

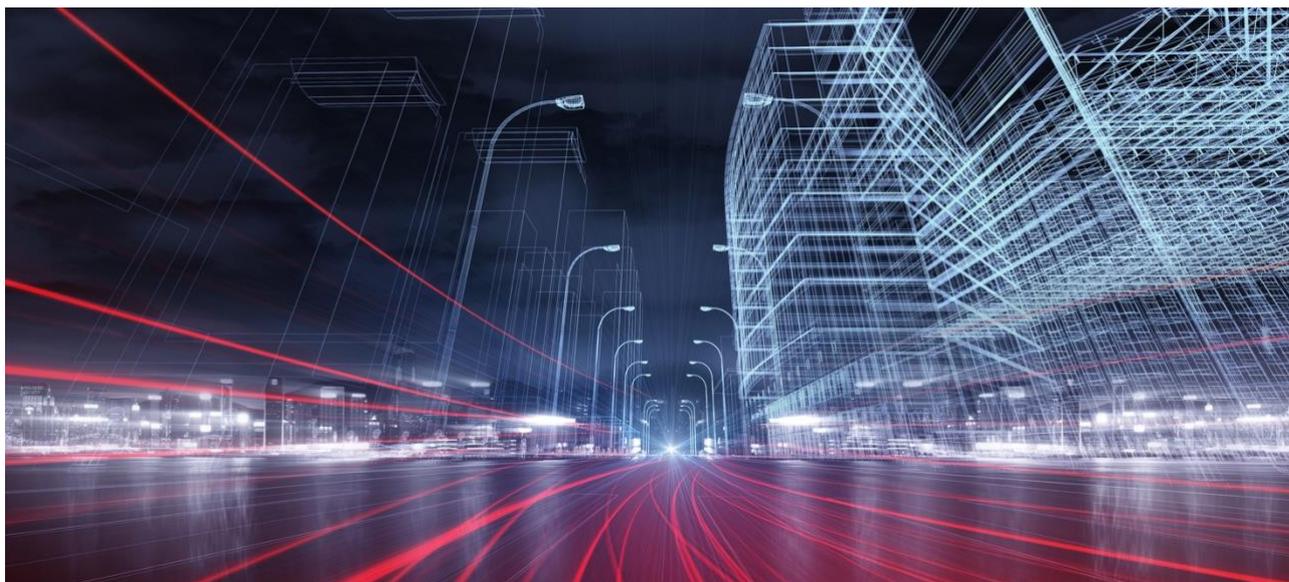


DIGITAL CITIES CHALLENGE

Assessment report for the city of Ventspils

Municipality should be managed as a socially responsible enterprise

July 2019



Digital Cities Challenge

Assessment report for the city of Ventspils

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Table of contents

1. Introduction to the Digital Cities Challenge.....	4
2. Key sectors of the local economy and DCC focus	6
3. Digital maturity level of the city: outcomes of the Self-Assessment Tool and Key Performance Indicators	9
3.1. Outcomes of the Self Assessment Tool	9
3.2. Key Performance Indicators.....	11
4. The local digital ecosystem: leadership and governance	16
5. The use of digital solutions by local companies.....	20
6. Community engaged in digital transformation.....	22
7. The state of local digital and physical infrastructure	24
8. Digital solutions enabling the modernisation of business environment	26
9. Data-driven innovation	29
10. Skills and entrepreneurial culture.....	31
11. Digital transformation SWOT analysis	33
Appendix I: Table of abbreviations and definitions	35
Appendix II: Bibliography	37

1. Introduction to the Digital Cities Challenge

According to the recent data, 72% of the EU's population lives in cities, towns and suburbs, making them the engines of the continent's economy. Cities generate 85% of Europe's GDP, they also face multiple, interconnected challenges, including energy and climate change, employment, migration, social inequality, and water, air and soil pollution.

However, through advanced digital technologies, Europe has the opportunity to re-invent the way we manage our cities' development and respond to the big societal challenges, such as efficient health management, cleaner environment, green mobility, and offering great-value jobs. Due to their high density, cities are put in a very good position to create innovative ecosystems made up of a wide array of different stakeholders from government, industry, finance, academia, communitarian organisations, social partners, etc. Cities have the capacity to make policies become reality.

In this context arises the **Digital Cities Challenge**, an initiative of the European Commission with the main purpose to support the cities in their path to digital transformation. DCC offers policy advice and support to 15 cities in Europe, namely **Alcoy**, **Algeciras** and **Granada** in Spain, **Arad** and **Iasi** in Romania, **L'Aquila** in Italy, **Kavala**, **Patras** and **Thessaloniki** in Greece, **Sofia** in Bulgaria, **Ventspils** in Latvia, **Grand-Orly Seine Bièvre** in France, **Pori** in Finland, **Rijeka** in Croatia, and **Guimarães** in Portugal. The support to be offered will speed up the digital transformation and the industrial modernisation of cities in order for them to take full advantage of the 4th industrial revolution.



This initiative draws inspiration on the recommendations set out in the "Blueprint for cities as launch pads for digital transformation". In addition, it will reinforce the networking among model

cities, facilitate their participation in on-going European initiatives in similar policy fields, strengthen stakeholder collaboration, cross-regional partnerships and stimulate investments.

The selected Digital Cities receive support in the form of field advisory services to be provided by a group of high level experts and peer reviewers, and offer the possibility for city representatives to participate in a series of capacity building and networking seminars. These activities take place in four Academy seminars during which cities share practices, take advantage of peer to peer learning and work together and in thematic groups on the steps of their transformation trajectory.

This document has been developed in the framework of the field advisory services being delivered in the city of Ventspils. It represents the main output of the first step of the digital transformation strategy: setting the digital vision and ambition for digital transformation. The assessment report has been developed by the Digital City team on the basis of:

- The results of the Self-Assessment Tool. A total of 16 valid replies were collected through the SAT.
- The collection of Key Performance Indicators at the city level is still ongoing and is therefore not completely included in this report.
- A literature review of key documents provided by the leadership team, including reports, policy documents and project plans (cf. the Appendix II for full list of documents consulted).
- An assessment visit which took place from 18 to 19 April 2018.
- A Vision and Ambition Workshop which took place from 7 to 8 May 2018.

This document represents the key input to the work to be performed during the forthcoming phases of the digital transformation trajectory, i.e. definition of the city strategy and roadmap.

2. Key sectors of the local economy and DCC focus

On a European scale, Ventspils is defined as a micro-city. As a seacoast and port city in 1990s Ventspils was heavily dependent on port related logistics and transport business. However, by taking strategic decision in 2002 to adopt an industrialisation policy the city has made transition to the multi-sectoral economy.

