OP 3.1.2

Local and trans-national SWOT analysis

CENTRAL EUROPE Programme 2007 – 2013

PRIORITY 1: Facilitating innovation across Central Europe

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Summary	A local SWOT (Strengths, Weaknesses, Opportunities, and Threats) and trans-national SWOT analysis: focus on clinics, SMEs, R&D institutions and other health care stakeholders.

LP: Bayern Innovativ GmbH/ Forum MedTech Pharma e.V.

Introduction:
In the EU there is an innovation emergency http://www.euractiv.com/en/innovation/coming-rescue-eus-innovation-emergency-analysis-502020. On ten of twelve comparable indicators, the US is ahead of Europe and China is catching up fast. The Innovation Union Scoreboard also compares performance between the 27 EU Member States as well as Croatia, Serbia, Turkey, Iceland, the Former Yugoslav Republic of Macedonia, Norway and Switzerland, based on 25 research and innovation-related indicators (3 Groups: "Enablers", "Firm activities" and "Outputs"). The Commission is asking Member States to ensure that their Europe 2020 National Reform Programmes build on the strengths identified in the Scoreboard and address the weaknesses. Please find more information on the European Innovation Union and on the Innovation Union Scoreboard following the links http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=action-points and http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index_en.htm .

1. Local SWOT analysis:

- **Healthcare market Germany**

Strengths:

- Very good knowledge base in relevant key technologies
- Well established and differentiated R&D infrastructure
- Actually good availability of high potential employees
- Knowledge transfer is fuelled by high start-up dynamics
- Effective network and cluster activities
- High R&D efforts (especially in big companies)
- High percentage of innovative products and high quality products
- Competitive industrial base with access to big export markets (especially with big companies)
- high market share in Germany

Weaknesses:

- R&D strategies focussed on technical development
- Innovation politics often not coordinated (among others: fragmented research funding)
- in certain areas network of innovation stakeholders unsatisfying (among others: integration of SME`s, patient-orientation)
- minor risk-/investment readiness of industrial stakeholders (especially SME`s, venture capital) hinders the adoption of technologies
- legal/political framework: among others minor stability, high regulation density along with minor applicableness
- duration and transparency of reimbursement procedure
- growth dynamics of home market

Opportunities:

- high technological knowledge (among others: patents, publications)
- expand existing R&D infrastructure (among others: patenting process, application of already existing research funding instruments)

- enhancement of interdisciplinarity (among others: academic education, specialisation on funding research)
- qualitatively improvement of interface between policy, science, economy and market
- increasing importance of private economic stakeholder in home market (among others: private clinics, public-private partnership)
- understanding health as a growing market (among others: emerging markets, demographic change)

Threats:

- bottleneck of high qualified employees in the future
- increasing competitive pressure (e.g. from the USA, Asia) and decreasing market share in world trade
- piling-up of orders/investment-backlog in public health organisations of home market (among others: clinics, hospitals)
- cost pressure within the healthcare systems of many established industrialized countries

source: "Innovation in medical technologies – challenges for R&D, healthcare and economic politics"; German Bundestag, report of the commission for education, research and technology assessment (18. commission, 25.11.2010)

- ***Upper Bavarian clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.***

As described in OP 3.3.1 a & b there are hospitals of all 4 care levels in Upper Bavaria. Their strengths in relation to innovation have as well been described, please find contact data there.

Strengths:

- Very intense cooperation between university hospitals and other healthcare stakeholders (e.g. with "big" industry, r&d institutions, politics, healthcare organisations)
- Many clinics are certified and have a quality management system
- High degree of consolidation processes; e.g. fusion of the 5 Munich community hospitals led to Städtisches Klinikum München Ltd.
- Specialist clinics are available in the big metropolitan areas
- Private-public networks (ambulant, in-patient care at hospitals) and cooperation of hospitals in rural areas
- Various approaches for innovation-/technology transfer
- Part of a big healthcare market, especially in the European Metropolitan Region Munich EMM
- Resources for application of new, innovative and expensive MedTech products
- High degree of process optimisation within hospitals; strategic departments available for project management
- Well educated employees
- Very good variety of healthcare services for the inhabitants of Upper Bavaria
- Outsourcing of services which are not hospital core function

Weaknesses:

- Still too many municipal clinics in rural areas (in Bavaria more than in other federal states of Germany), period of hospitalisation too long, hospitals - especially in rural areas - aren`t filled to capacity

- Municipal hospitals have to save a part of their income (4,2% of annual turnover) for the pension of their employees
- Most employees working in the hospitals are educated in municipal hospitals
- German bed capacity is bigger than the average of other European countries (60%); bed capacity in Bavaria is smaller than the German average
- Innovation management system still not introduced regionwide, even within university hospitals; it is just applicable for the hospital itself
- Innovation transfer to SMEs not happening due to missing trust in their abilities and capacities
- Coordination of technology transfer is still not process optimized (e.g. bottleneck BayPat)
- MedTech innovations need high skilled personnel and higher cost for maintenance

Opportunities:

- Competition of hospitals leads to chain-formation, growth of privately owned hospital chains and cooperation-networks in rural areas; this leads to a better organization of healthcare services and resources
- Better organization of healthcare processes: shorter hospitalization, better pre- and post-hospitalization (ambulant services, rehabilitation)
- Introduction of eHealth systems will save hospitals time and money for the benefit of the patients
- holding on to the hightech strategy of German Government during depression
- Upper Bavarian politicians are aware of the healthcare situation and coordinate their support wisely; awareness of demographic development
- Easier funding of investment planned for 2011 (facilitated NUBs)
- Introduction of the innovation transfer system of IntraMED-C2C could generate a fund for reinvestment in innovation
- Municipal hospitals educate the hospital staff of the future: they can choose the best fitting ones for their clinics; if this staff decides to be ambulant physicians they can transfer their patients to the hospital they were educated
- Involvement in cooperation projects (e.g. eHealth region Upper Bavaria, excellence cluster M^4) will promote technology transfer

Threats:

- Piling up of orders / investment backlog (= innovation backlog) due to healthcare-political reasons (actually 20-30 billion €)
- High cost pressure in healthcare system (DRG) leads to distinction for the same treatment/services between public and private insured patients: private patients are over-, public patients are under-treated
- Too many physicians in metropolitan regions, too little in rural areas
- Demographic change will lead to a cost explosion in the hospitals due to the more intensive care necessary; staff has to be hired and educated
- Decrease of well educated employees
- Unclear political and legal framework; no planning security for the hospital management
- decrease of public funding
- Bankruptcy of many small, public owned or rural hospitals

The biggest hospitals can be found in the big Upper Bavarian cities like the European Metropolitan Region Munich (EMM) with about 5,5 million people (among others: 2 university hospitals, the municipal hospital of Munich), region Regensburg with almost 670.000 people (among others the university hospital of Regensburg), Augsburg with

263.000 inhabitants (among others: the central clinic) and the region Ingolstadt with 500.000 people (among others: municipal hospital) to name only a few. In the big

cities the scientific and economic infrastructure is very good. The EMM attracted among others: the headquarters of the Fraunhofer Society, 12 Max-Planck-Institutes, the German research centre for environmental health, European and German patent office, medical and health services of TÜV Süd product service GmbH, the German heart centre, the German Air and Space Association. The innovation network is thus very intense. Big companies like General Electric built their european R&D centre near Munich, the headquarters of Siemens is located at Munich as well. Pharmaceutical companies like Bristol-Myers Squibb, GlaxoSmithKline, Baxter and Merck Sharp & Dohme are as well present. Many clinical trials are run and coordinated by the study centres of the university hospitals.

A promising attempt to overcome the innovation transfer gap between clinics and companies is the exemplary model at MIMED (Institute for Micro-Technology and Medical Device Engineering of the Technical University Munich at Garching). Here students and scientists work under a realistic regulatory framework of a medical-product manufacturer in the context of their training activity. For this purpose MIMED is certified through ISO 9001 and ISO 13485 and is a producer of medical products. This certification facilitates the development of innovative medical equipment – not only in cooperation with enterprises, but directly by students or research assistants. So students get familiar with the tasks and responsibilities of medical-product manufacturers, in order to simplify the transition from concept to product.

In the EMM both university clinics (LMU & TUM) and the German research centre for environmental health are renowned for their activities in mechatronics, minimal-invasive technologies, computer-aided methods, processing devices and e-health (e.g. Cluster mechatronics & automation, MIMED http://www.cluster-ma.de/en/mitglieder/mitgliederliste/mimed/index.html). Regensburg is known for its e-Health competence centre and its centre for applied biomedicine (eg. eHealth competence centre Regensburg http://www.eh-cc.de/ , international centre for telemedicine http://www.uniklinikum-regensburg.de/kliniken-institute/unfallchirurgie/Forschung/ICT International Center for Telemedicine/index.php ; BioPark Regensburg http://www.bioregio-regensburg.de/index2.php?mid=11&lang=en).

