

SMART-SPACE –Deliverable D.T1.1.2 “SWOT analysis concerning the potential contribute of Digital Technologies for the economic growth, employment and investments in AS”



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D.T1.1.2 “SWOT analysis concerning the potential contribute of Digital Technologies for the economic growth, employment and investments in AS”

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1. Executive Summary

Within the SMART SPACE project, the activity AT1.1 is aimed to set the scene. It identifies main elements to strengthen the Industry 4.0 processes by SMEs in the AS. Particularly, specific themes, e.g. the alpine peculiarities, innovation processes, social challenges identified in the AS eco-system to meet Industry 4.0’s challenges, create employments and growth.

The Deliverable D.T1.1.2. “SWOT analysis concerning the potential contribute of Digital Technologies for the economic growth, employment and investments in AS” is based on 11 local SWOT analysis, that have been gathered in order to define an overall pictures to be considered for the economic growth, employment and investments in the Alpine area.

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3. Applied concept and approach

The Deliverable D.T1.1.2. “SWOT analysis concerning the potential contribute of Digital Technologies for the economic growth, employment and investments in AS forecasts the integration of local SWOT analysis”, provided by partners.

Local SWOT analysis define an overall picture to be considered for the economic growth, employment and investments in the Alpine Space.

Partners have received some guidelines to perform their SWOT analysis.

They have been told that the SWOT analysis performed by partners need to capitalize on existing studies and sources (such as regional Smart Specialization Strategies, EUSalp Strategy¹, regional Operational Programs ERDF 2014-20, Regional Innovation Scoreboards², Innobarometer³, Eurostat⁴, the Alpine Digital Agenda⁵, etc).

As for quantitative data, it has been recommended to prefer EU sources, since they are comparable, even if partners have been free use further sources, local, national, EU. Some suggestions possible

Some possible SWOT factors to be considered have been listed as guidelines:

- research & innovation investment, organization, policy; R&D expenditures
- availability of human capital
- public policies, both regional and national
- broadband connections
- significant geo-morphological features in regional area
- relevant demographics dynamics in your region
- consider regional strengths and weakness already mentioned in the Regional Innovation Scoreboard⁶
- a regional ID CARD with facts & figures is meant to help comparisons.

¹ Eusalp Eu Strategy, <http://www.alpine-region.eu/eusalp-eu-strategy-alpine-region>

² http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en

³ http://ec.europa.eu/growth/industry/innovation/facts-figures/innobarometer_en

⁴ <http://ec.europa.eu/eurostat/web/regions/overview>

⁵ The Alpine Digital Agenda, 2014,

http://www.alpconv.org/en/publications/alpine/Documents/Agenda_Digitale.pdf?AspxAutoDetectCookieSupport=1

⁶ http://ec.europa.eu/growth/industry/innovation/facts-figures/regional_en

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4. DETAILED REGIONAL SWOT ANALYSIS

4.1. Region Alsace⁷ (FRANCE)

Region name	GRAND EST (FR) – ALSACE
Area	8 280 km ²
Population	1 868 183 (Eurostat, 2015, provisional)
Population Density	225,6/ km ² (Eurostat, 2015)
% mountain territory	% (source Région)
% hill territory	
% plain territory	
Regional GDP per capita in € (source INSEE year 2014)	29 418 €
Global R&D Expenditure (GERD) (Eurostat, year 2013)	290€/inhabitant (1,3% of the regional GDP per capita)

⁷ Sources: 1) http://www.alsace.cci.fr/sites/default/files/chiffrescles2016_alsace.pdf, 2) http://www.region.alsace/sites/default/files/fichiers/economie/region_alsace-srdeii-v7.pdf, 3) http://www.adira.com/upload/documents/ADIRA/Presentation-Alsace_2016.pdf, 4) http://alsaeco.com/sites/default/files/statistiques_annuelles_numerique_2016.pdf

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<u>STRENGTHS</u>	<u>WEAKNESSES</u>
<ul style="list-style-type: none"> • Young population (30,5% less than 25 years) • Cross-border position: the region has a common border with 2 countries (Germany and Switzerland)- 200 kms of shared border • Share of its trade with the European Union and Switzerland much higher than for the other twelve other French regions. • Offering a wide range of general and vocational training, well distributed throughout its territory and closely linked to the needs of its sectors of activity and its businesses. (2 Universities, business school, engineering schools, arts and cultural schools...) • The Universities of Strasbourg (UNISTRA) and Haute-Alsace welcome a total of 73,000 students. International students represent 20% of the student population at the University of Strasbourg. Each year, students from over 150 countries come to study, making Strasbourg one of France's top city for international students. UNISTRA is ranked 3rd in term of foreign student integration (20% of total) • UNISTRA: 87th at the Shanghai Awards: 1st place in France and 19th in the world in chemistry 5th among French regions in terms of student enrolment • The industry accounts for 20.3% of the total added value of the territory, i.e. 6.5 points above the national average (2013). It is also the 4th region in France with the most industrial activity per km² (15.5 employees / km²). • 28.1% of total employment comes from industrial employment (Q1 2013) - 2nd industrial region. About 1/3 of the workforce employed in services • Presence of strong traditional networks: the agri-food industry, machinery and equipment, transport and chemistry-pharmacy are the 4 major sectors which constitute the pillars of the industry. • The third most industrialized region in France. More than 1,200 foreign-owned enterprises. First Region for number of industrial jobs under foreign control • The share of employment in the industrial sector is 23.8% in Alsace, compared to 21% on the national average. 	<ul style="list-style-type: none"> • Cloud Computing services remain marginal in Alsace, despite the technology credibility and maturity, the equipment and the quality of the offers of the hosts. While ADSL still predominates in 83% of optic fiber cable and its very high-speed low-cost bandwidth is only 1% since 2015 • 4.7% of exporters are primary exporters, i.e. companies trying to access to international markets for the first time. • Small and under-capitalized companies • Ageing production tools • Weak research in the private sector • Distance between R&D and decision centres • Weakness in the business services sector • 9 out of 10 establishments employ fewer than 10 employees in the digital field