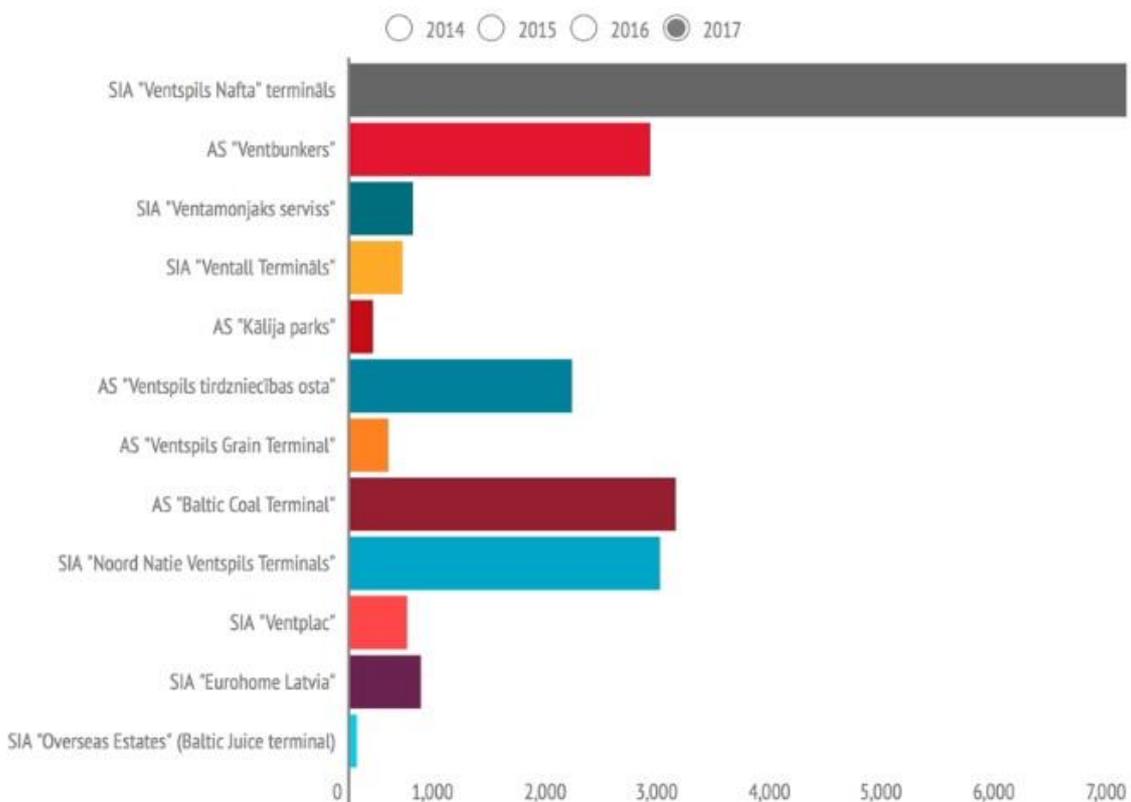
Between 2002 and 2016 the total annual manufacturing output has increased by 2k%, while the annual manufacturing export volume has grown by 3,5k%. During this period, several larger industrial parks and territories have been developed, and 1400 new manufacturing sector related jobs have been created. Historically, the employment in the transport sector has taken the leading position. However, since 2010, the number of employees in the manufacturing companies exceeds that of the port companies. Despite population decline, the number of employees has been staying the same since 2013. During the period from 2005 to 2016, the number of economic active enterprises increased by 88%. Ventspils has attracted digital and industrial investors from several European and International countries. The majority of foreign direct investment flows into sectors related to transport and storage service, followed by manufacturing. The FDI for 2018 is estimated to €254 million, which is an increase of 18% from 2017. According to the latest statistical data (September 2017), the accrued FDI since 1991 averages €6.6k per capita, which is two times more than the average in Latvia and the second-best result amongst the Latvian cities, surpassed only by the capital city Riga.

The fDi Intelligence in its ranking "Global Free Zones of the Year 2016" has given the Freeport of Ventspils six bespoke awards – for start-up support, infrastructure upgrades, expansions, port infrastructure, web strategy and marketing campaign, and for advanced manufacturing. fDi Intelligence also included the city of Ventspils in its European Cities and Regions of the Future 2016/17 ranking, according to which, Ventspils' foreign direct investment strategy was considered to be the second best amongst European micro-cities. Meanwhile, the Forbes acknowledged Ventspils as the best regional location for business in Latvia in 2013, 2014 and 2015. The next ambition of the city is to become a European level hub for smart technologies and achieve 10% ICT share in GDP of Ventspils city. Ventspils aims to be among the top European digital and business friendly micro-cities.

The core sectors of the Economic Development in Ventspils are Manufacturing, Port and Transport, ICT Sector, and Tourism and Health Resorts.

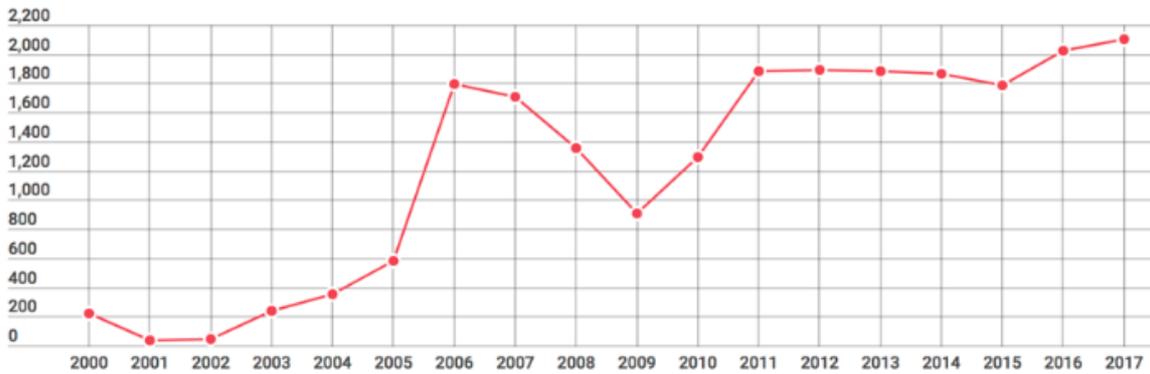
The port activities are forecasted to decline in a 20-30 years period. The tipping point for Ventspils Commercial Port for ex. was in 2013 with an annual cargo turnover of 3,8 million tons. This evolution is due partly because the Russian Federation’s own new port projects and also due to their possibility to control the tax level of the trans-shipment goods from Latvia to Russia.

Figure 1 The total cargo turnover of the Freeport of Ventspils terminals (thousand tonnes)



On the other hand, the Ferry Line Cargo has increased steadily from 2000 and 2011 (see Figure 2). However, there is a stagnation in its development (in tonnes) since 2011.

Figure 2 Ferry Line Cargo Amount (thousand tonnes)



The main key business challenge in these sectors are to turn the lack of the human resource capital by a sustainable access to human resources.

- One of the solutions is to optimise business processes by implementing automation solutions to compensate lack of human capital. Ventspils High Technology Park actively works to develop Ventspils as Digital Innovation Hub with focus on agile manufacturing and automatisisation competencies by creating a cluster of competent organisations and local companies.
- Another important solution is attraction of new talent. Municipality works on educational programme developments to facilitate needs of local businesses and prepare young specialists from early ages, with great focus on ICT sector. With hope to attract more new talent to ICT sector Ventspils Business Support Centre plans to launch IT retraining courses for young and established professionals who are ready to change career paths and learn basics of programming. There are programmes for both secondary and university levels, and the vocational education and City's Digital Centre's digital skill development for adults to this end. The city sees ICT both as a goal per se, and as a cross-cutting horizontal technology driver for all industry sectors in the region.
- Alternatively the City has put in place tax incentives and increased investment in education and schools and digital support services for both companies and individuals to attract companies to Ventspils, however another main challenge is housing. There are several plans to build new houses to facilitate new and skilled work force.