In June 2009 the Bavarian cabinet has granted the construction of 20 new hospitals with a total sum of 260 million Euros. This is an increase of 100 million Euros in comparison to 2008. It shows the high status the Bavarian government admits to healthcare. Another priority for the Bavarian government within this grant is the support of the hospitals to realize their need for new medical treatment and MedTech devices. Innovation transfer in the sense of our project should also be included in this grant.

The smaller clinics are found in the rural areas. The demographic change will probably lead to a specialization of these clinics or to a better cooperation or networking with local rural ambulant physicians (“Health-Networks” as UGOM http://www.ugom.de/k/ugom_/page-ugom-1-folder.html) in order to streamline cost and effectiveness. The cooperation of clinics across the border will also enhance (among others: cooperation of German Oberallgäu clinics with the Austrian Kleinwalsertal region; cooperation of the Ostallgäu clinics with the Reutte clinic in Austria http://www.fachklinik-enzensberg.de/se_data/_filebank/aktuelles/unbenannt1/az_reutte.pdf .

Another healthcare tendency can be found by looking at the public hospitals with their initiatives to build ambulatory healthcare centres (e.g. MVZ Oberallgäu

http://www.mvz-immenstadt.de/index.shtml?entstehung) with different medical specialists working together at one place using the same human resources and sharing the equipment. On the other hand there is the model of the private for-profit hospitals where patients are treated in a local hospital with the telemetric support of specialists consulted via telehealth (e.g. philosophy of Rhön-clinics or the traumanetwork Munich-Upper Bavaria South http://www.klinikum.uni-muenchen.de/de/Pressestelle/Pressemeldungen/101214Traumanetzwerk/index.html .

By accelerating and funding the introduction of AAL devices at rural hospitals Government could also support them.

- ***SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.***

Strengths:

- Upper Bavaria has a very good R&D and economic infrastructure and the international reputation as a hightech location (business incubators, vc companies, high-tech clusters); this attracts MedTech global players as well as SMEs
- More than 60% of the German MedTech products are produced in Bavaria
- There are about 250 Bavarian MedTech companies, most of them SMEs, 33% of them located in the EMM
- High rate of involvements in MedTech networks and branch organisations (Forum MedTech Pharma, SPECTARIS, IHK)
- Home market: Big hospitals as target market attract MedTech (r&d and sales) companies
- Highest rates of patent applications in Germany
- High export rate of MedTech products
- Well educated staff due to the universities and r&d institutes of EMM; staff can interchange between SMEs and global players guaranteeing knowledge-transfer
- About 10% of turnover is re-invested in r&d
- Suppliers for big MedTech companies (Siemens, GE)

Weaknesses:

- Can`t afford introduction of an innovative MedTech product into the market due to regulatory and legal framework
- No satisfying access to information on public funding
- Can`t survive time-to-market without a longer funding
- Missing r&d departments; they have to cooperate with companies with R&D department, r&D institutes or universities if they want to develop a new product; otherwise the time-to-market would be even longer
- Not experienced enough to handle an innovation project on their own
- Very little access to clinics; few ideas for new products stem directly from there
- Missing acceptance by the universities and clinics due to their size
- Copying products that are already present in the market; therefore no innovative products appear
- Can`t pay high wages of well educated staff
- They are afraid of r&d cooperation projects because of the unforeseen risks

- Too specialised, focussing on their small market niche
- Too little coordination between the healthcare stakeholders
- Too much focussed on technology, too little on end-user preferences (patients; keyword open design/innovation)
- Decreasing risk investment

Opportunities:

- Stronger efforts in cooperation with r&d institutions experienced with public funding should accelerate their access to new innovative products
- Sharpening their senses for and facilitating their access to public funding could lead to overcome their reservations about funding
- Education on IP generate new patentable products
- Integration of SMEs in networks/cluster
- Reducing legal and formal obstacles (MPG, NUBs) would also lower their reservations about funding

Threats:

- Development of healthcare policy, political and regulatory framework not foreseeable
- Long lasting and intransparent refinancing of their investment in innovative products
- Persisting depression; decreasing funding of Government for public health leads to a decrease in German healthcare market
- Decrease in well educated staff
- Big companies buying SMEs

In Bavaria about 600.000 people are already working in the biggest and most developing branch of industry, the healthcare sector. The annual turnover is about 40 Billion Euros for healthcare in Bavaria. The MedTech industry is one of the main components for this success. There are about 250 MedTech companies in Bavaria, most of them SME`s. Bavaria forms part of Germany's MedTech sector, and that, in turn, is number two in the world - after that of the USA. Germany's MedTech sector has a workforce totalling nearly 150,000. More than half of its sales stem from products which are younger than three years old.
Bavaria's MedTech workforce - nearly 20,000 - accounts for some 20% of the German MedTech total. These highly-qualified staff members turn out more than 60% of Germany's electronics-based MT devices and some 30% of its products as a whole. Some 70% of the sales recorded by Bavaria's MedTech sector stem from abroad.
In the EMM region 50% of the MedTech companies have less than 20 employees. Due to the big hospitals as a target market there are many sales branches of international companies, e.g. MED-EL: headquarters Innsbruck, Austria, sales branch Starnberg, 40 employees
http://www.medel.com/de/show/index/id/368/title/Deutschland . The products (cochlear implants) are developed by clinical research at Munich universities (TUM, LMU) supported by Governmental grants. The inventions are certified for MED-EL Austria by the Munich TÜV Süd Product Service GmbH. About 11% of the Bavarian MedTech companies are located in the city of Munich, 22% outside of Munich within the EMM. Compared to the German MedTech companies this means 1,6% in the city of Munich, and 3% outside of Munich within the EMM. Many companies of the health care sector can be found at the pages of Bayern International http://www.bayern-international.de/en/business-in-bavaria/key-technologies-in-bavaria/extendet-search.html .

Forum MedTech Pharma is permanently in contact with more than 600 of its members in 13 countries via newsletters, at conferences, seminars and workshops. Most of them are MedTech companies, but also R&D institutions and health care companies or health policy actors located in Bavaria. Please find the list of members following the link http://www.medtech-pharma.de/english/members/members.aspx . The decision makers can be addressed personally e.g. to invite them to the planned project workshops. One problem is their lack of time and the motivation to join in the project. The promotion of our project will raise publicity and may help to overcome this problem. A strategy for a motivation scheme has to be discussed at Linz at the second project meeting.

SME`s benefit from the big companies because they can act as suppliers for them. Additionally they can feed niches which big companies are not interested in. The problem is that they have no or little access to the clinics themselves (the access problems will be addressed later in the project).

One approach could be joint projects together with the big companies and the hospitals to raise the awareness and confidence of the hospitals and the big companies in the SME`s. In these joint projects they can prove their abilities.

Another approach: the usual way of innovation transfer from non-university clinics to companies is by addressing the sales representatives in the hospitals or the r&d/product management directly at trade fairs or conferences. If the medical inventors would make an agreement with the companies that, if they do not proceed with their ideas within one year`s time, the inventors can address SME`s by their own. This could be supported by the project workshops to be implemented later in this project. The big companies as well do have lots of non-proceeded ideas or even patented medical inventions in stock. These could be presented to SME`s in project workshops as well. The project partners could moderate both sorts of workshops. Further discussion on that topic has to be done at the 2nd PP-meeting at Linz.

Due to the very good R&D and economic infrastructure and the international reputation as a hightech location of Upper Bavaria well educated staff is available. People can decide between working for big companies or small ones. If a company closes down their staff is welcomed at their former competitors. For that reason knowledge can be disseminated worldwide very easily.

Negative framework factors are for example that the time-to-market takes too long. Additionally SME`s must disburse 192.000 € of legal fees to obtain and maintain a patent protection for all 27 member states. A unified EU patent is highly welcomed. It would cost only 4.400 € for a protection of the same duration in the USA (source: EPO). Too little venture capital is also available.

