>E. Reorganise: Create teams across departments and use EDP as an icebreaker.</td>
</tr>
<tr>
<td>6. Paradox of experience</td>
<td>In an unstable environment, stakeholders tend to call experts to endorse decisions. However, innovation does not necessarily need specific experts.</td>
<td>F. Recruit networkers instead of experts: Involve people with comprehensive vision and change procurement processes accordingly.</td>
</tr>
<tr>
<td>7. Challenges of metrics and accountability</td>
<td>Public value difficult to assess, though indicators crucial to hold managers responsible for outcomes.</td>
<td>G. Develop metrics and incentives: Measure performance of innovation policies in shorted periods of time and create incentives for companies.</td>
</tr>
<tr>
<td>8. Short-termism and political cycle</td>
<td>Businesses and policymakers bound to get results immediately (e.g. financial reporting, polls) and less interested into long-term R&amp;I.</td>
<td>H. Engage public opinion and long-term players: Communicate results to create benchmarking and cooperation. Involve locally anchored companies.</td>
</tr>
<tr>
<td>9. Obstacle of pre-defined agendas</td>
<td>People should be free to change their mind and consider themselves part of a learning process, but often follow pre-defined agendas.</td>
<td>I. Create for a where knowledge-holders represent themselves: Use techniques such as Chatham House Rule to allow real interaction.</td>
</tr>
<tr>
<td>10. Power versus knowledge</td>
<td>Businesses should in theory allocate power to where skills are, governments</td>
<td>J. Encourage institutional flexibility: Install mechanism that</td>
</tr>
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allocate skills where power is assigned (e.g. to spend money).

applies subsidiarity principle, to use resources so that results are maximised.

Table 2: EDP challenges and pitfalls and related problem-solving approaches, Based on Grillo 2016: 66 -70

These different challenges and pitfalls as well as the suggested problem-solving have been taken into due consideration when defining the Stardust EDP process as well as guiding its implementation. They are also used in framing its monitoring as well as conclusions on the implementation of the process.

2.3 Scope of the report

According to the STARDUST project description, in the framework of a process of entrepreneurial discovery, key stakeholders – from government to academia, industry, civil society or investors – are to be activated in order to set up future priorities, reduce negative externalities and market failures, and increase the possibility to attract investors/financial resources in the smart city context and the project’s core domains of energy efficient buildings, e-mobility and ICT support. In this regard, Task 7.2 of Working Package 7 ‘Smart City Innovation Ecosystems and Business Modelling’ envisage the launch of an Entrepreneurial Discovery Process (EDP), expected to be a structured inclusive and interactive bottom-up process that helps discover and produce information about potential new entrepreneurial activities.

The various insights on how an EDP can be and has been approached as a central element of the design and implementation of a Research and Innovation Strategy for Smart Specialization (RIS3) in EU Cohesion Policy Programming, introduced as part of Chapter 2, was used as a basis to structure the STARDUST EDP in a smart city context. The methodology as well as its various steps are described in more detail in Chapter 3. At the same time, it needs to be noted that the process has been adapted to the needs and constraints (e.g. time, resources and capacities) imposed by the project. In particularly, it can be noted that the EDP in a smart city context, as much as focused on pursuing the integration of entrepreneurial knowledge distributed over many organisations, even more so addresses its fragmentation over different sites. In addition, the project can only kick-off the process, by organising a first range of workshops and fostering exchange of experience across lighthouse and follower cities, which subsequently contributes to the development of an EDP strategy and plan. Considering that an EDP requires careful consideration of the institutional settings and needs to be adapted to changing circumstances, the first submission of this report can only provided some first insights on what measures have been adopted by LH and follower cities. Those are presented in Chapter 5. Related conclusions as well as envisaged next steps are then presented in Chapter 6. As such, this report is interpreted as setting-the-stage for the STARDUST EDP. Further results are expected to be presented as part of the final submission of Deliverable 7.1 on STARDUST Living Labs.
3 METHODOLOGY

3.1 Objectives and the ‘who’ and the ‘how’ of EDP in a smart city context

According to its proponents, EDP evolves as an inclusive process (Rodriguez-Pose and Wilkie 2016), albeit this still leaves many questions open on ‘who’ should be involved and ‘how’ the process should be designed and how particular challenges are to be addressed.

With regard to STARDUST, during the kick-off of the task soon the question emerged how to transpose the notion of the EDP and related experience in a smart city context, and more specifically as part of the creation of urban living labs in the involved lighthouse cities. Generally, the idea that a wide diversity of stakeholders and their knowledge need to be considered is especially part of the people-oriented approach to a smart-city development. It requires related strategies to focus on the ‘soft infrastructure’ and people, in particular in relation to knowledge, participation, equity or safety (Bibri and Krogstie 2017). However, in many of the lighthouse and follower cities, smart city strategies still largely put the focus on the efficiency and advancement of hard infrastructure through ICT. This results in some defined challenges in launching an EDP and requires careful consideration on how to structure such a process. In addition, it can be assumed that as much as being a process that should activate knowledge across sectors and different actors, in the city context it also refers to knowledge across places.

Building on Foray 2016, the STARDUST EDP was developed to consist of three main phases (see Figure 2). The initial phase includes screening current stakeholder processes, initiatives and groups, to build on already existing entrepreneurial activities and allow creating relevant synergies. Entrepreneurship in this regard was interpreted more widely as including all actors organizing, managing, and assuming the risks of an endeavor. This ranges from public administrations to the private sector and individual citizens as well as research institutions. In this regard, the lighthouse cities are preliminarily asked to identify a subset of stakeholder groups to be engaged in the process. The second phase consists of exploring EDP priority areas by getting a better understanding of the socio-economic context in which the smart city evolves. This is first achieved by a brief analysis of the structure of the
urban economy and getting insights into related key statistics, to identify first potentials, opportunities and challenges for research and innovation in relation to smart cities. In a second step, related insights are envisaged to be presented as part of an interactive workshop, to collect additional contextual knowledge on potential entrepreneurial activities by tapping into local expertise, less visible in the statistics. The aim is to combine different kinds of knowledge, as a basis for dialogue and interactions between urban government and stakeholders, in order to let future priority areas emerge. The final phase focuses on the development of an EDP strategy and plan and its operationalization, given the project time frame is not considered sufficient in institutionalizing related processes at the city level. This phase consists of steps such as a second workshop to define and validate business models for potential opportunities (e.g. interactive canvas), a third workshop involving policymakers, to assess outcomes and identify ways to facilitate the realization of potentials (e.g. legal barriers, incentives), and the final drawing of an EDP strategy and plan and related monitoring system.

The various steps of the different phases are outlined in more detail in Chapter 4. It needs to be noted that although distinct various steps are presented, not necessarily the STARDUST lighthouse cities follow them strictly. In light of the previously presented challenges and pitfalls of the EDP and taking into account the scope of the STARDUST EDP, it is advised that they are adapted to a municipality's needs, their objectives, and existing initiatives, in order to take into account the different institutional context, to build-up synergies with existing efforts and at the same time to free-up capacities for the discovery of new bodies of knowledge.

3.2 Interlinkages with Task 7.1, 7.4 and 7.5

As already highlighted, the kick-off and development of an EDP in the three Lighthouse Cities is intrinsically linked to the creation of urban living labs and the preparatory activities carried out in 2018-2019 and described in the Deliverable 7.1 (submitted March 2019). Already task 7.1 (Activation of Smart Innovation Ecosystem: Smart citizen’s empowerment and stakeholders) aims at a higher degree of citizens’ engagement and participation towards innovation, to be achieved through an increased inclusion of a diversity of stakeholders. Activities carried out within this task included a comprehensive stakeholder analysis, which permitted to identify and characterise key players to be involved in the future project’s activities at the beginning of the project’s implementation. Relevant stakeholders have then gathered by establishing stakeholder groups in each STARDUST Lighthouse City. Finally, a review of the existing social innovation initiatives has been carried out. These accomplishments have all contributed to the further shaping of the EDP process.

At the same time, the EDP also contributes to the further evolvement of the cities’ smart innovation ecosystem, by exploring potentially new opportunities and priorities outside the dedicated LHCs and FCs STARDUST activities and providing scope and space for new discoveries and as such research & innovation. It is expected that some of the EDP’s results, especially in exploring new priorities and also related business models, can also support task 7.4 with regard to the development, test and validation of innovative business models and financial schemes as well as with regard to task 7.5 by informing exploitation strategies and business plans for the project results.
4 VARIOUS STEPS FOR SETTING UP THE EDP

Figure 3 provides a first overview of the different steps of the STARDUST EDP, according to its various phases. The single steps are described in more detail in the following sub-chapters.

4.1 PHASE A: Screening of existing processes and groups

4.1.1 Review of existing stakeholder engagement processes

As part of task 7.1 of the STARDUST project, each LHC and FC is asked to collect information on existing initiatives in the framework of the Social Innovation Ecosystem. According to the provided template (see Annex 3 of Deliverable 7.1), this refers to the mapping of existing social innovation initiatives, applying categories such as Living Labs, Crowdsourcing and Social Innovation. It also collects information on adopted participatory approach and the stakeholders involved, to allow creating synergies with the planned activities of the STARDUST project and not replicating already existing experiences in the framework of the project.

In the framework of task 7.2 and STARDUST EDP, the related template was updated and new questions introduced to allow a focused screening of the already collected initiatives and identify new ones, in relation to R&I/entrepreneurial initiatives (see Annex 1). This especially refers to aspects such as:

- Promoter of the initiative, including research institutions
- Target group of the R&I/entrepreneurial discovery activity (EDA)
- Ways of engagement, including the activation of local capacities and resources (e.g. citizen science, research collaboration)
- Thematic focus of the R&I or EDA initiative
- Assessment of importance of organisation/partner especially regarding the involvement in the EDP process and stated reasons.

4.1.2 Analysis of existing stakeholder groups and their activation for EDP

The step builds on the stakeholder analysis carried out in task 7.1 of the STARDUST project. It refers to the process of identifying stakeholders who are considered of relevance to a defined
task, with regard to the desired knowledge, interests and likely impacts resulting from the project. This includes:

1. Identification of all stakeholders relevant for the shaping of local Living Labs (LLs)
2. Analytical categorization of previously identified stakeholders, based on their knowledge, interests and relationships
3. Aggregation of stakeholders in homogeneous groups.

Related guidelines were provided, which outline the various steps, methods such as interviews and surveys, as well as and including templates to collect and analyse the data (see Annex 1 of Deliverable 7.1).

Based on the results, the LHCs were asked to pre-identify a first subset of stakeholder groups to be engaged in the process, and for the development of EDP strategy and plan. Specifically, this refers to:

- Screening the results of the stakeholder analysis for relevant information on institutions and initiatives potentially involved in research & innovation or other entrepreneurial discovery activities (EDA)
- Update and/or create first list of contacts to get in touch with regarding the involvement in the EDP process, using the provided templates.

4.2 PHASE B: Exploring EDP priority areas

4.2.1 Formal economic analysis

Following Foray (2016: 14), part of the starting point of an EDP is the analysis of the structure of the urban economy, to gain insights on urban assets that promote R&I in relation to smart cities. This analysis is usually based on indicators related to sectoral productivity, capacity to compete, patent and industry specialisation, critical mass, extra-urban networks and partnerships. As such, this step consists of looking into key statistics to identify **first potentials and opportunities** in the urban economy.

The initial guidance and template document (see Annex 3) suggests areas of focus and provides examples of indicators to the LHCs and FCs. However, the involved public administrations are responsible for the final selection of the parameters to be analysed, given their relevance is assumed to be strongly determined by the context and related knowledge. Based on an analysis of indicators applied in the framework of RI3S and regional operational programmes, the following areas were deemed important:

- **Geo-demography**: These can for example include
  - Total population
  - Share of population in urban area over regional value
  - Youth population group (0-14)
  - Working age population group (15-64)
  - Old population (65+)

- **Local economy’s structure and entrepreneurship**: These can for example include
  - GDP and GDP per capita
  - Economy’s sectoral distribution (using NACE2 classification)
  - Sectoral concentration (Top of 5 subsectors - % total employment)
  - Firm size
  - Number of enterprise births in the reference period (% of tot active enterprises)
  - New enterprise survival rate (3-5 years)
4.2.2 Collecting contextual knowledge and insider expertise

In addition to a more formal economic analysis to gain insights on urban assets that promote R&I in relation to smart cities, the EDP requires to **tap into local expertise** – into knowledge of what works and does not work economically and which is less visible in the statistics (Foray 2016). This usually refers to aspects such as existing strong research institutions and their domains, active companies and their main sectors, value chains positioned in the city as well as grand challenges the city might be facing.

It consists of combining different kinds of knowledge and analysis, as a basis for dialogue and interactions between government and stakeholders, in order to let priority areas emerge – considered then domains of future specialisation (Foray 2016). In this regard, the LHCs are invited to organise a first workshop, supported by a guidance and template document (see Annex 3), following steps such as:

- **Identifying and building on existing key initiatives and events in order to create related synergies**
  - Selecting a first group of stakeholders to discuss tailored questions, including e.g.,
    - Considering existing needs and challenges in the city what new entrepreneurial activities might be explored?
    - With regard to existing smartry city initiatives, what worked well and for what reasons?
    - With regard to existing smartry city initiatives, what worked less well and for what reasons?
    - Which opportunities does [the LH city] offer to unfold the entrepreneurial potential with regard to a smart city?
    - Which problems prevent the entrepreneurial potential with regard to a smart city to unfold in [the LH city]?
    - Which stakeholders and representatives would need to be involved in an upcoming initiative/ in the next phase of the EDP?

- **Set up the workshop and agenda, and use the “Stakeholder Group Establishment | Guidelines for stakeholder participatory involvement” of Deliverable 7.1 to define and select a participation approach considered appropriate for the workshop**

- **Report on the results of the 1st workshop, handing also out a slightly adapted questionnaire that allows to monitor the event with regard to social innovation initiatives (see Annex 2)**
4.3 PHASE C: Development of EDP strategy and plan and its operationalisation

4.3.1 Exploring first potential projects

Following the phase of exploring EDP priority areas, the final phase involves the concretisation of the results. This kicks-off with a 2nd workshop, which focuses on the involvement of a variety of entrepreneurial actors, to define and validate business models in relation to potential future opportunities. It can include the interactive development of business model canvas for both profit-oriented and social entrepreneurs, especially with regard to existing initiatives to be potentially transformed into projects and business/collaboration opportunities. With regard to defined topics, this includes looking into:

- Values and missions offered
- Key partners – or who is going to help
- Key activities – or how to do it
- Key resources – or what is needed to get it done
- Audience relationship – or how to interact
- Distribution channels – or how to reach the audience
- Cost structure – or how much will it cost, to private & public actors and economy at large
- Revenue stream – or what to gain, both in monetary terms as well as wider benefits

4.3.2 Policy design for EDP

The second step of the concretisation phase refers to how policy can be designed to help entrepreneurs and other actors to discover areas of future research & innovation activities. It consists of the organisation of a 3rd workshop, which especially involves policymakers and public administration representatives, to explore ways of how to facilitate the realisation of these potentials, projects and business/collaboration opportunities (e.g. legal barriers, incentives, ED infrastructures). Besides the traditional SWOT (Strength, Weaknesses, Opportunities and Threats) tool, this can involve the use of the PESTLE approach, referring to the organisation of working tables to look into risks and opportunities related to the political, economic, social, technological, legal and environmental contexts.