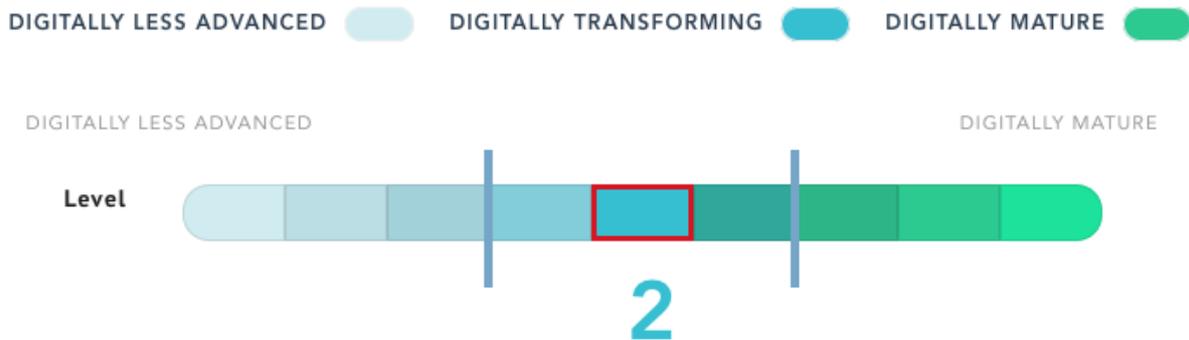
3. Digital maturity level of the city: outcomes of the Self-Assessment Tool and Key Performance Indicators

3.1. Outcomes of the Self Assessment Tool

The SAT result is based on answers provided by stakeholders of the Ventspils City. It allows assessing the City's digital maturity and defining a starting point for the digital transformation strategy of the city.

The Ventspils overall digital capacity is positively assessed. The SAT score of 5/9 shows that Ventspils is a “Digitally Transforming” city, as shown in Figure 3. However, there is still much to do in breaching the gaps, understanding them, and offering a solution.

Figure 3 General SAT Questionnaire Result



Your city is well on the way to becoming digitally mature, continuing on this trajectory will create innovation ecosystems that will drive job creation and economic growth. To maintain your steady progress in your digital development, take note of the good practice steps presented at the end of this report...

The following figures show on the key strengths and weaknesses, and the key differences in perceptions expressed by different types of stakeholders (in total, valid responses were provided by 16 stakeholder).

As shown in Figure 5 above, SAT participants from the City, which also includes participants from the Utilities sector, such as energy and telecom, there is a clear a trend where improvements are needed. However, the results of assessment interviews showed a somewhat different picture, where the City is conscious about its role and responsibility in the digital transformation process.

Some aspects related to the SAT results for the Education and Finance sectors, show the need for further focus on investment in digital technologies in education and the support that the city can give to financial institutions and organisation providing financial instruments. It is also important to note that many of the laws regulating these aspects are national laws, where the municipality per se has little influence.

3.2. Key Performance Indicators

The threefold DCC Key Performance Indicator goals, to diagnose, monitor, and communicate on the Ventspils City's digital transformation, are targeting different economy sectors in Ventspils. These are the telecommunication providers, public transportations companies, education establishments, industry associations, financial institutions and the municipality itself. The city was questioned on the sectors of infrastructure, open data, digital skillset and education, digital competencies of companies, community aspects, available financial support initiatives, city support services for digitalisation, and well as the municipality's governance and leadership abilities.

During the initial collection of data for the KPIs, it became clear that several data points would be difficult to gather due to their sensitive character. Such information was not available currently as it would require companies to disclose information sensitive for competition. This hesitation was felt among private companies in particular, which are not willing to share such information publicly.

Thanks to the local trust among several stakeholders through the work of industry associations, it was possible nevertheless to pave the way for a first round of KPI results of the digital aspects of business and society in Ventspils, and for the outlook of the way ahead.

The results show that the city as a whole has done a lot of effort already, and there the city is conscious about the situation, understand its present challenges and know how to respond and give new solutions. Though in society in general, there is no clear roadmap ahead yet, Ventspils City still sees the areas and opportunities that need further attention. In particular of bringing the smart city challenges to the next level – the Ventspils Digital City.

DIGITAL CITIES CHALLENGE – Assessment Report

Key Performance Indicators (KPIs)

Dimension	Sub-dimension	ID	KPI	Result as per 15062018
Infrastructure	Digital infrastructure	1	% of households with broadband internet at home [%]	NA
		2	% of enterprises with broadband internet at home [%]	NA
		4	Average speed of internet [Mbps]	Mobile download: 22.52 Mbps; Mobile upload: 15.65 Mbps
		7	% of city covered by 4G [%]	100% 4G coverage within the city limits
	Non-digital infrastructure	11	Availability of integrated mobility platform to travel across transport modes [Y/N]	0 (Zero)
		14	Availability of one-stop shop for water, gas, electricity for address changes or new addresses? [Y/N]	Yes
15		Availability of coax or fibre network at main business parks [Y/N]	Yes	
Open data	Data scope and accuracy	18	Availability of open datasets [Y/N]	Yes
Digital skillset and education	Digital education	23	% of people who bought or ordered goods or services over the internet in past 12 months [%]	NA
		24	% of students in digital subjects over the last 5 years [%]	33%
		25	% of ICT graduates employed in the city over the last 5 years	199
		26	% of non ICT/digital diplomas at university colleges, universities (e.g., medicine, economics, biology, agriculture) including digital courses	16%
	Attraction of IT talent	27	# of employees in digital companies [#]	420
Community	Ecosystem collaboration	37	Number of ICT clusters and number of ICT companies joined as cluster member in any cluster organised/formed in the city	2
		38	# of digital start-ups	TBC
	Networking and mentoring	39	Number of events on digital topics and/or for digital companies in the last five years	TBC
Finance	Public	40	Grants / tax incentives provided at city level to support digital start-ups in last 12 months [EUR]	TBC
		42	Grants / tax incentives provided at city level to support non-digital companies for digital projects in last 12 months [EUR]	TBC
	Private	44	Number of digital start-ups receiving a loan in last 12 months [#]	1
		45	Number of digital start-ups received venture capital in last 12 months	0
Governance and leadership	Shared vision	46	Availability of business angels for digital start-ups [Y/N]	TBC
		51	Availability of digital strategy [Y/N]	Yes
	Coordination	52	Availability of clear executive responsible for digital development plan [Y/N]	Yes
		53	# of man hours of executive responsible on weekly basis dedicated to coordination of digital development plan [hours]	TBC
Implementation and monitoring	54	Existence of a monitoring framework for the implementation of the city digital strategy [Y/N]	Yes	

Having an unemployment rate of 5%, the main overall driver for Ventspils is the present lack of and future forecasted lack of human capital. The underlying question is how the city can retain and attract new human resources?