- ***Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.***

Strengths:

- Excellent international standard: high education of r&d staff due to the excellent universities in the EMM
- Many different r&d institutions and r&d departments of companies are located in Upper Bavaria

- Attraction of scientists from abroad due to economic reasons and leisure time possibilities
- International cooperations
- Well organized and experienced in public funding
- Supported or totally financed by governmental funding
- Good interchange of basic and industrial researchers (e.g. professors working in clinics and in r&d institutions simultaneously)
- High rate of patent applications
- High rate of business incubators promoting scientists to company founders
- Different initiatives of EMM support innovative scientists willing to launch a company
- Big international trade fairs in Munich; presentation of innovative ideas/products to a worldwide publicity is possible
- State of Bavaria supports various research consortia in the medical sector

Weaknesses:

- Public r&d institutes generate basic knowledge, that has to be screened for innovative product ideas
- Too little focussed on industrial approach of product development and usability
- Little cooperation with SMEs
- Fast leaving scientists export knowledge which is missing afterwards in the r&d departments/institutions
- If the project is no longer financed the scientists have to look for a new job/area of research

Opportunities:

- Integration in hightech clusters are a better access for them for they are coordinated and more research driven
- Using EU networks for finding new cooperation projects/partners will stimulate innovation transfer; same for finding German projects/partners
- Consequent implementation of German hightech strategy: better governmental r&d coordination will lead to a better funding due to innovation union

Threats:

- Dependent on governmental funding and legal framework/regulations
- If the Governmental strategy and industrial project partners are too much product oriented basic research is neglected
- Well educated scientists export knowledge to other countries
- Higher investment in research by other countries
- Decreasing generation of funding due to economic depression

EU 3%-target before 2020 (Lisbon strategy on European spending for R&D): R&D intensity, measured as GERD (Gross Expenditure on Research & Development) as % of GDP, is one of the core indicators to assess the research or technological potential of a country or region. It can be used to make international or inter-regional comparisons. It was shown that **Upper Bavaria** ranked place 5 with 4,6% (*GERD as of GDP* EU27 mean 1,9%). Due to the sheer economic size of some leading regions, the leading regions in terms of *absolute R&D investment* are different from those in terms of *R&D intensity*. Île de France, **Upper Bavaria** and

Stuttgart have remained among the top three from 1995 to 2003 (GERD EU27 total 178,850.1 Mio. €; Île de France 12,499.2 Mio. € respecting 7,0%; **Upper Bavaria 6,362.0 Mio. €** respecting 3,6%; Stuttgart 5,189.1 Mio. €).
Business sector R&D expenditures: **Upper Bavaria** ranked place 4 with 3,7% (*GERD as of % GDP* EU27 mean 1,2%). *B(usiness)ERD* EU27 total 114,039.1 Mio. € respecting 100%; Île de France 8,533.4 Mio. € respecting 7,5%; **Upper Bavaria 5,082.6 Mio €** respecting 4,5%; Stuttgart 4,700.4 Mio. € respecting 4,1%.
Public sector R&D expenditures *G(overnmental)ERD and H(igher education)ERD*: **Upper Bavaria 1,280.0 Mio. €**.
There are 77,898 researchers working in the Île de France region; 33,808 researchers working in **Upper Bavaria** and 30,774 researchers working in the Stuttgart region. Their output in terms of patents were 757 for Stuttgart and 747 for **Upper Bavaria**. Best performed Noord-Brabant in the Netherlands. In terms of publications: Île de France 23,193 and **Upper Bavaria** 8,917.
Source: http://ec.europa.eu/invest-in-research/pdf/download_en/kf2008.pdf 2009

Healthcare and MedTech comprises of different disciplines. Most of them are present in Upper Bavaria. The exchange of information is facilitated and supported by the Bavarian Ministries via the leading-edge clusters of the high-tech initiative (e.g. EMM personalized medizin http://www.m4.de/). The education of first-class researchers is guaranteed by the renowned Universities LMU, TUM and in Regensburg. The attraction of highly skilled researchers is as well secured by the facts previously described. In 2009 12.641 Bavarian inventors applied for a patent meaning 26,4% of German patent applications in 2009. This leading role of Bavaria is decisively due to the EMM.

Apart from the university R&D there are several Fraunhofer- and Max-Planck-Institutes and the German research centre for environmental medicine in the EMM. DLR (Germany's Aerospace Agency), Institute of Robotics and Mechatronics, Oberpfaffenhofen http://www.dlr.de/rm/en/ ; Linked with ZIMT and TUM, ITEM GmbH (Center for Innovation in Therapeutic Medical Technologies), Garching, Helmholtz Zentrum München - German Research Center for Environmental Health. Please find an overview of technology transfer centres and initiatives following the link http://www.muenchen.ihk.de/mike/ihk_geschaeftsfelder/innovation/Anhaenge/Technologietransfer-in-Oberbayern.pdf .

There are many start-up`s generated by R&D institutions and accompanied by business incubators (e.g. Trion Pharma http://www.trionpharma.de/ of Helmholtz Zentrum Munich / Ascenion http://www.ascenion.de/en/homepage.html ). The Munich Business Plan Competition for example is supporting innovative start-up`s (e.g. SurgicEye http://www.surgiceye.com/ from the MRI of TUM). EMM supports start-up`s by letting them cheap space to work in at technology and business incubator centres (e.g. gate center of technology and incubation in Garching http://www.en.gategarching.de/). Many VC companies are present in the EMM. Big trade fairs like Analytica, Automatica and Forum Life Sciences can be utilized by the start-up`s to promote their innovations. The same is possible at renowned conferences.
The state of Bavaria also provides support to a large number of research consortia. These are comprised of scientists from a wide variety of fields, and of companies. These consortia include: BAVARIAN RESEARCH COOPERATION FOR ADULT NEURONAL STEM CELLS (FORNeurocell II)
http://www.bayfor.org/en/portfolio/research-cooperations/world-of-

living/forneurocell2.html ; BAVARIAN RESEARCH COOPERATION FOR INFECTION PROTECTION BY MEANS OF NEW DIAGNOSTIC AND THERAPEUTIC METHODS

(FORPROTECT) http://www.bayfor.org/en/portfolio/research-cooperations/world-of-living/forprotect.html ; BAVARIAN RESEARCH COOPERATION FOR CELL-BASED REGENERATION OF THE MUSCULOSKELETAL SYSTEM IN OLD AGE (FORZEBRA) http://www.bayfor.org/de/geschaeftsbereiche/forschungsverbuende/welt-des-lebens/forzebra.html .

The R&D departments of multinational companies are also found in EMM (e.g. General Electric http://ge.geglobalresearch.com/locations/munich-germany/).

- ***Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.***

Strengths:

- The German health care system is one of the best in the world; this results from the cooperation and communication of all healthcare stakeholders
- All citizens have to be health insured; one can decide to have a private or governmental one; there are about 160 health insurances in Germany from which to choose; they administer the money for the Government
- Governmental strategy: reducing cost of healthcare system by declining numbers of hospitals, specialisation and coordination of services in hospitals, increasing basic charges for patients
- High Governmental manpower: three departments taking care of all healthcare stakeholders; awareness of need to promote innovation transfer

Weaknesses:

- All insured treatments in a given country are available for all EU patients; that is why there is such a strong European legal and regulatory framework for refinancing innovations
- Lobbying instead of constructive development of a common healthcare strategy
- Missing cooperation between the three Governmental departments
- Focus on high-tech treatment
- Governmental concerted action plan on the German Healthcare System not yet completely finalised

Opportunities:

- A common strategy for the coordination of the 3 Governmental departments is about to be implemented
- Patients: the paradigm of the German healthcare system is about to change; personal health is more and more seen as a value which doesn`t come for free (prevention, paying (more) for a special treatment)
- By specialisation and cooperation of hospitals and an increased use of telemedicine more patients can be treated in a given time
- EU-standards help streamline healthcare processes in the different countries
- Cluster initiatives and -enforcements will make the local stakeholders work more cooperative and coordinated
- New approaches like personalized medicine, AAL, eHealth and other will take the pressure off the healthcare system

Threats:

- Demographic development: due to high costs the excellent German healthcare system has to be adopted to realistic features
- Development of global economy unclear
- Lobbying of the big companies could adversely affect SMEs interests

Germany is said to have the best health care systems in the world. Please find a short description and an overview following the link http://www.howtogermany.com/pages/healthinsurance.html or http://www.bpb.de/themen/X9C5R7,0,Gesundheitspolitik.html . An overview of German health care companies can be found at http://www.cecu.de/gesetzliche-krankenkassen.html .

