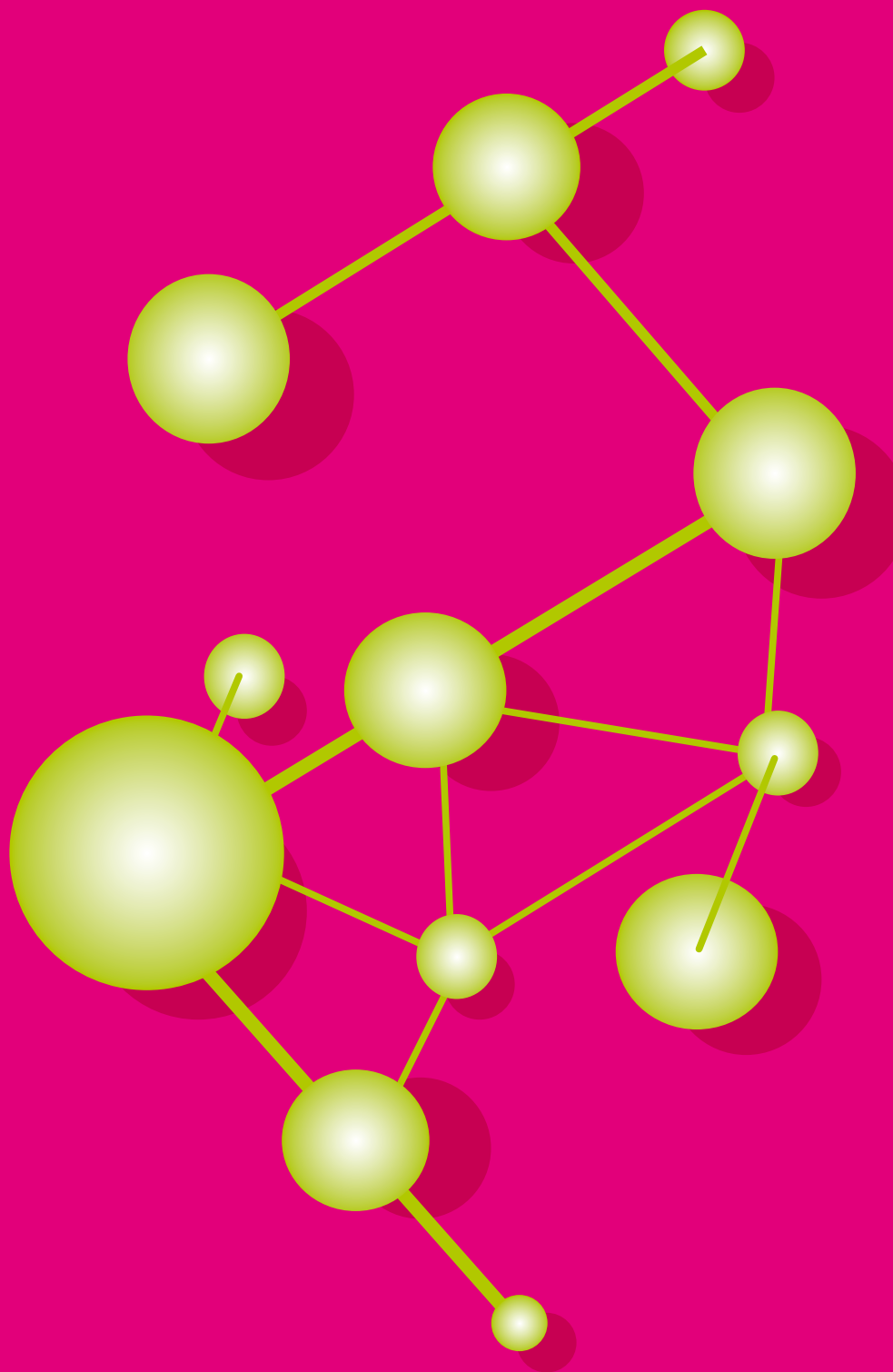


Research in Styria



The Strategy of the
Province of Styria for the
Promotion of Science and Research



Das Land
Steiermark

→ Wissenschaft und Forschung

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Researchers advance!

Styria is a location for science and the research state of Austria. With an R & D ratio, which even within the European region has held a leading position for many years, the province of Styria has a special responsibility to ensure the success to date is continued further. Through the "new" research strategy we intend to plan this way forward in a consistent manner, as ultimately it also includes the future of our country.

"Strengthening strengths" is the general theme required to reach the "critical mass" that is inevitably associated with the claim of excellence. The region of Styria is strong in cooperation and networks. Concentrating these interdisciplinary lines of connection is a goal not only of our nine universities that are coordinated within the close cooperation of the Styrian Conference on Higher Education, but also of our state research establishment Joanneum Research, of our research networks and of our lines of promotional funding. Thematically, this shared framework for action, or overall policy, should in particular promote those areas of strength in which we have established expertise and competence, and which further pursue the cooperation of science and research right through to economic added value. Even the evolution of the research strategy is a statement of its central message: based on the research strategy and evaluation results for 2005+, this research strategy has been discussed, questioned, developed and adapted together with the stakeholders. Thus, it maintains continuity and continued strategic thinking for the competencies of the location and stands as a commitment of the stakeholders in Styrian research.