As indicated in the Mission Statement, there are a few key areas, where the city is trying to break the present evolution by creating a momentum for a possible and better digital future. These are to “embed the digital into societal challenges”, “to strengthen the ICT infrastructure”, “to enhance the use of ICT in enterprises”, and finally “to focus on ICT in Manufacturing and Valuable Supply Networks”.

During the Vision and Ambition workshop, several promising projects for the future were enumerated by the city representatives. It showed not only that the city is aware of the existing challenges, but also that there are several solutions available on the horizon although it is still difficult to measure which of the present and planned projects will have the best impacts. Nevertheless, in order to drive the digital transformation in Ventspils, two areas of specific interest stood out, and these two are the human capital, as already mentioned, and also the available housing for persons and families interested in moving in to Ventspils.

According to a representative of a local bank there is a strong community vision in Ventspils. The existing data shows that approximately 70% of the Ventspils citizens share an opinion that companies can grow and scale-up their activities through enhanced cooperation. Therefore, there are business opportunities that can be built on this community. In order to align the citizens of Ventspils, there were discussions during the Assessment interviews to create a larger awareness campaign to this end. The need for alignment is also shown on some of the SAT dimension in the Vision and Ambition Workshop presentation.

Ventspils City Municipality’s main two core tasks which are related to the area of ICT are:

1. To provide access to required ICT services and infrastructure to all the locals, guests and businesses;
2. To ensure further development of necessary ICT infrastructure in Ventspils.

During the discussion for the formulation and definition of the Vision and Mission Statement, one of the representatives of the City Council suggested to re-focus the strategy and start paying attention not exclusively on ICT industry, but in particular on its horizontal application in other industries. All of the participants of the discussion agreed to this approach and one of the stakeholders noted that it would be important to broaden the strategy and not to completely change its focus.

Moreover, it was emphasised that attraction of human resources is a big issue and that the city needs advice on how to approach it. Taking into account the decrease of students enrolled in ICT, the city needs to find new solutions to tackle existing challenges. The figure below presents the recent ICT Strategy and Action Plan Goals, including the targets and outcomes for the year 2017.

Figure 6 Headcount for ICT and University Specific Areas

OVERARCHING CRITERIA	BASE VALUE 2012	AIM 2017	RESULTS 2017	AIM 2020	DATA SOURCE
Employed in ICT companies, including branches	217	637	349 (2016)	1 150	Lursoft
Students at Ventspils University of Applied Sciences	919	1 170	817 ↓	1 591	VeA
- *including ICT students	275	468	266 ↓	786	VeA
Number of doctoral students at VUAS	46	60	20 ↓	80	VeA
R&D academic staff (FTE) at VUAS	66	85	54 ↓	111	VeA

*IT –231 full-time students, including enrolment of 76 in 2017/18. In 2018/19, 121 state-funded places, 108 – with tuition fee

On top of these, there are programmes of ICT in education, business support and finance for innovation and entrepreneurship facilitation. For example, there are City granted office space and large production facilities for new companies.

One of the consulted stakeholders representing the City Council recommended a revision of the Ventspils ICT Strategy and its actions as a result of Ventspils participation in DCC. Such issues as to why the expected results of the Strategy are not delivered and whether some other coordination should be considered necessary were pointed out. It was also noted that some smaller scale problems, for example, absence of ICT among school children entrepreneurship projects and limited activity of ICT students in creating ICT start-ups. From governance perspective it was acknowledged that there is a lack of active platform for discussion of the progress of the strategy. With the regards to future plans, it is foreseen that the city will build new offices for ICT companies and Science and Innovation Centre (expected in 2021).

From the Assessment interviews, it became clear that there are several common points and common factors which explain the digital performance of Ventspils. These are i.e. the difference of cultural, economic and social understanding between younger and older generations. In particular the differences between the Soviet Union and post-Soviet Union life experiences. There is also a specific understanding (or non-understanding) of the role of the State, as well as both opportunities and risks that private entrepreneurship brings along. Also, there is a reluctance to share ideas because of the lack of trust towards supporting institutions, investors and other stakeholders. It can be difficult even to ask people to try to participate in the programme due to this. It is a challenge to get the message across that entrepreneurship is possible, and that communication on project ideas helps the improvement of innovation itself.

4. The local digital ecosystem: leadership and governance

The local digital ecosystem is well developed, and there are several structures that support the digital development in the city.

The key document governing ICT-related activities in Ventspils is the Ventspils ICT Sector Strategy and Action Plan 2014-2020. As the strategy comprises vision of Ventspils to be the smart choice for living, education, science, and entrepreneurship in ICT, an active participation is expected from stakeholders within the respective fields.

Ventspils City has created its digital eco-system which is built with the local important stakeholders:



Sector wise, one of the system’s core players is Ventspils High Technology Park (VHTP) that is the main operator of ICT related infrastructure. It is also a part of the “receiving end” in terms of policy implementation in link with Ventspils City Council. Up to now, the cooperation has been successful, and VHTP has proven to be an engaged player. However, since 2017 when Ventspils Business Centre was launched, a distinction of which activities are to fall under the Council via the Centre’s performance and which are managed by VHTP has to be still improved. A certain role in this is also given to education institutions, and City Council is trying

to stimulate the process by investing in infrastructure and study program improvement, in Ventspils Technical School and Ventspils University of Applied Sciences, in particular. However, in terms of number of students applying for ICT-related programmes and graduating from them, better results are expected.

In 2018/2019 study year, Ventspils City Council has first launched a scholarship for excellently performing students in STEM sciences in amount of 2000 euros per study year. 25 applicants were registered in September 2018, and the popularity is expected to increase. This is a tool of how to attract talented students to Ventspils and stimulate their activities here.

However, in terms of comprehensive school student knowledge and activity level, the situation is better. For instance, under a criterion “Students at comprehensive schools with high-level skills in ICT, number accumulated” the planned result of 10% in 2017 was beaten by 17% reached instead. Also, 9% were engaged in city-level competition Ventspils IT Challenge which, in the municipality’s opinion, is one of the most effective ways of how to create interest in ICT through practical incentives.

In terms of students enrolled in ICT programmes, increase in results may also foster increase in employment in ICT sector, which, subsequently, may strengthen the role of other business and adult-training support institutions, as Investment and Development Agency of Latvia Business Incubator, the Digital Centre, and Life-Long Learning Centre – all of them has a potential to improve their capacity in terms of individuals and companies served. For instance, only 9 ICT start-ups at business incubators and technology parks were established in 2017 instead of 50 planned, which demonstrates a further communication and more direct incentives and support mechanisms to put in place the existing infrastructure must be applied. With no doubt, consequences in terms of people employed in ICT and number of companies (the latter being with a stable tendency in 2017 and 2018 of <5 new companies per year) also affect the sector turnover, and, in economic terms, may also create a question of usefulness of further investment in business infrastructure and effort for some. The sector turnover in Ventspils was €10.9 million in 2017, while the indicator for 2020 set in the Strategy was €92 million. Therefore, in cooperation with VHTP, the City Council is trying to formulate the potential solutions to introduction of digitalisation and automatisisation programmes in Ventspils to assist the related businesses – that may both to increase the sector’s value and help other sectors (as manufacturing) to become more effective in their processes.