In Upper Bavaria the medical service of the healthcare insurances is helping to coordinate healthcare stakeholders (patients needs, ambulant and hospital physicians, rehabilitation means, MedTech companies and healthcare insurances) aiming to streamline time, effort and cost http://www.mdk-bayern.de/clients/mdk_bayern/webcms/CMS2Content.nsf/content/startseite_mdk_bayern_wir_ueber_uns_portrait.html?Open . An in-depth information system of the Federal Health Monitoring can be found following the link http://www.gbe-bund.de/gbe10/abrechnung.prc_abr_test_logon?p_uid=gast&p_aid=4711&p_sprache=E&p_knoten=TR700

PP3: Health-Technology Cluster, Clusterland Upper-Austria

Local SWOT analysis about the region of Upper-Austria, including the four target groups:

- ***Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.***
- ***SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.***
- ***Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.***
- ***Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.***

Strengths:

- A huge number of small innovative companies
- Excellent health care system (hospital concentration/frequency, unsurances)
- Excellent location development (TMG)
- Low unemployment rate in Austria
- 26 % of Austria´s application for a patent in Upper Austria
- Advancement of innovative R&D projects
- High quality products in niche markets
- Political support – Life Science Initiative – Cluster structure
- Excellent education system: education in medical technology

- Component suppliers
- Good Infrastructure, geografical position is central in EU, straight access to the New EU-East-Countries
- Advancement of Start-Up companies

Weaknesses:

- Barely OEMs
- Such a small country is not interesting as headquarter for big companies
- Expensive production location with high labour costs
- No university hospital, no medical university
- Clinics are little specialized
- High hospital frequency: perhaps hospitals have to be closed in the metropolitan area
- Heterogeneity of the Life Sciences in Upper Austria
- Synergy of the single industry sectors still rather unused
- Difficult for companies to set up new markets
- Huge number of regulations

Opportunities:

- Location attractiveness is gradable
- Many projects could be reached by connecting economy with medical university
- Co-operation with other strong life science regions
- More innovations through concrete technology transfer

Threats:

- Discounter from far east
- Lack of experts
- Consolidation of the medical technology market
- Competition between medical technology regions for advancements
- Health care system in current complexity still achievable?

PP4: TIS innovation park, Italy

Healthcare in Italy

Strengths:

- Italy has an affordable healthcare system
- high standard of medical assistance
- Italian doctors are well-trained
- private hospitals are comparable with any throughout the world
- Well established and differentiated R&D infrastructure
- High percentage of innovative products and high quality products

Weaknesses:

- Some state hospitals in Italy that are substandard, providing a comfort level below what most Northern Europeans and Americans would expect.
- Long waiting lists for visits and long response time to the needs of citizens
- Cooperation with industry and SMEs not motivated
- Innovation politics often not coordinated
- Bad coordination among stakeholders on trans regional level

Opportunities:

- Development of innovation culture within the clinics
- Transparent motivation scheme for innovative achievements
- Establishment of long –term business connections with industry and SMEs
- High technological knowledge
- Expand existing R&D infrastructure
- Increase importance of national collaboration
- More high qualified employees
- Increasing competitiveness for the Italian Companies in comparison with World market
- Identifying of alternative Business Models

Threats:

- Cost pressure within the healthcare systems of many established industrialized countries
- Reorganize Healthcare deliver with the support of ICT
- Less money for R&D
- Cost reducement for Healthcare System
- Demographic change will require more services with less in Budget

Local SWOT analysis:

- ***South Tyrolean Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.***

Strengths:

- Well qualified personnel
- Up-to-date therapeutic and laboratory equipment
- Existence of specialist hospitals focusing on a specific medical discipline
- Centralized Health Care management by one public Health Agency
- High service standard
- higher flexibility a stronger customer orientation

Weaknesses:

- Lack of detailed formal regulations concerning medical technology transfer to business
- Different Platforms within the hospitals
- Not a unique patient management system
- Different Booking Systems
- Unawareness among employees of possibilities to cooperate with enterprises
- Lack of employee incentive programs (fiscal and non-fiscal) to undertake cooperation with enterprises

Opportunities:

- Access to scientific and R&D institutions
- Use of funds under various programs supporting medical technology transfer
- Establishment of long –term business connections with industry and SMEs
- Opportunity to establish an eHealth Cluster within the region
- Specialization of private and public clinics
- More ambulatory Health care centers

Threats:

- Focusing mostly on cooperation with companies regarding infrastructure development and Patient management System
- Lack of University Hospitals
- Lack of general procedures regarding implementation of medical technology in business
- Differentiation in developmental potential between public and private hospitals
- Demographic change will require more services with less in Budget
- Decrease of well educated employees
- Public employees are enforced to have an bi-lingual degree in Italian and German

South Tyrolean SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

The economy in South Tyrol is mostly not structured centrally and composed of small and very small enterprises

- 92% with less than 10 employees
- 80% not more than 5 employes
- 40% only 1 employe

Strengths:

- Meeting point between German and Italian culture
- A bridging function between the Italian and Middle European market
- Well informed about Trends in the World
- Investment availability
- Low unemployment rate in South Tyrol
- Good quality products in some specific markets
- Good education system.
- Component suppliers
- High quality of life
- Public funding focused on R&D activities

Weaknesses:

- Problems with recruiting of high educated human capital
- Long distances with between client and stakeholder
- Small number of high-tech “pioneer” businesses with a high degree of innovation activities
- Innovation mostly occasionally, not continuously
- Such a small country is not interesting as headquarter for big companies
- Expensive production location with high labor costs
- No university hospital, no medical university
- Synergy of the single industry sectors still rather unused
- Difficult for companies to set up new markets
- Innovation I limited to single individuals

Opportunities:

- Changing into a science based economic reality
- Innovation in products and development of services
- Attract new market segments by means of long-term strategies
- Location attractiveness
- More innovations through concrete technology transfer
- Education on IP generate new patentable products

- Integration of SMEs in networks/cluster
- Development of an appropriate business environment
- Practicable instruments for getting a better understanding of innovation processes

Threats:

- Only limited accessibility of the territory
- 3 languages: German, Italian and Ladin
- The innovation output in the past was under the OECD level and the research and development investments were under the national level
- Lack of experts and decrease in well educated staff
- Competition between medical technology regions for advancements
- Development of healthcare policy, political and regulatory framework not foreseeable
- Low market flexibility

Globalization and internationalization tendencies imply new challenges for small and medium-sized enterprises (SMEs), which are either facing the pressure to achieve short-term profits, or have to attract new market segments by means of long-term strategies. This trend raises the question of growth perspectives of SMEs and their future development. The paper gives an insight into selected growth theories, entrepreneurship and SMEs, firm competencies, core competencies and the wellbeing of entrepreneurs as a growth indicator. The majority of SMEs are run by the family and characterized by low growth rates or even stagnation, and relatively low market entry and qualification barriers.

South Tyrolean Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- Mostly co-financed by the Region
- Good scientific quality
- Up-to-date equipment and well-equipped laboratories
- Long- term international research cooperation

Weaknesses:

- Lack of cooperation with SME's
- Lack of mechanisms stimulating search of cooperation possibilities with SME's
- Lack of commercialization of research results
- Overgrowth of administration and bureaucracy which has a negative impact on the functioning of institutions and cooperation with external partners
- Very young Institutions with less experience
- No engineering faculty at the local university

Opportunities:

- Opportunity to cooperate with business-related institutions
- Exploitation of research results for transfer of technology to companies and clinics
- Engagement of their capacities for regional development and employment
- Development of new cutting edge research fields in long-term cooperation with clinics
- Support in providing patents, know-how and technologies
- Premiums for the specialization of doctoral candidate and for degree dissertations
- High involvement in national projects
- High involvement in EU projects

Threats:

- Shortage of high skilled human capital
- Lacking coordination of institutions supporting and fostering innovation
- High costs of living
- Unutilized optimisation potential of R&D institutions

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.

Strengths:

- South Tyrol as an Autonomous Province has the financial and legislative political primary power
- High priority of the health issues in policy makers and government
- Centralized governed healthcare system
- Awareness of the need to establish local strategies for technology transfer
- Support by local funding strategies
- Department of Innovation, Research and Development
- Spending power on the population

Weaknesses:

- Lack of established strategy implementation plans
- Lack of study result implementation and commercialization
- Bureaucratic barrier which has a negative impact on the functioning of institutions and cooperation with external partners

Opportunities:

- Support and development of company cooperation's, competence centers, clusters and networks
- Joint activities together with economic associations, institutes, organizations and universities
- Implementation of an regional innovation system
- Development of business systems and economic structures
- Promotion of human capital in the field of research and innovation
- Governance and public measures

Threats:

- Reorganization of Health care System
- Reduction of national contributions for local Government (Health 1/3 of overall budget – main cuts will be done here)
- Weak cross regional cooperation

PP5: Lower Silesian Voivodeship, Poland

Local SWOT analysis:

- ***Clinics/hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.***

Strengths:

- Topic concerns almost everybody's life
- Highly educated medical personnel continuing professional education and ongoing improvement of job skills
- Up-to-date therapeutic and laboratory equipment
- Good contacts to stakeholders existing in the region - specialist in hospitals are focusing on a specific medical discipline
- Experience in project management of hospital units, diagnosis and provision of a variety of services
- New topic for media representatives, Participation in conferences, discussion groups and congresses meeting various business representatives

Weaknesses:

- High complexity of the content
- There are no standards for transfer of medical technology to business
- Few facts and figures about cooperation of hospitals and business in Lower Silesia
- Unawareness among employees of patent protection translates into a lack of patents at hospitals in LSV
- Lack of regulation according to cooperation with enterprises
- Poor financial condition of hospitals in LSV
- Dealing with publicity of Central Europe programme

Opportunities:

- Providing new and sound facts concerning the innovation background with opportunity to cooperate with Parks of Technology
- Access to scientific community and R&D institutions representaed by Institute of Immunology and Experimental Therapy – Polish Academy of Sciences
- Use of funds under various
- New initiative which help the innovation transfer in medical sector with programs supporting medical technology transfer
- Offering sustainable solutions

Threats:

- Reluctance of target groups, esp. groups of beneficiaries with focus on cooperation
- Missing, changed or delayed results because of no success in medical technology transfer
- Relatively short project duration relating to PR and dissemination activities
- Lack of procedures according to implementation of medical technology in business

SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- Knowledge of current trends in economy and organizational innovations
- Sensitivity to market changes
- Experience in implementation of innovative products and services
- Staff experience

Weaknesses:

- small teams in small enterprises
- Preferences for promotion and marketing instead of research

- Lack of cooperation with research institutions
- Focusing on new client rather than on new product

Opportunities:

- Opportunity to receive funds for personnel development and education
- Opportunity to activate Parks of Technology
- Support with public aid for small and medium enterprises
- Opportunities to promote innovative achievements on the Internet and other media interested in business-related matters

Threats:

- Competition of big business
- Different policy regulations depending on company organization

Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- Highly educated personnel
- Well-equipped laboratories
- Experience in obtaining research grants
- Permanent access to knowledge databases,
- Experience in cooperation with international R&D institutions

Weaknesses:

- No experience in cooperation with small and medium enterprises
- Lack of innovation process understanding

Opportunities:

- Opportunity to be a part of innovative community
- Collaboration with International R&D institutions and cooperation with business-related institutions

Threats:

- Lack of tradition in cooperation with SME
- Legal regulations that block flexibility of R&D institutions

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups

Strengths:

- Influence of local strategies on technology transfer
- Technology transfer as a source of saving
- Impact on the society and other relevant groups with respect to cooperation

Weaknesses:

- Lack of understanding of innovation and strategy implementation
- Negative political impact on cooperation

Opportunities:

- Opportunity to receive support from national institutions
- Chances for cooperation with media
- Promotion of technology transfer As a local policy

Threats:

- Individual interest groups may lobbing about different regulations
- Political groups and National Health Fund may change their point of view

Trans-national SWOT analysis:

- ***Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.***

Strengths:

- International cooperation support of share medical knowledge and experience with partners
- It allows to increase an Experience in various sectors of medicine and healthcare

Weaknesses:

- Different hospital strategies depending on the region and the country
- Language barrier
- Different organizational structures
- Different forms of financing

Opportunities:

- Opportunity for market growth
- Enhancing of international networks
- Better possibility of funds

Threats:

- No legal regulations for international cooperation

SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- Economy based on knowledge
- Global Market and the needs of customers
- Experienced personnel implementation of innovative products and services

Weaknesses:

- Personnel migration
- Different language and culture
- Different economical situation

Opportunities:

- Creation of attractive market
- ICT can develop international cooperation

Threats:

- Time consuming process and patience is needed

Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- High educated staff
- Knowledge and modern equipment of laboratories

Weaknesses:

- Market in particular countries
- Commercialization problems

Opportunities:

- Wide EU Cooperation
- Promotion of innovation
- Participation in international research programs and projects

Threats:

- Economical situation

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.

Strengths:

- interest in improving the quality of treatment

Weaknesses:

- Different regulations
- Insurance companies and political groups have different strategies

Opportunities:

- Increase of treatment quality
- improving the economic situation

Threats:

- Frequent changes in national found strategy

PP6: The John Paul II Hospital, Poland

Local SWOT analysis:

- ***Clinics/hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.***

Strengths:

- Highly qualified personnel continuing professional education combined with ongoing improvement of job skills
- Up-to-date therapeutic and laboratory equipment
- Existence of specialist hospitals focusing on a specific medical discipline
- Orientation on diagnosis and provision of a variety of services in a strictly defined medical area
- Existence of administrative units specialized in project management at hospitals and procurement of funds
- Participation in conferences, discussion groups and congresses meeting various business representatives

Weaknesses:

- Lack of detailed formal regulations concerning medical technology transfer to business
- Non uniform infrastructure of hospitals in Malopolska
- Unawareness among employees of possibilities to cooperate with enterprises
- Unawareness among employees of patent protection translates into a lack of patents at hospitals in Malopolska
- Lack of employee incentive programs (fiscal and non-fiscal) to undertake cooperation with enterprises
- Non-uniformity regarding financial situation at hospitals in Malopolska

Opportunities:

- Opportunity to cooperate with clusters in Malopolska – „Polish Medicine: South-East" Cluster, Interregional Cluster of Innovative Technologies „MINATECH" and LifeScience Cluster Krakow – comprising also small and medium enterprises as members
- Development of the existing hospital networks such as „Pain Free Hospitals"
- Access to scientific and R&D institutions
- Use of funds under various programs supporting medical technology transfer

Threats:

- Focusing only on cooperation with business regarding standardization of medical services and infrastructure development
- Discouragement and fear of defeat because of no success so far and tradition of medical technology transfer
- Lack of general procedures regarding implementation of medical technology in business
- Differentiation in developmental potential between public and private hospitals

SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- Knowledge of current trends in economy
- Competitiveness
- Responsiveness to market changes
- Finding a market niche that can create financial gain
- Experience in implementing innovative products and services
- Goal orientation
- Staff experience

Weaknesses:

- Lack of research teams in small enterprises
- Susceptibility to changes in macroeconomic market conditions
- Allocation of large funds for promotion and marketing instead of research
- Lack of tradition in cooperation with research institutions
- Augmented employee fluctuation
- Focusing on new client procurement rather than product and service development

Opportunities:

- Opportunity to receive funds for personnel development and education
- Opportunity to cooperate with clusters in Malopolska – „Polish Medicine: South-East" Cluster, Interregional Cluster of Innovative Technologies „MINATECH" and LifeScience Cluster Krakow – comprising also hospital as members
- Opportunity to cooperate with business-related institutions that suport entrepreneur initiatives – The Medical Technology Transfer Center and The Technology Park Ltd., Center for Innovation, Technology Transfer and Jagiellonian University Development, Krakow Technology Park, Jagiellonian Center for Innovation Ltd., Malopolska Regional Development Agency
- Public aid for small and medium enterprises
- Local support for the development of competition
- Opportunities to promote innovative achievements on the Internet and other media interested in business-related matters

Threats:

- Absorption by big business
- Variability of macroeconomic factors and trends in economy
- Different company organization policy depending on internal regulations
- Problems relating to terms and conditions of cooperation between R&D institutions and hospitals stemming from different legal and formal regulations in these organizations

Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- Highly qualified personnel
- Up-to-date equipment and well-equipped laboratories
- Opportunity to obtain study grants
- Permanent access to knowledge, current achievements and study results
- Close cooperation with international R&D institutions
- Ongoing development and improvement of study outcomes

Weaknesses:

- Lack of cooperation with small and medium enterprises
- Lack of mechanisms stimulating search of cooperation possibilities with small and medium enterprises
- Lack of commercialization of research results
- Overgrowth of administration and bureaucracy which has a negative impact on the functioning of institutions and cooperation with external partners

- Lack of system for young scientist promotion and support

Opportunities:

- Opportunity to join clusters in Malopolska, research consortia and organizations of R&D and enterprises
- Platform for Exchange and collaboration with International R&D institutions
- Opportunity to cooperate with business-related institutions
- Opportunity to obtain external funds for commercialization of research results
- Chance to test study results and solutions and offer niche products and services that would not be realized because of a lack of research teams

Threats:

- Lack of simplifications in legal regulations that block flexibility of R&D institutions
- Unawareness of R&D potential in the society
- Resistance to implementation of study results in external environment which is regarded as abstract and unprofitable
- Lack of influential media interest in local research achievements which are reported in professional literature and do not reach enterprises

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups

Strengths:

- Awareness of the need to establish local strategies for technology transfer
- Promotion of innovation and cooperation as part of technology transfer
- Decision-making and impact on the society and other groups with respect to cooperation

Weaknesses:

- Lack of established strategy implementation
- Lack of study result implementation and commercialization
- Bureaucratic barrier which has a negative impact on the functioning of institutions and cooperation with external partners
- Enforcement of political party's interests
- Terms of office in local government – short-term (4 years) thinking and acting; lack of political continuity

Opportunities:

- Gaining support from national institutions
- Procurement of funds for local initiatives relating to technology transfer
- Opportunity to address all groups of interest and modify their attitudes
- Chances of close cooperation with media
- Opportunity to create local policy regarding promotion of technology transfer

Threats:

- Local initiatives may be ignored by the government
- Distrust in the society towards political groups and National Health Fund
- Lobbing about regulations that favor individual interest groups
- After floods devastating Malopolska in 2011 technology transfer funds were reallocated for more urgent needs i.e. compensation for the loss, road reconstruction, modification of anti-flood infrastructure

Trans-national SWOT analysis:

Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.

