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DIGIBEST REGIONAL ANALYSIS FOR AUSTRIA

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Inhalt

Introduction

The Regional Analysis Austria is a part of the DigiBEST project interregional learning. Regional reports will be used to conduct the State of Art of the Digital Transformation Report of the DigiBEST partners' regions. The main objective of this report is to analyse the situation on digital transformation of enterprises Austria (with focus on SMEs and start-ups), including an analysis of statistical data and literature, mapping stakeholders, a SWOT analysis, digitalization barriers and solutions, policy analysis, good practices; as well as results from the Digitalization Assessment Survey. Finally, the analysis provides recommendations formulated by the responsible partner in cooperation with stakeholders.

According to the European Commission, digital transformation "*…is characterized by a fusion of advanced technologies and the integration of physical and digital systems, the predominance of innovative business models and new processes, and the creation of smart products and services."* Advanced digital technologies provided in the processes of digital transformation, such as the Internet of Things, big data, advanced manufacturing, robotics, 3D printing, blockchain technologies and artificial intelligence, as well as smart use of ICT in SMEs offer businesses new opportunities for building on their competitiveness.[1]

[1] https://ec.europa.eu/growth/industry/policy/digital-transformation_en

This analysis follows the definition of SMEs and micro enterprises defined by the European Commission based on a number of employees, turnover and balance sheet:

Table 1. Main factors determining the type of an enterprise[2].

Company category	**Staff headcount**	**Turnover**	o r	**Balance sheet total**
Medium-sized	< 250	≤ € 50 m	≤ € 43 m	
Small	< 50	≤ € 10 m	≤ € 10 m	
Micro	< 10	≤ € 2 m	≤ € 2 m	

- Part 1 of the Regional Analysis provides a brief introduction about the partner region and policy instruments tackled.
- Part 2 describes the economic situation and stage of digitalization based on statistics as well as literature and documents. The stage of digitalization is assessed using regional DESI data.
- Part 3 reflects the most important barriers for SMEs digitalization, as well as possible solutions to overcome these identified barriers. It is based on the analysis of literature and policy documents.
- Part 4 describes the main stakeholders in Austria based on the mapping tool KUMU.
- Part 5 contains a SWOT analysis of the situation in Austria.
- Part 6 is based on an analysis of policy and support instruments and normative acts with focus on the digitalization of SMEs. Subchapter 6.1 describes the main features of national, regional and local policies towards the digitalization of SMEs, subchapter 6.2 summarizes respective support instruments.
- Part 7 consists of the description of three Good Practices.

[2] https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en

- Part 8 describes the findings and conclusions of the Digital Assessment Survey based on the responses of Austrian SMEs and Start-Ups.
- Part 9 summarizes the most important recommendations from the analysis conducted.

1 Introduction to the analysed region: Republic of Austria

The Republic of Austria (germ.: "*Republik Österreich*") is a landlocked East Alpine country in the southern part of Central Europe and consists of nine federal states (Bundesländer): Vienna, Lower Austria, Upper Austria, Burgenland, Salzburg, Carinthia, Styria, Vorarlberg and the Tyrol). Vienna also is Austria's capital and its largest city (over 1,9 million as of Jan 1st 2020[3]). Austria occupies an area of 83.879 km² and has a population of nearly 8,9 million people. Austria is a mountainous country with one of the largest natural land reserves in central Europe. The official language is German, in some regions there are additional official languages.

After WW I, in 1919 the *First Austrian Republic* became the legal successor of the Dual Monarchy of Austria-Hungary. In 1938 followed the annexation of Austria by the German Reich. After the end of WW II and period of Allied occupation, Austria was re-established as a sovereign and self-governing democratic nation known as the *Second Republic* in 1955, when it declared its perpetual neutrality in foreign political affairs.

Austria is a parliamentary representative democracy with a directly elected Federal President as head of state and a Chancellor as head of the federal government. Austria has been a member of the United Nations since 1955 and joined the European Union in 1995. It is a founding member of OECD and Interpol. Austria signed the Schengen Agreement in 1955 and adopted the euro currency in 1999.

[3] https://www.wien.gv.at/statistik/pdf/viennainfigures-2020.pdf

According to the World Economic Outlook Database of the International Monetary Funds, Austria is in the top 20 richest countries in the world by GDP per capita terms (55.400 Euro).[4] The country has achieved a high standard of living. In 2019 it was ranked 20th in the world in the Human Development Index[5]. Vienna consistently ranks in the top internationally on quality-of-life indicators.

The Austrian economic system can be characterized as a free market economy with a strong social focus. In Austria exists a tried and tested system of economic and social partnership, which has traditionally played a strong and reconciliatory role in wage and price policies.

Austria is a highly developed industrialized country with an important service sector. The most important industries are food and luxury commodities, mechanical engineering and steel construction, chemicals, and vehicle manufacturing. In agriculture, Austria is witnessing a

trend towards organic farming. With an overall share of 22%, organic farms in Austria occupy a leading position among the EU Member States.[6]

Iron ore, non-ferrous metals, important minerals and earths are among the most important natural resources. The growth of the industrial sector increasingly requires supplementary imports. This is also true of fuels, energy resources, and the electricity-generating industry. Austria has its own resources of petroleum and natural gas. The generation of hydroelectric power is constantly being expanded, with Austria in the lead in the field of hydroelectric power in the EU. Most of the Austrian enterprises are SME, only approximately 1.100 companies have more than 250 employees. The start-ups scene with focus on innovative, ICT-oriented start-ups as well as the start-up support have developed considerably during the last years.

In this context a program within the framework of ERDF has been introduced in Austria to foster digitalization efforts *("ERDF Programme Investments in Growth and Jobs Austria 2014-2020 – Operational Programme for the use of ERDF Funds"*). The overall goal of the

[4] International Monetary Funds (2020 estimates): https://www.imf.org/en/Publications/WEO/weo-database/2020/October/1

[5] http://hdr.undp.org/en/content/2019-human-development-index-ranking

[6] https://www.austria.org/economy

program is to provoke a structural change in SMEs through high-quality, innovative and target group-oriented offers. This will have positive effects on the productivity and profitability of organizations and will furthermore secure employment. Measure Nr. 9 (within Priority axis 2/Priority 3D) supports growth in companies. Its focus lies on operational investments in connection with growth phases of SMEs: Companies are supported in growing and adopting new technologies through: 1) Acquisition of new technologies for production and services; 2) expansive projects in the field of production and production-related services; 3) investments for new businesses or structure-improving business relocations; 4) investments for the production of new products and services. There shall be some significant improvements in the quality of operational services, embedded in innovative approaches.

In this context Austria developed a digital roadmap[7] which presents around 150 specific measures in twelve fields of action in order to ensure that Austria can optimally exploit the potential of digitalization. One of the 12 guiding principles is for Austria to become one of the world's leading digital business locations. To this end, it is important to provide support to businesses for their digital transformation.

[7] https://www.digitalroadmap.gv.at/

https://www.britannica.com/topic/Maps-of-the-World-1788586

2 Economic development, entrepreneurship and digitalization in Austria

In this chapter, a description of the socioeconomic situation in Austria is given (see Table 2) in order to understand economic impacts on digital transformation and ensure comparable information for the Joint Report.

2.1 Economic development and entrepreneurship

Austria's industrial and commercial sectors are characterized by a **high proportion of SMEs**.[8] In the year 2019 the total of 538.500 enterprises consists of 98,6% microenterprises up to 9

[8] https://www.statista.com/statistics/503135/austria-number-of-enterprises-by-employment-size-class/

employees, 6,1% small and medium-sized enterprises from 10 to 249 employees, whereas only 0.2% of all companies have more than 250 employees.[9]

Austrian industry covers every branch of manufacturing, from basic goods to the labor-intensive production of highly processed products. The construction of plants and systems (encompassing the planning, delivery, and assembly of turn-key production facilities is making up an increasingly important share. This field is strongly export-oriented, as is the electronics sector. Tourism is an essential pillar of the Austrian economy.

There are more than **32.000 newly founded enterprises per** year in 2019[10]. 19% of them are start-ups in the field of „Information technology and Consulting“. Five years after starting their company, 7 out of 10 of these newly founded enterprises still are active.

In the last years, a **vibrant start-up scene** has developed in Austria[11]. The entrepreneurial intent as well as start-up activities of students are quite similar to Germany and Switzerland.[12] Start-ups by academics respectively by teams of students are often innovative and technology-oriented with a focus on digital entrepreneurship.[13] -This development is supported by an **increase in start-up-support** (notably start-up services of the chambers of commerce, of banks as well as regional or local start-up services, privately owned incubators and corporate entrepreneurship activities of enterprises, specialized incubators and accelerators as well as networks, pre-incubators and start-up centers of universities). **Innovative forms of support** have been developed (f.i. the GIN-Network, the Jump program

[9] https://wko.at/statistik/kmu/GK_BeschStat_GW.pdf?_ga=2.187935784.1849194039.1613072275-709192788.1613072275

[10] New Members of the Chambers of Commerce (personal service, especially care service, not included).

[11] https://austrianstartupmonitor.at/en/

[12] Kailer, N. et al. (2019): Entrepreneurial Intentions and Activities of Students and their interrelation with Entrepreneurship Education - Global University Entrepreneurial Spirit Students‘ Survey 2018 - National Report Austria. University Linz & University of Graz. Linz and Graz. .

[13] Kraus, S. et al. (2019): Digital Entrepreneurship: A research agenda on new business models for the twenty-first century. In: International Journal of ‘Entrepreneurial Behaviour & Research, 25 (2), 353-375.

– focusing on the development of incubators and accelerators - organized by FFG, or programs like „pier4“, with a focus on the cooperation of start-ups and bigger enterprises).[14]

Table 2. General information, 2014-2019

Indicators	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Size of territory *square kilometres*	83.879	83.879	83.879	83.879	83.879	83.879
Population *Millions, 2018*	8,51	8,58	8,7	8,77	8,82	8,86
Real GDP per capita[15] *EUR* *GDP per capita is a measure of region's or country's economic output that accounts for its number of people. It divides the country's gross domestic product by its total population and is a good measurement of a standard of living.*	38.990	39.890	40.920	41.990	43.600	44.780
Real GDP growth[16] *% change* *Constant price estimates. In theory, the price and quantity components of a value may be identified and base periods prices are substituted for those of the current period. Methods are used in practice to calculate variables at constant prices. Another method, commonly referred to as price deflation,*	0,7%	1,1%	2,0%	2,6%	2,7%	1,4

[14] https://www.ffg.at/ausschreibungen/goaustria-individual-1-ausschreibung

[15] www.statistik.at/web_en

[16]https://www.statistik.at/web_en/statistics/Economy/national_accounts/gross_domestic_product/annual_data/124378.html

involves dividing price indexes into the observed values to obtain volume estimates. The price indexes used are constructed from prices of the major items of each value. Please make sure these series are in line with "GDP at constant prices".						
Population of active enterprises (from 1 to 9 employees)[17] *number*	552.312	541.681	549.010	554.621	551.867	
Population of active enterprises (10 employees and more)[18] *number*	43.133	43.236	43.655	45.175	45.1206	
Net business population growth[19] *%*	2,1	2,0	2,2	1,0	1,6	
Unemployment rate[20] *% of labour force* *Percentage of the civilian labour force which is unemployed. The government defines unemployed as people who are jobless, looking for jobs, and available for work. Unemployed persons comprise persons aged 15 to 64 who were: without work during the reference week, i.e. neither had a job nor were at work (for one hour or more) in paid employment or self-employment; currently available for work, i.e.*	5,62%	5,72%	6,01%	5,5%	4,85%	4,67%

[17] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bd_size_r3&lang=en. USED: http://www.statistik.at/web_de/statistiken/wirtschaft/unternehmen_arbeitsstaetten/unternehmensdemografie_ab_2015/103459.html

[18] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bd_size_r3&lang=en USED: http://www.statistik.at/web_de/statistiken/wirtschaft/unternehmen_arbeitsstaetten/unternehmensdemografie_ab_2015/103459.html

[19] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bd_size_r3&lang=en USED. http://www.statistik.at/web_de/statistiken/wirtschaft/unternehmen_arbeitsstaetten/unternehmensdemografie_ab_2015/103459.html

[20] https://www.statista.com/statistics/262695/unemployment-rate-in-austria/

were available for paid employment or self-employment before the end of the two weeks following the reference week; actively seeking work, i.e. had taken specific steps in the four weeks period ending with the reference week to seek paid employment or self-employment or who found a job to start later, i.e. within a period of at most three months.						