- For the Ventspils Education Authority:



19

Core Criteria: Ventspils Education Authority

Criterion	Base value 2012	2016 (reached)	2017 (planned)	2017 (reached)	Goal value 2020
Number of students at comprehensive schools and vocational education establishments taking part in the ICT competition in Ventspils/year (% of international participants)	n/a	56 (5%)	100 (10%)	172 (9%) 	200 (25%)
Student ICT learning enterprises, number accumulated (% of the total number of learning enterprises)	0	0	20 (40%)	0 	Initially: 40 (53%) Currently: 18 (10.3% of 174 enterprises).

- For the Ventspils ICT Sector:



20

Core Criteria: ICT Sector

Criterion	Base value 2012	2016 (reached)	2017 (planned)	2017 (reached)	Goal value 2020
Employed in ICT	217	349	637	420 (prospects) 	1,150
Number of active ICT companies (% of the total number of companies in Ventspils)	67 (5.8%)	66 (2.8%)	100 (7%)	n/a 	150 (9%)
ICT sector turnover, M EUR	8.1	8.2	35	10.9 	92

Regarding the Governance, the overall assessment from both the SAT and the interviews show that there is a strong confidence in the City Council governance and leadership of the Digital Transformation. The City is aware of the need to improve aspects of the support in particular for the Venture Capital investments. The incubator policies and practices work well, as confirmed by the interview with the Investment and Development Agency of Latvia.

However, there is a need to shorten the present selection process of applications submitted for funding. Now it takes one month, and the grant has to be signed by the Agency Director. It would be good to use for instance Digital Signatures to speed up the process. The SMEs representatives would prefer the grant process to take one to two weeks in general. They also consider that there is too much bureaucracy but assess the process to be fair.

5. The use of digital solutions by local companies

The situation of use of digital solutions and technologies (including infrastructure) by the private sector is not unequivocal in Ventspils City. There are private sector companies that are very active in using different digital solutions and at the same time some companies avoid anything new. It has been observed that companies with older management teams are less open and more sceptical to digitalisation solutions. Many local companies do not even have their own websites as company management does not have the necessary skills to manage it. It is also widespread that many managers barely use computer for work related tasks and all the paperwork is prepared by outsourced accountant companies. Generally speaking it is hard to identify the main barrier keeping the private sector from making a more intensive use of digital solutions as it's more of a mix between awareness, cultural, financial and skills-related aspects.

On the other hand, there are also very advanced companies in Ventspils such as utilities companies with various smart metering sensors and wise geology. One of the first to adapt new technologies is local manufacturing sector as they are one of the first to see added value of digitalisation and automatisisation. The most successful companies in using digital technologies however are companies operating in ICT field with largest players being one of the first to test new technologies for their clients, while others are working as automatisisation consultants for world's largest manufacturers. Utilities companies were mentioned as a good example for the situation in Ventspils – some are using smart sensors and boosting productivity of one field, while in other aspects they are lagging behind with bureaucratic approach in communication with customers, processing payments etc. These companies have a high potential in becoming more digital.

Self-serving portal creation is in high demand in utilities, banking and also private sector. Blockchain solutions and other technologies that allows eliminate bureaucratic process, reduce paper flow between institutions and companies, fostering exchange of information would be useful to help overcome some of the private sector's key development challenges.

Banks in Ventspils treat digital projects with the same diligence as other projects or companies – business plan, model, team, financial standing and other relevant factors are accounted and only then the decision is made. Companies operating in the field of ICT more often seek

external funding from angel investors or support institutions and are more reluctant to turn to banks for loans.

Digital and ICT projects are among priorities of Altum finance institution; however, these projects go through the same evaluation process as other, non-digital projects. In case if Altum is able to supply the loan, the project stakeholders are introduced with relevant angel investors or business accelerators.

The main solutions to boost productivity of non-technical companies could be as simple as using company cloud servers to store all the documentation, using project management tools and applications, as well as implementing more complex automation services starting from customer service tools based on artificial intelligence and machine learning to developing their own tools for business process optimisation. However, the main challenge to overcome is lack of human capital (as described in Section 3), especially young tech-specialists who could train existing employees or operate these technologies themselves

6. Community engaged in digital transformation

One of the objectives set out in the 2020 Ventspils ICT Sector Development Strategy and Action Plan 2014-2020 concerns the development of ICT cluster. Ventspils City Municipal Institution «Ventspils Digital Centre» is developing Ventspils ICT cluster to increase and foster collaboration between different industry players, municipality and other stakeholders.

Currently, the main activities Centre's activities to promote and grow Ventspils ICT cluster are linked to holding or co-organising networking events for institutions and enterprises, which are operating in the field of information and communication technologies. These tech community events are called «Ventspils ICT cluster meetup» and the main drivers are different ICT companies (not only from Ventspils city, but also from other Latvian cities), municipal institutions like Ventspils city council, Ventspils Education Board, Ventspils Business Support Centre, Ventspils High Technology Park, Ventspils Free Port Authority and others. They provide a good platform for networking and discussions about industry challenges and possibilities, trends, innovations and problems as well. The Cluster meetings are also a good promotional platform

One of the more often noted challenges and problems which occur is a lack of skilled employees – some of industry players (tech companies) has raised this issue and mentioned this as one of the main reasons which slow down or limit their growth. Understanding consequences of such situation stakeholders from educational institutions Ventspils University of Applied Sciences and Ventspils Technical School have disclosed intention to address this issue and increase their efforts to prepare young specialists for industry. The events also offer an opportunity to present ideas and/or ICT solutions and, subsequently, there are open discussions on these topics.

There are several collaborations between digital and non-digital companies in Ventspils tech community. For example, many of the solutions presented in these events are made by ICT professionals but solutions target audience are non-digital companies (like government, financial services, healthcare, energy & environment).

The City recognises that the rapidly growing ICT sector and demand for the latest solutions requires for more active business involvement to satisfy the City's public needs as well. With

a predefined intention to develop, test, and implement new solutions Ventspils City launched in 2016 ICT Pilot Programme, and in 2017 approved 9 projects. The core idea of the programme as such can be evaluated to be successful, however, the companies proposing their respective innovative ideas for Ventspils City often lack realistic view on how to further develop their product or service as well as face the risk of not increasing as businesses (low tax pay rate, few employees, etc.).

It is also important to point out the Ventspils ICT cluster events where one or several lecturers, speakers, presenters are representing non-digital company which is looking for collaboration or provides some services or products which are or could be valuable to ICT companies. This is one of the ways how the Ventspils Digital Centre with ICT cluster events is trying to increase and foster collaboration between digital and non-digital companies from various sectors to integrate them in Ventspils tech community.

Ventspils ICT cluster is aiming to bring together companies that can benefit from each other by collaborating, starting joint ventures, using each other products, services etc. It is planned to attract more non-digital companies in Ventspils tech community collaboration in the future because ICT solutions can be implemented and used in various industries in forms and ways industry players even do not imagine this without knowing existing or potential services and products provided by ICT companies. Therefore, one important Ventspils ICT cluster task is also to inform and educate society in Ventspils about novelties in the field of ICT.