Strengths:

- Highly qualified personnel ready to share medical knowledge and experience with international partners
- Promotion of medical achievements at international conferences and congresses
- Experience in various sectors of medicine and healthcare
- High level of hospital specialization

Weaknesses:

- Uneven development in hospitals depending on the region and the country
- Different goals and hospital development strategies
- Language barrier among employees
- Different organizational structures and different financing forms at hospitals

Opportunities:

- Opportunity to base on experience in project implementation
- Establishing international networks of cooperation and improving the existing ones
- Procurement of funds from European sources

Threats:

- Changes in the relevant EU legislation may have a negative impact on further development of the existing networks
- Local legislation and legal regulations or their lack may have a negative impact on the existing networks

SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- Knowledge of current trends in the economy
- Competitiveness and creation of brands recognized all over the world
- Flexible approach to the market and the needs of customers
- Finding a niche market as a chance for financial gain
- Experience in implementation of innovative products and services
- Experienced personnel

Weaknesses:

- Susceptibility to macroeconomic factors
- Increased personnel fluctuation
- Different organizational culture in small and medium enterprises
- Linguistic barrier
- Differences in personnel salary, company gain and strategic goals

Opportunities:

- Following the creation of attractive economic zones, small and medium enterprises may dynamically cooperate with international partners
- Wide access to the Internet and electronic data transmission provide a chance to further develop international cooperation with enterprises

Threats:

- Different currencies in the EU may have a negative impact on cooperation
- Crisis in the EU had a negative effect on individual economies, which is reflected in the strategy of small and medium enterprises
- Preparation to implementation of uniform Economic laws in individual countries may take a long time and block the development of small and medium enterprises

Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- Highly qualified personnel
- Up-to-date equipment and modern laboratory devices
- Permanent access to knowledge, current achievements and study results
- Close cooperation with R&D institutions
- Ongoing development and improvement of study outcomes

Weaknesses:

- Marked differences in tradition of cooperation with business among R&D institutions in individual countries
- Marked differences in expenditure on commercialization of study results among R&D institutions in individual countries
- Marked differences in commercialization of study results

Opportunities:

- Cooperation with R&D institutions in all EU countries
- Cooperation with technology transfer clusters and centers
- Promotion of innovation during International conferences, congresses and symposia
- Participation in international research programs and projects
- Procurement of funds for technology transfer to business

Threats:

- Differences in the national legislation directly affecting the flexible functioning of R&D institutions

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.

Strengths:

- Impact on all groups of interest
- Decision-making with respect to the establishing of technology transfer strategy

Weaknesses:

- Different strategies for development between insurance companies and political groups
- Different internal regulations
- Different plans for the development of insurance companies and political groups

Opportunities:

- Promotion of technology transfer to business
- Possibility to affect and address all groups of interest
- Chances for close cooperation with the media
- Uniformity of law

Threats:

- Lack of confidence in the society towards this group
- Frequent changes in national superior institutions may affect personnel, strategic and organizational changes on a local level

PP8: Regional Development Agency of Gorenjska, Slovenija

Local SWOT analysis:

Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.

Strengths:

- Good quality of services at primary, secondary and tertiary level
- Easy accessibility of services at local level
- Relatively short response time to the needs of citizens
- Services adapted to specific needs of life and sports activities in the Alps including urgent interventions

Weaknesses:

- Legal status of clinics and hospitals not adapted to the market economy
- Cooperation with industry and SMEs not motivated
- Complete absence of innovation culture
- Relative small share of market economy - small number of self paying patients
- Lean private-public activities

Opportunities:

- Development of innovation culture in the management of clinics
- Transparent motivation scheme for innovative achievements
- Establishment of long –term business connections with industry and SMEs
- Opportunity for establishment of local Medical and Technological Technology Parks on the grounds of clinics
- Clinics could become the key actors for economic growth, employment and wellness of the region

Threats:

- Absence of willingness of political actors to change the legal status of clinics adapted to the market economy and the need of innovation culture
- Lack of the managers of clinics with innovation skills

- Resistance of staff to the introduction of innovation culture to clinics

SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- Orientation to the global market of involved companies (70% of export in average)
- Flexibility for changes at world market
- Long –term cooperation with academic institutions
- Participation in the EU and domestic research projects
- Efficient management within SMEs

Weaknesses:

- Absence of efficient management of involved industry in the biomedical production sector
- Lean capacities of the R&D staff within the SMEs
- Absence of the innovation motivation schemes within the SMEs
- Small (typically family firms) not prepared to the jump to medium sized companies - lack of vision, knowledge and finances
- In majority of cases they are technology followers

Opportunities:

- Establishment of long-term cooperation with clinics
- Transfer of major part of the R&D activities on the ground of clinics
- Cooperation with clinics could enable SMEs to become technology leaders in the niches of biomedicine
- Fast growth-jump of companies
- Enlargement of their activities to new markets
- Stronger involvement in the EU projects

Threats:

- Unfriendly legal environment for the entrepreneurship and particularly cooperation with innovative clinics
- Delays in establishment of cooperation with clinics
- Strong competitors in other regions in EU and globally

Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- Stable financing
- Above critical research mass
- Relatively good involvement in the EU projects
- Moderate scientific quality
- Long- term international research cooperation

Weaknesses:

- Absence of transparent innovation motivation scheme
- Low share of research income from the market
- Lean activities in the Technology transfer and production of patents and other IP products

- Legal status hinder their own initiatives and motivation for their growth
- Ageing of the research staff-negative selection and brain drain
- Orientation to the so called “basic research” what in motivated by the national project selection criterion system

Opportunities:

- Exploitation of research results for transfer of technology to companies and clinics
- Engagement of their capacities for regional development and employment
- Development of new cutting edge research fields in long-term cooperation with clinics
- Further growth by intensification of new contracts with industry, clinics and work for strategic national priorities (Telemedicine national network, exploitation of the ICT technology, etc.)

Threats:

- Opposite to the need to change the legislation concerning research institutions and consequently their status toward market economy demand
- Losing engineering and technical skills in favour of basic research
- Missing the opportunity to cooperate with clinics to resolve very urgent health problems and at the same time develop new products and services

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.

Strengths:

- Relative stable financing of clinics by the health insurance governmental institution (ZZZS)
- High priority of the health issues in policy makers/ government
- Health care is one of the top priorities of Slovene culture/ wellbeing/ quality of life

Weaknesses:

- Efficiency of the management of the capacities in clinics
- Lean exploitations of the resources in clinics for economic growth, innovation, regional development, employment

Opportunities:

- Health sector in Slovenia could become the No.1 actor for the economic and regional development
- The value added of health sector in Slovenia is leading compared to other industrial and service sectors
- High potentials of health sector to establish long term cooperation with the spheres of technology and tourism with culture in developing integrated products for the global market, which would also be implemented in the country
- The size of Slovenia (2 million population) is excellent test bed for evaluation of some advanced/complex approaches in health care like telemedicine & telecare

Threats:

- Lobbying of other sectors like civil engineering (highways - traditional low added value and environment problematic industry, agriculture...) could block

the governmental investment in development of the health sector in the form of innovative clinics products and services for global market
- Poor capacities of the politicians and parliament members to recognise the health sector as the top one for the development of Slovenia/EU as whole

PP9: CVVI - Centre for research, innovation and regional development, Czech Republic

Local SWOT analysis:

Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.