Source: Eurostat database, Statistics Austria

2.2. Digital economy and society

The goal of this sub-chapter is the assessment of the digitalization and readiness for digital transformation of Austria (based on Eurostat regional statistics and the Digital Economy and Society Index (DESI)[21] as well as the EU Digital Scoreboard.[22]) (see Table 3).

[21] The Digital Economy and Society Index (DESI) is a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU member states in digital competitiveness. https://ec.europa.eu/digital-single-market/en/desi

[22] https://ec.europa.eu/digital-single-market/en/digital-scoreboard)

Table 3. DESI index and DESI areas[23], 2014-2019

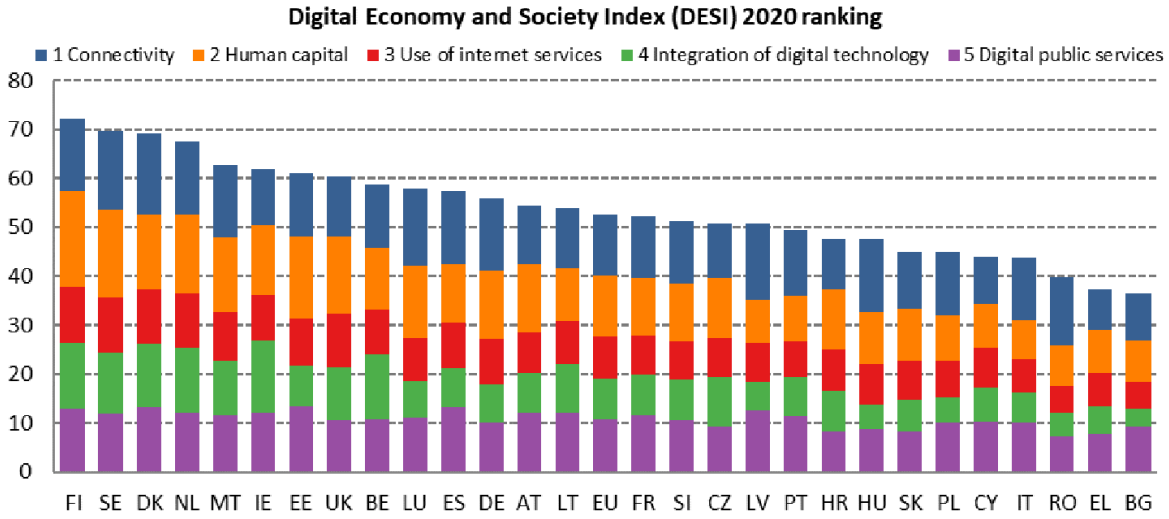
Indicators	2014	2015	2016	2017	2018	2019
DESI Index	0,46 (13)	0,53 (13)	0,54 (10)	549,2 (12)	48,5 (13)	51,1 (14)
DESI: connectivity	0,52 (12)	0,60 (12)	0,61 (14)	50,6 (17)	317,5 (22)	43,5 (18)
DESI: human capital/digital skills	0,57 (14)	0,61 (14)	0,59 (7)	53,2 (9)	55,4 (8)	55,7 (8)
DESI: use of internet services by citizens	0,32 (25)	0,38 (14)	0,42 (20)	45,2 (16)	50,0 (15)	52,5 (16)
DESI: integration of digital technology by business	0,33 (13)	0,37 (13)	0,39 (10)	35,0 (18)	34,9 (19)	34,8 (19)
DESI: digital public services	0,47 (11)	0,65 (9)	0,68 (6)	62,9 (7)	72,3 (10)	76,3 (10)

Source: https://ec.europa.eu/digital-single-market/en/desi

According to DESI 2020[24], Austria ranks 13th out of 28 EU member states.

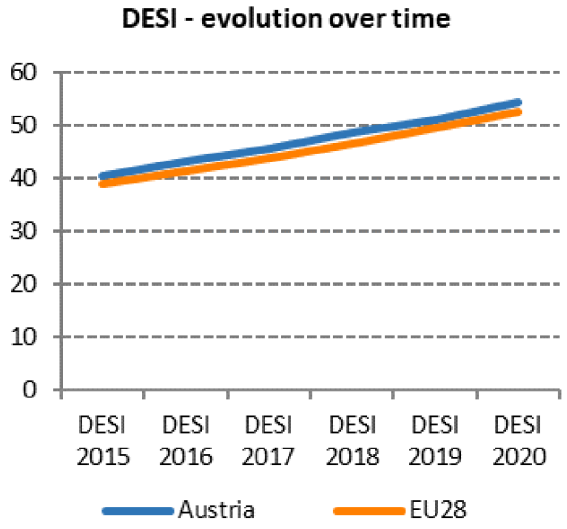
[23] DESI 2015 was re-calculated for all countries to reflect updates and corrections to the underlying indicator data. Also, too improve the methodology and take account of the latest technological developments, a number of changes have been made in DESI 2019. The DESI therefore was re-calculated for all countries for previous years to reflect changes in the choice of indicators and corrections to the underlying data. As a result, country scores and rankings have changed compared with previous publications. This table shows the re-calculated scores as indicated in the reports of the respective following year (f.i. scores for 2018 as re-calculated and indicated in the report for 2019).

[24] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.



In the DESI dimensions of Human Capital as well as Digital Public Service, in the year 2020 Austria scores about average, in the other dimensions below average. Compared to DESI results of previous years, Austria's ranking remains quite stable. Overall Austria remains slightly above the EU average results. The gap to the best performing EU member states, however, has increased. This is due to the fact that the usage of internet increased at a slower pace than in other member countries. Companies use Cloud and Big Data too seldomly.[25]

[25] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.



In the ***Connectivity dimension***, Austria ranks only 22th (2020). It performs very well with 98% average coverage in 4G. On the other hand, Austria has a low coverage with very high-capacity networks (14% in 2019). The coverage in fixed broadband with speed > 100 Mbps has markedly increased over the last years. With 29% it is above EU average now. Broadband prices, both for fixed as for mobile, are below EU average which might be the reason for the increasing mobile broadband take-up.[26]

In every indicator of the ***Human Capital dimension*****,** Austria is an above average performer (digital and software skills, ICT graduates and specialists)(2020).[27] As, nonetheless, Austrian enterprises lack staff with the right IT-skills, the Federal Ministry for Digital and Economimc Affairs launched a review to develop updated apprenticeship programs und job profiles. The Austrian Business Agency supports companies in finding skilled workers, including digitally skilled workers, abroad[28]. Beginning 2018, all Austrian pupils will acquire digital skills, as the "**digital basic education**" subjects is introduced in the schools of the lower secondary level. Targetting employees of companies the subsidized "**Digital Pro Bootcamp"** was

[26] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.

[27] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.

[28] https://investinaustria.at/en/

launched. In 2019 three digital innovation hubs opened. Also a new platform promoting digital jobs was launched.[29] Universities will receive 50m Euro for projects related to digital transformation.

In the ***Use of Internet Services dimension*** Austria ranks 18th and scores below EU average (2020). Whilst Austria is well above average in the use of internet banking, the opposite is the case in selling online (14% vs. 23% EU) and video calls (47% vs. 66% EU).[30]

In the ***Integration of Digital Technology dimension*****,** in 2020 Austria ranks 17th. Here the proportion of SME selling online has increased markedly to 19% and is now similar to EU average. SMEs selling online cross-border are well above EU average (15% vs. 8% EU). Very low is the usage of Big Data (6% vs. 12% EU) as well as the usage of the cloud (11% vs. 18% EU).[31]

Austria's **SME digital program** ("KMU Digital")[32] offered support for more than 7.000 SMEs to learn about digital opportunities. In 2019 the program has been re-arranged and now offers support for the following phases: analysis of the digital potential of the SMEs and the implementation of digital projects – up to 9.000 Euro per SME.

The support for SMEs and Start-Ups is complemented by supporting networks, incubators and accelerators. The Global Inuobator Network Austria (GIN)[33] links start-ups, investors, incubators and accelerators from Austria and abroad. Within the "**Jump Start"-**Program[34]

[29] www.digitaleberufe.at

[30] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.

[31] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.

[32] https://www.kmudigital.at

[33] https://www.gin-austria.com

[34] https://www.aws.at/aws-jumpstart/

several start-up incubators and their start-ups are supported, so that innovative and technology-oriented business ideas can quickly reach their market. Additionally, the **Digital Innovation Hubs** program of FFG, which has been renewed in December 2020, aims at building a network of partners and providing SME with digital know how.[35]

However, additional measures for SMEs in the field of using the cloud and big data are necessary.

In the "***Digital Public Services" dimension*** Austria is performing best, ranking 8th in the EU countries in 2020. In the use of re-filled forms Austria is considerably above average (81% vs. 59% EU). Austria also performs better than the EU average in Online-Service completion (97% vs. 90% EU). The – relatively seen - weakest sub-dimension is the Open data score (although still equal to the EU average). [36]

The **Austrian One-Stop e-Government Portal** for businesses (USP – Unternehmensserviceportal)[37] offers about 50 e-Government services for companies[38] on a website with a single sign-in. Also, all public tenders from over 7.000 authorities are announced in the one-stop platform and thus give SMEs free and unlimited acces to all tenders. The portal Digital Austria[39] provides an overview of the **Digital Action Plan Austria** [40] and offers also SME-relevant information and an overview of government support schemes. The one-stop platform for government services has been expanded and has been relaunched under the name **"Oesterreich.gv.at"**[41] Along with that in 2019 a chatbot named "Mona" and a

[35] https://www.ffg.at/dih.

[36] European Commission (2020). Digital Economy and Society Index (DESI) 2020 – Austria.