While most ICT companies are very responsive to the Council' initiatives and often share their knowledge, give recommendations and open up their premises for visits to promote the industry, it is however challenging to bring those companies together and engage in mutual ventures as most of their products are exported with rather small local market share. Besides, many ICT companies only have branches in Ventspils with top management elsewhere in Latvia or overseas.

Recently, Ventspils High Technology Park has been recognised as regional digital innovations hub (the only other Latvian DIH is in the capital city of Riga) and has shifted its focus on bringing all of the companies, support centres, local council, educational institutions and other stakeholders together in order to create an effective regional hub for sharing competencies and transferring technology knowledge.

7. The state of local digital and physical infrastructure

Thanks to the early Ventspils City Council's commitment to the digital, the city has a very strong present digital infrastructure and is continuously updating it. The city's digital infrastructure consists of present three and soon four components. These are – at the present – the city's optical fibre network, the free WiFi access points and 4G radio telecom coverage, and in the near future also the free city-wide range low energy consumption radio network (LoRaWAN).

The municipal owned optical network is the longest and fastest optical network owned by any municipality in Latvia, and possibly in Baltics. This optical network interconnects all major industrial areas as well as all schools and municipal institutions in the city. One advantage of having a municipal owned optical network, is that it is easy for local business to change their cable telecom providers anywhere in the city since the telecom providers themselves connect to the city network before delivering cable services in Ventspils on that same optical network.

There are more than 350 WiFi Access Points in Ventspils University of Applied Sciences, schools, libraries, other public areas.

The city is covered by 4G radio from all three mobile telecom operators in Latvia. The city recognises however, that all 4G compliant base stations are not equal. This means that in reality, there may not be a maximum available 4G speed everywhere in the city.

The city has a practice of not applying a specific “cybersecurity” approach. Instead Ventspils has taken various and different measures to monitor, prevent and control the municipality networks.

As digital infrastructure improvements in near future, i.e. within the next one to two years, the City of Ventspils is preparing to:

1. To migrate the core backup links of the Municipality Area Network capacity from 10G to 50G and 100G;
2. To make sure there are WiFi Access Points installed in every classroom in every school;
3. Enable a free city-wide LoRaWAN network for everyone.

Lack of makerspaces, fablabs and general access to technologically advanced laboratories for local businesses is considered as the weaker point of Ventspils ICT infrastructure and seriously delays awareness raising and innovations in the city.

Prolonged period of housing deficit is complicating the attraction of new talents from outside Ventspils City. Generally, most young talents move to Ventspils for their period of studies while living at dormitories and after graduation face the reality of housing situation, thus choosing other cities to start their careers.

8. Digital solutions enabling the modernisation of business environment

In relation to how the city of Ventspils embraced the ‘digital paradigm’ in their private sector development policies, it is important to note that the Municipality is closely monitoring latest digital paradigm shifts and acting accordingly. For example, it recognises that it is becoming ever more challenging for private sector to recruit young talent, therefore a decision has been made to create a support organisation for ICT sector – **Ventspils Business Support Centre** (<http://www.vatp.lv/en>) which assists companies operating in ICT sector to attract new talent, help them relocate, coordinates cooperation with education institutions and supports new companies with various incentives, such as free or subsidised office spaces.

Rather high costs of development and implementation of various digital solutions could be considered as one of the biggest obstacles; however, Ventspils Municipality is working diligently to digitalise various sectors. One of the more recent examples is **development of mobile application** that allows people to report various flaws (fallen trees, dirty streets, technical problems) within the city by taking a photo with application and adding a small comment if necessary. Software automatically informs responsible services about the geolocation and sends the picture so that they can react accordingly and in a timely manner.

Concerning the type of digital solutions that could be adopted by the public sector to further promote the creation of a friendlier business environment, the city is looking at different state-of-the-art technologies in its digitalisation process and believe that for example **ledger technologies** like blockchain would definitely give various advantages.

Ventspils city believes firmly in **open digital infrastructures**, and has promoted these through providing grants for citizens and companies wishing to develop Digital Applications for this end using the open digital infrastructures. If there are missing open data city services, the Ventspils citizens can make a demand to the city to implement this. However, the use of these possibilities and opportunities have been limited.

Regarding digital solutions provided by the city so far, the **Ventspils Digital Centre** (VDC) stands out as the city lighthouse to facilitate the involvement of Ventspils municipality,

residents and entrepreneurs in the information society and e-Government. VDC is a public institution of Ventspils municipality. Here citizens and entrepreneurs have the possibility to work actively in building up the information society and in implementation of e-solutions on local, regional, national and international level, and to form, support and develop the infrastructure of information and communication technologies. It is about technologies, access to technologies, and skills to use these technologies. To this end, the Digital Centre plays an important role. It is estimated that there are about 400 consultations per day, and some 700 school children connect to the Digital Centre each week. There is also an open helpdesk for anyone to receive help free of charge about how to use digital technologies.

The VDC delivers a wide range of services to inhabitants, municipal employees and departments, business companies and other legal entities, including:

1. Development and maintenance of ICT infrastructure in Ventspils city municipality (administration, institutions, schools).
2. ICT helpdesk for schools and all libraries of Latvia.
3. Training inhabitants helping them to acquire and improve computer and maker skills.
4. Providing public internet access points in Ventspils.
5. Offering copying, printing, video and image duplication and processing services.
6. Providing business support services for start-ups and SMEs.
7. Hosting seminars and experience exchange forums for EU project developers and implementers.

As a City example for the utilities services offered to third parties should be mentioned the City heating company Ventspils Siltums (www.ventspilssiltums.lv). The utility company has recently invested in a new system. It is a new energy management and automation system for their whole network. They got a very good contract since the supplier company in Estonia was looking for pioneer customers. They have now a well-developed system with monitoring of the temperature in the network and the usage of each building. The utility company is the owner of the metering devices on the network. Before they were monitoring the machines manually. Now, thanks to the new energy management system with a new solution for distant reading and measuring of the city energy data, they are well advanced in the digital space. All network meters automatically send remotely the energy data like temperature and pressure of the steam with regular intervals. Is it important that there is the same quality of service on the whole network, and the new system was installed to this end.

As a public utility company, Ventspils Siltums cannot support the development of local business ecosystems based on its own physical and digital infrastructures. However, the board has taken a recent decision to invite as internship students to run digital projects in their infrastructure and network.

Greatest challenges with implementing digital solutions in public authorities has always been after the implementation - the cautious perception and lack of trust for innovations among general population mainly due to the lack of knowledge on how to use these technological innovations. To foster the adoption of innovations public authorities organise informational seminars and open-day visits to show examples and explain the use of innovations.