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- Alsatian industry stands out for its diversification and economical balance.
- Develops specific areas of excellence: chemistry and biology
- SMEs are the main players in private research in Alsace (30% of private R & D expenditure compared with an average of 18% in France). In addition, Alsace benefits from a strong public research pole. 54.4% of R & D investment expenditure in relation to regional GDP
53 mixed laboratories associated with CNRS, 12 with INSERM and one with INRA. 9,300 people involved in R & D activities, including 5,200 researchers. 4 Nobel Prize winners (Pr Jean-Pierre SAUVAGE Nobel Prize in chemistry in 2016, Pr Martin KARPLUS Nobel Prize in Chemistry 2013, Pr Jules HOFFMANN Nobel Prize in Physiology and Medicine 2011, Pr Jean-Marie LEHN Nobel Prize in Chemistry 1987)
- 3rd French scientific centers and 3rd regional research center of the CNRS;
3rd in technological density (number of patents filed / labor force)
5th region for the application of European patents
5th for scientific density (number of publications / active population)
3rd in technological density (number of patents filed / active population)
- 2nd region in terms of attractiveness for foreign researchers (outside the Paris region)
- 247 patents registered in 2015
- 31% of company R & D spending is carried out by SMEs (The highest proportion of all French regions)
- At the national level, Alsace is the 10th region in terms of expenditure on Public and private research.
- Accessible and connected region: Road network with motorway network characterized by an important international transit flow; River network (1800 kilometres of waterways), 8 international airports. Developed railway network (TGV Est - 12 million passengers - Rhine TGV Rhin Rhone - 9 million passengers)
- Alsace alone contributes to 7% of total French exports: 1st region in terms of exports per capital; 5th exporting region in terms of value (excluding Ile-de-France) of exports; 72.2% of Alsatian exports are delivered to the countries of the European Union. In the first quarter of 2014, Alsatian exports represented

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<p>29.5 Billion €. The main exporting sectors are pharmaceuticals, machinery and equipment, chemicals and automotive.</p> <ul style="list-style-type: none"> • The consulting, engineering and training activities represent the 2nd employer of the digital sector. 	
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • Strategic positioning at the heart of Europe • Easily accessible from major European poles as well as on a wider international scale • 4th exporting region of France (Nearly 30 billion euros in 2013), thanks to Germany (28.33% of exports), but also thanks to networks with The Netherlands (7.9%) or Italy (7.3%). 45% of Alsatian industrial workers are employed in establishments of foreign investors. • Strasbourg is the 3th Financial center in France after Paris and Lyon. • Cooperation and synergies in the most diverse fields: economy, employment, training, culture, tourism, environment etc ... with neighbouring foreign regions • Strong ecosystem and networks for efficient intermediations between demand and offer: CCI (Industry and trade organism), competitiveness clusters, French Tech Alsace (Health Tech and IoT Manufacturing), and instruments (diagnosis Industry of Future) specially dedicated to digital transformation ... • The Alsatian digital sector is marked in 2016 by new hires and creation of positions (+ 7.3%). • Slight decrease in the number of small structures for establishments with between 10 and 49 employees (+0.6 points) in digital field. • Decrease in the number of structures with 0 staff in favour of larger establishments (-10%) 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • -2.7% for industrial employment between 2008 and 2012 • Increase of the population is about 0.15% between 2007-2012: lower than the national growth due to an unfavourable migration movement • Employment rate of 67.9%, lower than the objectives of the European Union (75%). • Low research and private development • A part of the industrial fabric exposed to the low labour costs countries (textile, automobile...) • Lack of talents in the digital economy, especially computers developers. Recruitment issue.

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4.2. Region AUSTRIA

Region name	AUSTRIA
Area	83.878,99 km ²
Population	8.772.865
Population Density	105 per km ²
% mountain territory	62,8%
% hill territory	-
% plain territory	37,2%
Regional GDP per capita in € (source ..., year YYYY)	€ 39.390 per capita (Statistik Austria, year 2015)

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • In Vienna, the attraction of international experts and international students that stay in the region has increased over the last years. Particularly the United Nations Headquarters in Vienna attract international experts, consultants and students that stay in and around Vienna. • Reliable and extensive network in the region, high mobility and knowledge exchange with other regions • The urge to modernize and adapt to global challenges facilitates the adoption of new and innovative concepts such as Smart Cities etc. 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • There is a “missing middle” (majority of enterprises is small sized) • Centralized state model, almost everything happens in Vienna • Public policies and governmental initiatives are complex and there is no central information base • Brain drain, attraction of mediocre students due to very low permission standards at university and huge influx of German students that were not accepted in German universities • Lack of ICT experts
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • Change people’s mentality/mindset • Opportunity of specialisation due to digitalization of low skilled work • Potential internationalisation 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • The public as well as SMEs fear the implementation of digital processes because they suspect job loss caused by digital automatisaton • Lack of digital education and ongoing training for everybody • Lack of consciousness regarding the fast progress of technologies, ongoing education necessary but not carried out