[37] https://www.usp.gv.at

[38] See in detail: European Commission (2018b): eGovernment in Austria (May 2018). ISA editorial team. Luxembourg. Available at: https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_Austria_2018_vFINAL.pdf (Accessed Jan. 25th 2020)

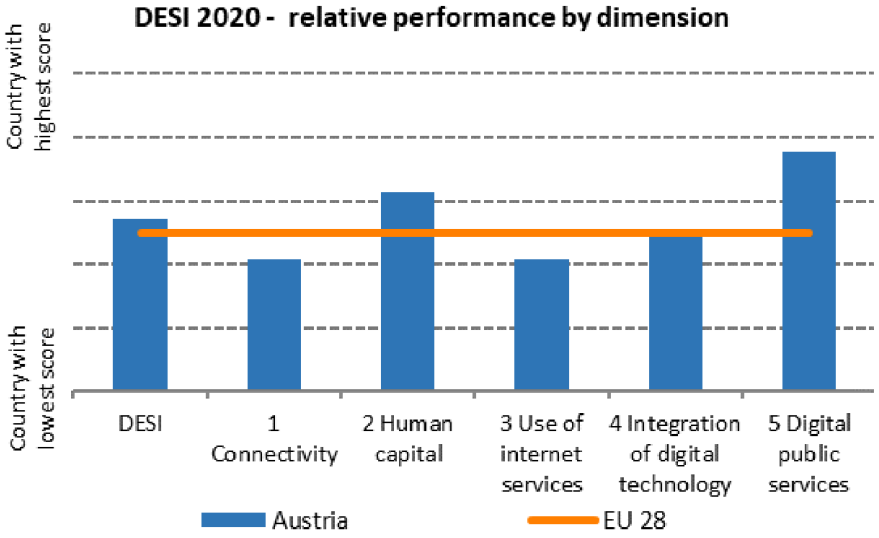
[39] https://www.digitalaustria.gv.at

[40] https://www.digitalaustria.gv.at/aktionsplan.html

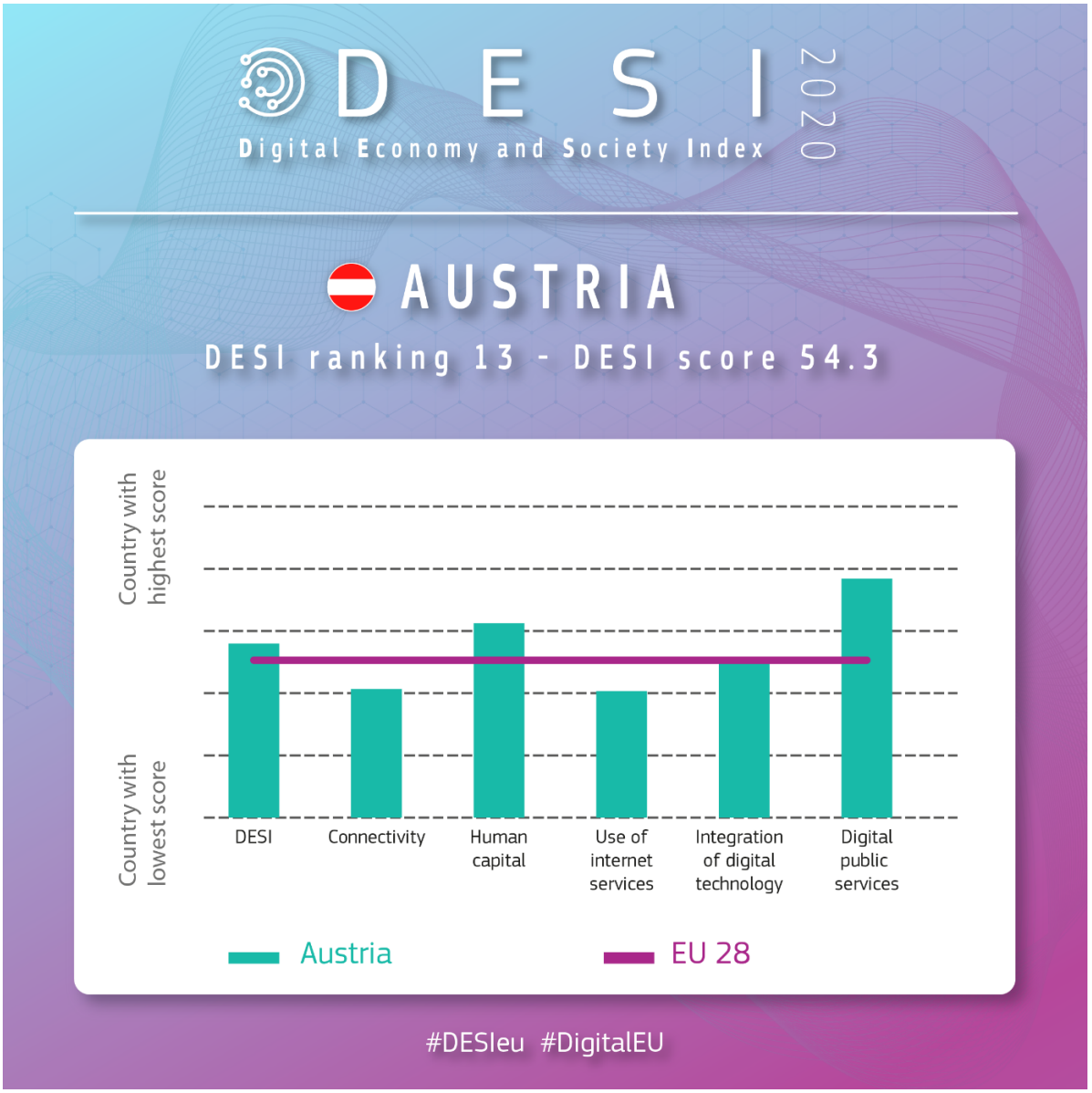
[41] https://oesterreich.gv.at

mobile app (Digital Office App) were launched to improve the service quality of the e-Government portal.

With the **Austrian e-Government Act 2020** the right to electronic correspondence with public authorities entered into force. All citizens now have the opportunity to handle alltheir contacts with the authorities electronically and without a break in media. They also can send documents electronically. One goal of Austria is to join the "*Digital 10*", the network of the 10 most digitally advances nations. Seen overall, the Austrian public sector is digitally advanced compared to other EU states.[42] An additional focus on open data and e-government users will help Austria to join the Top 5 in the DESI ranking for digital public services.



[42] The „e-Government Monitor 2020" also shows Austria in the lead of the DACH region (Germany, Switzerland, Austria): https://www.ots.at/presseaussendung/OTS_20201020_OTS0065/e-government-monitor-2020-oesterreich-bei-e-government-nutzung-klare-nr-1-in-der-dach-region



The comprehensive "**Digital Roadmap Austria"**[43] (published in 2017) lacked quantified targets. 2019 started the development of the **vision "Digital Austria in 2050"** [44] as a starting point for the overall digitisation strategy (the **Digital Action Plan Austria**[45]) with the goal of

[43] https://www.digitalroadmap.gv.at/

[44] https://www.roadmap2050.at/digitalaustria-initiative-fuer-erfolgreiche-digitalisierung/

[45] https://www.digitalaustria.gv.at/aktionsplan.html

providing the framework for the Austrian digitalisation strategy and harmonising existing strategies).

A focus lies on the digital transformation in selected priority topics (data, climate and environment protection etc.) and in the further improvement of modern e-government services for the business sector as well as for citizens[46].

Also, the stakeholder consultation for the national artificial intelligence strategy, "**Artificial Intelligence Mission Austria 2030**"[47] has been completed.

In 2019 the government adopted the **Austrian Broadband Strategy 2030**[48]. The overall vision is the nationwide availability of gigabit-capable connection by the end of 2030. The rollout shall be completed in several phases:

- Phase 1: Nationwide provision of ultrafast broadband connections (100 Mbit/s) by the end of 2020
- Phase 2: Market launch of 5G in all state capitals by the end of 2020
- Phase 3: Austria as a 5G pilot country by the beginning of 2021
- Phase 4: Availability of 5G services along main transport paths by the end of 2023
- Phase 5: Availability of gigabit-capable connections nationwide by the end of 2025, including nationwide 5G coverage.

[46] See as an overview of e-government in Austria: European Commission (2018b): E-Government in Austria (May 2018). Available: . https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_Austria_2018_vFINAL.pdf (accessed: Jan. 25th 2020).

[47] https://www.bmk.gv.at/themen/innovation/publikationen/ikt/ai/aimat.html

[48] https://www.bmlrt.gv.at/english/telecommunications-and-postal-services/broadband-office/broadband-strategy-2030.html

A threat seen is that the regulatory framework in Austria still needs to be better adapted to the digital age. Many initiatives have been launched only within the recent years and the real longterm impact is still not visible.

Evidently the **current pandemia** has a profound impact on key societal indicators relating to the use of internet services by citizens. There is a marked increase in the demand that has been put on digital infrastructure and services. Therefore, efforts in future should focus on a stronger and more resilient digital transformation and economic recovery, notably very high-capacity networks (VHCNs) and 5G, digital skills, advanced digital technologies and digital public services.In the wake of the pandemic Austria has taken a large number of targeted measures in digital: f.i. chatbots informing about COVID-19 and subsidies for companies, improving cybersecurity by informing about COVID-themed phishing or malware emails and fake shops. The possibility of telework has been increased. Online resources for pupils, apprentices, students and teachers[49] have been developed and improved. A nationwide platform promoting Austrian online-sales platforms has been introduced.[50]

Focusing on DESI incidators which are expecially relevant for the economic recover after the pandemia, Austria is advanced in 5G, is about EU average in the digital skills indicator and, very pronounced, in digital public services. Austria lags behind in the deployment of Very High Capacity Networks (VHCN) and performs relatively weak in the digisation of businesses.

Table 4 reflects the statistical data focussing on the general regional digital economy and society based on the **Eurostat database.**

[49] F.i. www.edutube.at, www.eduthek.at, www.eeducation.at

[50] https://www.shoepping.at/

Table 4. General regional digital economy and society statistics, 2014-2019.