4.3.3 Drawing the final EDP strategy and plan

Building on the previous tasks, an EDP strategy is set up to define the EDP’s main principles and objectives in each city. Potential opportunities that have emerged from previous actions are transposed into a plan to describe envisaged future actions, for the activation of entrepreneurial activities in the cities. As emphasised in the introduction, the project can only kick-off the process, whereas the aim of the EDP strategy and plan is to institutionalise the process in a smart city context, to ensure that it also continues after the ending of the project.

4.3.4 Monitoring system for the operationalisation of EDP strategy and plan

Using insights from previous tasks, e.g. with regard to the formal economic analysis carried out by the cities, a basket of indicators is identified to be used to monitor the operationalisation of EDP strategy and plan. This for example includes:

- Number of individuals/stakeholder groups participating in the EDP
- Stakeholder quality evaluation participatory action research
- Number of policies influenced through the project actions
- Number of innovative business models launched
- Number of small-scale and inclusive business initiatives developed
- Investments in NbS triggered by the project
5 FIRST INSIGHTS INTO STARDUST EDP IMPLEMENTATION

The following sub-chapters present the initial activities carried out by the LHCs and FCs. At this stage, this refers to Phase A and B of the STARDUST EDP.

5.1 PAMPLONA

5.1.1 Existing stakeholder processes and groups

Pamplona has identified more than 5 new and already previously listed initiatives belonging to its social innovation ecosystem, which specifically relate to smart city R&D or entrepreneurial activities. They partly are concluded and partly still taking place in the city. These include:

1. Smart Iruña Lab
2. Co-living – Co-working
3. Science Ekaitza
4. Navarra LAN Party
5. Innovation Camp: hacia una movilidad sostenible

1. Smart Iruña Lab

The already in Deliverable 7.1 introduced Smart Iruña Lab is a programme allowing new entrepreneurs to test their solutions in a real environment. At the end of 2018, Pamplona City Council launched the Smart Iruña Lab Programme, with the aim of developing public-private collaboration agreements, which would enable Pamplona City Council to test and trial Smart-City solutions. The specific objectives to be achieved through this programme were:

1. To develop Smart projects in specific areas linked to the new city model, set out in the Strategic Urban Plan: circular economy, environmental sustainability, accessibility, energy efficiency, social equity, health, etc.
2. To provide input to the Framework Collaboration Agreement in the field of the Smart City of Pamplona City Council.
3. To identify project-companies, linked to local entrepreneurship, to develop the projects identified in the area of Smart Cities.
4. To support and encourage, from a business point of view, the initiatives identified through different channels: technical support, communication, networking, etc.
5. To identify and describe a system of indicators allowing to assess the work done and its continuity.

In the first edition of the SIL programme, five technological pilot projects were selected to be tested as Smart City solutions in a real environment in Pamplona; they covered different scopes, such as mobility, energy efficiency, environment or road safety. These were: LED luminaires for improving road safety (STOPLED), solutions for early warning of pests in urban parks (AGROPESTALERT), radar sensors to monitor different transport means in an intelligent way (uRad), technological solutions for an intelligent irrigation (SmartAqua) and continuous monitoring of indoor air quality (Inbiot). During 2019 the projects were hosted at the relevant departments of the City Council, who facilitated their implementation (permits, technical follow up etc.), and received training and advice on entrepreneurship by specialised consultants. The City Council also supported these initiatives with different communication actions (e.g. press releases, short videos, social networks and two public presentation events). The results were presented at the first seminar of the EDP in January 2020 (see next section).
The programme beneficiaries participated in the evaluation of this first edition by responding to a questionnaire addressing the different aspects of the programme (communication of the programme and the call, starting of the projects, training, advice, project’s follow up and communication). The overall score was 8.3 out of 10, which was considered a very good score to re-launch the programme.

The city council is now launching the call for the second edition of Smart Iruña Lab, taking into account the improvement recommendations indicated in the evaluation of the first edition, with deadline closing on 31 March 2020. In this call the topics related to STARDUST (mainly energy and mobility) will be prioritized, and further synergies with regard to the EDP process explored.

2. Co-living – Co-working

Pamplona City Council inaugurated a Co-living and Urban Lab in a municipal building located at the old city centre. In the first year (2019), with the ground floor (working space with 11 working post) and the first floor (two meeting rooms) refurbished, several activities were hosted, the most important being the programme “Más Pamplona-Iruña: Coliving -emprendimiento y Laboratorio Urbano” – a call launched by the City Council and promoting economic and social entrepreneurship and the development of innovative business models (Fundación Universidad Sociedad, of the public university of Navarra UPNA). Nine projects were selected, in the fields of mobility, culture, retail, artificial intelligence, active aging, tourism and housing.

By mid-2020 the building will be fully refurbished, with 11 studios with private toilets (2\textsuperscript{nd} – 4\textsuperscript{th} floors), and two common spaces in the cellar (a kitchen-dining room and a living room).

In parallel, the City Council is working on the operative part of the Co-living which will become a reference centre for entrepreneurship several fields related to Climate Change. The City Council wants this project to be part of their Strategic Plan and is working with several stakeholders of the local innovation ecosystem (Government of Navarra, Aditech, SODENA, CEIN, UPNA etc.) to co-create this centre, which will contribute to mobilize innovative ideas in
the context of the local Strategic Plan and RIS3 in the Smart Cities domain. Potential integration in the framework of the EDP are contemplated.

3. Science Ekaitza
Since 2018 Pamplona is hosting a Scientific Gala of Navarra called SciencEkaitza with a panel of luxury guests, organised by Aditech. ScienceEkaitza is an inspiring event where science, the Big Bang, technology, creativity and humour are discussed. The aim is to bring science closer to citizens in an event where speakers assure to surprise the audience with their presentations. A famous comedian presents this Gala, which also includes the presentation of the SciencEkaitza Scientific Awards, that recognise the creative capacity and spirit of cooperation of people dedicated to RDI in Navarra. The SciencEkaitza Awards are intended to stimulate society's interest in research and innovation by highlighting the benefits provided by science and innovation.

4. Navarra LAN Party
The success of the first edition of the Navarra LAN Party led to the organization of a second edition in September 2019, briefly presented in Deliverable 7.1. It is organised by ANDITEC (Asociación Navarra para la Divulgación de la Tecnología, a regional association for IT dissemination), hosted by the Public University of Navarra (UPNA) and supported by Pamplona City Council and the Government of Navarra, among others. Over 400 people participated in the first edition of this technological party, including three days of activities on Digital Art, Demoscene, Sports, Hardware, Games, a Hackathon and many others.

Pamplona City Council organized an activity in each of the editions, featuring a proposal for a Gaming Tool to be developed afterwards within STARDUST. The first year was dedicated to the gaming tool and the second one to develop new case studies to best exploit different data sets published by Pamplona City Council, to feed the STARDUST City App.

5. Innovation Camp: hacia una movilidad sostenible
The Department of Social Rights, through the Navarre Employment Service (SNE), has started the selection process of ten participants to create prototypes and test new business ideas to solve the following challenge: How to take advantage of new technologies to move towards sustainable mobility? (see press news)

Through its national reference centre for renewable energies and energy efficiency, CENIFER, the SNE-NL is proposing a 10-week programme called "Innovation Camp: towards sustainable mobility", from March to May 2020.

The programme, delivered by Peer Faculty, aims to identify and commercially launch small-scale business ideas that put sustainable mobility at the centre, in order to know which ones could be viable. To this end, agile methodologies will be used under three slogans: "make a mistake quickly and cheaply, learning in the process", "not without my client" and "decide with data". The activity will also give participants the opportunity to test their ideas in a real environment, while developing their innovation and entrepreneurial skills. Successful ideas will be rewarded with a place in Cenifer's coworking as well as specific technical support from the Navarre Employment Service.
The format combines 10 sprints or online challenges to be completed each week with 4 face-to-face sessions on new technologies in big data, artificial intelligence, etc. applicable to mobility as well as a presentation or Demo Day of the projects and their results for companies and other stakeholders of interest in Navarra.

The programme is looking for proactive people (employed or unemployed), who have their own idea related to mobility, who are willing to test it and who are curious to learn how to innovate and undertake in an agile, cheap and less risky way than in a traditional way.

5.1.2 EDP priority areas - socio-economic context

Pamplona is the capital of the uni-provincial region of Navarra, which is located in the north of Spain, bordering France in the western border.

Below, some geo-demography data for the city are provided:

- Population of Metropolitan area: 319,208 inhabitants.
- Population of Navarra Region: 640,129 inhabitants.
- Share of population in urban area over regional value: 32.75% (taking into account Pamplona Municipality only), 49.87% (taking into account the whole metropolitan area of Pamplona).
- Youth population group (0-14): 27,810 inhabitants.
- Working age population group (15-64): 135,498 inhabitants.
- Old population (65+): 46,363 inhabitants.

In the next figure, the population pyramid of Pamplona is shown (January 2020):

Figure 5: Total population of Pamplona, 2 January 2020. Source: Pamplona City Council
Concerning **local economy's structure and entrepreneurship**, it is difficult to obtain reliable information at municipal level, and, when this exist, it may not be very significant, since the municipality is small if considering its surface (23.55 km²) and there is a lot of relevant economic activity in the metropolitan area outside the municipality. In addition, Pamplona is the capital of the Region of Navarra (which has a single province), and therefore it can be considered that data and indicators at regional level are quite representative of the city of Pamplona, and therefore information provided in this section mainly picture the Navarra region. At regional level, thus, the latest data show that the GDP has increased by 2.4% in the last trimester of 2019, as shown in the table below:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Period</th>
<th>Value</th>
<th>Annual variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI (Consumer prices Index)</td>
<td>2020.02</td>
<td>103,9</td>
<td>+0.6%</td>
</tr>
<tr>
<td>GDP (progress)</td>
<td>2019.T4</td>
<td></td>
<td>+2.4%</td>
</tr>
<tr>
<td>Occupied (active) population</td>
<td>2019.T4</td>
<td>287,700</td>
<td>-0.93%</td>
</tr>
<tr>
<td>Affiliations to Social Security</td>
<td>2020.01</td>
<td>284,908</td>
<td>+1.9%</td>
</tr>
</tbody>
</table>

*Table 3: GDP and other key economic indicators.*

In 2018, the GDP for the region was of 20,282 M€ (source: SODENA) and the GDP per capita 31,800 € per inhabitant (source: Instituto Nacional de Estadística). The following table compares related regional data with national and EU ones:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>NAVARRA</th>
<th>SPAIN</th>
<th>UE 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP Mill. €</td>
<td>20,282</td>
<td>1,244,757</td>
<td>16,039,864</td>
</tr>
<tr>
<td>Annual Growth Rate GDP</td>
<td>2.6</td>
<td>2.0</td>
<td>1.2</td>
</tr>
<tr>
<td>GDP per capita €</td>
<td>31,389</td>
<td>25,000</td>
<td>31,237</td>
</tr>
</tbody>
</table>

*Figure 6: GDP & annual growth in comparison.*

The number of enterprises created in 2018 was 169, contributing to the trend of steady increase in the net number of enterprises of the last years. The figure below shows the evolution of the number of enterprises of Navarra from 2009 to 2018 as well as the interannual variation (Source: Anuario económico de Navarra 2018).

*Figure 7: Development number of enterprises.*
Although the rate of new initiatives is low, Navarra has a high percentage of consolidated business initiatives (those over 42 months old), i.e. 9.3%, which is higher than the national average. While the levels of entrepreneurship in Navarra are rather small, the quality of them seems to be high since a high percentage of new business initiatives survive over time. (Source: *II Plan de Emprendimiento de Navarra*, from GEM 2014).

In terms of employment, the unemployment rate in Navarra is the lowest in Spain, i.e. 9% in the second semester of 2019, down from a peak of 17.2% in 2012. At national level the highest level of unemployment after the 2008 crisis was of 26.1% in 2013, which was then gradually decreasing to 15.3% in 2018. (Source: *Anuario Económico de Navarra 2018*).

In the following table, some relevant indicators of the labour market of Navarra are provided:

<table>
<thead>
<tr>
<th>Table 4: Labour market indicators.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Source:</strong> INE and Ministerio de Trabajo, Migraciones y Seguridad Social.</td>
<td></td>
</tr>
<tr>
<td><em>(Anuario Económico de Navarra 2018)</em></td>
<td></td>
</tr>
</tbody>
</table>

The **RIS3 of Navarra** was developed and coordinated by SODENA, the financial instrument of the Government of Navarra for the development of business in the region. The diagnosis was carried out taking into account the EDP principles. Initially four strategic sectors were defined for the region: Automotive, Agrifood, Renewable energies and Biomedicine, as mentioned in SODENA’s page **Invest in Navarra**. In addition to these, the last update of the **RIS3 of Navarra** adds two other strategic sectors for the region, i.e. Comprehensive tourism and Creative and Digital industries.

Since the definition of these strategic sectors, different initiatives have taken place. Thus, in order to coordinate these RIS3 sectors, SODENA gathers and coordinates the different regional **Clusters** related to them. Another relevant initiative is **ADItech**, a private non-profit foundation created in 2014 to coordinate the Navarre RDI System (**SINAI**) and the dynamisation of the relationship between science, technology and business in Navarra. ADItech collaborates with and coordinates the 10 SINAI stakeholders (**AIN, CENER, CIMA**, ...)
CNTA, CSIC, Lurederra, NAITEC, Navarrabiomed, Universidad de Navarra, Universidad Pública de Navarra), which are technological centres related to the strategic sectors, and the 21 Navarrese companies of its Board. The website of the RIS3 Navarra offers all relevant information, including diagnosis, implementation and monitoring information, among others.

However, all these data will have to be reviewed in relation to the impact that the Covid-2019 crisis will have in the local economy. Already some estimations indicate that the GDP will decrease by 1.6% in Navarra (one decimal less than at national level, were the estimation is of 1.7% decrease) and 4,349 employments will be lost. (Source: Diario de Navarra of 23/03/2020, from a study of the Centro de Predicción Económica Ceprede).

### 5.1.3 EDP priority areas - Local expertise on favourable conditions

<table>
<thead>
<tr>
<th>Event</th>
<th>When</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st Stakeholder meeting</strong></td>
<td>16th January 2019</td>
<td>Workshop to get to know the different initiatives and finding synergies among stakeholders. By invitation only.</td>
</tr>
<tr>
<td><strong>Smart City y Living Labs:</strong> Nuevas oportunidades para emprendedores, Startup y Empresas</td>
<td>21st January 2020</td>
<td>Smart City and Living Labs: New opportunities for entrepreneurs, start-ups and enterprises - 1st EDP Workshop, open seminar.</td>
</tr>
</tbody>
</table>

In the context of the work carried out in WP1 and related to the Stakeholders Group Establishment (task 7.1.2), a first meeting was organized with some initially identified stakeholders (Pamplona City Council, Aditech, UPNA, Fundación Universidad Sociedad, NASUVINSA, Zabala) in order to internally get to know the different initiatives taking place within the local innovation ecosystem and which could be relevant to the development of the Smart City.