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4.3. Region Auvergne-Rhone-Alpes (FRANCE)

Region name	AUVERGNE-RHONE-ALPES (FR)
Area	69,711 km ²
Population	7,884,096 (Eurostat , 2015, provisional)
Population Density	114/km ² (Eurostat , 2015)
% mountain territory	67 % (source Région)
% hill territory	
% plain territory	
Regional GDP per capita in € (31,200€ source Eurostat , year 2013)
Global R&D Expenditure (GERD	833,70€/inhabitant (2,7% of the regional GDP per capita), Eurostat , year 2013

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Second Region for area (8% of the French territory), population (9,9% of the French population – 7th European rank), GDP and public & private R&D expenditures in value⁸ • Dynamism of the entrepreneurship (10,5% of French business creation in 2010), strong export (12% of the French exports) to Europe, trade surplus¹ • According the RIS 2016, relative strengths of the region compared to the EU28 are in EPO patent applications, Tertiary education attainment, and Innovative SMEs collaborating with others. Another strength is mentioned in the RIS 2016, in the trends graphs, exports of medium and high tech products. • High level research, in particular in the key-enabling technologies (KET)¹. Many renewed research centers (CEA, CNRS, INRIA...), technology transfer structures, and dynamic organizations & programs to promote industry: more than 30 competitiveness clusters. 	<ul style="list-style-type: none"> • According to the RIS 2016, relative weaknesses of the region are in Public R&D expenditures, Sales due to new product innovations, and Non-R&D innovation expenditures. • Private R&D expenditures insufficient compared to the economic fabric (1,7% of the GDP)³ • Discreet initiatives in tests, experiments and prototyping with substantiating tests tools and projects¹ • Lack of visibility, critical size and networking for the regional technological platforms¹ • Weakness of regional innovation actors to network and to participate in European funding H2020 projects as well as in the 7th PCRDT¹

⁸ POR FEDER FSE Rhône-Alpes 2014-2020

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<ul style="list-style-type: none"> • Lots of national funds for collaborative R&D between enterprises and research laboratories in Region (from 28% to 54% of national funds) • Large investments in promising industries (nanotechnology et nanoelectronics, biochemistry and health, green energies...) and in innovative traditional industries (motor, textile, building trade, food-processing industries...)¹ • High industrialization-rate region with a strong manufacturing vocation: 490 000 industrial jobs². Strength of industrial equipments. Many machine exports (special machines). 550 companies offering solutions for the industry of the future, 132 companies offering solutions for production control, 100 industrial robots companies, 126 robotics integrators, 70 additive fabrication companies for industry...² Also a lot of integrators in the territory. • Fifth region in Europe in scientific and technological on Industry of the Future topics⁵ • Second digital Region in France: 5200 enterprises and 90 000 jobs in 2017 Regional strength in industrial software (80% of the national offer)⁹, 1st larger digital cluster in Europe (500 members) • Third place in the European Union for its broadband penetration level (35%) and second in terms of penetration growth: funding for the roll-out of broadband as well as support from legislative measures¹⁰. National and regional policies to support the optical fiber 	<ul style="list-style-type: none"> • Even if the industrial jobs volume is important compared to the other French regions, Auvergne-Rhône-Alpes is an intermediary industrial weight in Europe (18% of job employment in the industry) • High increase of service industry which do not counterbalance the loss of industrial jobs¹ • Industry is mainly composed of very small and medium-sized enterprises, and not enough large-business (critical size, value-creating)¹¹ • Low growth of innovative companies: 50% of the innovative regional companies do not overtake the very small enterprise status after 8 years activity³ • Weakness of the private funding: only 6% of national venture capital funds and 8,4% of national investment capital funds. Too many private financing • Coordination between regional towns not always structured in the field of innovation • Low degree of international trade openness for innovative very small and medium-sized enterprises, and an insufficient positioning in high growth territories • Ranked 17th among the European Regions to attract foreign investments in the digital economy¹² • Exports are a low share of the turnover in digital companies (exports are 8,5% of the turnover)
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • Young and dynamic population • High proportion of R&D personnel and researchers in the region (13,9% of the national workforce)¹³ • The Region is at a meeting point, especially for goods transportation in Europe¹ • Transregional, transnational and transborder cooperations¹ 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • High proportion of subcontracting companies in Region, which is a threat in crisis periods (20% of the national companies, 6500 enterprises in all) • A part of the industrial fabric exposed to the low labour costs countries (textile, automobile...)