Indicators	2014	2015	2016	2017	2018	2019
Households that have internet access at home[51] *% of households with at least one member aged 16 to 74* *The access of households to internet is measured as percentage of households where any member of the household has the possibility to access the internet from home.*	81	82 85	87 89	90	90	90[52] f
Households that have broadband access by NUTS 2 regions[53] *% of households with at least one member aged 16 to 74* *The availability of broadband is measured by the percentage of households that are connectable to an exchange that has been converted to support xDSL-technology, to a cable network upgraded for internet traffic, or to other broadband technologies.*	64	65	65	63	69	89
Individuals regularly using the internet by NUTS 2 regions[54]	81	84	85	89	89	

[51] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00047&plugin=1

[52] https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_households_and_individuals

[53] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00047&plugin=1

[54] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00050&plugin=1

% of individuals 16-74 *Regular users of the internet are persons who use the internet on average at least once a week, every day or almost every day.*						
Individuals who have never used a computer by NUTS 2 regions[55] *% of individuals 16-74* *Persons who have never used a computer (at home, at work or any other place).*	11	10	11	6	7	
Individuals who accessed the internet away from home or work[56] *% of individuals*	31	34	25	36	28	47
Individuals who ordered goods or services over the internet for private use in the last year by NUTS 2 regions [57] *% of individuals 16-74* *Persons who bought or ordered goods or services (i.e. food, groceries, household goods, films, music, books, magazines, newspapers, clothes, sports goods, computer software or hardware, electronic equipment, shares, financial services, insurances, travel or holiday accommodation, tickets, lotteries or betting and other) over the internet during the last year.*	56	-	59	65	61	63
Individuals, who used the internet.[58] *% of individuals* *Frequency of internet access: once a week (including every day)*	82	85	85	88	88	88

[55] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00051&plugin=1

[56] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_iumd_i&lang=en

[57] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00052&plugin=1

[58] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_iuse_i&lang=en

Individuals who used the internet, frequency of use and activities [59] *% of individuals* *Internet use: selling goods or services*	43	46	48	53	53	54
Individuals who used the internet, frequency of use and activities[60] *% of individuals* *Internet use: civic or political participation.*	59	57	68	68	66	70
Individuals who used the internet, frequency of use and activities[61] *% of individuals* *Internet use: Internet banking*	48	51	53	57	58	63
Individuals who used the internet for interaction with public authorities[62] *% of individuals* *Internet use: interaction with public authorities (last 12 months)*	59	57	60	62	66	70
Individuals who used the internet for interaction with public authorities[63] *% of individuals* *Internet use: submitting completed forms (last 12 months)*	30	31	33	37	45	47
Individuals who used the internet, frequency of use and activities[64] *% of individuals* *Internet use: participating in social networks (creating user profile, posting*	44	45	49	51	53	56

[59] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

[60] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

[61] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

[62] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_gov_i&lang=en

[63] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_gov_i&lang=en

[64] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

messages or other contributions to Facebook, Twitter, etc.), percentage of individuals.						

Source: Eurostat database: https://ec.europa.eu/eurostat/help/first-visit/database

Another useful source for measuring readiness for the digital transformation is the **IMD World Digital Competitiveness Ranking**[65] which examines three main factors:

- *Knowledge* - the capacity to understand and learn the new technologies
- *Technology* - the competence to develop new digital innovations
- *Future readiness* - the preparedness for the coming developments.

The IMD Ranking shows a marked improvement for Austria (from rank 20 in 2019 to rank 17 in 2020) out of 63 countries worldwide.

This is due to an marked improvement in the category « future readiness » (from rank 23 in 2019 to rank 16 in 2020) as well an improvement in the category « Technology » (from rank 32 to rank 28). In the category « Knowledge » Austria holds rank 11.

- In the category « *Knowledge* » (sub-rank 11), the Net flow of international students, employee training and pupil-teacher ratio (in tertiary education) are the top strength. However, a lack of female researchers in ICT as well as the R&D productivity (measured by publication) are considered as top weaknesses.
- In the category « *Technology* »(sdub-rank 24) two major top weaknesses are indicated : Starting a business and Immigration laws.

[65] https://ec.europa.eu/digital-single-market/en/digital-scoreboard

- In the category « *Future readiness* » (sub-rank 21), e-participation and measures against software piracy are considered as marked overall top strengths.

3 Barrier and solution analysis of the digital transformation of SMEs

The SMEs digital transformation barrier and solution analysis is based on a literature and document review (such as legislation, normative acts, reports, strategies, action plans, results of scientific studies) complemented by the Digital Transformation Survey (see chapter 8).

The analysis separates barriers and solutions into 5 following categories:

- Awareness rising & collaboration
- Enabling corporate environment & capacity building
- Administrative, technical & legal obstacles
- Financial & economic barriers
- Policy & security barriers

Table 5. Barrier & Solution Matrix

Barrier	Brief barrier description	Identified solutions, if any	Source
Awareness Rising & Collaboration			
Information and communication deficits	Many specialized support programmes from many different: SMEs need increased time for selection and have problems in the assessment of the quality of the measure New communication channels are needed to convince SMEs of the necessity of digital innovation	Coherent competence frameworks and support platforms (f.i. fit2internet) Testimonials and cases of good practice (SME and start-ups with advanced usage of digitalization and with a strategic digitalization concept)	BMDW: Digital Austria Austria DigiBEST Survey
Lack of cooperation between start-ups and big companies	Too few start-ups with specialisation in IKT cooperate with bigger companies, thus the knowledge transfer in the field of IKT is limited and existing IKT-solutions are not transferred in the work organisation of other companies	Innovative support offers by (high tech) incubators, f.i. programmes focussing on the cooperation of start-ups and bigger companies with incubators as “go between” Innovation Clusters	Kailer & Hora 2016 FFG Jump-Start-Programme KPMG 2020
Current pandemic	Pandemic changes work organisation – in the long run permanently (f.i. telework, digital business models), home office, teleconferencing) Lower barriers increased acceptance for digital technologies by employees and clients	Increase participation in the broad range of programmes offered by government Permanent establishment of digital pilot projects	A.D. Little 2020, 55 DESI Austria 2020, 3
Low rate of IKT-students	Low rate of IKT-students, especially female Low occupation rate of IKT-students in SMEs (except technology oriented start-ups)	Specialised IKT-curricula and study programmes on all levels Support of start-ups of students and academics	IMD 2020, 50 Kailer u.a. 2019, 37
Enabling Corporate Environment & Capacity Building			
Lack of innovation, risk aversity	Innovation friendly environment for SMEs needed	Digital technologies are more important for bigger companies Use of digital technologies in form of mobile end-devices and direct clients as “gateway” for further applications	Ernst & Young 2000, 6

Lack of necessary specialised IKT-skills Lack of qualified IKT-trainers Educational gap Lack of pedagogical concepts for IKT	Right people in the right place, person-job-fit Upgrade skills Unskilled workers lack basic competencies too, but these are a prerequisite to acquire digital skills	Digital, methodical, social, communication and personal skills have to be increased Cooperation of educational system and economy needed Lifelong IKT learning Special focus on dual vocational training with IKT content Competence Framework for Digital Skills Additional focus on programmes with focus on basic skills for unskilled workers Competence Framework for Digital Skills and competence tests (fit2internet)	AMS 2019, 4 OECD 2019,5 Ernst & Young 2020, 15 A.D.Little 2020, 6 BMDW: Digital Austria AMS 2019, 5 A.D.Little 2020, 6 AMS 2019 Accenture 2020, 17
Lack of acceptance of innovations by government as client for ICT	Lack of acceptance of government institutions of innovations in the IKT-sector developed by start-ups as these start-ups have a "liability of newness"	"gov-tech" platform to provide a government institution as first reputation client for start-ups	A.D.Little 2020, 6
Administrative & Technical & Legal			
Perceived (or suspected) "bureaucracy"	Companies (often wrongly) guess that there is too much "bureaucracy" when applying for a support offer or for participation in a special programme (as compared to the available sum of funding)	De-bureaucratisize the administrative processes of projects Former participants as testimonials	
Immigration laws	Immigration laws as hindrance to employ IKT-experts,	Adaption of red-white-red card for highly qualified workers	IMD 2020,50
Lack of evaluation and therefore of proven impact	Lack of evaluation of measures and programmes, so the impact is not convincibly visible to SMEs Only few evaluation data available, so that SME owners are not convinced	Projects that demonstrate technology use cases, such as the use of 5G in production, are to receive targeted funding and the funding is to be tied to specific result indicators.	A.D. Little 2020, 50f.
Lack of ultra-highspeed broadband	"locked in" in previous broadband generation (30-100Mbit/sec), not up-to-date	Nationwide expansion of the fiber optic network	WIFO 2019, 3 DESI 2020 Austria, 3 A.D. Little 2020, 51

Financial & Economic			
Access to funding: Lack of funding for the implementation phase Lack of resources in SMEs	After (subsidized) training, consulting and pilot projects the transfer of developed strategies and pilot projects into everyday business practice is important – but there is a lack of funding (loans, VC) Lack of resources as a main obstacle for digital innovation in companies -	Venture Capital Specialised state funds for implementation of digital solutions for SMEs and Start-ups Specialised programs offering financial support for the implementation phase (f.i. new version of KMU Digital)	AIT 2020 (Startup Monitor 2019) Feuchtinger 2018, 23 Ernst&Young 2020, 12
Unwillingness of management to invest in digital projects	Executives and owners of enterprises which are not convinced of the necessity or the positive economic impact of digital innovations in their enterprise are unwilling to invest in such activities	Testimonials from cases of best practice and networking activities	ACR 2020, 7
Lack of usage of digitalization in SME Low usage of Cloud and big data	Lack of usage of digitalization in SME (except in IKT-start-ups) Lack of resources as main obstacle to digital innovations in enterprises Bigger companies see digitalization more often as a chance than SMEs		Initiative D21 2020, 11ff. ACR 2020, 6 Accenture 2020, 9 Ernst & Young 2020, 10ff. Austrian Digibest survey
Policy & Security			
Cyber-Security	Very important for most SME Catch-up demand		Ernst & Young 2018. 5 Initiative D21 2018, 4
Research needs	Research gap: few R&D publications in the field of IKT Concentration of R&D in larger enterprises		Initiative D21 2018, 5 OECD 2017, 1 ACR 2020, 5 IMD 2020, 50

Regulatory framework	National regulatory framework needs to be better adapted to the digital development		Broadband Strategy 2030

4 Main stakeholders of each region

The stakeholder mapping is based on the following definition: *„A stakeholder is anybody who can affect or is affected by an organisation, strategy or project. They can be internal or external and they can be at senior or junior levels."*[66]

Main stakeholders of DigiBEST in Austria are both external and internal bodies, with representatives at senior or junior level. Key stakeholders are national, regional or local institutions and authorities, business support organizations (with focus on SME and start-ups), representatives of ICT business (including business owners) as target audience of project activities, representatives of universities, universities of applied science and research institutions as advisory partners, NGOs, and Media (see table 6).

They are contributing to DigiBEST Austria in cooperating with AWS as the Austrian project partner of DigiBEST, as participants in DigiBEST workshops and meetings, as invited experts in the role of a sounding board,

4.1 National, regional or local institutions and authorities

On national level the Austrian **Federal Ministry of Digital and Economic Affairs** (Bundesministeriuim für Digitalisierung und Wirtschaftsstandort) is the central institution for the promotion and coordination of government's efforts of digitalization. **Specialised**

[66](http://www.stakeholdermap.com/stakeholder-definition.html

institutions related to, or owned by, the Federal Ministry of Digital and Economic Affairs have been commissioned or have been established especially to organize relevant digitalization programmes. For example, the **Austrian Research Promotion Agency** (FFG – Forschungsförderungsgesellschaft) organizes, among a broad range of other activities, start-up networks like the Global Incubator Network (GIN), the Jump Start-Program for innovations in incubators or the Digital Innovation Hub programme[67]. Also, the **Digitalization Agency** (DIA – Digitalisierungsagentur)[68], acting as a knowledge and project platform for the whole of Austria, has been installed within the FFG. The **Austrian Promotional Bank** (AWS - Austria Wirtschaftsservice)[69] is fully owned by the Republic of Austria.is 100% owned by the Republic of Austria, represented by the Federal Ministry for Digital and Economic Affairs (BMDW) and the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK). AWS offers a broad range of support including financial support and runs programmes to promote the digitalization of the economy.