The meeting paved the way for the organization of the first EDP workshop, which took place on 21st January 2020, gathering some 70 people from different stakeholder organisations, including those attending the initial 1st stakeholder meeting (see Figure 8). It was organised as
an open seminar, under the title “Smart City and Living Labs: New opportunities for entrepreneurs, start-ups and businesses

The main focus was on the results of the 1st edition of the Living Lab programme promoted by the City Council, including presentations of the 5 projects that benefited from the programme. The Smart Iruña Lab programme was launched to test a first set of five projects under real conditions throughout 2019. Representatives from these projects presented their results during the workshop.

The five projects involved in the first edition of the Smart Iruña Lab were the previously introduced STOPLED, uRAD, AGROPESTALERT, Smart AQUA and INBIOT. STOPLED is a project on road safety, focusing on LED bands placed on sidewalks and exits of public or private parking to warn pedestrians of the imminent opening or closing of the doors at the arrival of vehicles. They can also be installed on pedestrian walkways with or without traffic light to reinforce road safety. uRAD addresses sustainable mobility, with radar sensors monitoring the traffic of all types of vehicles and people moving through a particular space. The collected data, including real-time information, can be used to improve urban mobility. AGROPESTALERT develops intelligent traps to detect pests affecting crops from their biometric character. Smart AQUA offers smart irrigation by calibrating soil type and crop and by using an algorithm to irrigate when necessary and based on the needed amount. This may increase saving by 50%. INBIOT monitors indoor air quality and improves it through specific sensors, algorithms, and a real-time access platform based on its database.

The second session of the workshop included presentations by Paula Noya (ADIttech) on the Technological capabilities of the Navarre Innovation System (SINAI) and its alignment with the needs of a Smart City; María Sanz de Galdeano (CEIN), focusing on CEIN activities such as training, support to the creation of new enterprises and their cooperation with the University and the City Council; and Miguel Garcia, (Zabala Innovation Consulting) on New opportunities for digital entrepreneurship in Europe, who presented financial opportunities for start-ups under the Blockchers, NGI Explorers and NGI Dapsi H2020 projects.

The workshop closed with a round table on Innovation, Business Opportunities and Collaboration Models for Smart Cities in the Framework of Climate Change & Green Deal chaired by César Usoz (Inspiria Consulting). Participants from the City Council, SODENA, Naitec, BeePlanet Factory and Kunak debated on challenges and opportunities in the framework of an energy transition. The main conclusions of the round table included:

- Need to actively involve the citizens in the energy transition
- Difficulties to communicate to the citizens the important changes that are taking place in terms of R&D, and this makes it difficult to have them on board
- Need of making citizens aware of the fact that they are part of these changes and they can also shape them
- Some believing that by now more sticks and less carrots are needed to foster changes towards more sustainable lifestyles
- Being proposed that the City could create a network of volunteers to test new projects and initiatives
In addition, in order to assess the **Smart Iruña Lab programme**, the City Council carried out a questionnaire to the beneficiaries of the first edition. The entrepreneurs participating in the first edition of the Smart Iruña Lab rated it very positively (8.3 out of 10), in particular the training and business advice received, as well as the accessibility and support to run the pilot tests in a real environment. They suggested that the communicative support to their projects could be improved by the City Council, and also emphasised the fact that, besides all the support they received form the programme, at the beginning to launch some financial contribution is also often needed for this kind of projects.

This is an initiative that worked well in Pamplona, and therefore the new local government decided to maintain it, trying to improve it, by taking into account the recommendations of the questionnaire. Thus, a second edition has just been launched. The [call](#) of the programme is currently open, and entrepreneurs can present their project proposals until 31st March 2020.

Another important initiative that arose from the work being undertaken in the context of STARDUST WP7 is the creation of a **Coliving-coworking building** to foster entrepreneurship in Pamplona. To allocate it, a public building in the old town is being refurbished. The initial idea was to create a centre for entrepreneurship, but, thanks to the work that is being carried out in the context of WP7 (including the 1st EDP workshop), the City Council has decided to dedicate it specifically to Climate Change / Energy transition and new technologies.
The building has an office space for 11 people in the ground floor; two meeting rooms in the first floor; 11 studios, with private toilets on the 2nd-4th floors and a big kitchen-dining room and a living room in the cellar. The works were planned to be finalised by June 2020, although some delays may happen due to Covid-19. In the meantime, the Municipal staff in charge of developing the programme to select the 11 researchers / started a series of bilateral meetings with some of the stakeholders identified in T7.1 (i.e. Aditech, Government of Navarra-SODENA, CEIN). The idea is that the City Council provides the building, and the programme is co-created with the main stakeholders of the local innovation ecosystem and always in the framework of the RIS3 as well as potential business models to be studied as part of the EDP.

5.2 TAMPERE

5.2.1 Existing stakeholder processes and groups

Ecosystems and initiatives

Tampere offers an excellent setting for entrepreneurship and start-ups. The city actively invests in young entrepreneurs, and the strong local start-up culture has created countless success stories, especially in the video game and manufacturing industries as well as health tech. The Tampere University and its cutting-edge research constantly bring new professionals and innovators to the region, where an active start-up community offers plenty of relevant events.

In this regard within the framework of the urban development strategy, the following relevant stakeholder groups have been identified:

- Business Tampere, cities and municipalities, Business and development units of urban municipalities, Tampere Chamber of Commerce, Pirkanmaa Entrepreneurs’ Association, Pirkanmaa Federation, ELY Center, Business Finland, Tampere Metropolitan Area Municipal Association, Tampere City Region Business Services Ltd, MAL Network, University of Tampere and Tampere Vocational College Tredu.

Developing world class business and innovation ecosystems and strengthening networks are critical success factors for attracting investment, businesses and knowledge to the urban area. The development of business ecosystems is an effective policy and according measures have already been implemented (see Figure 11).
This involves enabling encounters by applying digital solutions. It is imperative to enable face-to-face, networking, and sometimes surprising interactions. Bringing together businesses, talent and different players in the ecosystem and matchmaking promotion will support the development of ecosystems, while improving the service experience. Ensuring the availability of high-skilled workers and the channelling of new skills to the region are crucial issues for the functioning of these ecosystems. They must be open and capable of integrating new types of knowledge into platforms and networks, including to attract international start-up entrepreneurs and graduates from the Tampere University community to attract international talent to the business world. Promoting collaboration between small and larger companies is part of the ecosystem and enables the development of new innovative products and services. It also offers small businesses a channel for growth and internationalization with the support of ‘locomotive’ partnerships (Economic development strategy of the Tampere city region).

**Start-up Tampere** exists to make running a start-up easier together with a network of people. As part of Business Tampere, they offer support for businesses, helping it grow faster and scale up in the competitive start-up industry. Since Tampere already has a strong ecosystem related to entrepreneurship, STARDUST Tampere uses the EDP especially to analyse the ecosystem and to create development opportunities in relation to sustainability. In the beginning of the EDP process a few of the state of the art on potential mobilization of entrepreneurial and creative skills initiatives are studied and listed below.

1. **Autonomous traffic level 4 test plan ecosystem**
2. **Smart Hervanta area**
3. **Smart Campus Innovation lab**
4. **Demola**
5. **Crowdfunding experimentation/pilot**
6. **Koklaamo-concept for cocreation and experimental development**
1. Autonomous traffic level 4 test plan ecosystem

Already introduced in Deliverable 7.1, the purpose of the test environment in Tampere is to support businesses, components, system vendors, research institutes, car manufacturers, and potential transport service operators for these autonomous vehicles, digital infrastructure equipment, automated traffic, and service concepts research, development and innovation (R & D & I).

The test area ecosystem also contributes to wider cooperation in Pirkannmaa, Finland and internationally; and to the exchange of information. Test bed activities and opportunities are one way to benefit business growth and also a tool for companies. The City of Tampere, together with company Ramboll, are the promoters of this initiative. Outcome so far from this ecosystem has been a plan for determining the test environment that was made by Ramboll and approved by the City of Tampere.

2. Smart Hervanta Area

Also briefly described as part of Deliverable 7.1, the platform is a cloud-based mobile network that allows 5G testing of all kinds of smart city services. Hervanta's test network is a Nokia cloud-based Private LTE network that enables testing and development of future smart city products and services using 5G technology. The test network will be operational in 2018-2020. In addition to the University of Tampere's Hervanta campus and the Polytechnic University of Applied Sciences, the network covers downtown Hervanta and the tram route. The continuation needs to be validated for example taking into account the needs from the autonomous traffic ecosystem.

3. Smart campus Innovation Lab

Introduced in Deliverable 7.1, the Smart Campus Innovation Lab (SCIL) has been a Tampere3-wide (Tampere3 means All three Universities that were in Tampere) internal innovation ecosystem – a living lab – and an open development community. Students from various fields and from all Tampere3 universities, as university professionals collaboratively have carried out the development together.

Now that the universities have been combined to one University of Tampere, the work of this innovation lab continues under Y-campus name https://www.y-kampus.fi/en/. Another initiative from the research world or the academy field is for example ProAcademy https://proakatemia.fi/en/home/. University and University of Applied sciences play a big role, especially in the early phase in the current start-up ecosystem in Tampere. Their goal is to increase our understanding of entrepreneurship and business in Tampere region, to help our client companies to restructure their business and to generate skilled entrepreneurs in the global and digitalizing business environment of the 2020s.
4. Demola

Demola helps companies and experts seeing how the future will impact their own business – or how the new generation will see their own future. And for students, it is an opportunity to be a young visionary and participate in making the future. During the past 10 years, there have been about 3500 Demola projects with 1000 companies and organizations and over 15 000 students participating. Students are considered as creative people. IPR model was made so that it was a fair deal for students and clear for the companies.

Demola is currently a firm called Demola Global and, since its foundation in 2011, it has not received any financial support from the public sector. Demola trademark and innovation platform is owned by Demola Global. Demola Global was established in Tampere, Finland. Now Demola operates in 18 countries: Finland, Sweden, Denmark, Norway, Spain, France, Lithuania, Latvia, Hungary, Portugal, Mexico, Namibia, South Africa, Slovenia, Japan, China, Nepal and Tunisia.

5. Crowdfunding experimentation (pilot)

As the first city in Finland, the City of Tampere launched an experiment with the aim of encouraging and enabling citizen and community-based projects through crowdfunding. The objective is to support projects that engage local people to take part in developing their own local environment. The project ideas to improve local environments and neighbourhoods derive from the citizen and communities and the campaigns are also ran by them. The City of Tampere functions as the enabler by partially funding citizen and community-based projects as one crowd funder among others, by giving the campaigns visibility and by advising the planning of campaigns. The City of Tampere wants to back crowdfunding campaigns that demonstrate local support. The City of Tampere has been experimenting with institutional crowdfunding in the spring of 2019 in cooperation with Mesenaatti.me, a community funding service. The experiment ran from November 27th 2018 to May 24th, 2019.

By the deadline of March 1, 2014, 14 campaigns had been requested for the crowdfunding experiment, of which the mayor selected 11 campaigns based on a list of proposals of the city task force. The $20,000 budget set aside for the experiment was distributed to the campaigns that best met the criteria. The selected campaigns represent a wide variety of projects and are located in different parts of Tampere. The campaigns are well in line with the goals of the experiment; to enliven the city, strengthen community spirit, and support the involvement of residents and the uniqueness of the regions. Of the crowdfunding campaigns that participated in the experiment, 10 raised their target funding and were implemented during 2019.
Besides working as a funding mechanism this is acting also as a tool for citizen engagement. Citizens and communities inside the region are actively working in order to get something that they really need. Input is coming directly from the communities that apply for crowdfunding.

### 6. Koklaamo concept for co-creation and experimental development

Koklaamo was an innovation platform developed in Tampere, which provides companies with a great opportunity to develop new services for the needs of city dwellers. Businesses could bring their wild ideas to Koklaamo, where they worked together to solve the problems of everyday life. The challenges addressed in Koklaamo were identified together with local citizens in workshops. The Koklaamo process in itself aims toward openness and building trust between the different stakeholders in order to create a safe environment for dialogue and the creation of new solutions. The process has shown how developing new solutions with citizens and different stakeholders can be made efficiently, with small expenses and agile ways. Ten new concepts have been created to meet different challenges.

**Lessons learned**

It needs to be considered that the role of the city is changing and it takes time to internalize the new approaches that this role will take in practice in the future. Open innovation platform in the city context is a new thing and it still needs some more practice with regard to its implementation. There appeared to be a slight change in the group of participants in different workshops as the representation from different stakeholders varied from workshop to the other. This caused a bit of information loss. The dialogue between the different stakeholders could have been facilitated also between the different Koklaamo workshops, thus creating a better continuum and commitment in the developing process.

The process-oriented approach to co-development will be still used and practiced in near future as part of the Smart Tampere programme. The city will open the annual Tampere Challenge (design competition, quick tests, etc.) to identify the key challenges and development needs of the city and business in the business and economic planning process. Competition seeks innovative solutions to one or more of the critical challenges that has arisen during budgeting.

Part of the concepts depicted above are actually forming a significant part of the current Startup ecosystem in Tampere. Especially services provided by Tampere University and Tampere University of Applied Sciences have proven to be the spark for many entrepreneurship beginnings. Social innovation ecosystems enable (or inhibit) the development of social innovations. They consist of actors from different societal sectors and their environments with legal and cultural norms, supportive infrastructures and many other elements.

**Identified needs from the previous phase (D7.1) – Energy ecosystem and open data**

In the framework of the analysis carried out in Deliverable 7.1 ‘Living Labs activities report in each Lighthouse’, with regard to Tampere new activities that would supplement the existing ecosystem and stakeholder groups were identified. One of those referred to the area of energy ecosystem. It is expected that an evolving ‘energy ecosystem’ would bring improvement to data modelling and normalization, especially if related projects are more closely aligned and use similar/same models. In this regard, activities will be carried out e.g. with nationally EU
funded Interreg project AREA21 and 6Aika projects Energy wise cities (EKAT), and City IoT. A good base for energy data is also provided by STARDUST pilot targets: 30 buildings in the city centre that are connected to Talotohtori Cloud-based BEMS system are already producing energy data. Other ecosystems would be formed regarding open data and especially Fiware actions in the Tampere area. Active members that have been already identified are University of Tampere, Nokia, VTT, Business Tampere, City of Tampere and also participants from the business world. One of the objectives is to have regular meetings and info sessions.

5.2.2 EDP priority areas – socio-economic context

*Insights from the regional economic development strategy*

The Tampere metropolitan area or Tampere region is the second largest economic area and growth centre of eight municipalities in Finland - Kangasala, Lempääälä, Nokia, Orivesi, Pirkkala, Tampere, Vesilahti and Ylöjärvi. It published the Tampere region urban economic strategy in November 2019. The vision for the business sector in the urban area by 2025 is “Overwhelming in its capacity for renewal - sustainably growing”. The vision is achieved through the best business experience, an attractive industrial growth base, reinforcing innovation and innovation capabilities, and sustainably growing, competitive business and industry (Economic development strategy of the Tampere city region).

A diverse economic structure protects the competitiveness of the city region against changes in the world market. In order to maintain it, it is deemed important to develop the capacity for renewal in all sectors, across businesses of different sizes and in different life cycle stages. However, after a decade of lost growth, the RDI investments are below the target of 4% of GDP.