K. Edlinger-Ploder

Kristina Edlinger-Ploder
Minister of State for Science and Research

Science and Research in Styria

An impressive diversity in science and research

Styria is one of the most research-intensive regions in Europe (research rate in 2009: 4.3%). Each year about Euro 1.5 bn. is invested in research in Styria. Universities in Styria are among the largest employers in the region and Styria is a leading partner in the implementation of the Austrian research and technology policy.

A comprehensive range of disciplines at universities and colleges¹

One of the key economic factors for the future of Styria are the numerous other non-university and academic research institutions that include five universities, two universities of applied science, two educational colleges of education and the mainly state-owned JOANNEUM RESEARCH. The Styria proportion of R & D spending in the science sector in Austria is 18% (2009). In comparison only around 15% of the funding from the Austrian Science Fund (FWF) focused on basic research flows into the province of Styria.

There is a broad consensus that the "core competencies" of Styria are in the "engineering and technology related" disciplines. This means that more than half (exactly 55%) of the technical university researchers in Austria work and teach in Styria. Within the main technology core competencies, the proportion is even higher: 73% in mechanical and automotive engineering, 75% in the field of metallurgy and materials science, and 58% in industrial chemistry and in other interdisciplinary engineering sciences.

The "culture of cooperation" that is now evident in a variety of informal and institutionalised collaboration activities is perceived as a strength and an opportunity. This has been encouraged by a new culture of cooperation in higher education (e.g. NAWI (Naturwissenschaften - Joint Natural Sciences Programme) Graz or BioTechMed), which provide an interface management function in the processes for establishing centres of excellence and pilot type network initiatives such as "Nanonet Styria". The

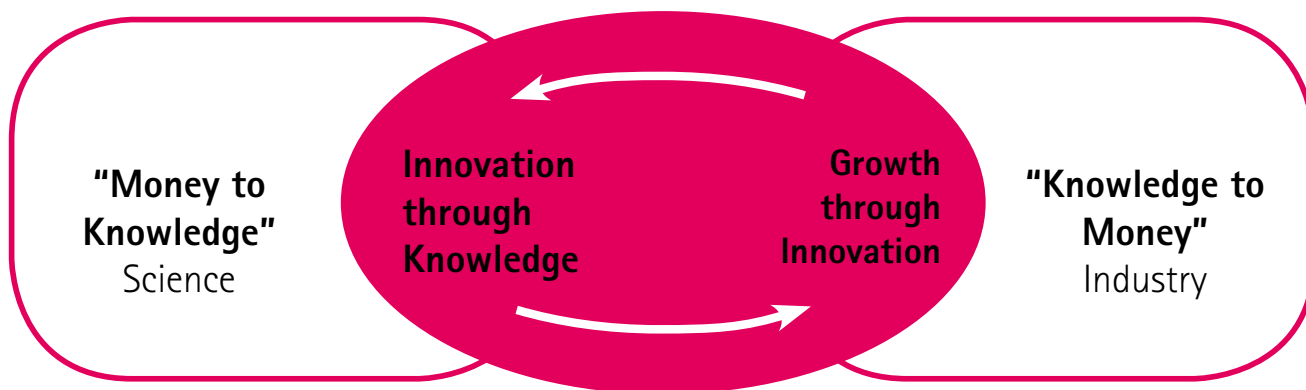
Styrian Conference on Higher Education also adds a new set of skills at university level. The elements of "cooperation" are consistently perceived by interviewees as a "key lever" for the location of Styria and the development of a common base for higher education and research. Together with the wide variety of disciplines, they open up the options for interdisciplinary and „complementary" research and thus new opportunities for innovation.

Above all, within a compact area, Styria offers a nearly complete range of disciplines in humanities, arts and social sciences (HASS). This creates options for interdisciplinary and "complementary" research on issues of common interest. The HASS areas are less experienced in cooperation and in part exhibit other needs compared to technology-related research.

The universities have to combat a difficult set of circumstances that often leads to highly qualified teaching and research staff choosing an alternative location. The fact that competing locations with better infrastructure facilities win on attractiveness is increasingly being recognised as a problem. Lack of investment opportunities in advanced research infrastructure are seen as a threat to attractiveness of the location. Without a doubt there are still overlaps, parallel activities and the opportunities for cooperation both within the sciences and between science and regional business.

¹Translator's comment: Colleges = including universities of applied science and technology

Synergistic development of science and business



Science, research and business complement each other in a synergistic manner. This can be seen from the high density of COMET centres of excellence in Styria as well as the high level of third-party funding, especially in the technology-oriented universities. Third party funding has now reached levels of more than 45% (TU Graz, University of Leoben). The corporate share of the third party funded projects is up to 70% (University of Leoben).