On the regional level additional special programs focused on the province are developed and organized by the **provincial governments** (Landesregierungen). Here often **special regional institutions for the promotion of SMEs** and digitalization are instrumental in the organization and roll-out of such activities – f.i., Business Upper Austria, ITG Innovations Service of Salzburg, Styrian Business Promotion Agency (SFG), Kärntner Wirtschaftsförderungsfonds (KWF), or Standortagentur Tirol.

4.2 Business support organizations

The Austrian **Chamber of Commerce** (WKÖ - Wirtschaftskammer Österreich) and the regional Chambers of Commerce which are established in all provinces of Austria are

[67] https://ffg.at/dih

[68] https://www.ffg.at/en/node/70661

[69] https://www.aws.at

important stakeholders in the process of digitalization of the Austrian economy. The chambers of commerce cooperate with the Ministry of Digitalization and Economic Affairs in the development and roll-out of nationwide digitalization programs.

Furthermore, the regional chambers of commerce develop and organize special programmes (often in cooperation with the regional governments (Landesregierungen)).

As an example: In Upper Austria, the "OÖ Digital 2025" program of the Upper Austrian Chamber of Commerce (WKOÖ) aims to support upper Austrian enterprises in their digital transformation by offering services, subsidies, training and best practices.[70]

Another important stakeholder is the **Association of Austrian Industrialists** (IV - Industriellenvereinigung) which is also organized on national as well as provincial level.

Also, **platforms** with a wide range of members, including government, business support organizations and enterprises, have been established and promote digitalization activities. One example is the nationwide association "platform industry 4.0" (Plattform Industrie 4.0)[71] of the Association of Austrian Industrialists or the Digital City Vienna.[72]

Business incubators, pre-incubators and accelerators support IKT-Start-ups and thus play an important role in the extension of digitalization among enterprises. They also support the cooperation of start-ups and bigger companies which often is crucial for the implementation of digital solutions.[73]

4.3 Universities and research institutions

Departments and specialized **research centers** of **universities and universities of applied science** (Fachhochschulen), which often are focussing on digitalisation themes, are

[70] https://www.wko.at/service/ooe/innovation-technologie-digitalisierung/OOe-Digital-2025.html

[71] https://plattformindustrie40.at/

[72] https://www.digitalcity.wien

[73] https://www.tech2b.at/files/assets/content/Presse/2017/Studie_ZusammenarbeitzwischenGrounternehmenundStart-UpsOnline.pd

conducting empirical studies as well as literature reviews. They also introduce or expand digital themes in their curricula and develop specialised curricula on bachelor and master level. Their entrepreneurship institutes, start-up centers and pre-incubators help to increase the entrepreneurial intention of students and support their start-up activities which often result in innovative, technology-oriented ICT-Start-Ups.

There are also **independent research institutions**, some (co)financed by the (provincial) government, as cooperation partners. An example is the **Austrian Institute of Technology - AIT)**[74] that performs applied research and enables the market exploitation of innovative infrastructure related solutions. AIT thus aims to bridge the gap between research and technology commercialisation.

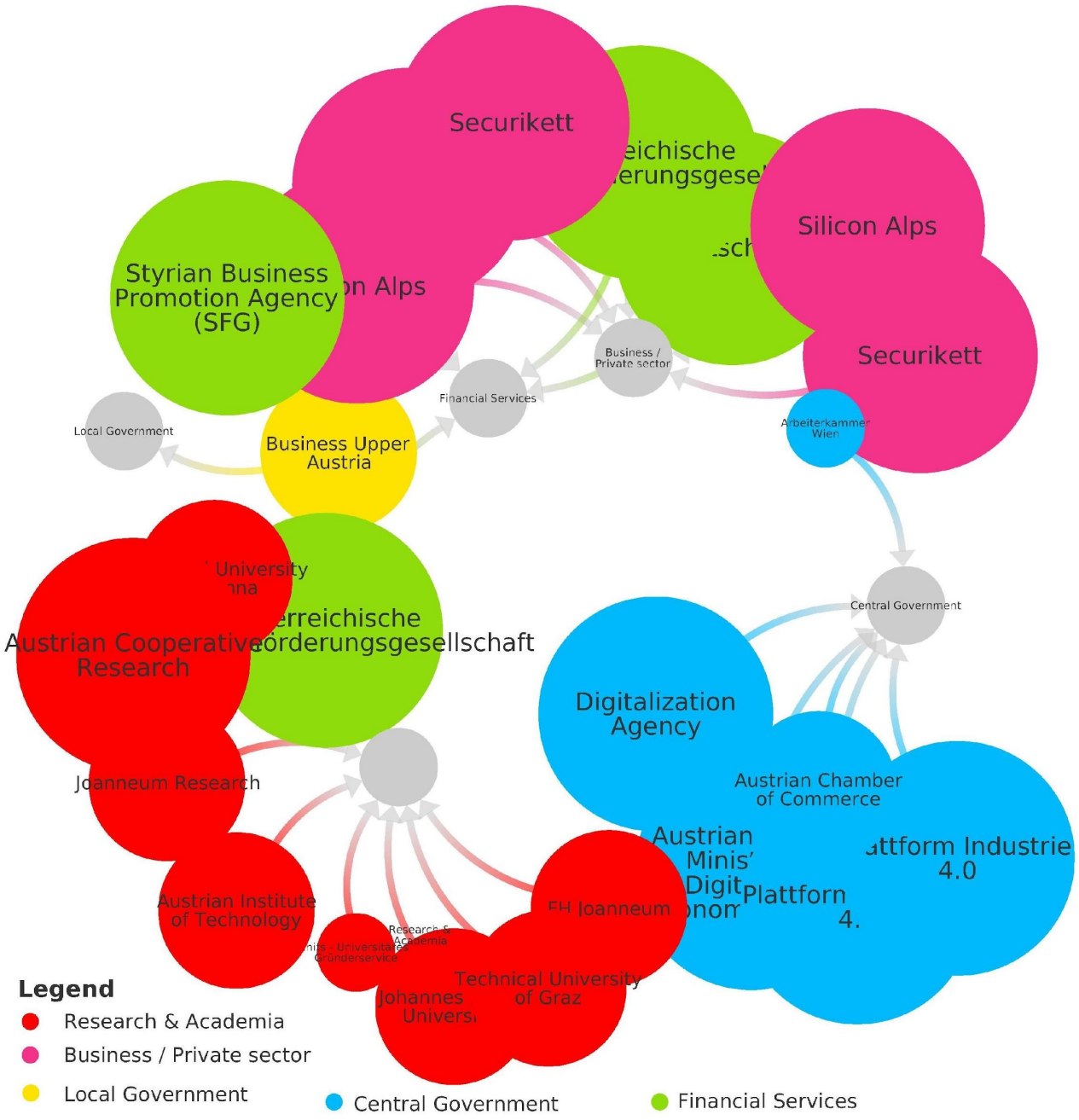
4.4 Representatives of ICT business (including business owners)

Several representatives of ICT business, including owners of ICT Start-Ups also cooperate in the DigiBEST project and act as experts and sounding board.

[74] https://www.ait.at

4.5 KUMU maps

1. Position on Digitalization



2. Position on Influence

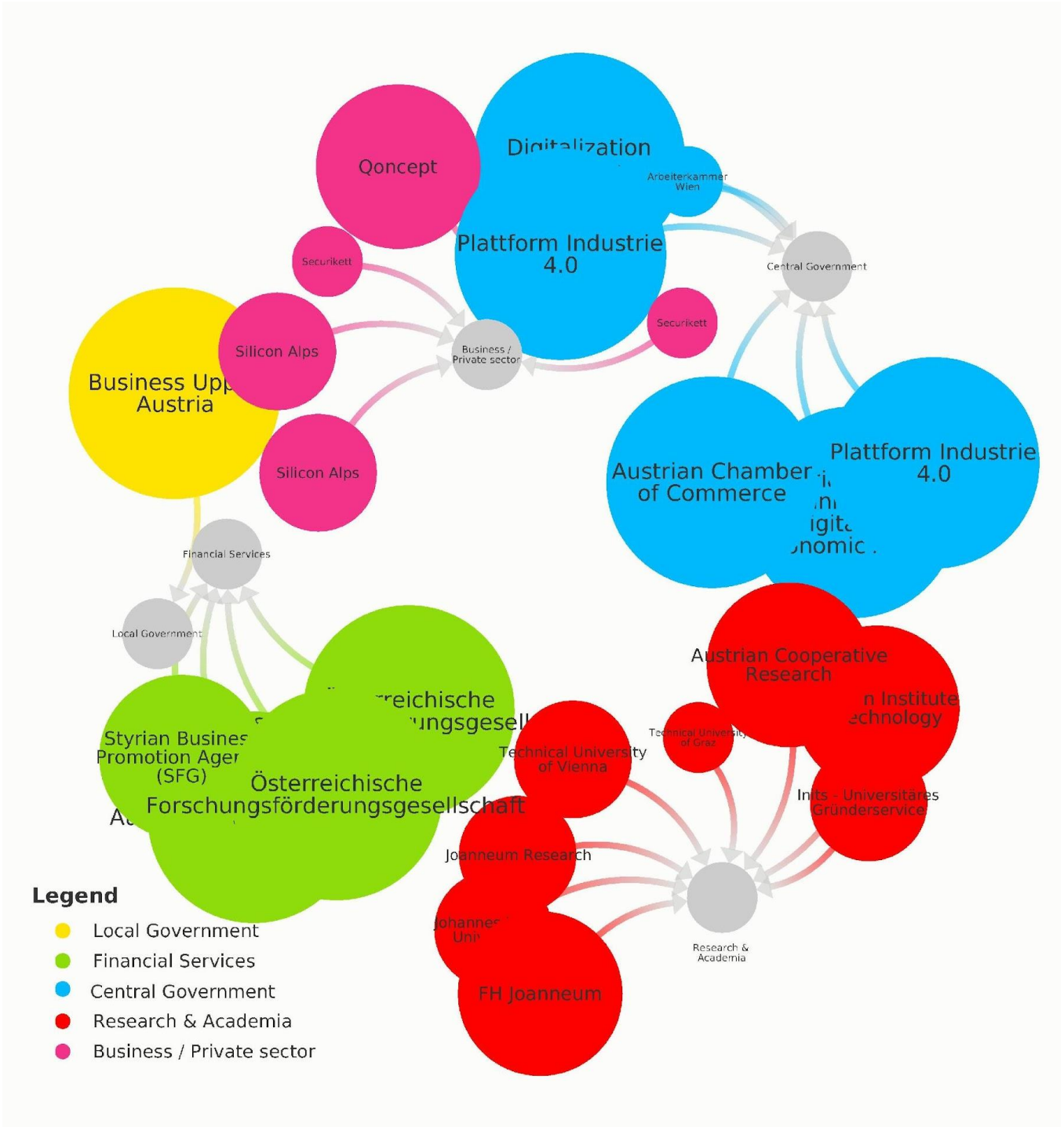


Table 6. List of main stakeholders in Austria

	Company name	**Website**
1.	Austrian Federal Ministry of Digital and Economic Affairs	https://www.bmdw.gv.at/
2.	Austrian Chamber of Commerce	https://www.wko.at/service/Startseite.html
3.	Business Upper Austria	https://www.biz-up.at/
4.	Styrian Business Promotion Agency (SFG)	https://www.sfg.at/
5.	Plattform Industrie 4.0	https://plattformindustrie40.at/
6.	Austrian Institute of Technology	https://www.ait.ac.at/en/
7.	Johannes Kepler Universität	www.jku.at
8.	FH Joanneum	https://www.fh-joanneum.at/en/
9.	Inits - Universitäres Gründerservice	https://www.inits.at/
10.	Arbeiterkammer Wien	https://wien.arbeiterkammer.at/index.html
11.	Securikett	https://www.securikett.com/