The strategic objective set at national and EU level is to ensure that the RDI expenditure exceeds 4% of the regional GDP. At best, research and development expenditure in the wider Tampere Region relative to output was 7%. The ratio has now fallen below 4% (see Figure 12). Private sector R&D expenditure, in particular, has been declining for a long time. The R&D investments in the higher education sector have developed more favourably than in the business field, and the region’s higher education institutes have been particularly successful, for example in applications for the most sought-after research funding. However, the scale of funding for higher education institutes is not sufficient to compensate for the change in the business sector (Economic development strategy of the Tampere city region).
Data from the Business Finland databank shows to which sectors the funding is directed. In 2018 for the Tampere region the following branch groups were getting funding:

- Accommodation and food service activities
- Administrative and support service activities
- Agriculture, forestry and fishing
- Arts, entertainment and recreation
- Construction
- Education
- Electricity, gas, steam and air condition supply
- Financial and insurance activities
- Human health and social activities
- Information and communication
- Manufacturing
- Other service activities
- Professional, scientific and technical activities
- Public administration and defence; compulsory social security
- Real estate activities
- Transportation and storage
- Water supply, sewerage, waste management and remediation activities
- Wholesale and retail trade; repair of motor vehicles and motorcycles

The biggest share of funding was attributed to manufacturing and education. The different branch groups can be further divided in up to hundreds of different branches.

In 2018, RDI funding took a positive turn as the R&D expenditure of companies also started to rise in the wider Tampere Region. The total amount of RDI investments used in companies was MEUR 487, an increase of over 9% from the previous year. The funding granted by Business Finland in the region also increased: The total amount of RDI funding was allocated to actors
in the region, totalling M€ 66, 75% (MEUR 49) of which was allocated to the business sector. The amount increased by M€ 9.2 from the previous year (+23%) (see Figure 13). Of the funding granted, two-thirds were grants and one-third loans. In addition, a positive signal can be seen in the up-turn in risk financing granted to companies in the wider Tampere Region in 2019 (see Figure 13). The preliminary information on risk finance extends to summer 2019 (Economic development strategy of the Tampere city region).

![Figure 13: Development of RDI financing granted by Business Finland to enterprises, Tampere Region 2012–2018](image)

In addition to the importance of promoting cooperation between large companies, research institutes and small businesses in RDI activities and in finding funding, the economic development strategy highlights also the sustainability aspect. The economic development vision of the Tampere city region until 2025 is “Superior capacity for renewal – sustainable growth”.

Sustainability is a prerequisite for competitiveness in global markets. Sustainable business means climate-smart operating models, greener technology, sustainably designed products, and well-being for entrepreneurs and employees. Sustainable growth in the city region will be strengthened through support for the development of climate-smart ecosystems and the emergence of circular economy clusters, and by promoting market access for new, more sustainable solutions through public procurement. The region’s sustainable business is framed by green, attractive and more accessible cities and municipalities with vibrant centres (Economic development strategy of the Tampere city region).

**Insights from the analyses of the start-up ecosystem**

During 2019, as part of the EU funded 6Aika project: Ecosystems of Growth project, an overview of growth-oriented companies in the Tampere region was produced. The overview has three primary purposes. First, it creates a visualisation of the current situation in the region by using as recent information as possible and by combining several, partially new sources of data. Secondly, it showcases the information generated in the region and the opportunities of utilising this information. Thirdly, it serves as a prototype of the visual overview that can be
produced with the tool created in the project and current sources of data. The overview is available under the following link.

The overview visualises the start-up ecosystem in Tampere region (Pirkanmaa). At the same time its results can be customised, for example by selecting attributes such as the number of companies, turnover, average turnover per company in the group, the number of personnel or the average number of personnel per company in the group (see example in Figure 14).

![Figure 14: Founded start-ups in Tampere region, from under 5 to 10 years old (Pirkanmaa)](image)

The tool can also tell where innovations were created in 2018. From the diagram in Figure 15 it can be seen that Y-campus and Tribe P47-space have been good incubators for ideas.

![Figure 15: Relevant innovation ecosystems/initiatives](image)

The tool provides a dashboard that shows the established start-ups by related ecosystem. Also start-up categories are provided, which is can used to gather data of the area where start-ups are active. Health-tech together with Gaming are somewhat typical areas of start-ups in the Tampere region, according to Figure 16.
The tool also provides information on the amount of start-up financing and to what sectors or areas the financing is directed.

The results of Figure 14 re-emphasise the importance attributed to sectors such as Health-tech and Gaming, followed closely by larger industry projects, and some financing also provided to software development. Aspects to be taken into account in the further evolvement of the EDP.

5.2.3 EDP priority areas - Local expertise on favourable conditions

Workshops organized around the topic so far by STARDUST:

<table>
<thead>
<tr>
<th>Event</th>
<th>When</th>
<th>Topic</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable Start-up weekend in Tampere</td>
<td>20.-22.9.2019</td>
<td>54 hours to create start-up which enhances our economy, society and environment.</td>
<td>total: 70, 30 active event participants</td>
</tr>
<tr>
<td>EDP workshop 1, together with the start-up ecosystem</td>
<td>17.12.2019</td>
<td>What is smart city to you? Hackathon SWOT analyses</td>
<td>10 persons, start-ups, start-up ecosystem, City of Tampere, Council of Tampere region</td>
</tr>
<tr>
<td>EDP workshop 2, together with the start-up ecosystem</td>
<td>14.02.2020</td>
<td>Sustainability in start-up ecosystem</td>
<td>12 persons, start-ups, start-up ecosystem, City of Tampere, Council of Tampere region</td>
</tr>
</tbody>
</table>
The first event identified for creating synergies with the EDP process was the **Sustainable Start-up Weekend**. It aims at contributing to the goal of Tampere to develop a smart and sustainable city through the creation of new businesses. All Startup Weekend events follow the same basic hackathon type model: anyone is welcome to pitch their startup idea and receive feedback from their peers. Teams organically form around the top ideas (as determined by popular vote) and then work for 54 hours on business model creation, coding, designing, and market validation. The weekend culminates with presentations in front of a judges panel. Goals for the event that were initially set:

- Contribute to the development of Tampere Startup Ecosystem
- Contribute to the increase of startups in the sustainability field in Tampere
- Create awareness about sustainability issues among attendees

In addition to STARDUST (City of Tampere) participants there were stakeholders from public as well as private sector. Most of the participants were students. Participants were there to listen and gather information about city of Tampere and sustainability, but the main point was to collaborate in the development of ideas around sustainability.

Identified key achievements include:

- Kick started the development of sustainable entrepreneurship in Tampere
- Contributed to the visibility of the Tampere city brand and speeded the word about the current actions of the city in the field of sustainability
- Attracted different players (e.g. mentors, investors) from the field of sustainability from Tampere and the rest of Finland
- Showcased Tampere startup ecosystem to some of the key mentors and investors from outside of Tampere.
- Showcased the opportunities for sustainable businesses in the Tampere region.
- One of the teams (Charge Now) continued idea development at Red Brick Accelerator.

With regard to lessons learned, attendees highlighted the importance of a clearer structure with regard to mentoring. However, it was also acknowledged that in the timeframe of 2 days a comprehensive mentoring program is not achievable.
Furthermore, attendees have highlighted the importance of team formation processes. Some of the teams were lacking some of the key skills (e.g. environmental engineering). In the future, this can be improved by putting more financial and human resources for marketing to specific target groups. Additionally, more effort should have been put into addressing topic of sustainability. Particularly, a mentoring session on Sustainable Development would be a useful addition to create knowledge among the participants. The attendee feedback showed that the topic of sustainability has not been highlighted enough. Feedback from the mentors was highly positive, highlighting the quality of organization as well as the potential of the start-up ideas. Some of the mentors noted that, compared to other Start-up Weekend events, the start-up ideas and the work done within the weekend were much higher quality.

After the kick-off of the development of sustainable entrepreneurship in Tampere, STARDUST Tampere has organized two workshops in the framework of the EDP. In the first workshop, the topic was Smart City or Smart Tampere and what direction it should take. A SWOT analyses of the Hackathon method was applied to discuss what threats, opportunities, strengths and weaknesses can be seen in promoting a sustainable entrepreneurship through hackathons. When elaborating especially what smart city means to entrepreneurs, themes that rose were digital solutions/ICT, sustainability and strong co-operations, especially between city and citizens. According to discussions, a smart city needs to engage people, discover their needs and problems, but on the other hand it also needs to guide and lead on the topic of the sustainability. A smart city also needs to have a clear vision of the future society and more inspiration and passion driven development towards that. It needs smart people who are willing to develop city together.

With regard to the Hackathon method, even though the City of Tampere has a strong start-up ecosystem, the gap and obstacles between Hackathon/Innovation events and accelerator programmes remain an issue.

![Figure 19: Revisiting Hackathons - feedback from the participants](image)

A major problem related to Hackathons is the follow-up after the actual event. Missing facilitation leads easily to no results at all. The real change or even a pilot will not be realised at all. When asking about the weaknesses of the hackathons from a start-up point of view, in Tampere, even though a smart city, the hackathon culture does not exist. There is also still a lack of open data. Also, the hackathons only offer short periods of time in order to get something tangible done. But there is still the possibility to find new connections, business opportunities between companies also, not just with the city and participants. It brings up agile solutions for slow industries and the city. And it also brings the officials out of the box or their “bubble”.
In the second workshop the economic development strategy of Tampere region was looked at from the startup point of view. What does the new Economic Development Strategy of Tampere Region mean for startups? How to implement the strategy and boost sustainability?

The strategy itself was thought important. It is important to have the vision and sustainability included. However, concerns were discussed on how it will be achieved when competitive business has still a strong impact and lack of concrete ideas is believed a weakness. When thinking of general ideas of boosting the theme, communication and networking are thought to be the key activities. Cities should communicate more – what is the real impact of our doings. And collaboration is important. The current situation should be told and why we are there. With technology only the change is not possible, but more open discussion is needed of the problems in the city so that companies and start-up can come up with ideas and answers. Testing the ideas is important for start-ups. The strategy should support and help getting into the testing phase. There should be clear point of contact inside the city for these actions.

With regard to the EDP, couple of streams or co-operations have already been identified and planned as next steps. STARDUST will continue the co-operation with Council of Tampere region so that planning of the mutual event hackathon or “Climathon” will start, the event itself being in August 2020. In the event, stakeholders from the different quadruple helix model groups will join to solve issues and brainstorm around topics selected beforehand. In addition, the work with the startup ecosystem kick, which started in September 2019, will continue and the next workshop will concentrate on one of topics raised during the previous workshops:

Sustainability as part of the startup service path with
- Topic actively featured in services
- More sustainable entrepreneurship
- Developing a Sustainable Business Assessment Tool for Startups

STARDUST wants sustainability being integrated into the start-up ecosystem and to the services provided to start-ups, so that future companies will be sustainable by default, and will be building smarter and carbon neutral Tampere 2030.

5.3 TRENTO

5.3.1 Existing stakeholder processes and groups

In the most important Italian rankings related to sustainability and smart city, Trento usually occupies one of the first places with regard to medium sized cities. In ICityRank 2019, Trento is 6th in the overall ranking, 3rd in economic stability and 1st for environmental protection. In the Smart City Index 2020 made by EY, Trento lists first, followed by Turin, Bologna, Mantua and Milan, with the full results to be published in May 2020. Due to collaborations across key institutions such as the University of Trento, Fondazione Bruno Kessler (FBK), Province of Trento and its managed enterprises as well as the Municipality of Trento, in the last years the city has become one of the frontrunner cities related to ICT, environment, energy, innovation, entrepreneurship and start-ups. Thanks to these very strong partnerships, the social innovation ecosystem is already a reality, though additional efforts are needed to refine it and to include more partners.
Trento has identified 12 initiatives belonging to its social innovation ecosystem, which specifically relate to smart city R&D or entrepreneurial activities, partly concluded and partly still taking place in the city. Of these 12 initiatives, Trento selected 7 examples considered key:

1. Speck & Tech
2. Clab – Trento
3. Impact Hub – Trento
4. EIT Labs
5. HIT – Hub Innovazione Trentino
6. Trentino Sviluppo
7. ReBuild

1. **Speck & Tech**

Already introduced in Deliverable 7.1, Speck & Tech is an initiative that can be seen not only as a social innovation but also as Living Lab. Speck & Tech is a community of entrepreneurs, developers, designers, professionals and anyone who wants to build a network of tech enthusiasts within the Trento area, with the purpose of learning and sharing new ideas regarding development, design, entrepreneurship, start-ups and any related topic. Speck & Tech usually organise events on topics related to computer science, IoT and other, by involving professionals, experts and academia. At the end of the event, a buffet is opened, which consists of only two ingredients: speck (typical Trentino food) and beer. Its main objective is to foster discussion and networking between participants and speakers.

Speck & Tech is a novel way of meeting ICT experts and of explaining different topics in a smart way also live on Facebook. The promoters of the related events are mostly composed by young technology affine people, belonging to the University of Trento and all the related research & innovation organisations like Fondazione Bruno Kessler (FBK), EIT Labs as well as employees of start-ups or companies. These events started in April 2016, and since March 2020 the initiative has organised around 40 events with an average of 200 participants. Moreover, since Speck & Tech has a lot of connections with start-ups and entrepreneurs, they offer also a place for job offers.

For Trento, Speck & Tech is an important initiative with regard to the EDP Process thanks to their connection with ICT experts and their related expertise. Speck & Tech is reachable on the Internet [https://speckand.tech/](https://speckand.tech/), and also on the main social media and instant messaging platforms.

2. **Clab – Trento**

The CLab Trento (Contamination Lab Trento) initiative is a cross-disciplinary laboratory where everyone can be both ingredient and creator of entrepreneurship and innovation. Throughout the year CLab Trento hosts events, seminars, workshops on innovation, entrepreneurship and social impact offered by student associations or other organisations. Founded in 2012, CLab Trento is promoted by the University of Trento in a strategic partnership with Hub Innovation Trentino (HIT). The stakeholders of this initiative are mostly students
of the University of Trento with different background and skills, starting from computer scientist and including economists.

In CLab Trento, people play different roles: Clabbers are the students or people that participate in different offered programmes. There are also mentors that are the “teachers” of the Clabbers that help them to develop their ideas. CLab Trento has so far involved more than 2000 students, realised more than 100 projects, included more than 40 mentors, and created and incubated more than 15 start-ups. CLab Trento is reachable on the Internet https://clabtrento.it/en and on main social media platforms. CLab Trento can be an important initiative for the EDP Process due to their connection with different people that have different skills and also the knowledge on the organisation of Hackathon and events.

3. Impact Hub – Trentino

The Impact Hub – Trentino initiative started in May 2015, and is part of the international network of Impact Hubs, one of the world’s largest networks focused on building entrepreneurial communities for impact at large scale — home to innovators, dreamers and the entrepreneurs who are creating tangible solutions to the world’s most pressing issues. Impact Hub – Trentino involves a lot of different stakeholders with very different profiles: entrepreneurs, no-profit operators, self-employed, young students, creators and ICT experts. They have a common desire: have a positive impact on the territory. Stakeholders can access public and common spaces, resources, get inspiration from others and networking for market opportunities. Impact Hub offers also physical spaces where entrepreneurs, start-ups can have their headquarter.

This initiative collaborate with the Municipality of Trento, Province of Trento, main cooperative banks, FBK and other municipalities and companies. Since Impact Hub have a lot of contacts with different profiles, not only in ICT, it is deemed a very good candidate for the EDP Process. Impact Hub can be reachable https://trento.impacthub.net/ and on the main social network.