Strengths:
- well educated hospital staff
- good accessibility
- excellency in certain fields of specializations
- regulation mechanism to cut misusing of health care system implemented
- relatively strong feeling of solidarity in the health care system

Weaknesses:
- pending quality of services
- long waiting periods of time for operations
- the reforms needed in the field of health care and its financing have not been introduced in the recent years
- very often absence of competence centres and of innovation management structures
- relatively low transparency of public procurements in many cases
- low share of private financing of the health care system compared to foreign countries
- lack of differentiation between the patients´ need for health care and social care

Opportunities:
- reform of the health care system at national level
- establishment of innovation management structures in hospitals
- promoting motivation for hospital staff to share their innovative ideas
- enhance transparency
- adaptation of state and region owned hospitals to market economy environment
- enhancing patients´ responsibility for their health and enhancing their active attitude towards treatment
- implementing active HR policy

Threats:
- repeated escalation of the situation related to the level of wages in the public health care sector → migration of medical doctors

- resistance of hospital staff to introduce any changes, notwithstanding any additional administrative/management work
- lack of motivation of medical staff to face challenges posed by the current system
- ageing population – demographic challenge → enhanced demand for health care vs. lack of capacities to provide it

SMEs: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- pro-market and pro-innovation orientation
- flexibility to provide unique solutions to specific problems
- mutual interconnectedness of single actors acknowledged vital
- motivated management
- open-mindedness
- existence of structures enabling spending of European funds money + existence of functional business supporting actors such as CzechInvest, CzechTrade
- qualified and relatively flexible labour force

Weaknesses:

- complicated taxation system
- high level of employees protection → lowered ability to react in a flexible way to the market needs
- absence of tools for financing highly innovative projects of SMEs with short history
- insufficient structures for the transfer of research outcomes into commercial items
- problems with introduction of new products in the pre-existing supply
- problems with sustainable financing of RTD activities

Opportunities:

- openness of the health care market for SMEs allowing them to become fully fledged actor in the health sector
- expansion to other European regional markets
- consolidation of bargaining power in the innovation transfer process
- improvement of the Intellectual Property protection
- involvement in clusters and cluster initiatives

Threats:

- decrease in the EU public grants/financial mechanisms
- lack of implementation capacity in relation to structural funds
- competition of big corporations and companies

Research & Development Institutions: Decision makers/ Management, R&D staff/ engineers/ technicians.

Strengths:

- well educated staff
- relatively stable governmental support
- internationally successful outcomes of research activities (e.g. nanotechnologies)
- high share of business sector in R&D (60%)
- rapidly growing share of universities´ involvement in R&D sector
- increase in RCI and patents in biomedical branch

Weaknesses:

- low share of applicable research (24%)
- low share of really applicable results of research, in fact most of the outcomes are mere publications → lack of results with commercial potential
- high share of non-investment costs (almost 90%)
- decrease in financial resources in absolute terms
- low number of patents
- insufficient protection of IP rights – IP issue neglected
- small number of Czech applications for patents at European Patent Office

Opportunities:

- involvement in clusters and cluster initiatives
- close cooperation with SMEs and LME as well
- cooperation with business supporting actors
- focus on applicable research
- potential for becoming mediator in between hospital staff´s ideas and their realization in hands of SMEs

Threats:

- decrease in funding
- brain drain by better-doing countries in terms of economy
- lack of public interests in R&D activities and results
- lack of media attention
- low attractiveness for young scientists

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.

Strengths:

- wide respect of the solidarity principle in the health care system
- huge potential to introduce nation-wide changes in the innovation transfer process
- current government is motivated to reform the Czech health care system in terms of financing and to set up new rules for health insurances

Weaknesses:

- the reforms needed in the field of health care system and its financing have not been introduced in the recent years

- long-term strategy missing
- relatively low transparency of public procurements

Opportunities:

- introducing health care system reform
- opportunity to set up system-wide solution for innovation transfer

Threats:

- lack of interest of stakeholders in possible changes
- adverse economic situation
- generally low level of innovation across the sector

PP10: Budapest University, Biomedical Engineering Knowledge Centre, Hungary

Status of health innovation in the Central Hungarian Region - SWOT analysis

	Strengths	Weaknesses
Internal factors	• The support of the R&D&I activities is institutionalized (NIH – National Innovation Office) • At the biggest health research centers were set up technology transfer offices (i.e. Semmelweis Innovations at the Semmelweis University), or at universities – from sources of SROP <Social Renewal Operative Program> – were established these bodies (TTO at Budapest University of Technology) • The technological preparedness of local SME-s is strong • There are significant local cluster and platform initiatives (Mediklaszter, MM Klaszter, Artemis National Technological Platform, eVITA Platform, Software and Services Platform) • Numerous Hungarian research place are participating international R&D&I applications • The concentration of the health industry is the highest in the Region • Most of universities operate in the Region • The health professional education of the technological have started (at Biomedical Engineering Knowledge Center of Budapest University of Technology)	• The R&D&I financing is held up by the economical situation of Hungary • Technology Transfer Offices don't function properly, their financing are not settled • Technology Transfer Offices don't finance innovations at the moment of a new born idea (no incubation) • Owners of innovations are not in possession of business preparedness, don't built up the management of innovation as a project • The critical situation of health care doesn't favor innovations • Doesn't exist local innovation management at clinics/hospitals • There is no sufficient motivation to stimulate innovations • The innovation capacity of medical professions is significantly dropped, the physicians are strongly fasten down by interests of the drug lobby • Medical workplaces are under informed: it doesn't encourage innovations • There are few applications with content of innovation from the health care sector • Innovation means the access to the high-level, state-of-arts technologies and not innovative ideas • Doesn't exist proper protection of industrial law (patents) for health innovations • Hospitals/clinics haven't sources to realize innovative ideas • There is no innovation management at the non-university hospitals

	Opportunities	Threats
External factors	• Exists in health sector program to stimulate and to reveal innovation (eVITA, InTraMED-C2C etc.), which can help to emerge innovations • There are many possibilities for international application in the health sector • Innovation is supported on EU level, with special emphasis on challenges of ageing society → it has health relevance • Health public administration consists of managers formally worked related innovation fields • The innovative health care (i.e. telemedicine) may give further innovations an edge • The vision of " attentive state" falls background , the concept of sustainability prevails: it results considerable innovation possibilities in health sector	• The further difficult existential status of the medical society kills the innovative spirit of youth • The structural reform of health care focuses other fields – the optimization of health care system -, it doesn't allocate sources for innovation management programs • The initial financing system of innovations further not develops, a few number of innovation are able to reach the phase of strengthening • Innovative solutions don't get in the governmental financing systems • Civilian bodies acting in health sector are further indisposed, don't make enough publicity to innovations • Legal instruments – belonging to the innovation friendly environment - are further not burn • Developments of SMEs' not always take into consideration existing clinical protocols and basic principles • Economical crisis would drag on, it spells danger for the SMEs to survive • The market of SMEs is narrowed down by the breaking of multis and Chinese economics to the clinical technique, they buy up many SMEs • The export oriented economics further increases the distance of actors in health care industry from the domestic innovation • Health informatics developers don't support realization of innovative info-communication ideas

PP11: University of Debrecen, Hungary

Local SWOT analysis:

Clinics/ hospitals including university hospitals, clinics with all supply levels, publicly owned, private non-profit and private for-profit.

Strengths:

- Significant research and development capacities are available in the region
- University of Debrecen (UD) Medical and Health Science Center (MHSC) is one of the biggest university hospitals of Hungary and UD is one of the most significant universities of Hungary
- UD provides high quality education (strong medical education)
- High qualified researchers are working at UD and at the clinics and hospitals of the region
- The Medical and Health Science Center of UD provides high quality medical services for patients
- Innovation and technology transfer is in the focus of the university
- The Technology Transfer Office of UD is focusing on the utilization of research results of the clinics of the university

Weaknesses:

- There is a lack of innovative accredited clusters in the region (there are only four accredited clusters)
- There is a lack of specialized incubator houses in the region
- Lack of time and energy of the clinical staff for looking for potential SME's to launch cooperation with them
- There is a low number of tender application opportunities for which research institutions and SME's can apply together
- The number of R&D&I mediator organizations such as TTO or innovation agency are low
- Lack of really innovative SME's in the healthcare sector
- R&D&I and education activities are concentrated in Debrecen, the 'capital' of the region

Opportunities:

- Strongly developing health care sector in Hungary and in Region Észak-Alföld
- Participation in the four health care related accredited clusters of the region (innovative pharmaceutical cluster, health care cluster, innovative functional food cluster)
- UD is very successful in preparing tender applications and in obtaining grants
- EU presidency of Hungary (the Week of Innovative Regions will be held in Debrecen in the beginning of June 2011.)

Threats:

- Low salaries of the medical staff (doctors, nurses, researchers)
- Brain drain
- IP management rules are not standardized
- Slow decision making procedures at university departments and clinics

SME's: Decision makers/ Management, R&D staff, Marketing/ Product Development.