12.	Austrian Cooperative Research	https://www.acr.ac.at/
13.	Joanneum Research	https://www.joanneum.at/
14.	Qoncept	https://qoncept.at/
15.	Technical University of Vienna	https://www.tuwien.at/en/
16.	Silicon Alps	https://www.silicon-alps.at/
17.	Technical University of Graz	https://www.tugraz.at/
18.	Austria Wirtschaftsservice	https://www.aws.at/en/
19.	Österreichische Forschungsförderungsgesellschaft	https://www.ffg.at/
20.	Digitalization Agency	https://www.ffg.at/en/node/70661

Source: AWS DigiBEST Projekt Directory of Cooperation Partners

5 SWOT analysis for Austria

The SWOT analysis (Table 7) includes two groups of factors:

a. Internal factors – The *strengths* and *weaknesses* internal to the region (organization etc.).
b. External factors – The *opportunities* and *threats* presented by the external environment to the region (organization etc.).

The SWOT analysis should identify the following:

- **S**trengths: characteristics (factors) of the SMEs digitalization development, main success factors, strengths with regard to SME's digital transformation in your region.
- **W**eaknesses (or Limitations): factors that present disadvantages for SMEs digital transformation.
- **O**pportunities: chances (factors) to improve SMEs digitalization and its economic impact.
- **T**hreats: elements (factors) for SMEs digitalization (and economy in general) that could cause trouble for the economic development.

/

Table 7. SWOT analysis for Austria

Internal Factors	
Strengths	**Weaknesses**
Ex: What are strengths of SME digitalization on my region?	Ex: What are weak sides of SME digitalization in my region?
E-Government: very efficient support for SME and Start-ups, broad range of digital services for enterprises, namely SME and Start-ups, saves time and costs	Usage of the **Cloud and Big Data** well below EU average (especially in non-technologically oriented SMEs and start-ups)
Awareness of the necessity of digital adaption in technologically oriented SMEs and Start-ups: "digital testimonials" can serve as multipliers and testimonials to convince other SMEs and Start-Ups	**Lack of funding opportunities and venture capital:** Especially SMEs and Start-Ups trying to expand or develop their business (model) after participation in training and coaching have problems in financing their development (via banks, business partners) SMEs need (relatively seen) more money for digitalization than bigger companies
Cyber-security: improvements during the pandemic	**Lack of ICT-infrastructure** in (vocational) schools and training institutions and **lack of trainer** with qualification in the ICT field
Intensive support for SME and Start-ups: increasing number of relevant networks, start-up service centers, (high tech) incubators and accelerators, broad range of support activities including information and awareness raising, coaching, consulting, networking	"lock in" on **older versions of highspeed broadband**
High investment in ICT and education programmes **Good quality of employee training in enterprises and external training programmes:** increases the number of skilled workers with ICT skills	

External Factors	
Opportunities	**Threats**
Ex: What are opportunities for SME digitalization in my region?	Ex: What are main threats for SME digitalization in my region?
Effects of the pandemia: leads to a boost of innovative digital business models and increases cooperation between ICT-Start-ups and other enterprises, thus intensifying IKT knowledge transfer	**Digital skills deficits in target groups with unskilled workers:** a lack of basic skills increases the problem of lacking digital skills, leads to problem of decoupling
Increasing investment in ICT and education programmes: also for unskilled workers, basic IKT-knowledge in all levels of education and in further education	**Lack of ultra-highspeed broadband**
High digital skills in special sub-groups (students and skilled workers/experts in the ICT field, selected (qualified and interested) students from abroad) can easily be further improved; further training for ICT specialists	**Low rate of female graduates** in ICT and engineering
Within Europe, Austria has one of the **highest proportions of cross-border selling**	**Effects of the pandemic:** pronounced decline in orders, sales, cooperation (combined with insecurity about the length of the crisis)
New up-to-date specialised IKT-curricula and study programmes can attract more students in the field of ICT and engineering	Lack of consistent comparative data on EU level, lack of evaluation data about the efficiency of programmes
(further) development of a clear strategic framework for all support offers with focus digitalization of SME and start-ups	Too many measures (specialised programmes, networks, action groups, ….). Lack of central coordination results in problems choosing the appropriate measure for the own company (lack of time for searching and evaluation offers)

Source: Own analysis of documents and reports (see bibliography)

6 Policy on and support instruments for digitalization of SMEs

6.1. Main features of the national, regional and local policies towards the digitalization of SMEs

The **promotion of the digital transformation** in Austria is a core task of the of the Federal Ministry for Digital and Economic Affairs (BMDW - Bundesministerium für Digitalisierung und Wirtschaftsstandort)[75] This **Digital Austria Initiative**[76] focusses on

- the creation of digitalization-friendly legal framework conditions to promote digital innovation
- the support of the economy (f.i., provision of financial support, development and dissemination of best practices in digital transformation, coaching)
- on expanded digital services for all citizens, f.i. via the online platform „oesterreich.gv.at“ and, since 2019, the (free) digital office app („Digitales Amt“).
- the coordination of the digitalization activities of the entire federal government by a task force for digitalization

The digitalization activities of the federal government are coordinated by a **task force for digitalization**. Chief Digital Officers (CDOs) are appointed in each department. The CDO of the BMDW itself is also the head of Section I (Digitalization and e-Government).

The new **provisions on data protection**, introduced 2018, are based on the General Data Protection Regulation (DSGVO – Datenschutzgrundverordnung[77]) are based on the General Data Protection Regulation of the EU.

[75] https://www.bmdw.gv.at/en/Topics/Digitalisation/Strategy/Digital-Austria.html

[76] https://www.bmdw.gv.at/en/Topics/Digitalisation/Strategy/Digital-Austria.html

[77] https://www.jusline.at/gesetz/dsgvo

Concerning **Cybersecurity**, the **ICT Security Portal**[78] was launched in 2013. 40 cooperation partners (administration and business) created this central internet portal, which deals exclusively with security in the digital world.

The expansion, implementation and ease of **use of electronic official services** are among the priorities of the Austrian Federal Government. The heart of Austrian E-government law, and the basis for **Digital Austria** („Digitales Österreich"), is the **E-Government-Act** (2004, last amended in 2018).[79] In between, there were adjustments to the Regulation on Electronic Identification and Trust Services for Electronic Transactions in the Internal Market (eIDAS-VO).

To promote **digital literacy**, Austria has developed its own competence model for digital skills: The **Digital Competence Framework for Austria - DigComp 2.2 AT**[80] is based on the European Reference Framework for Digital Competences and serves to classify and compare digital skills. It defines digital competences in six areas and eight competence levels.

The Austrian Federal Government pursues the goal of nationwide broadband high-performance infrastructures. It is based on the objectives of the Austrian **Broadband Strategy 2020**[81] and led by the Federal Ministries for Digitalization and Economic Affairs respectively Transport, Innovation and Technology. Its aim is an ultrafast broadband high-performance access nearly nation-wide. The target of 99% coverage of at least 100 MbPs downstream for households in 2020 has yet not been achieved, although good progress

[78] (https://www.onlinesicherheit.gv.at.

[79] https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_Austria_2018_vFINAL.pdf

[80] https://www.fit4internet.at/view/verstehen-das-modell/&lang=EN

[81] https://www.bmlrt.gv.at/english/telecommunications-and-postal-services/broadband-office/broadband-strategy.html

has been made, in particular with NGA coverage. Since 2015 about one billion Euros has been allocated. About 400 beneficiaries received funding in over 1.200 projects

The **Austrian Broadband Strategy 2030**[82] is designed to achieve nationwide coverage with Gigabit-capable broadband services by the end of 2030.The Austrian government is working on a new funding model for broadband rollout. Broadband expansion requires both stable framework conditions for sustainable investment decisions and the necessary flexibility to adapt to changing conditions. The Broadband Strategy 2030 therefore includes five concrete interim targets in addition to the long-term objective of nationwide coverage with Gigabit-capable connections by the end of 2030. It describes concrete measures for achieving the objectives in the four areas of strategy, legislation, subsidies and accompanying measures.

Smart specialisation is a policy concept where regions benefit from specializing in a particular area of science and technology: **RIS3** starts from a common vision of a more competitive regional profile – a vision shared by policy makers, by the business sector, but also by the lead institutions of research, technology and creativity. Austria employs a longer-term perspective in working with the Smart Specialisation concept: The federal government encourages its science and research institutions to act as regional lead institutions. The **Lead Institution Initiative** has been integrated as "objective 6d" in the Austrian National Development Plan for Public Universities 2019-24 and herewith also in the performance agreements of the public universities. This, f.i. leads to increased research and teaching activities in the field of digitalization. The Federal Ministry of Science, Research and Economy supports cooperation between institutions and regional policy makers by offering the **RIS3 KEY**[83] as an easy-to-use tool

82 https://www.bmlrt.gv.at/english/telecommunications-and-postal-services/broadband-office/broadband-strategy.html

83 https://era.gv.at/object/document/494, see also ÖROK (2016).

Table 8. Normative acts on national, regional and local levels regulating digitalization.

National level
Federal Ministry for Digitization and Economic Affairs: "Digital Strategy for Austria" https://www.bmdw.gv.at/en/Topics/Digitalisation/Strategy/Digital-Austria.html (EN) https://www.digitalaustria.gv.at/ Federal Ministry for Transport, Innovation and Technology: Broadband Strategy 2030 https://www.bmlrt.gv.at/english/telecommunications-and-postal-services/broadband-office/broadband-strategy.html (EN) „KMU Digital" - the Austrian Digitalization Initiative for SMEs: https://www.kmudigital.at/Content.Node/kampagnen/kmudigital/the-austrian-digitalization-initiative-for-smes.html (EN) Austrian e-Government Act https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_Austria_2018_vFINAL.pdf (EN) Austrian competence model for digital skills: „Digital Competence Framework for Austria - DigComp 2.2 AT" https://www.fit4internet.at/view/verstehen-das-modell/&lang=EN (N)
Regional (provincial) level[84]
Example for digitalization strategies of a province: "Guideline Digitization Upper Austria.": https://www.digitalregion.at/leitinitiative-digitalisierung/ (DE) State Government of the province of Upper Austria & Chamber of Commerce Upper Austria (2020): Programme "Digital Starter Upgrade" www.wko.at/service/ooe/innovation-technologie-digitalisierung/Programmdokument-DIGITAL-STARTER-UPGRADE_end.pdf (DE)
Local level

[84] In this DigiBEST egional analysis report, the „region" covered is the whole Republic of Austria. The term „regional level" in this table is understood as „provincial level", i.e. one of the nine provinces („Bundesländer") of Austria (Vienna, Lower Austria, Upper Austria, Burgenland, Styria, Salzburg, Carinthia, Tyrol, Vorarlberg).