⁹ [INSEE and CCIR Rhône-Alpes](#)

¹⁰ [Alpine Digital Agenda](#)

¹¹ [Rhône-Alpes S3](#)

¹² [Observatory of the digital economy in Rhône-Alpes](#), Clust'R Numérique & E&Y

¹³ [Eurostat](#)

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<ul style="list-style-type: none">• High innovation and technological potential, including on KET 1• University center structuring (IDEX, ISITE)• Strong tools to support technology transfer including about 20 technological platforms which offer companies R&D and experimentation means• Good presence of Research & Innovation organizations (research centres, academia...), expertise, competences, funds and instruments• Strong ecosystem and networks for efficient intermediations between demand and offer: CCI (Industry and trade organism), competitiveness clusters, Lyon French Tech, French Tech in the Alps, French Tech Saint-Etienne, including organisations (ENE, Captronic, technical centres) and instruments (Plan PME, EOI Industry of Future) specially dedicated to digital transformation ...• Regional government policy for economic development, innovation and internationalisation focuses on 8 areas of excellence, including innovation in manufacturing and digital technologies (S3, POR, SRDEII). A Regional policy for the industry of the future and direct funds for companies.• Annual growth of 8% in employment in digital ⁹• National and regional policies focus on high-speed broadband: “Plan Auvergne Très Haut Débit”, “Strategic roadmap of the Auvergne Rhône-Alpes Region 2017-2021 European Silicon Valley”.• Strong investments in digital, 650M€ for 2017-2021: 220 m€ to connect the Region, 260m€ to create digital jobs, 170 m€ to create digital services. European campus of digital technologies¹⁴• Plenty of business meeting and fairs on manufacturing and digital such as SIDO, Industrie Lyon, AMM, IoT Planet, Salon du Progiciel, SIMODEC, Pollutec, Congrès Entreprise du Futur, 3D Print	<ul style="list-style-type: none">• Jobs losses within the industry sector, especially in those territories: Loire (mecanics, defence), Vallée de l’Arve (automobile subcontracting, screw-machining), Ain (plastics manufacturing) et Maurienne (metallurgy)¹• Main exports in Europe (60% of the exports)• R&D expenditures not enough valued in terms of innovation and in launch on the market of new products (rate of transformation)• Reluctance of some industrial clients (including from traditional industries) in front of the new production technologies, lack of maturity of the industry of the future market• Difficulties to establish the ROI of new solutions/organizations• Lack of means (human and material resources) of the industrial companies to communicate, make known and sell their products and services (specially to export)• Lack of training for new skills, including digital skills, necessaries to the industry of the future• Barriers to entry to the German market are tough to bring down for the regional industrial, because of the competition and culture.• Low international development of the ICT sector• Lack of talents in the digital economy, especially computers developers. Recruitment issue
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¹⁴ [Digital Roadmap Auvergne Rhône-Alpes 2017-2021](#)

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4.4. Region Baden Wuttemberg (DEUTSCHLAND)

Region name	Baden-Württemberg
Area	35.752 km ² ⁷
Population	10.879.618 (2015) ⁸
Population Density	305/km ²
% mountain territory	
% hill territory	
% plain territory	
Regional GDP per capita in € (source ..., year YYYY)	Source Eurostat, 20169) 41,200 €

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • Federal state with the highest industrial share in Germany and a major production location in Europe • Small and medium-sized enterprises are important actors in the overall economic innovation process. Around 11% of EU SME funds went to Baden-Württemberg. An important program of the federal government gives 25% of the funds to Baden-Württemberg. They can thus finance scientific activities in the run-up to development or implementation oriented R & D activities. • Universities, research institutes and the business sector are developing high-quality technologies, processes, services and innovative products, which can then also be produced and applied locally on the basis of well qualified employees and the narrow network of companies • Research-intensive economy • Dense network of universities, non-university and research institutes invest large amounts in the production of knowledge 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • Resource-poor industrial location (e.g. raw material, energy) • Lack of young professionals (professional and the academic sector) • In view of the intensified international competition, the frameworks of innovation policy must be further improved in order to maintain and further develop industrial production in the country. • Transfer of research results into industrial value-added processes
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4.5. Region Bavaria (DEUTSCHLAND)

Region name	BAVARIA (Germany)
Area	70,550 km ²
Population	12,843,514 (31 - 12 - 2015)
Population Density	182 / km ²
% mountain territory	10% (<i>estimated data</i>)
% hill territory	40% (<i>estimated data</i>)
% plain territory	50% (<i>estimated data</i>)
Regional GDP per capita in € (source statista.com, 2015)	42,800

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • According to Regional Innovation Scoreboard 2016, relative strengths compared to the EU28 are in Employment in knowledge-intensive industries, EPO patent applications, and Business R&D expenditures.¹⁵ • Various information platforms and services are in place giving background information on Industry 4.0 and Digital Technologies and also showing use cases¹⁶ • R&D-expenditures constitute a large proportion of the GDP in an international comparison (3.26% in 2013)¹⁷ • Germany is still considered as a centre of high technology and as one of the pioneers in implementing Industry 4.0 • In spite of progressing globalization, Germany covers comprehensive parts of the value chain within the innovation process. 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • Relative weaknesses are in Sales of new product innovations, Public R&D expenditures, and Innovative SMEs collaborating with others⁷ • Many small enterprises with low capital and innovation potential • Information platforms and services are rarely used, although they do exist. Companies ought to be approached directly. • Even though the average percentage of households with broadband connection is relatively high, digital divide is still a problem in mountainous and rural areas
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¹⁵ http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

¹⁶ <http://www.plattform-i40.de/I40/Navigation/EN/Home/home.html;jsessionid=846F51720E2C76CF019151EDD034D419>