4. EIT Digital – Trento node

EIT Digital aims at global impact through European innovation fuelled by entrepreneurial talent and digital technology. EIT Digital strengthens Europe’s position in the digital world by delivering breakthrough digital innovations to the market and breeding entrepreneurial talent for economic growth and improved quality of life. EIT Digital helps business and entrepreneurs to be at the frontier of digital innovation by providing them with technology, talent, and growth support.

The Trento Node of EIT Digital started its activities in September 2011, and is promoted by Hub Innovazione Trentino (HIT), Fondazione Bruno Kessler (FBK) and Province of Trento. The main partners of EIT Digital include corporations and businesses such as BT, Cefriel, Centro Ricerche Fiat (FCA), Comau, Engineering Ingegneria Informatica, Ericsson, GFT, IBM, Olivetti, Poste Italiane, Reply, SIA, Siemens, STMicroelectronics and TIM; innovative SMEs like Amiko, Cloudesire, Expert System and Okkam, research organisations such as the CNR.
academic institutions like the Polytechnic University of Milan and Turin, University of Bologna, University of Trento; and ecosystem partners like HIT (Hub Innovazione Trentino). EIT Digital Trento has also a Satellite Centre in Milan. EIT Digital invests in strategic areas to accelerate the market uptake and scaling of research-based digital technologies (deep tech) focusing on Europe’s strategic, societal challenges: Digital Tech, Digital Cities, Digital Industry, Digital Wellbeing, and Digital Finance. EIT Digital breeds T-shaped entrepreneurial digital talent focused on innovation through a blended Education Strategy that includes a Master School, an Industrial Doctoral School and a Professional School.

For the EDP Process EIT Digital can be a very important and strong partner, mostly with regard to ICT and its research expertise and network. EIT Digital is reachable on the Internet https://www.eitdigital.eu/ and on the main social media platforms.

5. HIT – Hub Innovazione Trentino

Born in 2015, the vision of HIT – Hub Innovazione Trentino is to encourage innovation, technology transfer and scouting of innovation opportunities for the territory of the Province of Trento, related to the thematics of intelligent specialisation. The HIT Stakeholders are Fondazione Bruno Kessler (FBK), University of Trento, Fondazione Edmund Mach (scientific research, education and training, experimentation, consulting and business services in the agricultural, agri-food and environmental branches) and Trentino Sviluppo. The mission of HIT is the promotion of the results of scientific research in Trentino through technology transfer activities to private companies and investors, supporting stakeholders and Trentino companies in innovation processes and internationalisation in national and European networks (e.g. Cluster Technologies, KIC, and Technology Platform) and stimulating integrated training, infrastructures, skills and services to accelerate innovative and highly technological businesses. Related to EDP Process, HIT can be involved regarding areas such as ICT and energy. HIT is reachable on www.trentinoinnovation.eu and on main social media platforms.

6. Trentino Sviluppo

Trentino Sviluppo is a company established by the Autonomous Province of Trento to foster the sustainable growth of the “Trentino system” by developing actions and services aimed at supporting the creation of new entrepreneurial and innovation projects. In particular, Trentino Sviluppo represents the reference point for enterprises willing to operate in Trentino. Trentino Sviluppo started in 1986 its activities and is based in Rovereto. Like most of the initiatives, also Trentino Sviluppo is promoted by Province of Trento, Fondazione Bruno Kessler and University of Trento. Trentino Sviluppo accompanies the enterprises at all stages of the process leading to their establishment. For example, it helps them search for skilled workforce, get in touch with research institutions, identify the most suitable areas and venues, engage with the public administration in order to get a licence or a permit, get access to credit or apply for a grant. Even fully-fledged enterprises are supported in the development of new projects, both in terms of research and the technological and organisational development.
Trentino Sviluppo is not only active in the ICT field but also with regard to energy and building, and thus is considered a suitable candidate regarding the STARDUS EDP, also due to their thirty years of experience in networking and exploring the right path for developing innovative and entrepreneurial projects. [https://trentinosviluppo.it/en/Home.aspx](https://trentinosviluppo.it/en/Home.aspx), on Facebook and Twitter, on LinkedIn, Youtube and Whatsapp. Trentino Sviluppo is reachable on the Internet, [https://trentinosviluppo.it/en/Home.aspx](https://trentinosviluppo.it/en/Home.aspx), on Facebook and Twitter, on LinkedIn, Youtube and Whatsapp.

### 7. REBuild

REbuild is a platform for Italian construction innovation, recognised in the construction market as a reference player capable of anticipating and characterising the national debate on the future of construction. The company’s core business is the organisation of conventions and aggregation events aimed at the dissemination, information and training on sustainable building issues in the broadest sense. Founded in 2012 and building on the common intent of Riva del Garda Fierecongressi and Habitech - Trentino Technological District - to lay the foundations for the establishment of a reality that knows how to work on the most cutting-edge issues linked to the innovation of the redevelopment of real estate, it became a company in May 2016. REbuild, which over the years has been able to grow and building up a community of qualified professionals, is the most innovative reality in the Italian panorama. Over the years it has been able to attract the most attentive players to the evolution of the sector and to compare specific skills and know-how in order to offer possible answers and strategies. REBuild is reachable on the Internet [https://www.rebuilditalia.it/en/](https://www.rebuilditalia.it/en/) also, in main social media and on LinkedIn. Due to the important knowledge and network related to Building and Energy, ReBuild can be a very good player for EDP Process in Trento.

### 5.3.2 EDP priority areas – socio-economic context

Similar to Pamplona, it is difficult to obtain reliable data on the economy’s structure and entrepreneurship at municipal level. This is due to the city of Trento being strongly intertwined with developments at provincial/regional level, being the capital of the Province of Trento. Thus, data and indicators at regional level are considered quite representative of the city, and information included in this section mainly refers to the Province of Trento.

The **Smart Specialisation Strategy** (SSS3) of the Province of Trento was defined in 2014 and the part related to implementation, monitoring and evaluation was launched in 2016. The strategy identified key areas for future development, both from a productive and an economic point of view. It evolved from a bottom-up approach that engaged stakeholders in the field of research and innovation, linked to their vocation for the territory, and based on investments made in the past years and on the results obtained in terms of participation in national and international networks. The focus lays on given value and prioritising areas that can build on already researched technology, to be adopted or used on the territory in order to innovate and grow, on appropriate infrastructure, and on already started possible collaborations with research institution and public-private partnerships.

In particular, 4 macro-areas have been identified:

1. Quality of life
2. Mechatronic
3. Energy and environment
4. Agri-food

These areas respond, on the one hand, to a desire to enhance competitiveness and the specific nature of the production and technical-scientific system in Trentino, and on the other hand to the will of promoting sustainable development. It has also been recognised that Trentino provides certain key elements which characterise and cross-cut all the subject areas: digital development and ICT, social cohesion and capital, and social innovation. In-depth analysis has been carried out for all these areas, to assess the importance of ICT and enabling technology (such as biotechnology, nanotechnology, micro-nano electronics and photonics for example), existing strong aspects, weaknesses, threats and opportunities and alignment with the main initiatives and programmes existing at national and European level.

While having various points of contact, convergence and synergy, the Smart Specialisation Strategy does not replicate the Long-term Research Plan of the Province. It rather positions itself synergistically in the subsequent phase of the research-innovation-market production chain, also attempting to remediate the main defect of the Trentino research system. The main focus of the RIS3 is indeed policy for industrial research and innovation (moving beyond technological readiness level – TRL > 5/6), and the application and transfer of the results to the area in the medium-long term, coinciding with the 2014-2020 seven-year European Community programme.

Key criteria that have informed the selection include:
- Representativeness of sectors of considerable importance and economic impact,
- Coherence with significant public and private sector investment in innovation,
- Considerable critical mass present in the area,
- Excellence recognised at national and European level,
- Competitive advantage,
- Broad interpretation of the innovation concept, fully involving the private sector, and
• Prospects for particularly significant market development. Besides characterised by reciprocal interrelationships, the different areas are related to cross-cutting area priorities, starting from the diffusion of key technologies to social cohesion.

The continuous development of frameworks of interrelationships between need, institutional parties entrusted with responding and policy, which is capable of acting proactively to potentially address the highlighted critical areas, is expected to support the implementation of various elements, such as the necessary infrastructures, setting priorities and the most appropriate type of action for the specific geographical dimension and scale, as well as activities which promote for examples security, innovation, social and environmental aspects.

The Municipality of Trento contributes to the SSS3 and related R&I priorities, and has applied its concepts in the framework of most of the past and current actions and activities, including:

• General Regulatory Plan (PRG) of the Municipality of Trento, of which the first adoption was approved, subsequently revised and the second adoption is currently discussed in by the City Council. The PRG identifies 5 challenges:
  1. ECO TRENTO, referring to the main challenge of stopping land consumption
  2. COSY TRENTO, which puts emphasis on the urban regeneration and re-development and on the support of the touristic role of Trento and its territory
  3. OPEN TRENTO, about linking mobility systems and the urban layout
  4. SMART TRENTO, namely innovation of the urban system for supporting its attractiveness and that of the territory
  5. BELLA TRENTO in relation with the upgrade of protection rules for historical and cultural heritage

The PRG especially interlinks with the SSS3’s environment area and the element of preservation of landscape in particular.

• Touristic Plan of the City of Trento, which will soon be discussed by the City Council. The updating of the plan was based on important participatory processes, involving different stakeholders. It especially relates to the quality of life and also agri-food area.

• Urban Mobility Plan and the Sustainable Urban Mobility Plan, which will be published in 2020 and the European Project GreenCycle in particular contribute to activities with regard to energy and environment though also the Quality of Life

• By accessing to national and European funds and also thank to the IEEE award as “IEEE Smart City”, the Municipality of Trento can foster the idea of Smart City by adopting technological solutions that can give new services and can increase the well-being of its population.

### 5.3.3 EDP priority areas - Local expertise on favourable conditions

<table>
<thead>
<tr>
<th>Event</th>
<th>When</th>
<th>Topic</th>
<th>Attendees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trento Smart City Week - 3rd edition</td>
<td>16 to 22 September 2019</td>
<td>Information and entrepreneurial/citizen engagement on EDP at the municipal stand</td>
<td>16,000 event participants</td>
</tr>
<tr>
<td>Workshop on Trento Smart city</td>
<td>Postponed</td>
<td>Workshop on what went well, what less well and how the event contributed to supporting entrepreneurial activities</td>
<td>Representatives of different contributing partners, including FBK, UniTrento, Province of Trento, Muse, Local Health, Consorzio dei Comuni Trentini, Trentino Network, A22</td>
</tr>
</tbody>
</table>
The 3rd edition of the Trento Smart City Week took place in Trento from 16th to 22nd of September 2019 and had as important actor the innovation system of the Trentino. The topic of this edition was “Citizens in the digital times”, re-viewed from many perspectives based on roundtables, workshops, presentations and initiatives. It included 140 events, 180 speakers, 4 meeting rooms and 6 exhibition stands in the Digital Village at the Duomo Square of Trento. The stands have been organised by the most important actor of Trento’s innovation system such as the Municipality of Trento, Province of Trento, Local Health Authority, Trentino Network, Fondazione Bruno Kessler (FBK), University of Trento and MUSE (Museum of Science of Trento), and attracted around 16,000 visitors. The event was promoted by the IEEE and included the patronage by the Public Administration Ministry and AGID (Agency for Digital Italy). Other important actors of the Trentino Ecosystem decided to became partner such as Trentino School of Management, HIT and EIT Digital.

In framework of the event, on the one hand the different partners of STARDUST-Trento presented the objectives and achievements of the project. On the other hand, as part of the Entrepreneurial Discovery process to be developed within the WP7, Eurac Research directly engaged citizens in the planning of the future smart city, by asking about their knowledge of local entrepreneurial initiatives and perceived needs of the city of Trento. The approach consisted of a poster, which explains what an EDP is, what it is intended to do for the city of Trento, and giving the possibility to citizens to report via post-it what are the opportunities to be explored through the EDP in Trento (see Figure 21). In addition, if interested contact details could be shared.

The suggestions the citizens made through the post-its focused on the need to strengthen the connection between University and enterprises, by facilitating the creation of start-up
initiatives, the need to make the digital services more accessible to citizens, especially elderly, and finally the need to explore solutions for a more sustainable urban mobility.

With regard to the 1st EDP workshop, the idea emerged to evaluate the impact of the Trento Smart City Week, involving all the actors who have been supporting the event. First ideas on the agenda of the workshop emerged, including addressing questions such as what worked well and what less well with regard to the Trento Smart City Week, how it contributed to addressing future challenges Trento faces as a Smart City, which opportunities the event created to unfold the entrepreneurial and R&I potential with regard to a smart city, and which barriers still exist which hinder it to fully unfold its R&I potential. However, the necessity of involving high-level representatives of the different partners proved to require a well-in advance scheduling and very structured organisation of the workshop. This on the one hand coincided with developments within the public administration, such as personnel changes of those having been mainly responsible for strategically organising the event, and on the other hand with political municipal elections to take place in May 2020. The latter makes it questionable to what extent the new Council is still interested in pursuing the event or whether a new solution will be proposed, making the workshop redundant. These developments resulted into the postponement of the 1st workshop, and the different partners are looking into building on synergies to gain insights into future ED priorities, including the development of a questionnaire to be sent to the partners involved in the organisation of the Trento Smart City Week.

5.4 INSIGHTS FROM FOLLOWER CITIES

The drivers of each municipal initiatives are the local authorities and are administered by the civil servants. However, the local entrepreneurs and academia are integrated in the development of novel solutions to fit effectively in the existing energy and mobility systems. District leaders of all follower cities are serving as translator connecting good practice examples and related experiences of the lighthouse cities of STARDUST and other Smart City projects with the municipal stakeholders. Interfaces to Business models are investigated in all follower cities by using Osterwalder's business model approach (Osterwalder and Pigneur 2010), which proposes a single reference model, called Business Model Canvas based on the similarities of a wide range of business model conceptualizations via visualising them. It is nowadays one of the most used frameworks for describing the essential elements of business models with nine modules, the canvas. The target is to keep the interface description simple and focused on exploring the chosen challenges. These canvas matrixes (see the template in Table 5) provide an overview about the main relevant coefficients for the business models of planned demonstration sites.

<table>
<thead>
<tr>
<th>Key partners</th>
<th>Key Activities</th>
<th>Key Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Propositions</td>
<td>Customer Relationship</td>
<td>Channels</td>
</tr>
<tr>
<td>Customer Segments</td>
<td>Cost Structure</td>
<td>Revenue Streams</td>
</tr>
</tbody>
</table>

Table 5: Canvas template for coherent Business Models in in the follower cities

Source: Osterwalder and Pigneur 2010

Building on the ongoing exchanges with the Lighthouse Cities these canvas matrixes will also act as interface to the given EDP approach of the lighthouse cities. Four Capacity Building Workshops (CBWS) per follower city are part of the WP5 activities and allow the invitation of the right experts from the lighthouse cities to join such a CBWS that is mainly related to the
corresponding Replication Plans for each follower city. It is intended to provide the follower cities with feasibility studies that can be used to request for funding to become a lighthouse city in future.