Example for digitalization strategies: The strategy of the capital, Vienna: .”Digital Vienna” (“Digitales Wien”) https://digitales.wien.gv.at/site/digitale-agenda/ (DE)[85]

[85] Vienna, the capital of Austria, is a town, but also a province (Bundesland) of Austria.

6.2. Support instruments to promote SMEs digitalization

A program within the framework of ERDF[86] has been introduced in Austria to foster digitalization efforts ("*ERDF Programme Investments in Growth and Jobs Austria 2014-2010 – Operational Programme for the use of ERDF Funds*"). The Operational Program contributes to the achievement of certain elements of the Europe 2020 strategy in Austria.[87] EU funds are used to increase innovation and R&D activities in SMEs, including technology transfer and investment in R&D infrastructure. The program also supports SMEs in promoting their competitiveness through investments in innovation, energy efficiency and the use of renewable energies: More than 80% are attributable to R&D and innovation, Competitiveness of SMEs and Transition towards a low carbon economy. Concerning the funding priorities, the program focusses on four main priorities: Increasing the number of innovative SMEs, improving SMEs' competitiveness, increasing energy and resource efficiency in SMEs and sustainable integrated urban development. Main expected results (to be achieved by 2023) are an increase of R&D jobs in enterprises (+5%), an increase in the number of employees in technology centers (+10%), as well as an increase in the number of innovative (+3%) and 'frontrunner' enterprises (+5-8%). Also, the number of start-ups in technology-oriented and knowledge-intensive sectors (+3% p.a.) and of growing enterprises (+5% p.a.) as well as employment in production, knowledge-intensive services and tourism should be increased. Additionally, energy efficiency shall be increased (+5% p.a.) and the share an increase of energy efficiency (+5% p.a.) and the share of use of renewable energies in SMEs should rise to 13%.[88]

The overall goal of the Operational Program is to provoke a structural change in SMEs through high-quality, innovative and target group-oriented offers leading to positive effects on the productivity and profitability of organizations and thus securing employment. Measure Nr.

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86 https://www.bmlrt.gv.at/english/agriculture/european-structural-and-investment-funds/european-regional-development-fund-erdf.html

87 https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/europe/2014at16rfop001

88 https://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/europe/2014at16rfop001

9 (within Priority axis 2/Priority 3D) supports growth in companies. Its focus lies on operational investments in connection with growth phases of SMEs: Companies are supported in growing and adopting new technologies through: 1) Acquisition of new technologies for production and services; 2) expansive projects in the field of production and production-related services; 3) investments for new businesses or structure-improving business relocations; 4) investments for the production of new products and services. There shall be some significant improvements in the quality of operational services, embedded in innovative approaches.

The **Austrian digitalization strategy** focusses on the support of the economy with digital services, the creation of a digitalization-friendly environment to promote digital innovation as well as on expanded digital services for all citizens, f.i. via the online platform „oesterreich.vg.at“ and, since 2019, the (free) digital office app („Digitales Amt“).

Once having signed in at www.österreich.gv.at , administrative services like the **business service portal** (USP – Unternehmensserviceportal)[89] or the **portal of the revenue office** (Finanzonline) [90]as well as the **service platform “help.gv.at”**[91] can be accessed via single sign-on.

For entrepreneurs and start-ups, it is important that all necessary official channels are available electronically. These services are continually expanded.

As a special service for start-ups , the **registration of the new business** (85% thereof are sole proprietorships), the tax office registration, insurance registration with the social insurance agency (SVA – Sozialversicherungsanstalt) and the declaration according to the **New Business Support Foundation Act** (NeuFÖG – Neugründungsförderungsgesetz) can be initiated via the Business Service Portal (www.usp.gv.at) and electronically signed by mobile phone signature. Since 2018 also the entry of single person limited liability companies in the

[89] www.usp.gv.at

[90] https://finanzonline.bmf.gv.at/fon

[91] www.help.gv.at

commercial register (Firmenregister) can be initiated via the Business Service Portal. This ensures a speedy registration for most of Austrian newly founded enterprises. Also, the number of necessary government contacts can be substantially reduced.

Electronic payment for administrative procedures is possible. All contractual partners of the federal government are obliged to transfer invoices solely in electronically structured form via the Business Service Portal. Citizens as well as businesses can retrieve documents online in their electronic post box.

Furthermore, full text research across the Business Service Portal, the **Legal Information System** (RIS – Rechtsinformationssystem des Bundes) and the open government data platform (data.gv.at) enable the swift retrieval of information about official matters on desktops and mobile devices. Thus, the number of government contacts can be substantially reduced for start-ups as well as for established enterprises.

The market penetration of smartphones of 94% shows that it is increasingly important to offer as many e-government services as safely as possible for mobile devices. For businesses, the easy and one-stop access to e-government applications reduces administrative efforts.[92] Therefore, the topics of data protection and cybersecurity are of growing importance.

The introduction of the **mobile phone signature** („Handy-Signatur“) opens the opportunity to sign legally binding documents, invoices and contracts electronically. With the introduction of the „digitales amt app“ (digital office app) in 2019, it is now possible to use the mobile phone signature via this app. Also, **card-based citizen cards**, f.i. the Austrian social security card („e-card“) have been introduced nationwide.

Thus, citizens and businesses can be clearly identified when using digital official channels. Other important electronical services are the **proof of residency** (residence registration form) and the **Electronic Health Record** (ELGA Elektronische Gesundheitsakte)[93] which provides access to important health data for patients as well as health service providers. Also, the

[92] https://joinup.ec.europa.eu/sites/default/files/inline-files/eGovernment_in_Austria_2018_vFINAL.pdf

[93] http://www.elga.gv.at/en/about-elga/

submission of tax forms and **tax assessments** can be more time effective and faster via „FinanzOnline“.

Digitalization trends offer a great potential and new business opportunities for entrepreneurs and their companies. Therefore, a priority is also given to the inclusion of SME in the digital network. SMEs will be supported in the electronic monitoring of their production processes, in using the internet for e-commerce purposes and in developing digitalization strategies and putting them into practice.

SME Digital („KMU Digital”)[94] is the **Austrian Digitalization Initiative for SMEs of the** Austrian Federal Ministry of Digital and Economic Affairs in cooperation with the Austrian Economic Chambers (WKÖ – Wirtschaftskammer Österreich) and provides comprehensive support for these opportunities, specifically for small and medium-sized enterprises (SMEs). The program includes consulting services and financial support for investments in new technologies and digitalization. The program included a Status- and Potential Analysis as well as strategic consulting to develop their digitization strategy and training measures. So far, about 500 consultants have been trained and about 7000 applications for the program have been submitted. The SMEs were supported by **certified digitization consultants** (50% of the consulting fee paid by the state). Since Dec. 2019 the implementation module is offered. Companies receive funding for projects where they invest in their digital infrastructure. SME DIGITAL funds 30% of the investment in material and immaterial goods helping SMEs to take their first steps towards digital transformation. So far (Jan. 2021), 150 applications from companies have been made.

Currently the **pandemic** forces enterprises to focus on mobile working and home office. Nevertheless, the digital tools which are necessary are often not available in the companies. Therefore the Federal Ministry of Digitalization and Economic Affairs initiated the foundation of the **„Digital Team Austria“.**[95] This is a collaboration of enterprises of the

[94] https://www.kmudigital.at

[95] https://www.usp.gv.at/coronavirus/finanzielle-unterstuetzung-hilfestellungen/digital-team-oesterreich.html

digital sector on a voluntary basis. The participating companies offer digital services for SME for at least 3 months free of charge. This includes services in video conferencing, communication and cooperation, cyber-security, internet access and digital services for work, learning and everyday life.

To support the use of the Austrian competence model for digital skills, the **Digital Competence Framework for Austria - DigComp 2.2 AT**, the platform **„fit4internet**“ [96] has been established with the goal of raising digital skills by testing one's own competence level and as a tool to find suitable learning offers.

Support to SME is given not only through funding, but rather requires a network so that founders can establish partnerships. With the **„Jump Start“ Program**, the Federal Ministry for Digital and Economic Affairs together with the Austria Wirtschaftsservice (AWS) , strengthens young innovative companies by developing the service and competence portfolio of selectively chosen incubators and accelerators.[97]

[96] https://www.fit4internet.at/

[97] https://www.aws.at/fileadmin/user_upload/Downloads/Richtlinie/aws_JumpStart.pdf

7 Analysis and identification of good practices

In the context of the Programme, a "*good practice*" is defined as an initiative (e.g. methodologies, projects, processes, techniques) undertaken in one of the program's thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective.[98]

Table 10 presents two selected cases of good practice from Austria in order to give examples of programmes and instruments that have been implemented successfully.

The two selected cases are:

Digital Pro Bootcamps

The funding program Digital Pro Bootcamps aims to combat the IT skills shortage on the Austrian labour market

Location: Wien, Austria (Österreich) **Project:** DigiBEST

Digital Innovation Hubs (DIH)

Digital Innovation Hubs (DIH) support SMEs in surviving the digital change and realizing the innovation and growth potential that digitalization holds for them

Location: Wien, Austria (Österreich) **Project:** DigiBEST

[98] http://www.interregeurope.eu/help/glossary/

7.1 Digital Pro Bootcamps

The funding program Digital Pro Bootcamps aims to combat the IT skills shortage on the Austrian labor market

The "Digital Pro Bootcamps" program addresses the development of digital skills, the support of digital further training to master the challenges of advancing digitalization and the fight against the shortage of skilled workers.

Highly motivated specialists from Austrian companies are transformed into "digital professionals" during the learning phases (4-week bootcamps). They are enabled to understand complex interrelationships of digitization and practical problems. In addition to profound IT expertise and advanced digitalization skills on specific focal points of digitization, practical skills are the focus of the qualification. Companies use this learning format to support digital expertise in the company in order to ensure rapid and effective higher qualifications on a permanent basis and thus strengthening their digital competitiveness.

The strategic goals:

- To support companies in the systematic development and upgrading of existing research and innovation personnel.
- The intensification of knowledge transfer between universities or universities of applied sciences and companies, in both directions equally.

Operational goals:

- Increasing research, development and innovation competence in future-relevant
- Facilitating access to Research Technology Innovation & Digitalization qualification measures, especially by Austrian SMEs
- Establishing sustainable collaborations with higher education & research

Resources needed

Funding within first call (2018-2019): EUR 1.67 million (2 persons within the Austrian Research Promotion Agency (FFG) responsible for implementation of the call)

Funding within second call (2020): EUR 1 million (2 persons within the FFG responsible for implementation of the call)

Evidence of success

- EUR 1.67 million approved funding within first call
- Four funded Bootcamps within the first call, focusing on data science, data security and artificial intelligence
- 55 employees from 34 companies (including 16 SMEs) in the bootcamps with 11 scientific partners (high demand for the program itself)
- Combination of presence and online phases was a success

Difficulties encountered

Within the first call (pilot), the bootcamp had a duration of nine weeks. According to the feedback of the participating employees / companies, the duration of nine weeks was far too long. Therefore, the duration has been reduced to four weeks within the second call.