¹⁷ https://www.ihk-muenchen.de/ihk/documents/Innovation/BIHK_FuE_in_Bayern_final.pdf

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<u>OPPORTUNITIES</u>	<u>THREATS</u>
<ul style="list-style-type: none">• According to the Regional Innovation Scoreboard 2016 Bavaria is an “Innovation Leader”• Broadband access is already available in over 90% of households and is rapidly expanded with funding from the government• Support of regional development by enhancing the infrastructure• Funding programs by the Bavarian government to support the implementation of digital technologies in SMEs, e.g. “Initiative Bayern Digital”¹⁸• Demographic dispersion can be handled relatively easy because the mountainous area which is most difficult to access is sparse	<ul style="list-style-type: none">• Innovation performance has decreased (-5%) compared to two years ago.⁷• Demographic aging and urbanization• Increasing number of damages due to extreme weather events• Smaller businesses lacking resources for implementation of new technologies• Outsourcing

¹⁸ <https://www.stmwi.bayern.de/digitalisierung/bayern-digital/>

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4.6. Region PACA (FRANCE)

Region name	Region Provence Alpes Côte d’Azur
Area	31 400 km ²
Population	4 953 675
Population Density	158 /km ²
% mountain territory	50%
% hill territory	20%
% plain territory	30%
Regional GDP per capita in € (source ..., year YYYY)	30 800

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • Quality of life, high added value • Many instruments to finance innovation • Well established innovation network • A number of dynamic start-ups on new emerging markets • Second French region for new business creation • A good resistance to crises 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • Inadequate linkages between research and industry (weak commercialization and exploitation of R&D results). • A low weight of industry in the regional economy (less than 10%) and few big leaders • A complex institutional context: multilayers territorial governance • Over-representation of SMEs • Capacity to bring research and innovation to market
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • SATT (Accelerating technology transfer) • Three times more of start- ups than in France • Emergence of metropolises • Strategic position in the Mediterranean Sea 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • Too many intermediaries • An increasing global competition • A cultural reluctance to open SMEs capital to third parties capital

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4.7. Region Lombardia (ITALIA)

Region name	LOMBARDIA (IT)
Area	23,864 km ²
Population	10,014,304 (30-09-2016)
Population Density	419,65 ab./km ²
% mountain territory	40.52%
% hill territory	12.28%
% plain territory	47.2%
Regional GDP per capita in € (source Eurostat, 2016 ¹⁹)	34,900 €

<u>STRENGTHS</u>	<u>WEAKNESSES</u>
<ul style="list-style-type: none"> • High quality of the public and private research system (among others, 13 educational institutions, 12 institutes of the National Research Council (CNR), 160 research and technology transfer centers, ...). • Stable regional system of research and innovation, made of RTD performer (university & private research centers), clusters, innovation poles, start-up incubators. • High differentiation and distribution of companies in the manufacturing and service sectors. The main manufacturing sectors are: mechanical, electronics, metallurgy, textiles, chemicals and petrochemicals, pharmaceuticals, food, publishing, footwear and furniture. • With 348,615 million euros, Lombardy is the fifth largest GDP among European regions (Eurostat, 2014 data) and represents one fifth of National GDP. The regional economic system is strongly oriented towards exports. 	<ul style="list-style-type: none"> • Low level of R&D expenditure (about 1,3% pf GPD) and R&D personnel (about 1,5% of the total personnel employed) compared to the most developed European Region and under the European average (R&D expenditure about 2%)²¹ • SMEs dominate the market (99% of the 80,286 manufacturing companies are SMEs). From a shareholding point of view are mostly family owned businesses with the exception of few very large firms. High fragmentation in micro enterprises • According to the Regional Innovation Scoreboard 2016, Relative weaknesses are in Innovative SMEs collaborating with others, Public R&D expenditures, and Tertiary education attainment • Low level of collaboration among academia, research and companies²²

¹⁹<http://ec.europa.eu/eurostat/news/themes-in-the-spotlight/regional-gdp>

²¹<http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database>

²² Smart Specialization Strategy (S3) Lombardia, http://www.agenziacoesione.gov.it/opencms/export/sites/dps/it/documentazione/S3/S3regionale/S3_Lombardia.pdf

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<ul style="list-style-type: none"> • The Lombardy region is the first manufacturing region in Italy in terms of turnover and added value and the third one in Europe concerning the number of employees, after Bayern and Baden-Württemberg. • The Lombard private R&D expenditure as a share of the total is the highest in the Italian economy (over 75% against a national average of 50%) • According to the Regional Innovation Scoreboard 2016, relative strengths compared to the EU28 are in Employment in knowledge-intensive industries, SMEs with marketing or organisational innovations, and SMEs innovating in-house • Regional government policy (S3)²⁰ defined “Advance Manufacturing” one of the Specialization area of Lombardy. 	<ul style="list-style-type: none"> • Even if the average percentage of households with broadband connection in 2016 was higher than 80% (EUROSTAT, 2016²³), digital divide is still a problem in mountain and rural areas
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • High industrialization-rate region with a strong manufacturing vocation, high diversification of the production system and strong industrial districts (16 industrial districts covering 302 municipalities in 10 provinces). • Lombardy Regional Government is investing in several innovative actions, focusing on Industry 4.0, Digital technologies, IoT, ... • Lombardy industry and research are present in numerous platforms/initiatives at European level such as, for instance: Manufacture, EFFRA-European factory of the Future Research Association, EuRobotics aisbi. • Considering the strong vocation for manufacturing of the Lombard territory, Regione Lombardia has identified the manufacturing industry as the priority for its policies, in keeping with prior policies. 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • According to the Regional Innovation Scoreboard 2016, Lombardia is a “Moderate Innovator” and innovation performance has decreased (-8%) compared to 2014. • Highly heterogeneous territory, as for geomorphological features (over 40% mountainous) and demographic dispersion • The regional economic system has not yet recovered the GDP levels reached before the outbreak of the crisis in 2008.