9. Data-driven innovation

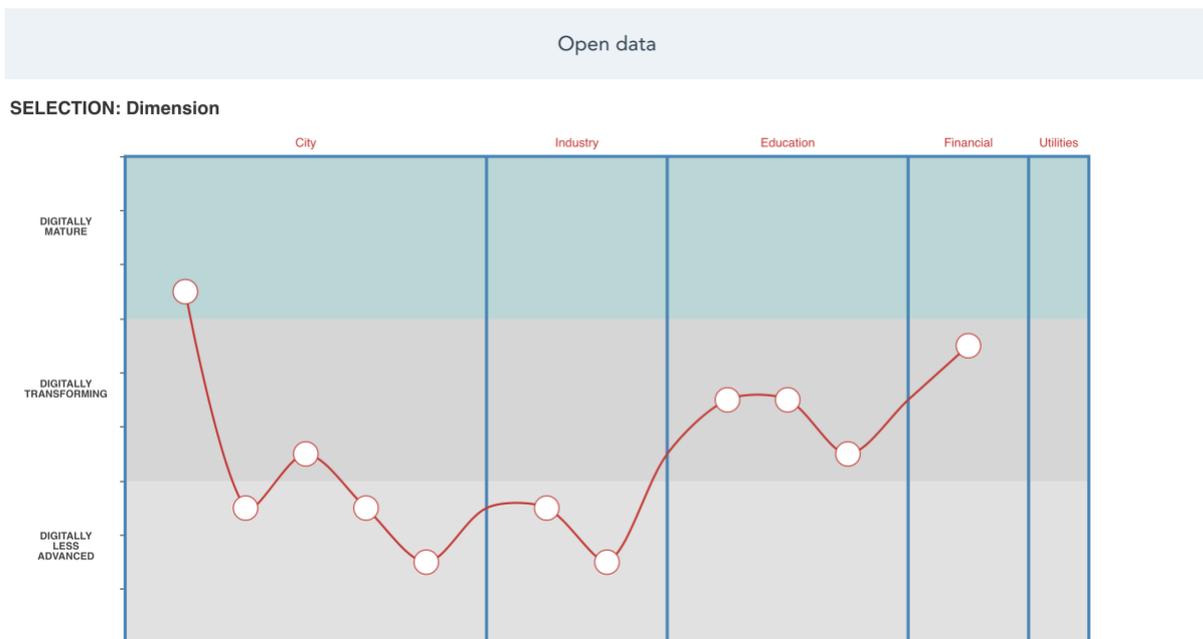
The City considers that access to public data to create new services, open digital infrastructures, smart infrastructures in transportation or utilities open to third parties to grow new business are not “digital solutions”. These are seen more as enabling initiatives that could facilitate the development of public or private businesses, provided the fact that there is a (clear) business case.

Therefore, the city separates between 1. the aspects of the open infrastructure and 2. the open data and views itself as a testbed for the open data. Primarily, it is about economic development, the community dialogue and finding common solutions. The City has focused on encouraging the creation mobile applications for example where service providers can develop interconnected citizen services in the form of an app where there is a cross-usage of both open city data, and other non-city data available from other sources.

There is a national law for open public data as well as a National Data Contact Point. In practice, there are issues with real time and storage of the data for the time being.

The city is aware of the situation and the results of the DCC SAT (as shown below).

Figure 7 SAT Result on Open Data Questionnaire



However, at the same time, the city recognises that there is not a strong demand side for data customers for the time being. The city is also looking at opportunities to support young entrepreneurs in this regard. Therefore, as it stands right now, since there is in fact a low demand in open data, which means that it is of low priority to the city, the city has decided not to pro-actively provided any new opening data without having seen any demand in real life.

Instead, the city is cooperating with any company willing to develop innovative and reasonable “solutions”, and is providing access to the infrastructure and even provide grants to this end by supporting these innovative initiatives in the form of ICT pilot projects. This is done for companies on case-by-case basis, and they are served as they come.

One of the most recent examples of open-data usage was when a local ICT company developing new product – mobile application that tracks the public transportation movement and informing users of real time estimated time of arrival at their location and requested historical data from public transportation GPS records. This information was available due to the fact that company operating public transportation in Ventspils PSIA “Ventspils Reiss” uses GPS tracking technologies to track fuel consumption and evaluate delays.

However, the information regarding open-data requests in Ventspils is available on-demand which are addressed to various organisations and councils structures.

10. Skills and entrepreneurial culture

In 2017 the population of Ventspils City was 38,600 and the population of Ventspils City Region was 117,600 making it the 6th largest city in Latvia. One of the aims of Ventspils City Development Programme for the period 2014-2020 is to increase the city's population by ensuring economic development. Overall employment has reached almost 20,000. Transport sector leads with highest numbers of employment, but is closely followed by manufacturing.

The number of employees in ICT sector in 2016 was 349 constituting relatively small part (2%) of the total employment. At Ventspils Technical College 4 ICT related study programs are operating and Ventspils University College offers 1 Bachelor and 1 Master level programme in the field of ICT. Also, scholarships for excellence are provided with the help of Municipality. The Ventspils Digital Centre is active in providing ICT related life-long learning options to people of Ventspils. On average 1500 people a year participate in these events.

The overall number of enterprises is slowly, but steadily increasing and in 2016 it was 2399 which is almost twice the number in 2005. This indicates increased entrepreneurial activity. Ventspils is also a leader (after the capital city of Riga) in foreign direct investment attraction in Latvia. When it comes to ICT companies, the numbers are not very high. In 2016, 66 (compared to 67 in 2012) active ICT companies were operating in Ventspils. This indicates stagnation in creation of new ICT companies, however, it has to be noted that ICT sector is new for the city and it takes time to build a stable presence.

The Ventspils Digital Centre is active in organising regular ICT community networking events which contributes to healthy entrepreneurial culture. Similar events are also organised by Ventspils ICT Cluster. In 2016 the centre has started „Ventspils IT Challenge“ – a competition for students to test their IT skills. Opening of Ventspils Business support centre in 2017 will contribute to overall entrepreneurial culture as the centre will motivate to establish new enterprises, inform society on business related support, assist in business launching and provide co-working space.

Overall, there are preconditions for the availability of digital skills in the city. It hosts Ventspils University College and Ventspils Technical College – both institutions training new ICT experts. Also there is a small, but important ICT business sector. However, despite these preconditions, the city faces important challenges such as insufficient number of specialists with ICT skills

and also some lack of quality of provided education is reported by local stakeholders. The city provides some measures to address these topics, for example, it provides housing development programmes for new professionals. However, more needs to be done to attract new professionals. Some possible steps to take are:

- Provision of attractive job opportunities (attracting new companies to the city),
- Consider dual degrees or cooperation degrees (e.g. Industrial PhD) between Ventspils University College and ICT companies,
- Support spin-off creation at the Ventspils University College;
- Support internship options to demonstrate attractiveness of the cities ICT sector;
- Further improvement of general ICT skills and provision of training of ICT skills necessary/requested by companies potentially willing to operate in Ventspils.

What regards the entrepreneurial culture, the picture is more positive and foresees fewer challenges for the future. Local stakeholders provide plenty of networking opportunities, active support from the City Council is a good precondition for future development. Taking into account previous developments and the ambition of the city, it might consider more active branding activities in this field and come up with a new image/branding of “ICT city”. Also role models and cities ICT champions could be identified and promoted in the public to further build the entrepreneurial culture and eliminate fear of failure and risk taking.

On the question « How can we rise their digital skills capital to bring these « high added value » companies to Ventspils? », the consulted stakeholders pointed out that there never were any the high added value companies located in Ventspils until very recently. Historically, all there ever was, were port related fishing and cargo loading and unloading industries. In 2017, the Ventspils Digital Centre has provided various digital skills education and training courses for more or less 2,000 citizens.