Potential for learning or transfer

SMEs in particular have to catch up with digitization. This applies above all to e-commerce, social media marketing and the use of cloud services. With the program Digital Pro Bootcamps, Austria implements targeted measures and grants to ensure that SMEs remain internationally competitive. This enables companies to rapidly further qualify their staff, carry out digitization initiatives and pursue the development of new technologies and products.

7.2 Digital Innovation Hubs (DIH)

Digital Innovation Hubs (DIH) support SMEs in surviving the digital change and realizing the innovation and growth potential that digitalization holds for them.

In order to support SMEs with digitization, several digital innovation hubs (DIH) were created in Austria. Each serves as a network of existing facilities (so-called "digital centers") that use their expertise and infrastructure to facilitate digital transformation process of SMEs. The national DIH program pursues the following goals with new interventions or by linking to existing measures:

- Mobilizing Austrian SMEs to actively participate in digital change in order to leverage productivity, innovation and value creation potential and to strengthen competitiveness
- Providing institutionalized access for SMEs to expertise and know-how on digitization as well as knowledge transfer to companies via further training measures
- Supporting digitization innovations in SMEs through access to infrastructure, opening up new business models, collaborative R&D and development of prototypes for digitization applications
- Improved integration of Austrian experts in European networks

Operational objectives:

- Large regional coverage. The majority of Austrian SMEs shall have a hub as the first point of contact in their direct surroundings
- Matching the content of the offer to regional needs. Consortia that focus on their offerings in one of the areas of artificial intelligence (AI), cyber security, data science, blockchain and 3D printing are particularly addressed
- Preparation of Austrian stakeholders for participation in corresponding European innovation hub initiatives

Resources needed

Funding for 1st call (2018/2019): EUR 3 Mio. (2 persons within FFG responsible for implementation of call)

For 2nd call (2020): EUR 4 Mio. (2 persons within FFG responsible for implementation of call)

For 3rd call (end of 2020): EUR 1 Mio. (funding for expansion of already existing hubs)

Evidence of success

3 out of the submitted 8 projects were recommended for funding in May 2019:

- DIH-Eastern Austria (Digital Innovation Hub - Lower Austria, Vienna, Burgenland)
- DiMaHub ("Digital Makers Hub")
- DIH West (Digital Innovation Hub West)

Total funding commitments: EUR 2.6 million

All hubs are currently in the construction phase.

In the meantime, the federal province of Carinthia has started its own “DIH South” (without federal funding), due to the success of the already funded DIHs.

Difficulties encountered

So far, there have not been any difficulties encountered. The demand for funding for digital innovation hubs was so high, that only 3 out of 8 submissions have been selected to get funding.

Potential for learning or transfer

A key success factor of the DIH program is the consideration of and collaboration with the federal provinces (regions). They know the needs of the SMEs in the region and collaborate with the regional higher education & research institutions. Consequently, the submissions are well coordinated and tailored to the needs of the region(s).

8 Finding and conclusions of the Digital Assessment Survey

This chapter presents the findings from the survey and conclusions drawn from these findings. The DigiBEST Austria project group and its network partners as well as start-up support networks distributed the link of this anonymous online-survey to young entrepreneurs and start-ups from November 2020 to January 2021. 252 persons viewed the link and 34 filled in questionnaire (at least partly).

Concerning the **sample structure**, most of the respondents are micro and small enterprises with up to 10 employees (80%). Almost two third of the participating enterprises have a turnover beyond € 100.000. Enterprises participating in the survey are from a wide spectrum of economic sectors. The ICT sector itself has not been included in the target group of this survey. The largest groups were consulting services, construction, the creativity sector, energy and the food sector. The companies are from all provinces of Austria.

Some results:

All participating SMEs and start-ups acknowledge the importance of digitalization for their enterprise and that the use of digital tools and solutions will promote their business activities.

The main benefits are seen in the acquisition of new clients (25%), in an increase of turnover/profit (15%). In an increase in their visibility on the market (10%) and their service quality for clients (13%).

Main internet connections already used in the companies are high speed broadband (50%), mobile connection (27%) and cable connection (19%).

Asked about their degree of satisfaction with their internet connection, the majority (75%) declares that the internet connection is sufficient for everyday business. 15% state that they would prefer a faster internet connection but think that this is too costly for them. 10% state that their internet connection is not sufficient for their everyday business. The reason for this is that the necessary infrastructure is lacking. No company, however, stated that an internet connection would be unimportant.

Digital technologies that already are mainly used in the companies are: wireless technologies as f.i. wi-fi (30%), databases (12%) and cloud computing (12%) and robotics (7%).

Which IT-solutions and IT-services are used by the responding companies? 22% use data storage (f.i. dropbox, One Drive, Google Docs), 22 % e-billing, 18% online solutions for services (e-sales), 15% direct marketing solutions (f.i. CRM). Approximately about one tenth of the enterprises uses search engine optimization (SEO) (f.i. MailChimp) respectively cloudcomputing.

Approx. 90% are planning to introduce new digital technologies, solutions or services over the next three years. A broad range of digital technologies has been mentioned here. Top of the list are security/scripting (19%), machine learning/artificial intelligence (13%), Big Data (8%) and Augmented Reality (8%).

Only few enterprises do not intend to introduce digital technologies at all because they consider these technologies not as necessary for their business activities or due to a lack of relevant information.

On the other hand, there exists a small group of enterprises with a broad range of existing or planned IT solutions and services. These could be used as cases of good practice and as testimonials in awareness activities.

A large majority of three out of four companies uses (free) public services' portals or public electronic tools – mainly digital signature (e-signature, handy-signature)(40%), public portals (i.e. www.oesterreich.gv.at) (44%) and the citizens card (Bürgerkarte) (17%). Only 3 enterprises stated that they do not know anything about these public portals and tools.

E-commerce services and internet for buying and selling goods and services are widely used among the participating enterprises (75%). Most often mentioned are online orders, reservations and bookings, e.g. through a shopping cart on the website of the enterprise.

Approx. one fifth of the companies sells and buys goods and services on an international basis.

The main reason that e-commerce is not used by companies seems to be the fact that there is no overall strategy for digitalization and e-commerce.

Three out of four companies use social media tools, mainly company websites, (micro)-blogs, social networks and search engines.

Only a few companies use digital security solutions, mainly for data protection for all devices, ongoing data backup, password protection and prevention of online attacks through antivirus systems and firewalls.

The results show a lack of companywide digitalization strategies. Half of the responding companies do not have such a strategy, and only 2 enterprises already have prepared such a strategy. About 40% mention that they are planning to develop a digitalization strategy within the next 3 years.

On the other hand, almost half of the answering enterprises indicate that their employees have digital skills above average (i.e. they use digital solutions for data exchange, bookkeeping, digital marketing and within their buying and sales departments, 30% assess the digital skills

as basic skills (e-main, internet search, social networks), 14% think that their employees are IT-experts.

What do SME and start-ups need to promote the digital transformation of their enterprise? In most cases they mention support programmes for employees and managers, tailor-made consulting and trainings as well as practical handbooks and leaflets. It has to be pointed out that only one enterprise needed no support at al.

In a nutshell: The results show that most companies are aware of the importance of digitalization for the future of the economy and of their industry and company as well. They also see benefits mainly in client acquisition, improvement of service quality and therefore in turnover and profit. A majority seems to be satisfied with existing internet connections for everyday business, but there seems to be a need for faster connections. There also exists a smaller group of companies with a broad range of existing (or at least planned) elaborated IT solutions and services and a need for faster connections. This of course is connected with the existence of an overall strategy for digitalization. These advanced companies could serve as testimonials and cases of good practice in awareness activities. They also could share their expertise and practical experiences in training programmes and networks focussed on digitalization.

The frequent use of public networks and (free) public electronic tools can be seen as comparative advantage for Austrian companies as Austria here is well above average (see DESI).

To further improve the awareness of the potential of digitalization and to promote the development of digitalization strategies on company level the focus of support measures should be on (free or subsidized) support programmes for employees as well as managers, on (subsidized) tailor-made IT-consulting as well as practice handbooks and the development of networks to exchange experiences. In addition, the need for ultra-broadband should be covered by financial funding.

9 Conclusions and recommendations

The findings from DESI, research reports and the DigiBESTt survey show that Austria has developed a strategic framework with quite a lot of different support programmes at country, regional and municipal level, organized by a broad range of different support institutions, often subsidized or free of charge. Although PR activities are frequent, SMEs often complain about a lack of information about relevant offers. The companies are well aware of the advantages and the (future) potential) of the introduction of IKT in their business. Nevertheless, SMEs and start-ups (except innovative, technology-orientated and IKT-start-ups) often use IKT technologies far less than bigger companies. A pronounced advantage lies in the broad range of e-government offers (portals and tools) which are widely used by companies and citizens. The infrastructure is quite well developed, with the exception of new generations of ultra-broadband. A further advantage lies in the broad range of educational training offers. It has to be taken into account that problems in the participation of unskilled workers in programmes to increase their digital competencies are enhanced by the fact that unskilled workers often also lack basic skills which are the prerequisite for effectively developing one's digital competencies.

Therefore, recommendations for future action focus on the following points:

- A broad range of programmes and activities fostering digitalization has been organized during the last years. Nevertheless, to **avoid a avoid "lock in" effect** (i.e. focus on improving previous generation of broadband). In future, activities should concentrate on the improvement of the infrastructure and further dissemination of **ultra-broadband.**
- An **overall digital strategy framework** (like now Digital Austria), should be further developed, focussing on **one-stop access** for interested parties, individual consulting to develop tailor-made measures, impact evaluation and accompanying monitoring of these programmes. An important point is to evaluate the impact of these measures

- In Austria, a group of (very) advanced start-ups and SMEs in the digital field 'already exists. These digital experts should be continuously included as **testimonials** to foster digital awareness and to build up networks.

Formatting:

Please, format your region research according the following rules:

(1) Text font: TIMES NEW ROMAN;

(2) Please keep references in the footnotes: 10pt. Examples on the references formatting see in the List of bibliography below;

(3) Text: 12pt, alignment: justified, line spacing: 1.15;

(4) Tables: Text: 11pt, alignment: justified, line spacing: 1.0;

(5) Do not use the first line, but include the spacing (6 tp) after the paragraphs;

(6) Endnotes are not welcomed; If you have the endnotes, please remake them into footnotes;

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(8) All graphs and diagrams should be referred to as figures and should be numbered consecutively in the text in Arabic numerals (e.g. Figure 1: Net staff salaries. Provide sources of figures (including *own authors' calculations*) in the form of footnotes if possible;

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Please, list names of documents and other sources of literature you have revised during your research, as well as provide internet links, if possible.

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