²⁰ [Smart Specialization strategy \(S3\) Lombardia, http://www.agenziacoesione.gov.it/opencms/export/sites/dps/it/documentazione/S3/S3regionale/S3_Lombardia.pdf](http://www.agenziacoesione.gov.it/opencms/export/sites/dps/it/documentazione/S3/S3regionale/S3_Lombardia.pdf)

²³ <http://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database>

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4.8. Region Piemonte (ITALIA)

Region name	PIEMONTE (IT)
Area	25,402 km ²
Population	4,646,251 (30-10-2012)
Population Density	180/km ²
% mountain territory	43.3%
% hill territory	30.3%
% plain territory	26.4%
Regional GDP per capita in € (source Eurostat, 2016 ²⁴)	27,700 €

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> Good presence of Research & Innovation organizations (research centers, academia, ...), expertise, competences (human capital) Stable regional system of research and innovation, made of RTD performer (university & private research centers), clusters, innovation poles, start-up incubators. Regional government policy (S3, POR) focused on innovation in manufacturing (Technology Platform “Fabbrica Intelligente”) According to the Regional Innovation Scoreboard 2016, relative strengths compared to the EU28 are in Employment in knowledge-intensive industries, SMEs with product or process innovations, exports of medium and high tech products and SMEs innovating in-house. 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> Even if the average percentage of households with broadband connection in 2015 was between 70 & 80% (EUROSTAT, 2015²⁵), digital divide is still a problem in mountain and rural areas According to the Regional Innovation Scoreboard 2016, relative weaknesses are in Public R&D expenditures, Tertiary education attainment, and Innovative SMEs collaborating with others
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²⁴<http://ec.europa.eu/eurostat/news/themes-in-the-spotlight/regional-gdp>

²⁵http://ec.europa.eu/eurostat/statistics-explained/images/5/53/Proportion_of_households_with_broadband_connections%2C_by_NUTS_2_regions%2C_2015_%28C2%B9%29_%28%25%29_RYB2016.Png

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<u>OPPORTUNITIES</u>	<u>THREATS</u>
<ul style="list-style-type: none">• High industrialization-rate region with a strong manufacturing vocation• Private R&D expenditure• According to the Regional Innovation Scoreboard 2016, Piemonte is a “Strong Innovator”. Innovation performance has decreased (-8%) compared to 2014.• Piedmont Regional Government has been investing in the last decades in several innovative actions, focusing on Open data, Internet of Things, Cloud computing e Business Process, Industry 4.0, ...• Piedmont S3 Strategy considers traditional industrial sectors as priority innovation areas. Aim of S3 is to transform and / or strengthen sectors of the Piedmont industrial tradition (Aerospace, Automotive, Green Chemistry/ Cleantech, Mechatronics, Made in Italy), using innovation as a tool²⁶	<ul style="list-style-type: none">• Highly heterogeneous territory, as for geomorphological features (over 40% mountainous) and demographic dispersion• Significant population ageing process (old-age-dependency ratio²⁷ in 2016 is 193,7)• Progressively reduced contribution to national GDP, made worse by the economical crisis• According to the Regional Innovation Scoreboard 2016, Piemonte is a Strong Innovator. Nevertheless, innovation performance has decreased (-8%) compared to 2014.

²⁶From the Piemonte S3 Strategy: “Obiettivo della S3 è trasformare e/o rafforzare i settori della tradizione industriale piemontese, usando l’innovazione come strumento per disegnare nuove traiettorie, nuovi saperi e valorizzare nuove competenze, rispondendo anche alle sfide che i cambiamenti della società impongono.
<http://www.regione.piemonte.it/parteneriato1420/dwd/S3piemonte.pdf>

²⁷The old-age-dependency ratio is the ratio of the number of elderly people at an age when they are generally economically inactive (i.e. aged 65 and over), compared to the number of people of working age (i.e. 15-64 years old).