Strengths:

- The number of new and quickly developing enterprises in the region are increasing
- SME's have significant role in the structure of the economy of Region Észak-Alföld: two-third of the employees are working by SME's
- SME's of the region have flexibility and quick adapting ability
- New, entrepreneurship-oriented generation have been appeared in the region
- There are 19 clusters in the region and four of them are accredited (the clusters are working in the fields of food and functional food industry, pharma-industry, IT, tourism, logistics, building industry, public accountancy)

Weaknesses:

- There is a lack of specialized incubator houses in the region
- Innovation activity of the SME's of the region is very low (around 17%)
- The unemployment rate in the region is high (around 14%)
- Most of the SME's are not spending for the development of R&D activities
- SME's are not using the available tender application opportunities and applicable financial resources
- SME's of the region are thinking just in short term

Opportunities:

- Priority sectors of Észak-Alföld Region are: 1. pharma-industry (drug research and drug development, drug manufacturing, and marketing of drugs); 2. biotechnology; 3. functional food industry; 4. thermal and wellness tourism, 5. IT industry; 6. energy and renewable energy; 7. creative industry, and 8. logistic.
- Initiation of workshop based meetings between the SME's and clinics (according to our survey SME's showed high interest in participating on this kind of meetings)
- Usage of the available tender application opportunities in a proper way

Threats:

- Young good educated people are very mobile (Brain Drain)
- There is a lack of applicable grants, grant applications or subsidies
- The culture of cooperation between SME's and clinics or research institutes is not well-developed

Research & Development Institutions: Decision makers/ Management, R&D staff/engineers/ technicians.

Research & Development Institutions have the same attributes as clinics and hospitals

Strengths:

- Significant research and development capacities are available in the region
- UD is one of the biggest university (with more the 210 research groups) of Hungary and UD is one of the most significant universities of Hungary
- UD provides high quality education (24 doctorate schools)
- High qualified researchers are working at UD
- Innovation and technology transfer is in the focus of UD

- The TTO of UD is focusing on the utilization of research results of the university

Weaknesses:

- Lack of time and energy of researchers for looking for potential SME's to launch cooperation with them
- There is a low number of tender application opportunities for which research institutions and SME's can apply together
- The number of R&D&I mediator organizations such as TTO or innovation agency are low
- Lack of really innovative SME's in the healthcare sector
- R&D&I and education activities are concentrated in Debrecen, the 'capital' of the region

Opportunities:

- Strongly developing health care sector in Hungary and in Region Észak-Alföld
- Participation in the three healthcare-related accredited clusters of the region (innovative pharmaceutical cluster, health care cluster, innovative functional food cluster)
- EU presidency of Hungary (the Week of Innovative Regions will be held in Debrecen in the beginning of June 2011.)

Threats:

- Low salaries of the researchers, technicians and R&D staff
- Brain drain
- IP management rules are not standardized
- Slow decision making procedures at university departments

Other relevant groups: health care insurance companies, health care decision maker groups and relevant political groups.

In our case these groups are clusters of the Region Észak-Alföld.

Strengths:

- There are nineteen clusters in the Region Észak-Alföld
- The four accredited clusters are strongly focusing on the developing health care sector
- The number of new and quickly developing enterprises in the region is increasing
- SME's have significant role in the structure of Észak-Aldöld Region's economy, two third of the employees are working by SME's

Weaknesses:

- Only four clusters are accredited from the nineteen clusters of the region
- Clusters are not using the available tender application opportunities and applicable financial resources in a proper way

Opportunities:

- There are addressed tender application opportunities for the four accredited clusters
- There are plenty of SME's participating in the clusters
- New entrepreneurship oriented generation have been appeared in the region

- Initiation of workshop based meetings between the SME's and clinics (according to our survey SME's showed high interest in participating on this kind of meetings)
- Usage of available tender application opportunities in a proper way

Threats:

- The "cluster culture" is not well developed jet
- SME's are not trusting each other fully
- SME's of the region are thinking just in short term

PP12: Medical Valley EMN e.V., Germany

Medical Valley EMN has worked out a local SWOT analysis taking into account the situation of clinics, companies (with focus on SMEs), r&d-institutions and other relevant groups like health care insurance companies, health care decision maker groups and relevant political groups in the field of innovation.

Strength:

- Health care is one of the major issues in policy making. The German Federal Ministry for Education and Research has awarded the Medical Valley EMN as Germanys leading edge cluster in medical technology and provided 40 Mio € funding for high class innovation from the region.
- High innovation potential:
  - The Medical Valley EMN/Northern Bavaria comprises an excellent health care structure of clinics of all supply levels and a huge number of specialist clinics focusing on specific medical disciplines. In total 104 private, publicly or churchly owned hospitals are located in the EMN providing good healthcare quality to the inhabitants of EMN.
  - A total of 180 dedicated medical technology companies are located in the EMN, with a high share (around 60 %) of SMEs. A high number of SMEs can be considered as research-driven.
  - A total of 20 extra faculty r&d institutions in the EMN provide high scientific quality and high class research.
  - A high startup dynamic with more than 100 startups in the medical technology sector within the last 15 years can be realized in the EMN. A broad service offer for the support of startups (incubators, VC-fonds, specialised funding, etc.) has been initiated by the Free State of Bavaria and supporting public organisations.
- Good infrastructure:
  - Well educated employees in clinics, SMEs, r&D institutions. The Friedrich-Alexander University Erlangen-Nuremberg educates the future employees focussed on the needs of the regional companies, clinics and r&d institutions.
  - The r&d institutions, clinics and of course the companies are well equipped and employ high class staff. This is the basis for the high-class research.
- Good support structures:
  - In the EMN there exist (based on Bavarian strategies) tailored funding strategies for r&d in the field of medical technology.
  - In the EMN there is brought support of startup companies, cooperation between business and science, competence centers and the medical technology cluster
- Good market position of SMEs
  - Most of the research-driven SMEs offer high quality products in niche markets.

  - As medical technology is a very international business the SMEs located in EMN are active in a very international field with many contacts to and co-operations with international companies, r&d-institutions and clinics.
- Innovation and cooperation is stressed from all stakeholders as essential for the development of the cluster.

Weakness:

- Innovation and technology transfer limited:
  - Innovation policy in the clinics is often not existing and not coordinated. Clinics in the Medical Valley EMN have no innovation management system introduced. It is mostly concentrated on quality management.
  - Medical technology transfer is not a common tool in the clinics. Medical technology transfer is limited in a standardised way to university hospitals with an own technology transfer unit.
- The innovation process is mostly technology driven and not user-driven. SMEs often have no access to the clinics as they are no official suppliers. Basic or technology driven research, user-driven research not in the focus.
- Lack of awareness of patent protection and IP rights especially in smaller clinics.
- Limited cooperation between r&d institutions, clinics and SMEs in innovation processes. Synergies between SMEs across EMN are often not used.
- Barriers:
  - The SMEs are active in a field underlying high regulations what makes the time-to-market rather long.
  - The duration and transparency of the reimbursement procedure makes high risk. The SMEs develop new products without knowing if they will be reimbursed by the health care insurances. Having a product not in the reimbursement list of the health care insurances makes it rather impossible to bring the product to the market.
  - The research results within the r&d institutions are of high quality but often there is a lack of commercialization of these research results.

Opportunities:

- Steps to more innovation:
  - Competition between hospitals can lead to increased efforts in the field of innovation. Innovation can be a source of income for hospitals.
  - Innovation transfer from clinics to companies can lead to innovation.
  - Increased cooperation between clinics, SMEs, scientific and R&D institutions in r&d-projects can increase the innovation capabilities.
  - Access to clinics means access to user-driven innovative ideas. Establishing long-term cooperation with clinics can be favourable for SMEs to strengthen their user-driven innovation processes.
  - Cooperation with clinics could enable SMEs to become technology leaders in niche markets.
- User-driven innovation can lead to new products and markets for the SMES.
- A change in regulations can decrease time-to-market. Innovations would enter the market earlier.
- Cooperation with companies and clinics in r&d projects can increase the commercialization of research results and lead to more marketable products.
- Cooperation with clinics (users perspective) can result in the identification of new cutting edge research fields in medical technology.
- The implementation of a regional innovation transfer system between clinics and companies in EMN (or for Bavaria) can increase the innovation potential.

Threats:

- Skills shortage: A lack of experts and high quality staff in the future is predicted. A lack of experts means also a decrease of innovation potential.
- Hospitals especially public owned hospitals in rural areas are in threat to be closed. This leads to a decrease of the innovation potential in the EMN.
- High workload for clinical staff. No time for off-work activities like thinking about inventions.
- Approval process and market regulation: From a business perspective these are the biggest hurdles to innovation in medical technology.
  The procedures are necessary for the safety of patients and users, but intransparant and too slow.
- Pre-financing: The long development phases require an expensive and risky pre-financing, which often represents a serious obstacle, especially as the financial institutions are very reluctant to corporate finance in financial crisis.
- The future development of the healthcare business is strongly depending on the future development of healthcare policy. The future development of the healthcare policy is under uncertainty.
- Research-driven and highly innovative companies can be absorbed by big companies