The following relevant first insights on existing conditions driving entrepreneurial activities or on potential thematic focus have been synthesised for different Stardust follower cities, building on defined interview results occurred in the framework of establishing deployment desks (see deliverable D5.1 Establishment of four Deployment Desks) and on the Replication Workshop in Tampere (30 January 2020, with participation of Cluj-Napoca, Derry and Kozani):

- **Cluj-Napoca**: A close cooperation between the city and the public and private utilities to realise energy efficiency measures occurs, especially in relation to the further development of district heating (DH) and co-generation fuelled by natural gas to cover additional electricity demand also in relation to electric vehicles use. Innovation processes are expected to focus on thematic areas such as the development of control software for energy management systems and the integration of smart meters, as well as with regard to the further development of the DH micro grids taking into consideration renewables (mainly small plants) and hybrid (thermal/electric) applications. Some initiatives on open data accesses with related institutions exist, but this is work in progress and related learnings of the lighthouse cities are very much welcome. The city is especially interested in the approaches and methods of the STARDUST lighthouse Tampere with regard to creation of a sense of community and common spaces.

- **Derry**: Key are bottom-up processes, which build on a close cooperation between the Council and established steering groups. These include i) the Equality Assurance & Oversight Group focused on equality of opportunity for all, ii) Statutory Partners Group responsible for planning, coordination and delivery across key projects and iii) Area Based Community Planning Groups who deal with participation actions to integrate resident views. In addition, project related cooperation between partners at regional, national and European level take place. According to the city, it can be demanding to engage with local stakeholders. Future interests especially lay in exploring behavioural changes of people and citizen engagement.

- **Kozani**: To achieve its CO2 emissions reduction targets, innovation actions are expected to occur with regard to the following areas: i) Energy-saving measures in municipal buildings, ii) energy-saving measures in street lighting, iii) energy-saving measures in the domestic and tertiary sector, iv) conservation measures in the agricultural sector, v) energy-saving measures in the field of transport, and vi) the increase of percentage of electricity from renewable energy sources (RES). According to the city, collaboration among the different stakeholders is difficult to organise. Open data platforms are not existing yet. Kozani however is especially interested in citizen engagement, in injecting renewables in the existing district heating network, and in the integration of hydrogen.

- **Litomerice**: It is Litoměřice vision that in 2050 it will be a city for the people – emission neutral and energy self-sufficient. It will be 1) a clean city with diverse modes of transport, 2) energy self-sufficient and carbon-free, 3) a city of short distances, 4) a city for the people – a liveable city and 5) a city attractive and open to investment. This includes potential innovation activities in relation to increased energy self-sufficiency linked for example to geothermal plants development and e-mobility infrastructure development.
6 CONCLUSIONS AND NEXT STEPS

The notion of an entrepreneurial discovery process (EDP) refers to a structured inclusive and interactive bottom-up process that helps discover and produce information about potential new entrepreneurial activities by involving different bodies of knowledge and groups of stakeholders. This report provides insights into the first two phases of the EDP as conceived in the framework of the STARDUST project. These were focused on identifying and building synergies with existing R&I initiatives and entrepreneurial activation processes and on exploring possible future EDP priority areas by studying the socio-economic context and tapping into existing local expertise. Initial results reveal that regarding future R&I priorities in smart cities the focus seems to be partly shifting, especially with regard to two key aspects. First, this refers to the wider interpretation of smart city, with sustainability issues increasingly being integrated into the concept. Rather than being only focused on R&I in relation to ICT as key motion of different urban operations, services, functions and designs, other topics such as climate change mitigation and adaptation, energy transition and circular economy have gained increased importance and entered the centre-stage of discussions. Secondly, attention is increasingly deviated from a technology- to a people-oriented approach. According to discussions, a smart city needs to ‘engage people, discover their needs and problems’, and at the same time offer a clear vision, inspiration and be passion-driven to involve people in designing the future ought-to-be of the city.

The STARDUST EDP process is still at a very preliminary stage of implementation. However, there are some important lessons learned with regard to its implementation. Structured according to previously introduced key challenges and pitfalls identified by Grillo (2016), of particular interest are considered the following aspects:

- **Different visions of failure**: The organisation of an open-ended process with uncertain outcomes proofs to be difficult in the framework of a Horizon 2020 project, where a defined output and impact is expected. This especially applies to public administrations and partly to (applied) research institutions, where failure and facing the unknown is rarely an option, although it represents key aspects of an innovation process. This especially applies to the smart city context, where the aim of increased visibility as frontrunner on the subject and perceived competition seems to put limits to allowing oneself to fail.

- **Obstacle of pre-defined agendas**: Rather than experiencing the involvement in the project as a learning process, the different partners collaborating on an activity often focus on the agenda pre-defined by the Horizon 2020 grant agreement and institutional settings. Key focus is often put on the achievement of previously agreed outputs, as a measure of success, rather than keeping track of the envisaged outcome and adjusting activities accordingly.

- **Organisation gaps**: Existing hierarchical and power structures and a lack of participatory/cooperation culture influence the success of involving a wider range and diversity of stakeholders and a diversity of knowledge. Sector, departmental and disciplinary silos increase the difficulty of an inclusive process.

- **Different skill sets**: The project tends to be governed by the activities, partners and disciplines involved in the implementation of the more technical working packages of the project, such as the different technological demonstration actions on energy efficiency and RES integration in buildings, energy storage or e-mobility. The efforts and diversity of expertise & knowledge required in an EDP process is not necessarily recognized by
defined partners. It is often merely interpreted as an endeavor to promote ‘acceptance’ of the demonstration actions and related solutions rather than viewing it as a central part to further drive collaboration and innovation in a smart city context.

- **Paradox of experience**: In the context of the project, public administrations seem often relying on the expertise of research institutions or individual business organisations and initiatives. However, innovation driven by the EDP would need less the involvement of specific experts but of a wide range of knowledge and experiences. Representatives of research institutions also seem to find it difficult attributing equal worth to non-scientific expertise, based on experience and local knowledge.

Although it strongly depends on the city context, on its participatory approach and entrepreneurial ecosystem, the LHCs’ first exposure to and experience with an EDP proved to be able to increase understanding and contribute to a change of perspectives with regard to the challenges and opportunities of an open-ended, flexible, creative and inclusive bottom-up process. However, these different aspects need to be further studied and taken into due consideration in the implementation of the **up-coming steps** in Phase C of the STARDUST EDP. This especially refers to the activities on the policy design for EDP and the drawing of the final EDP strategy and plan.

In addition, as one of the next key steps, the experience gained in the local workshops will be exchanged between the LHCs and FCs in a **common workshop**, in order to better understand favourable conditions for R&I in relation to smart city topics, and to explore potentially complementary know-how and trans-national opportunities. In the framework of the workshop, likely to be carried out in autumn 2020, a delegation of local stakeholders and representatives of start-ups from the STARDUST cities are going to present and share local entrepreneurial best practices. In this mutual learning process, the different findings of the cities with regard to the EDP implementation will be analysed and discussed. This refers to methodological aspects, including for example insights on opportunities and shortcomings of innovation events such as hackathons provided by LHC Tampere. It also refers to the development and testing of different business models and to aspects such as EDP priorities, future principles, stakeholder involvement, interdependencies & interrelationship of stakeholders, power relations and key challenges and pitfalls linked to what was described above.

This report will be updated accordingly, to take related developments into account, and provide **further in-depth insights** on the implementation of the EDP in a smart city context. In this regard, it will also inform the update of Deliverable 7.1, reporting on the implementation of the living labs in the different LHCs and to be re-submitted in September 2021.

During the last month of writing this report, Europe and the world experienced an exceptional situation linked to the spread of the corona virus Sars-CoV-2 and severe impacts caused by **Covid-19**. The following strict lock-down in many EU Member States is expected to have serious repercussions on their societies as well as on the (local) economy, as already indicated by LHC Pamplona when outlining its socio-economic context. It is expected that this will have a substantial impact on the STARDUST EDP, not only regarding how it affects the organisation of the various workshops. It will likely lead to a substantial shift of future R&I priorities, and it will be a key endeavour by the different partners to pick up the opportunities that the EDP offers to draw up potential new entrepreneurial activities in a smart sustainable city.
7 REFERENCES


Foray, D., David, P. A., and Hall, B. H. (2011). *Smart specialisation from academic idea to political instrument, the surprising career of a concept and the difficulties involved in its implementation*. MTEI-WORKING_PAPER-2011-001, EPFL


Mariussen Å; Rakhmatullin R; Staniowyte L. (2016). Smart Specialisation: Creating Growth through Trans-national cooperation and Value Chains. Thematic Work on the Understanding of Transnational cooperation and Value Chains in the context of Smart Specialisation. EUR 28049 EN. Luxembourg (Luxembourg): Publications Office of the European Union; doi:10.2791/658931


8 ILLUSTRATIONS

Figures

Figure 1: Key objectives of an EDP process ................................................................. 6
Figure 2: The three phases of the STARDUST EDP .................................................... 10
Figure 3: The various steps of the STARDUST EDP ................................................... 12
Figure 4: Signing of the agreement with the entrepreneurs ........................................ 17
Figure 5: Total population of Pamplona, 2 January 2020 ............................................. 19
Figure 6: GDP & annual growth in comparison ............................................................. 20
Figure 7: Development number of enterprises ............................................................ 20
Figure 8: Pamplona 1st Stakeholders meeting ............................................................. 22
Figure 9: Pamplona 1st EDP workshop ...................................................................... 24
Figure 10: Façade and vertical section of the Co-living-co-working of Pamplona ...... 24
Figure 11: Service structure pipeline of Tampere start-up ecosystem (13.6.2019) .... 26
Figure 12: RDI expenditures and their regional GDP share Tampere Region ............. 31
Figure 13: Development of RDI financing granted by Business Finland to enterprises, ... 32
Figure 14: Founded start-ups in Tampere region, from under 5 to 10 years old (Pirkanmaa) 33
Figure 15: Relevant innovation ecosystems/initiatives ................................................ 33
Figure 16: Founded start-ups in different ecosystems during the last 5 years ............... 34
Figure 17: Subsidies and risk financing granted in 2018 by ecosystem ....................... 34
Figure 18: Feedback from the participants ................................................................. 35
Figure 19: Feedback from the participants ................................................................. 36
Figure 20: The province of Trento’s SSS3, its main domains and components .......... 42
Figure 21: EDP citizen engagement at Trento Smart City Week ................................ 44

Tables

Table 1: Typology of policy instruments to encourage EDP ........................................... 7
Table 2: EDP challenges and pitfalls and related problem-solving approaches ............ 9
Table 3: GDP and other key economic indicators ...................................................... 20
Table 4: Labour market indicators ............................................................................. 21
Table 5: Canvas template for coherent Business Models in in the follower cities ......... 45
9 ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDA</td>
<td>Entrepreneurial Discovery Activity</td>
</tr>
<tr>
<td>EDP</td>
<td>Entrepreneurial Discovery Process</td>
</tr>
<tr>
<td>FCs</td>
<td>Follower Cities</td>
</tr>
<tr>
<td>LHCs</td>
<td>Lighthouse cities</td>
</tr>
<tr>
<td>LLs</td>
<td>Living Labs</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>R&amp;I</td>
<td>Research and Innovation</td>
</tr>
<tr>
<td>RDI</td>
<td>Research Development and Innovation</td>
</tr>
<tr>
<td>RIS3</td>
<td>Research &amp; Innovation Strategy for Smart Specialisation</td>
</tr>
</tbody>
</table>

10 ANNEXES

ANNEX 1. TEMPLATE FOR MAPPING SOCIAL INNOVATION INITIATIVES IN LHCS – NEW QUESTIONS RELATED TO EDP

ANNEX 2. STARDUST AND THE LAUNCH OF AN ENTREPRENEURIAL DISCOVERY PROCESS (EDP) – REVISED QUESTIONNAIRES

ANNEX 3. STARDUST EDP-1ST WORKSHOP GUIDANCE AND TEMPLATE
ANNEX 1: TEMPLATE FOR MAPPING SOCIAL INNOVATION INITIATIVES IN LHCS – NEW QUESTIONS RELATED TO EDP

<table>
<thead>
<tr>
<th>Name of Lighthouse or Follower City</th>
<th>(Please, copy and paste this table as many times as needed to report all initiatives in your city)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of Social Innovation or Research &amp; Development (R&amp;D)/Entrepreneurial Discovery Initiative</td>
<td></td>
</tr>
<tr>
<td>1) Vision and objectives</td>
<td></td>
</tr>
<tr>
<td>Brief description, vision and objectives of the initiative</td>
<td></td>
</tr>
<tr>
<td>2) Kind of initiative</td>
<td></td>
</tr>
<tr>
<td>• Would you describe it as a Living Lab, a crowdsourcing initiative or more in general as social innovation?</td>
<td></td>
</tr>
<tr>
<td>• If none of those, according to your specific knowledge of your city, how would you depict it?</td>
<td></td>
</tr>
<tr>
<td>• Are they focusing on research and development (R&amp;D) and/or exploring/creating new entrepreneurial opportunities in areas of relevance? (Yes/No/Do not know)</td>
<td></td>
</tr>
<tr>
<td>2) Timeframe</td>
<td></td>
</tr>
<tr>
<td>• When did the initiative start?</td>
<td></td>
</tr>
<tr>
<td>• Is it still running?</td>
<td></td>
</tr>
<tr>
<td>• If not, when did it finish?</td>
<td></td>
</tr>
<tr>
<td>3) Involved stakeholders</td>
<td></td>
</tr>
<tr>
<td>• Who was/is the promoter of the initiative? (e.g. local government or a firm) Please, highlight to which sector does it belong to, according to the categories of the Quadruple Helix (government, business, research institution, civil society)</td>
<td></td>
</tr>
<tr>
<td>• To what kind of stakeholders was/is it addressed? Or what was/is the target group of the R&amp;D/entrepreneurial discovery activity (EDA)? Here too, please, highlight to which sector do they belong to, according to the categories of the Quadruple Helix (government, business, research, civil society)</td>
<td></td>
</tr>
<tr>
<td>• Which role did/do different stakeholders have into it?</td>
<td></td>
</tr>
<tr>
<td>• Can you provide the total number of participants/partners?</td>
<td></td>
</tr>
<tr>
<td>• Were/are some stakeholders excluded, and if so why?</td>
<td></td>
</tr>
</tbody>
</table>
### 4) Participatory approach / ways of engagement

- **What kind of participatory methodology has been used? / How were local capacities and resources activated (e.g. citizen science, research collaboration)?** (Please, attach pictures or images if available)

- **Would you describe it as a one time participatory event, or as a participatory process (more participatory events)? Or short-term or long-term collaboration?**

### 5) Thematic focus

- **Can you describe the focus of such initiative/R&D or ED, and in particular highlight, if the initiative is on the thematic clusters of the STARDUST project (e.g. energy and buildings, mobility, ICT)?**

### 6) Key successes and failures (or SWOT)

- **What worked well and for what reasons?**

- **What worked less well and for what reasons?**

- **Which factors fostered participation/R&D or ED and eventually contributed to its success?**

- **Which factors hindered participation/R&D or ED and eventually affected its outcomes?**

### Any other information you would like to add

**Sources**

e.g. web pages link

**Contacts**

Do you consider the organisation/partner especially important in involving in the EDP process and for what reason?
STARDUST
and the launch of an Entrepreneurial Discovery Process (EDP)

ANNEX 2 – Revised Questionnaires

D7.2: Entrepreneurial Discovery Process (EDP) Results Report
WP 7, T 7.2

Authors: Silvia Tomasi & Sonja Gantioler (EURAC)
Annex 2a: Questionnaire for Organizers
QUESTIONNAIRE FOR ORGANISERS OF STARDUST STAKEHOLDERS PARTICIPATORY ACTIVITY

Tasks 7.1 and 7.2 of the STARDUST project aim to activate a Smart Innovation Ecosystem. In order to achieve this goal, within this task the STARDUST project promotes the creation of Living Labs in each STARDUST Lighthouse City, on e-Mobility, ICT and Smart Energy Systems, through the establishment of Stakeholder participatory involvement in the project activities and the launch of an entrepreneurial discovery process. For this reason, EURAC is collecting data on related events organised as part of the STARDUST project with the support of the project partners. The questionnaire is short and will take no more than ten minutes.