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4.10. Region SLOVENIJA²⁸

Region name	Central Slovenia
Area	2.334
Population	535.375
Population Density	229,40
% mountain territory	60 %
% hill territory	42,3 %
% plain territory	33,4 %
Regional GDP per capita in € (source ..., year YYYY)	26.418 (SURS 2016)

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> Focus on promoting knowledge, creativity and innovation and concentration of Research and innovation organizations, government and nongovernment institutions (ADLUR²⁹) National government policy Slovenia’s Smart Specialisation Strategy S4 is focused on innovation and fast-growing industries Slovenia has also already identified three key field-specific strategies, namely the Research and Innovation Strategy of Slovenia 2011-2020 (RISS), Slovenian Industry Policy (SIP) and Digital Agenda Central Slovenian region has the densest population and is also the largest urban area in the country. It is also economically the strongest region. With constant connections and deep collaboration between policy makers, research institutions as well as SMEs and larger companies, 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> According to Strategy for Information Society Development until 2020 relative weaknesses are significant under-investment in the development of digital technologies in companies Insufficient political support and cooperation of stakeholders for implementation of actions and development of digital society. High cost of building broad-band infrastructure in a mountains and rural areas Some parts of population have lower digital and e-content skills Lagging behind in development of rural and peri-urban areas due to inadequate digital infrastructure. According to Digit Agenda³⁰ only 32% of Slovenian companies is seeking external partners (in EU 42%)
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²⁸ Source: Statistical office RS (SURS) 2016, <http://www.stat.si/dokument/8941/regije-v-stevilkah.pdf%20>

²⁹ ADLUR - Agreement for development Ljubljana Urban Region 2016-2019 <http://www.ruralur.si/sites/default/files/ruralur/DOGOVOR%20ZA%20RAZVOJ%20LUR%20 osnutek 15 12 2015.pdf>

³⁰ Digital agenda https://vrhgospodarstva.gzs.si/Portals/Portal-Vrhgospodarstva/Vsebine/novice-priponke/DigitAgenda_kratka_2016_v1_web.pdf

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<ul style="list-style-type: none"> • 85% of companies have digitalization on their priority list and more than 30% of companies invested 10% of their budgets for development of digital technologies and channels. • Regional government policy (Agreement for development Ljubljana urban region 2016-2019) focused on knowledge, innovation and creativity • A third of the population (25-64) had attained tertiary education, which is the highest among all regions. The registered unemployment rate (11.7%) was lower than the Slovenian average • Slovenia is ranked 9 in high tech and medium tech manufacturers according to the Global Innovation index. 	<ul style="list-style-type: none"> • Digitalization technologies in companies are not recognized as means for achievement of economic growth. Main reasons digitalization is not more successful are: inadequate understanding of digitalization in terms of advantages for economic growth. • A gap of 3000 experts in digitalization and ITK sectors is identified • Slovenia’s ranking in innovation capacity, which is strongly linked to digitalization, is decreasing according to Global innovation index.
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • According to the Eu Innovation Scoreboard 2016, Slovenia is a “Strong Innovator”. Innovation performance has increased (1,2%) compared to 2015. • According to ADLUR and Strategy for Information Society Development until 2020 opportunities are creation Slovenian digital coalition, which will connect economic, public administration and development research and development organization • Digitalization of economy, education, research and development, culture, creative industries and start-up companies. • New business model of development ICT and digitalization advantages (industry 4.0, e-commerce, peer-to-peer, sharing economy, internet of things). • Potential synergies of building a smart and broadband connections to all economic subject • Partnership with government and ICT sectors • Government support for investment in research and development (R&D) in a digitalization sector • High industrialization-rate statistical region with the highest GDP per capita in Slovenia • Modernization of school programs • According to Digit agenda one of main aims is raising the share of companies that have a digital strategy, from 25% to 45% (2018) 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • According to Strategy for Information Society Development until 2020³¹ threats are in misunderstanding of development advantages of digital society and insufficient political support for investments and ensuring proposed interest • Lack of interest of stakeholders to implement provided actions and take advantage of digitalization • According to Digit agenda 60% of companies are expecting that their sales will be reduced for 5 to 15% because of digitalization. • Outflow of experts to other countries • 88 % of companies expect that the knowledge and skills of employees need to be adapted because of digitization • The deterioration in the competitiveness of the economy. • According to the Digital Evolution Index (Fletcher School), Slovenia is on the middle of ranking (28th places), according to on progress on 38th. This is this is the country that which has slowly losing ground.

³¹ http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/Informacijska_druzba/pdf/DSi_Strategija_ID_2020_20150306.pdf

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OPPORTUNITIES

- Innovation can help industry develop resource-efficient processes and new recycling technologies to reduce the dependence on raw materials and fossil fuels while at the same time reducing emissions that affect emissions.
- Mobilizing all existing potential (e.g. more women in science and technology professions) in close dialogue with the social partners and to support the mobility of workers within Europe.
- Identification of measures that enable more SMEs to be integrated into the innovation process and to further increase the innovation activities of medium-sized enterprises.
- The entire value chain could be present from research and development to production in the country

THREATS

- Continuous intensification of the global innovation competition
- The BW key sectors (vehicle construction, mechanical engineering, electrical engineering and chemistry in particular) are largely dependent on imports of metals, special raw materials and fossil fuels from abroad. On average, about half of the total costs in the manufacturing industry are attributable to materials. Rising raw material and energy prices are detrimental to the domestic production competitiveness.
- The impact of climate measures in the agriculture and forestry sector, in the energy sector, in the leisure and business sectors, in the manufacturing industry.
- Conversion of the energy system to renewable sources of energy under a reliable framework
- General modernization and innovation pressure, (e.g. in buildings and power stations, in drive technology in vehicle construction or in sustainable global logistics processes)
- Without targeted countermeasures in the area of skilled labor recruitment, the demographic development would contribute to a massive intensification

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4.11. Region Salzburg (ÖSTERREICH)³²