It proves to be challenging for the City of Ventspils to attract and sustain any high value added industry segments. For the next 20 to 30 years high value companies has been foreseen to be marginal. Considering the best impact ICT scenarios, regarding the digital skill sets, on municipality level and Ventspils University of Applied Sciences, the city can provide such companies with the missing 5-15% of high skilled personnel through the upskilling. The city can also foster various developments at Ventspils University of Applied Sciences with scientific labs and support for spinoffs, etc.

11. Digital transformation SWOT analysis

	Strengths	Weaknesses
 Digital Infrastructure	<ul style="list-style-type: none"> > Free Wifi in the public area / 4G coverage > City optical cable availability > LPWAN Radio project > 150 National eServices, several eGov projects 	<ul style="list-style-type: none"> > The City's Digital Infrastructure is not used to its full potential by local companies
 Access to data	<ul style="list-style-type: none"> > National Level Open Data > Open infrastructure > Open testbed > Real-time City data monitoring/exchange 	<ul style="list-style-type: none"> > Not enough innovate ways yet > Not enough real-time City data access
 Digital skillset	<ul style="list-style-type: none"> > First courses start in nursery - 20min/day > Ventspils Digital Centre courses > Employee training and qualification raising among ICT companies 	<ul style="list-style-type: none"> > Lack of new ICT professionals > Large proportion of micro-size companies (<10 employees) > Vocational training convergence takes time
 Companies' digital competencies	<ul style="list-style-type: none"> > Developed Services > Multinational clients > Many business sectors presented > Strong B2B technology transfer 	<ul style="list-style-type: none"> > Lack of skilled personnel > Insufficient practical skills of university graduates > Small ICT market in Latvia and Ventspils
 Community	<ul style="list-style-type: none"> > Monthly informal ICT Cluster Meet-ups > Constant City Business Events > Strong/motivated and fast growing Community 	<ul style="list-style-type: none"> > Lack of new ideas > Lack of interest in developing career in STEM or IT > Drop-out rate in all education levels
 Finance	<ul style="list-style-type: none"> > Tax incentives > Pilot Projects / 15000 EUR Application Grant > Freeport Economic Zone > Valid City and State Programs 	<ul style="list-style-type: none"> > Insufficient private/own resources to supplement the public funding > No strong accelerators > Not enough venture capital community structures
 Support services	<ul style="list-style-type: none"> > Investment and Development Agency > Business Incubation > Venture Services > Latvia Bank proposes virtual space 	<ul style="list-style-type: none"> > No Student incubators > Technology transfer from public sector
 Governance & leadership	<ul style="list-style-type: none"> > Strong commitment to further developing sector > Memorandum of understanding signed with leading ICT companies 	<ul style="list-style-type: none"> > Lack of available housing and living-space (in the pipeline)

	Opportunities	Threats
 Infrastructure	<ul style="list-style-type: none"> > Further development of High Technology Park > Develop needs of and for the IT sector > Innovation centre > Renew airline and railway connections 	<ul style="list-style-type: none"> > Lack of resources for further development
 Access to data	<ul style="list-style-type: none"> > Development of Ventspils as smart tech hub 	<ul style="list-style-type: none"> > Lack of choice among telecommunication providers
 Digital skillset	<ul style="list-style-type: none"> > New on-demand IT study programs > Attract new foreign prof.s and scient.s for IT&STEM > Go down in age for Maker schools > Cooperation with VIRAC-Radio Astronomy Centre 	<ul style="list-style-type: none"> > Emmigration of ICT professionals > 50% of all PICS.lv school graduates leave for abroad > Isolation from international cooperation > Shift of interest towards other industries
 Companies' digital competencies	<ul style="list-style-type: none"> > Cooperation with other regional companies > Further cooperation with educational organisations > Cooperation with VIRAC-Radio Astronomy Centre > Increase horizontal ICT use in various sectors 	<ul style="list-style-type: none"> > Lack of understanding of digital competencies > Underinvestment in developing competencies
 Community	<ul style="list-style-type: none"> > Cooperation at the Baltic Sea Region level > Implementation of new IT-technology events > Implementation of new IT-business events > Attracting more students to ICT 	<ul style="list-style-type: none"> > Demographic decline > Development countries strategy in attracting human resources
 Finance	<ul style="list-style-type: none"> > EU and national funding for infrastructure and business development > Accelerator programmes > Angel investors 	<ul style="list-style-type: none"> > Lack of long-term financing options due to end of Structural Funds planning period > Dependance on public funding
 Support services	<ul style="list-style-type: none"> > Accelerator > Competence and technology transfer 	<ul style="list-style-type: none"> > Lack of innovative ideas for support
 Governance & leadership	<ul style="list-style-type: none"> > City Support in ICT sector awareness marketing > Adapt city brand as IT entrepreneurship place > Improve City Digital Image via Marcom Campaign > Development of sustainably life and industry policy 	<ul style="list-style-type: none"> > Growing costs of support for IT sector > Loss of city council autonomy in Latvia

Appendix I: Table of abbreviations and definitions

Digital Cities Challenge (DCC)

The Digital Cities Challenge initiative, was launched by the European Commission in November 2017 and scheduled to run until August 2018. It helps cities (The Digital Cities, referred as DC) develop and implement digital policies that can transform day to day life for residents, businesses, workers, and entrepreneurs.

Digital City Teams (DCT)

Each participating Digital City has a Digital City Team which will be in charge of managing and coordinating the involvement of the city in the Challenge. Digital City teams will include a) the core team which consists of one Lead Expert, one Local Expert, one Support Consultant as well as Thematic Experts; and the b) the Digital City leadership team which is made up of representatives of the city (i.e. local elected officials, local public servants, and the designated project management team).

Digital Transformation Trajectory (DTT)

The Digital Transformation Trajectory refers to the evolutionary path a city follows while taking part in the initiative, from the preliminary assessment of the digital potential of the City, to the definition of the City's digital transformation strategy and roadmap.

Field Advisory Services (FAS)

Field Advisory Services are services provided by the Digital Cities Challenge to Cities throughout the duration of the initiative. The Field Advisory Services include the organisation of one assessment visit and a number of local workshops, which will gather local stakeholders involved in defining the digital transformation strategy of the City.

Key Performance Indicators (KPIs)

The objective of the KPIs is to collect data that can diagnose the current status in terms of digital maturity and measure the progress made by cities during and at the end of the Digital Cities Challenge initiative. The KPIs will facilitate the activities of the policy makers and stakeholders of cities when identifying and addressing the bottlenecks and obstacles of the

processes of digital transformation and industrial modernisation. They will also enable the right identification of the key success factors of the different initiatives and actions undertaken.

Self-Assessment Tool (SAT)

The objective of the SAT is to identify the starting points for discussion on how to (further) develop, reshape and improve the digital transformation strategies of European cities. It is an online-tool developed by the project with a set of questions and corresponding response options to be filled in collectively by a set of stakeholders such as industry representation, utility companies, education and research and financial institutions. The SAT covers eight key dimensions: Infrastructure, Open data, Digital skillset, Digital competencies of companies, Community, Finance, Support services, Governance and leadership.

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