Thank you for your support.

<table>
<thead>
<tr>
<th>1. NAME OF THE ORGANIZER</th>
<th>2. DATE</th>
<th>3. PLACE (STARDUST LC)</th>
<th>4. NUMBER OF PARTICIPANTS</th>
<th>5. NUMBER OF PARTICIPANTS THAT ARE STARDUST PARTNERS</th>
<th>6. LINK TO STARDUST WP</th>
</tr>
</thead>
</table>

7. Which SMART CITY thematic cluster does this activity address? (more than one answer is possible)
   - ENERGY SYSTEMS (Smart Building and District)
   - MOBILITY
   - ICT
   - Other (please specify): ____________________________________________

8. In which phase of the entrepreneurial discovery process can this activity be placed? (more than one answer is possible)
   - Review of existing stakeholder engagement initiatives – focus entrepreneurship
   - Collecting contextual knowledge and insider expertise
   - Exploring first potential smart city projects
   - Assessing policy design to unfold entrepreneurial activity
   - Drawing an EDP strategy and plan
   - Development of a monitoring system for the operationalisation of EDP strategy and plan
   - Other (please specify): ____________________________________________

9. Does this activity represent the continuation of previous ones?  
   No □                      Yes □  
   (If yes, please specify the date and place of the previous activity ___________________________)


This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 774094.
10. Who mainly promotes and finances the newly proposed urban service/product?
- Public initiative
- Private initiative
- Public and private initiative
- Other (please specify: ________________________________)
- Not relevant

11. Which business models have been mainly explored?
- Profit making
- No-profit making
- Other (please specify: ________________________________)
- Not relevant

12. Who did participate in this activity?
- STARDUST project partners
- Stakeholders from the public sector
- Stakeholders from the private sector
- Stakeholders from the research
- Stakeholders from the civil society
- Other (please specify: ________________________________)

13. Which was the main role of the participants in this activity? (Please indicate a maximum of two roles)
- Listen and gather information
- Provide information and feedbacks to STARDUST project partners
- Discuss their views, ideas and preferences
- Collaborate in the development of alternatives and recommend preferred solution
- Make decisions that are binding for the project partners
- Other (please specify): ________________________________

14. Which participatory technique did you choose for this activity?
- World Café
- Open Space Technology
- Hackathon
- Workshop
- Focus Group
- Conference
- On-line crowdsourcing
- Other (please specify): ________________________________

15. Could you briefly strengths and weaknesses of the activity you organized, in order to share knowledge and good practices with the STARDUST partners of other Lighthouse and Follower Cities?
   a. Please indicate what worked well and in your opinion for which reasons:
b. Please indicate what worked less well and in your opinion for which reasons:

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

c. Please indicate the methods used to involve participants (i.e. small group discussions, final discussion among all participants, etc.):

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

d. Please indicate which factors fostered participation and eventually contributed to the success of the activity:

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

e. Please indicate which factors hindered participation and eventually affected the outcomes of the activity:

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________

______________________________________________________________________________________________________________________
Annex 2b: Questionnaire for Participants
QUESTIONNAIRE FOR PARTICIPANTS

STARDUST is project funded by the European Union and aims to improve citizens’ quality of life, reduce greenhouse gas emissions and improve the business environment in what it is called a Smart City. The STARDUST project plans to integrate smart energy, mobility and ICT solutions together with innovative business models in 3 lighthouse cities: Pamplona (Spain), Tampere (Finland) and Trento (Italy). More specifically, the project aims to activate a Smart Innovation Ecosystem by involving stakeholders in the project activities, launching an entrepreneurial discovery process and finally creating Living Labs on e-Mobility, ICT and Smart Energy Systems. You participated in an activity organized in the framework of the STARDUST project and your opinion is very important to us. Hence, we ask you to fill out this questionnaire, which will allow us also to improve the project future activities.

The questionnaire is short and will take no more than ten minutes. The data that will be collected through the questionnaire will be used in accordance with art. 13 of Legislative Decree No. 196/2003 (see final page) on the protection of individuals and other entities regarding the processing of their personal data. The personal data will not be disclosed in any way, but used only in aggregate form.

Thank you very much for your support.

1. Please, indicate the place and date of the activity:
   ____________________________________________________________

2. Please, write your name and indicate which organization / institution / association you represented today in this activity:
   ____________________________________________________________

3. To which sector does your organization / institution / association belong?
   □ Public sector (Government)                □ Private sector (Business)
   □ Research (University and Education)      □ Civil Society (Associations and Citizens)
4. In which phase of the entrepreneurial discovery process (EDP) do you place the activity you took part to today?
   □ Phase 1: To provide information on existing entrepreneurial and research and innovation (R&I) initiatives
   □ Phase 2: To help identifying future R&I priority areas by providing defined expertise
   □ Phase 3: To support the implementation of entrepreneurial activities and/or the development of an EDP strategy and plan
   □ Other (please specify): ______________________________________________________

5. Concerning this phase of the innovative process, how much did you feel involved?
   □ Very much
   □ Much
   □ Little
   □ Not at all

6. In the innovative process, which role do you consider you have?
   □ Provider: who promotes research and theory development, thus increasing creation and problem solving
   □ Enabler: who makes possible the Living Lab creation and execution, by providing physical (e.g. space), organizational and financial resources to implement the activity
   □ Utilizer: who uses the Living Lab/innovative process to collect data from users, aiming to develop, test and improve new urban products and services
   □ User: final customer of product and services and sources of know-how to enhance and improve them

7. Concerning this activity, which main role do you consider you had?
   □ Listen and gather information
   □ Provide information and feedbacks to STARDUST project partners
   □ Discuss their views, ideas and preferences
   □ Collaborate in the development of alternatives and recommend preferred solution
□ Make decisions that are binding for the project partners
□ Other (please specify): ______________________________________________________

8. Concerning this activity, how much do you agree with the following statements:
(Please use a cross to score each statement between 1 = not at all and 5 = very much)

1 2 3 4 5
(not at all)                     (very much)

a. The issues discussed were interesting  □ □ □ □ □
b. The issues discussed were clear      □ □ □ □ □
c. The location of the activity was comfortable  □ □ □ □ □
d. I would participate in other activities like this  □ □ □ □ □
e. I received information I didn't have before  □ □ □ □ □
f. The meeting was not too long           □ □ □ □ □
g. I could express my opinion without difficulty □ □ □ □ □
h. Clear answers were given to the participants' questions □ □ □ □ □
i. The meeting was the opportunity to create networking □ □ □ □ □

9. How important are the following objectives for you?
(Please use a cross to score each piece of information between 1 = not important and 5 = very important)

1 2 3 4 5
(not important)                     (very important)

a. Reduction of greenhouse gas emissions  □ □ □ □ □
b. Reduction of energy consumption by energy renovation of buildings □ □ □ □ □
c. Increment of the number of people moving on foot and by bicycle □ □ □ □ □
d. Increment the use of cars and other vehicles that run on electricity or hydrogen □ □ □ □ □
e. Improvement of public transport       □ □ □ □ □
f. Reduction of traffic                  □ □ □ □ □
g. Increment of the health and well-being of citizens □ □ □ □ □
h. Involvement of the citizen in the definition of innovative services and products □ □ □ □ □
i. Promotion of the local economy       □ □ □ □ □
j. Creation of new synergies among local stakeholders □ □ □ □ □
k. Implementation of new business models □ □ □ □ □
l. Introduction of technological innovations □ □ □ □ □
m. Introduction of social innovations □ □ □ □ □
n. Creation of new relationships among citizens, firms, researchers and policy-makers □ □ □ □ □

10. Please indicate:
   a. Gender: □ Male □ Female
   b. Age: ______________________________

11. Do you have any further feedback to the organizers of this activity?
_______________________________________________________________________________________________________________
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Thank you for filling out this questionnaire.
Data Privacy Statement - EU Regulation No. 2016/679 (GDPR) and National Legislation

All personal data is processed for the purposes of attendance at meetings or other activities organized in the framework of the STARDUST project and, in particular, for participation in related surveys by the employees of the Institute of Renewable Energy - Eurac Research and will be stored for the duration of the project according to the rules of the specific Funding Programme and the time required to comply with the Applicable Law. The legal basis for the processing of your personal data is your consent; you may withdraw the consent at any time. The provision of personal data is voluntary, but refusal could interfere with the correct performance of the purposes, thus rendering the participation in the activities and surveys impossible.

The Data Controller is Eurac Research, Viale Druso 1, 39100 Bolzano; DPO: privacy@eurac.edu.

The data subject has the right to request access to, to correct or delete their personal data, to limit its processing, to data portability, as well as the right to lodge a complaint with a supervisory authority and all other rights pursuant to current data protection regulations (art. 15 et seq. GDPR) by writing to the e-mail address: privacy@eurac.edu.

The Undersigned ___________________________________________ DECLARES to have read the Information about personal data handling and is aware of this notice as drawn up pursuant to UE Reg. 2016/679 and national legislation and CONSENTS to the processing of his/her personal data.

Place, date_____________________  Signature  ____________________________________
ANNEX 3. STARDUST EDP-1ST WORKSHOP GUIDANCE AND TEMPLATE
STARDUST
and the launch of an
Entrepreneurial Discovery Process
(EDP)
[Title of 1st workshop]

30/03/2020
Presenter - Organization

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 774094
HOW TO READ AND USE THE GUIDELINES AND TEMPLATE

The guidelines are integrative part of the presentation/.ppt template that can be used for the first workshop. They should help structuring the workshop, by providing guidance throughout a proposed agenda. **This template can be adapted to the municipality's needs and depending on the objectives of the first EDP workshop.** Not necessarily all components have to be used, and not necessarily the presentation itself has to be used, if other approaches (e.g. shorter introduction) or methods (e.g. flipchart, handouts) are considered more suitable.

- Guidance and explanations on how to use the template are provided in *(brackets, italic and blue)* or **in a yellow box.** They should be deleted when using the presentation.
- Specific information to be included is indicated in *[square brackets]*.
- The template or parts of it can be translated into another language.
Authors and contacts:

**D7.2: Entrepreneurial Discovery Process (EDP) Results Report**
WP 7, T 7.2

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INTRODUCTION

I. The Stardust project and [the LH city]
   (Introduce:
   - the Stardust project
   - its various topics and activities, and
   - those envisaged for the LH city)

II. Smart cities and living labs – What are they and what do we do?
   (Present:
   - what smart city means
   - what living labs are
   - insights from the initiatives you have undertaken/collected
   - discuss what you might have missed, how they interpret smart cities and what they expect)

III. The entrepreneurial discovery process – What is it, why and how are we doing it?
   (Introduce:
   - the concept
   - the process and various steps,
   - and the results you expect)
INTRODUCING THE CURRENT SOCIO-ECONOMIC CONTEXT
(This refers to the formal economic analysis)

I. EDP and formal economic analysis – Why is it important?
   (Introduce key objectives of carrying out a formal economic analysis)

II. Key insights on [LH city’s] urban economy and the transition to a smart city
   (Present:
   - Statistics in relation to 5 or more key indicators, especially regarding areas such as
     • Geo-demography of [LH city]
     • Local economy’s structure and entrepreneurship
     • Local Employment
   - Discuss the insights they offer with regard to smart cities R&I)
[DISCUSSION/WORKSHOP ON] FUTURE R&I PRIORITIES IN RELATION TO SMART CITIES
(More interactive session to get defined insights. The extent of interactivity depends on existing participatory culture & experience as well as specific targets of the workshop. Use the “Guidelines for Stakeholder Participatory Involvement” regarding its organisation and participatory methods)

I. Gaining contextual knowledge – Why is it important?
   (Introduce
   - overall objectives of this workshop
   - the main challenges linked to the process

II. Favourable conditions – Tapping into local expertise
   (Present
   - specific objectives of this interactive session
   - approach to gather insights)

CONCLUSION (Discuss way forward and conclude next steps)
INTRODUCTION
I. The Stardust project and [the LH city]
STARDUST a Trento interverrà in 3 settori

• Mobilità elettrica
• Sistemi di ICT
• Efficienza energetica negli edifici

Grazie agli interventi in questi settori il progetto sarà un motore di sviluppo economico per il territorio.
INTRODUCTION

II. Smart cities and living labs – What are they and what do we do?
The concept of smart city

- The field of smart (& sustainable cities) is profoundly **interdisciplinary**.
- Smart city is a catchphrase that draws increased attention among research institutes, universities, governments, policymakers, and ICT companies. However, there is still **unclear and inconsistent under-standing of its meaning**.
- In essence, there are **two mainstream approaches** to smart city:

  1. **The technology and ICT-oriented approach**: Smart city strategies which focus on the efficiency and advancement of hard infrastructure and technology (transport, energy, communication, waste, water, etc.) through ICT.
  2. **The people-oriented approach**: Strategies which focus on the soft infrastructure and people, i.e. social and human capital in terms of knowledge, participation, equity, safety, and so forth.

(Bibri and Krogstie 2017)
Objective Task 7.1: Promotion of innovation through the activation of Living Labs

- **Living Labs** are open **innovation and users centred experiences**, where research meets practice, fostering innovative collaborations among business, users, government and academia. Here, users are involved from the very beginning of the innovative process to the validation of its outcomes in the real life (co-creation). In fact, Living Labs might fill the gap between technology development side (i.e. solution developers) and their application (i.e. user communities).