Region name	Salzburg
Area	7156,03 km ²
Population	545.742 (01/01/2016)
Population Density	76 / km ²
% mountain territory	25,3%
% hill territory	
% plain territory	
Regional GDP per capita in € (source Statistik Austria, 2014)	45.200 €

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • In proportion to its size, a characteristic feature of Salzburg is its very well-developed institutional research landscape: with several universities, its university of applied sciences and its university of education, alongside a number of non-university research establishments, it presents a robust foundation for science and research in this region. • There is much innovation among the relatively small number of companies who are permanently engaged in research, and among Salzburg’s industry and its leading companies. This contributes substantially to export and, in cooperation with other companies in terms of professional services, to regional value-creation – in some instances these firms are highly active in introducing new patents. 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • Yet as a whole, compared to other regions, the structures for science and research are still rather heterogeneous in their orientation and there is no explicit technical university in Salzburg. In recent years, certain individual areas of activity have undergone consistent expansion, significantly strengthening these areas and leading to visibility beyond the region boundaries and to international recognition. • All in all, there is a below-average level of research and innovation in the region’s corporate sector: this is attributable to the region-specific industry structures in non-technology areas and to the large number of small business enterprises. • It can be difficult to find appropriate commercial real estate in Salzburg, land prices are among the highest in Austria.
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³² All relevant data can be found in: Science and Innovation Strategy Salzburg 2025; Government Department 1 – Economic Affairs, Tourism and Municipalities, represented by Dr. R. Scharfetter; Government Department 2 – Culture, Education and Society (www.salzburg.gv.at/wiss)

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<ul style="list-style-type: none"> It is appropriate to single out a relatively large and dynamic creative-industries sector, strongly based upon Salzburg’s prowess in social sciences and cultural studies, and providing impetus to other economic sectors. 	
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> In Austria-wide comparison, Salzburg records a research ratio (R&D ratio) that is markedly below the average. Yet as a whole, private business contributes more than half of research expenditure in the State of Salzburg. Especially among SMEs, there is still potential here for raising the level of research and innovation activities. A feature of Salzburg is a modest level of dynamism in new-business formation in knowledge-intensive and technology-intensive business areas, accompanied by an above-average proportion of self-employed people in terms of the Austria-wide comparison. There are good prospects for success with newly-founded companies, especially at the interfaces between technology-based disciplines such as ICT, life sciences, materials science, etc.) and the creative economy (interactive media, design). The rather modest dimensions of Salzburg’s research structures offer advantages in comparison to larger economic locations, flexibility, good dockability for companies – getting them set up locally and operational – as well as short lines of communication and good personal contacts. 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> Despite the extension of Salzburg’s research and science sector, so far only sub-areas have recorded success in integrating science into the regional economic structures, thereby strengthening the regional innovation system. Salzburg’s research landscape in the university and non-university sector tends to be small in structure (as does the region business sector), distributed across various scientific establishments or specialist areas, with only few technical areas or areas close to business activities. Often the R&D institutions lack personnel resources, both for the transfer of knowledge and technology and for forcing the pace in applied research. The scientific areas in Salzburg with recognizable potential for business (e.g. wood, construction, materials research, ICT, life-sciences, medicine, etc.) – some of them being extended only recently – do not find themselves to be accompanied by large leading industries or small-to-medium-sized companies that provide major impetus, acting as the driving force for areas of emphasis in research, such as is the case in other industrial regions. The knowledge transfer into the heterogeneous and small-structured business sectors requires a regionally-adapted approach. Salzburg has a high tourism intensity, is well known for music and the arts and is therefore often not considered an economic region with innovative businesses and industrial activity. Salzburg has a particularly low unemployment rate which can lead to difficulties in finding (highly trained) personnel.

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4.12. Region Veneto (ITALY)

Region name	VENETO
Area	18,407.0 (Eurostat 2015)
Population	4,915,123 (Eurostat 2015)
Population Density	267.4/km ² (Eurostat 2015)
% mountain territory	29%
% hill territory	14%
% plain territory	57%
Regional GDP per capita in € (source Statistik Austria, 2014)	30.800 € (Eurostat 2015)

<p><u>STRENGTHS</u></p> <ul style="list-style-type: none"> • Employment rate above the national average although hit by the global crisis • High adaptability to markets; • Good entrepreneurial spirit; • High presence of industrial clusters and innovative networks; • Good technological equipment • Process and incremental innovation 	<p><u>WEAKNESSES</u></p> <ul style="list-style-type: none"> • High female unemployment rate • Lack of a management culture • Low investment in R & D; • Low breakthrough innovation; • Modest organizational innovation; • Lack of "finance for innovation" by private; • Undercapitalization of the companies; • Lack of strong relationships among business and research
<p><u>OPPORTUNITIES</u></p> <ul style="list-style-type: none"> • Recognised products quality in the global markets; • Dematerialization of products; • New opportunities for the Veneto trade goods offered by fast-growing emerging economies • Presence of infrastructures and digital services such as broadband and cloud computing 	<p><u>THREATS</u></p> <ul style="list-style-type: none"> • Lack of research/enterprise collaboration; • Absence of a metropolitan hub to aggregate quality services; • Loss of competitiveness; • Reduction of the opportunities for high-skilled jobs and jobs with high remuneration; • Mistrust of companies and families due to the economic situation and the fiscal policy; • Less new companies created