- “A forum for innovation, applied to the development of new products, systems, services, and processes, employing working methods to integrate people into the entire development process as users and co-creators, to explore, examine, experiment, test and evaluate new ideas, scenarios, processes, systems, concepts and creative solutions in complex and real contexts”

(Joint Programming Initiative Urban Europe, 2013)
Objective Task 7.1: Promotion of innovation through the activation of Living Labs

- Carrying out a **stakeholder analysis** and identifying relevant stakeholders to be involved, from business to public authorities, research institutions and civil society in each lighthouse city
- Establishing **stakeholder groups**, by organizing 2 dedicated meetings/events/workshops for each project topic, i.e. energy retrofitting building, e-mobility and ICT
- Identifying **existing stakeholder initiatives**, to create future synergies in the development of the innovation ecosystem

Objective Task 7.2: Entrepreneurial discovery process (EDP) – Carrying out a structured inclusive and interactive bottom-up process to discover and produce information about potential new entrepreneurial activities
Stardust and [LH City’s] stakeholder initiatives

(Use the Deliverable D7.1 to present information on existing initiatives identified in the framework of task 7.1.3)

Figure 16. Interest of Trento stakeholders in STARDUST innovative solutions
(Use the Deliverable D7.1 to present information on existing initiatives identified in the framework of task 7.1.3)

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Objectives</th>
<th>N° of participants</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IoT platform Open specification workshop 1</td>
<td>22.11.2017</td>
<td>Introducing the open specification model and city needs</td>
<td>63</td>
<td>IoT platform specification group (Slack)</td>
</tr>
<tr>
<td>IoT platform Open specification workshop 2</td>
<td>15.12.2017</td>
<td>Lists of requirements, initial structure for the document</td>
<td>40</td>
<td>Lists of requirements, initial structure for the document</td>
</tr>
<tr>
<td>IoT platform Open specification workshop 2</td>
<td>11.01.2018</td>
<td>Architectural aspects</td>
<td>34</td>
<td>Upper level architectural picture</td>
</tr>
<tr>
<td>Service design workshop for district heat customer (TSA)</td>
<td>9.3.2018</td>
<td>What information customers need?</td>
<td>~20</td>
<td>List of customer requirements and needs</td>
</tr>
<tr>
<td>Enlighten Tampere Hackathon</td>
<td>4.-5.5.2018</td>
<td>Smart solutions using street lighting sensor network</td>
<td>37</td>
<td>Three winning solutions that continued for piloting (innovative procurement process)</td>
</tr>
<tr>
<td>Towards 5G</td>
<td>5.9.2018</td>
<td>Demos showed with Hervanta</td>
<td>~80</td>
<td>persons interested with 5G to get know each other and</td>
</tr>
</tbody>
</table>
(Provide time for discussing what has been presented so far using the following questions)

• How do you see the topic of smart city and what are your expectations with regard to related research and innovation in [LH city]?

• Have we missed something with regard to existing initiatives?
INTRODUCTION

III. The entrepreneurial discovery process – What is it, why and how are we doing it?
EDP – Main concepts and objectives

• Central concept of **Smart Specialization Strategy** on Research and Innovation (RIS3)
  → Approach in defining focus of spending on Research & Innovation (R&I)
  → Shall be designed for using more efficiently the European Structural Investment Funds as part of the **EU Cohesion Policy** and increase synergies between different EU, national and regional policies, as well as public and private investments

• **EDP defined as strategy** that
  → ‘reflects the capacity of an economic system (a [city] for example) to generate new areas of development and new options through the discovery of new domains of opportunity and the local concentration and agglomeration of resources and competences in these domains’ (Foray 2016:8).

• In a nutshell:
  → From a **horizontal** to a **vertical** R&I policy
  → From **general investment** in preferred technological and scientific domains to the activation of **specific, regional capabilities and resources**
  → From **top-down** to **bottom-up**
Stardust EDP – Various phases and steps

A. Screening of existing processes and groups

A1. Review of existing stakeholder engagement process – focus entrepreneurship

→ Analysis of existing stakeholder engagement processes + their focus on entrepreneurship + business plans

A2. Analysis of existing stakeholder groups and their activation for EDP

→ Identifying subset of stakeholder groups to be engaged in the process, and for the development of strategy and plan

B. Identification of EDP priority areas

B1. Formal economic analysis

→ Collecting key economic statistics, as introduction to 1st workshop and to the EDP strategy and plan

B2. Collecting contextual knowledge and insider expertise

→ 1st workshop mapping potential new entrepreneurial activities
C. Development of EDP strategy and plan and its operationalisation

C1 Exploring first potential projects

→ 2nd workshop: defining and validating business models for potential opportunities (Interactive Canvas)

C2 Policy design

→ 3rd workshop: with policymakers assessing outcomes + ways to facilitate the realisation of these potentials (e.g. legal barriers, incentives).

C3 Drawing the final EDP strategy and plan

→ Building on the previous tasks, define the EDP’s main principles, objectives and envisaged future actions

C4 Monitoring system for the operationalisation of EDP strategy and plan

→ Building on the previous tasks, define indicators to be used to monitor the operationalisation of EDP strategy and plan
**Task 7.1 and 7.2. Activation Smart Innovation Ecosystem and EDP**

Last updated 6/2/2019

<table>
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<tr>
<th>PERIOD</th>
<th>June</th>
<th>July</th>
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</table>

**WP7 Milestones and Deliverables**

- Deliverable 7.1 Living Labs Activities Report
- Deliverable 7.2 EDP Report
- EDP International Workshop

**Task 7.2 Entrepreneurial Discovery Process**

- A. Screening of existing processes and groups
  - A1 Review of existing stakeholder engagement process – focus entrepreneurship
  - A2 Analysis of existing stakeholder groups and their activation for EDP
- B. Identification of EDP priority areas
  - B1 Formal economic analysis
  - B2 Collecting contextual knowledge and insider expertise - 1st workshop
- C. Development of EDP strategy and plan and its operationalisation
  - C1 Exploring first potential projects - 2nd workshop
  - C2 Policy design 3rd workshop
  - C3 Drawing the final EDP strategy and plan
  - C4 Monitoring system for the operationalisation of EDP strategy and plan
Task 7.1 and 7.2. Activation Smart Innovation Ecosystem and EDP

<table>
<thead>
<tr>
<th>MILESTONES</th>
<th>PERIOD</th>
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<tbody>
<tr>
<td>Policy milestones (e.g. assembly meetings, elections)</td>
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<tr>
<td>WP7 Milestones and Deliverables</td>
<td></td>
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<tr>
<td>Deliverable 7.1 Living Labs Activities Report</td>
<td></td>
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<tr>
<td>Deliverable 7.2 EDP Report</td>
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<tr>
<td>EDP International Workshop</td>
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**Task 7.2 Entrepreneurial Discovery Process**

**A. Screening of existing processes and groups**

A1 Review of existing stakeholder engagement process – focus entrepreneurship

A2 Analysis of existing stakeholder groups and their activation for EDP

**B. Identification of EDP priority areas**

B1 Formal economic analysis

B2 Collecting contextual knowledge and insider expertise – 1st workshop

**C. Development of EDP strategy and plan and its operationalisation**

C1 Exploring first potential projects – 2nd workshop

C2 Policy design 3rd workshop

C3 Drawing the final EDP strategy and plan

C4 Monitoring system for the operationalisation of EDP strategy and plan

**Stardust EDP – Timeline and responsibilities**
• Who?
  ➢ The experience gained in the local workshops will be exchanged between the LH and FC cities in a common workshop
  ➢ A delegation of local stakeholders and representatives of citizens/start up from the STARDUST cities, supported by experienced experts of WP7 from the cities

• What?
  ➢ In order to better understand favourable conditions for the implementation of the demonstration measures and explore trans-national business opportunities
  ➢ Present and share local entrepreneurial best practices

• When and Where?
  ➢ Tbd – in March 2020
  ➢ Rome?
SOCIO-ECONOMIC CONTEXT

I. EDP and formal economic analysis – Why is it important?
• Part of the starting point of an EDP is the analysis of the structure of the urban economy, to gain insights on urban assets that promote R&I in relation to smart cities.

• The analysis is commonly based on indicators related to sectoral productivity, capacity to compete, patent and industry specialisation, critical mass, extra-urban networks and partnerships.

• It looks into key statistics to identify first potentials and opportunities in the urban economy.

(Based on Foray 2016: 14)
SOCIO-ECONOMIC CONTEXT

II. Key insights on [LH city’s] urban economy and the transition to a smart city
In the following slides we present some examples of key indicators that have been used to present the socio-economic context in relation to existing EDP processes, particularly those that might be of importance to the smart city topic.

Please use the next slides template to provide key statistics with regard to your city. This especially refers to:

- Geo-demography of [LH city]
- Local economy’s structure and entrepreneurship
- Local Employment

Please also screen your regional RI3S report to get further indications, comparing where possible to regional and/or national figures and consult your municipal economic & statistical departments regarding availability of data and figures/slides and their robustness.
Select relevant indicators, depending on what you consider important in the smart city context. Examples:

- Total population
- Share of population in urban area over regional value
- Youth population group (0-14)
- Working age population group (15-64)
- Old population (65+)

Photo by Ryoji Iwata on Unsplash
Select relevant indicators, depending on what you consider important in the smart city context. Examples:

- **GDP and GDP per capita**
- **Economy's sectoral distribution (use NACE2 classification)**
- **Sectoral concentration (Top of 5 subsectors - % total employment)**
- **Firm size**
- **Number of enterprise births in the reference period (% of tot active enterprises)**
- **New enterprise survival rate (3-5 years)**
- **Technological distribution (patents) per sector**

Example RIS3 Navarra

Source: [https://en.wikipedia.org/wiki/Statistical_Classification_of_Economic_Activities_in_the_European_Community](https://en.wikipedia.org/wiki/Statistical_Classification_of_Economic_Activities_in_the_European_Community)
Select relevant indicators, depending on what you consider important in the smart city context. Examples:

- **Total Employment (15-64 years old)**
- **Share of employment (% labour force 15-64 over population 15-64)**
- **Unemployment (15-64 years old)**
- **Share of unemployment (% unemployed 15-64 over population 15-64)**
- **Labour productivity (GDP per worker)**

Example RIS3 Navarra
If you think that insights from another area might be important please feel free to include related indicators. This might strongly depend on your interpretation of smart city, and can for example include areas such as the city’s natural capital (e.g. development of nature-based solutions)
It’s time to talk!

(Provide time for discussing the information you have presented, based on the following questions:)  

• Are your surprised by some insights provided by the key indicators?  

• What is your experience with regard to some of the developments presented?
FUTURE R&I PRIORITIES IN RELATION TO SMART CITIES

1. Collecting contextual knowledge – Why is it important?
Contextual knowledge – Why is it important?

• Part of the starting point of an EDP is also the tapping into local expertise to gain insights on urban assets that promote R&I in relation to smart cities and which is less visible in the statistics

• This usually refers to aspects such as existing strong research institutions and their domains, active companies and their main domains, value chains positioned in the city as well as grand challenges the city might be facing

• It consists of combining different kinds of knowledge and analysis, as a basis for dialogue and interactions between government and stakeholders, in order to let priority areas emerge – considered then domains of future specialisation

Based on Foray 2016: 15
(The following list refers to problems or gaps which make it difficult for the public and private sectors to engage in an EDP)

1) **Different approaches to knowledge**: Private sector tends to restrict sharing of knowledge for competitive advantage whereas the public sector sees it as a common good.

2) **Different visions of failure**: Failure and uncertain outcomes are fundamental parts of an innovation process, whereas public administrations are legally not allowed to fail.

3) **A different propensity towards decision-making**: Private sector takes decisions allocating scarce resources, whereas public sector focuses on equal treatment.

4) **Different skill sets**: There is the danger of picking only the winners and/or dinosaurs.

5) **Organisation gaps**: Public sector tends towards horizontal organisation, businesses towards units and matrices.

Based on Grillo 2016: 66-70
6) **Paradox of experience**: In an unstable environment, stakeholders tend to call experts to endorse decisions. However, innovation does not necessarily need specific experts.

7) **Challenges of metrics and accountability**: Public value difficult to assess, though indicators crucial to hold managers responsible for outcomes.

8) **Short-termism and political cycle**: Businesses and policy-makers bound to get results immediately (e.g. financial reporting, polls) and less interested into long-term R&I.

9) **Obstacle of pre-defined agendas**: People should be free to change their mind and consider themselves part of a learning process, but often follow pre-defined agendas.

10) **Power versus knowledge**: Businesses should in theory allocate power to where skills are, governments allocate skills where power is assigned (e.g. to spend money).

Based on Grillo 2016: 66-70
FUTURE R&I PRIORITIES IN RELATION TO SMART CITIES

II. Favourable conditions – Tapping into local expertise
Tapping into local expertise – Key questions

(The following 2 slides provide a list of questions that can be used to structure the discussions with the different stakeholders. Which ones are used depends on the specific objectives of the LH’s first workshop, e.g. whether it aims at discussing specific initiatives or existing urban challenges more generally)

- Considering existing needs and challenges in the city what **new entrepreneurial activities** might be explored?
- With regard to existing smarty city initiatives, what **worked well** and for what reasons?
- With regard to existing smarty city initiatives, what **worked less well** and for what reasons?
- Which **stakeholders and representatives** would need to be involved in an upcoming initiative/ in the next phase of the EDP?
• Which **opportunities** does [the LH city] offer to unfold the entrepreneurial potential with regard to a smart city?

• Which **problems** prevent the entrepreneurial potential with regard to a smart city to unfold in [the LH city]?

This especially refers to the following aspects:

- **Entrepreneurial actors**: Key research institutions and companies & their domain of activity, entrepreneurial community initiatives
- **Entrepreneurial knowledge**: Topics, expertise, capabilities and technologies
- **Entrepreneurial resources**: Financial & communication resources, natural capital & assets
- **Entrepreneurial interactions**: Existing platforms & tools for different stakeholders to interact
(The following slides provide an example of how a discussion can be approached, building on the exemplary topic of Trento and its Smart City Week.

Please use the “Stakeholder Group Establishment | Guidelines for stakeholder participatory involvement” to define and select a participation approach you consider appropriate for your workshop.

What kind of reporting you provide on the event also depends on its topics/objectives. It can consists of pictures regarding information collected to the suggested questions, minutes or summary of the main outcomes and envisaged next steps.)
Objective: Tapping into the impact of the Trento Smart City Week on promoting entrepreneurial and R&I activities in relation to the topic.

Target group: All representatives of public institutions, research organisations more or less directly involved in the organisation or support of the Trento Smart City Week.

Questions to be discussed:

• With regard to the Trento Smart City Week, what **worked well** and for what reasons?
• With regard to the Trento Smart City Week, what **worked less well** and for what reasons?
• How has it contributed to addressing **future challenges** Trento faces as a Smart City?
• Which **opportunities** did it create to unfold the entrepreneurial and R&I potential with regard to a smart city?
• Which **barriers** still exist which hinder it to fully unfold the entrepreneurial and R&I potential with regard to a smart city?
First insights collected during the Stardust Spritz 2019
Approach:

• Take some time to think.....

• Write down your thoughts on the presentation cards....

• Briefly present and attach to the metaplaner/wall.....

• Discuss and identify common issues

(Example: Trento Smart City Week)

(Take pictures of the metaplaner/wall to document)
Conclusion
Way forward and next steps
It’s time to decide!

(Provide time for collecting replies to the following questions)

- What are my needs with regard to an entrepreneurial discovery process on smart city?
- Who do I think needs to be involved?
- How am I willing to contribute in the future?
Give us feedback!

(Hand out the questionnaires and give sufficient amount of time to answer and collect them – see Annex)
THANK YOU

Presenter - Organization
email

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 774094.


How extensively do we need to present indicators related to the ‘formal economic analysis’? With the presentation you should set the scene for the interactive sessions afterwards. Select those indicators where you think that these might provide some important insights to discuss.

Can we translate slides into the national/local language? Yes, it is encouraged in order to provide a better understanding on what you are doing in the framework of Stardust. However, there is not need to translate any slides that you do not use.

How do we have to document the event? How you document the event depends on how it is organised, e.g. how interactively. Feel free to take pictures of what is produced on flipcharts, metaplaners or other ways documented. Please be aware that it needs to inform the D7.2, which is likely similarly structured to D7.1 and also be presented at the common workshop in March 2020.

Do we have to focus on those questions you have provide? You can adapt those questions do the objectives of your workshop, e.g. focusing on a defined event and its impact or a defined topic.