The research output, as measured by the related costs, amounts to 70% in the business sector, which includes the centres of excellence and other non-university establishments such as JOANNEUM RESEARCH. Research in Styria is 37% funded by the corporate sector. It is notable that 23% of the funding is raised from foreign investment. In most cases this relates to business funded research, which was acquired as (internal group) research contracts through a competitive process².

The number of research based business units increased significantly within the past 5 years: from 350 to nearly 500. However, as generally observed, research is highly concentrated in a few companies and industries that together constitute the bulk of the research effort. In Styria, this is particularly the case in the vehicle and related engineering industries, in the electronics sector and in the area of materials. Also of note here is the construction sector, which in absolute terms is relatively small, but in the context of Austria has a high degree of specialisation. Despite critical success in broadening the "innovation base" this remains an on-going challenge for Styria as an innovation location.

The research in Styria is therefore particularly application oriented. In this respect currently Styria has particular strengths. Measured against funding raised from the Austrian Science Fund the need for strengthening competitive basic research can be seen even more clearly.

²This will be procured with the competitive processes of Styrian R & D facilities. The companies are represented here as research service providers in a highly competitive competition for research and development contracts.

Stakeholders' assessment

Despite these undoubted existing strengths a number of weaknesses and risks are perceived by the stakeholders:

- A research system with a high proportion of temporary funding is not at all stable.
- The competitiveness of the location in terms of top international researchers is very limited.
- A lack of internationalisation with a deficiency of international schools and restrictive legal framework for work permits were raised as issues.
- Aversion to change and taking risk in society and in the funding system. The role and importance of science and research is insufficiently recognised in society.
- The Geographical position as both a strength (quality of life) and a weakness (accessibility).

There is a high diversity of training opportunities in STEM fields³. However, clear gaps exist to fulfil the demand for up-and-coming STEM talent in research and industry. Graduation of STEM students poses the risk of becoming a key limitation. This is further linked to a continuing unattractive picture of science, technology, engineering, mathematics and computing in society and amongst children and young people⁴.

³STEM: Science, technology, engineering and mathematics, (in German MINT: mathematics, computer science, natural science and technology).

⁴See Recommendation MAJUT (Mainstreaming Jugend und Technik - mainstreaming youth and technology) of the Research Council of Styria (RIT Council)

Summary of Strengths and Weaknesses⁵

Strengths	Weaknesses
Science and Research System; Networking & Collaboration	
Presence of basic research right up to product development - a continuous innovation chain	Difficult set of circumstances faced by universities and basic research; Need to improve and re-align basic research toward the acquisition of third party funded basic research projects
"Culture of cooperation" - New models of cooperation in teaching and research	Lack of real lighthouse projects Overestimation of stability of the system
Science applied to leading research organisations - strength of application orientation	Deficiencies in the "spread of innovation" in the SME sector
Engineering know-how and full range of disciplines in the location	No systematic integration of Humanities, Arts and Social Sciences
Broad capability to link to demand and market trends through enabling technologies	Risk of falling behind in the attractiveness as a location for research partly due to a lack of investment in research infrastructure
Scientific Human Resources	
Quantitative research capability (Research output of Euro 1.5 bn.)	The importance to society of science and research is still too little
Extensive training programmes particularly in STEM subjects	Too little up-and-coming talent in science and technology
Location factor conditions	
Habitat and-quality of life	Geographic position is strength and weakness (accessibility)
	Inadequate international orientation of the location Styria

⁵Based on interviews and stakeholder workshop and incorporating analyses of the location Styria (e.g. as documented in the Science Report Styria).

Mission Statement: Shared space for science and innovation

Vision: The Styrian Research Landscape...

... is a leading international "shared space for science and innovation"⁶ for interdisciplinary collaboration using know-how at the cutting-edge in engineering technology.

Research and innovation occur together in dialogue. The specific location strengths are established in common agreed theme corridors along the chain from basic research to application.

Researchers at the beginning of their careers bring with them new and unconventional ideas. The conscious creation of equality and diversity is an essential foundation for success. Through the resulting good contacts with researchers networks are expanded worldwide.

The triad between science, education and business succeeds:

... In inspiring young people with research and gaining dedicated students.

... Converting know-how into regional added value.

Economically, Styria is in a process of transformation towards a knowledge-based manufacturing society⁷. The aim is to position itself as a European benchmark for intelligent transformation. Science, research and education set the foundation for this and provide the key to the future for Styria. They create knowledge, and thus the basis for innovation and growth.

Styria holds a very important function within the RTI Strategy of the Austrian

Government ("Becoming an Innovation Leader"), for trans-regional development within the framework of the Europe 2020 flagship initiative and the social and economic challenges that are formulated within it. Styria will actively expand its participation in the European innovation area.

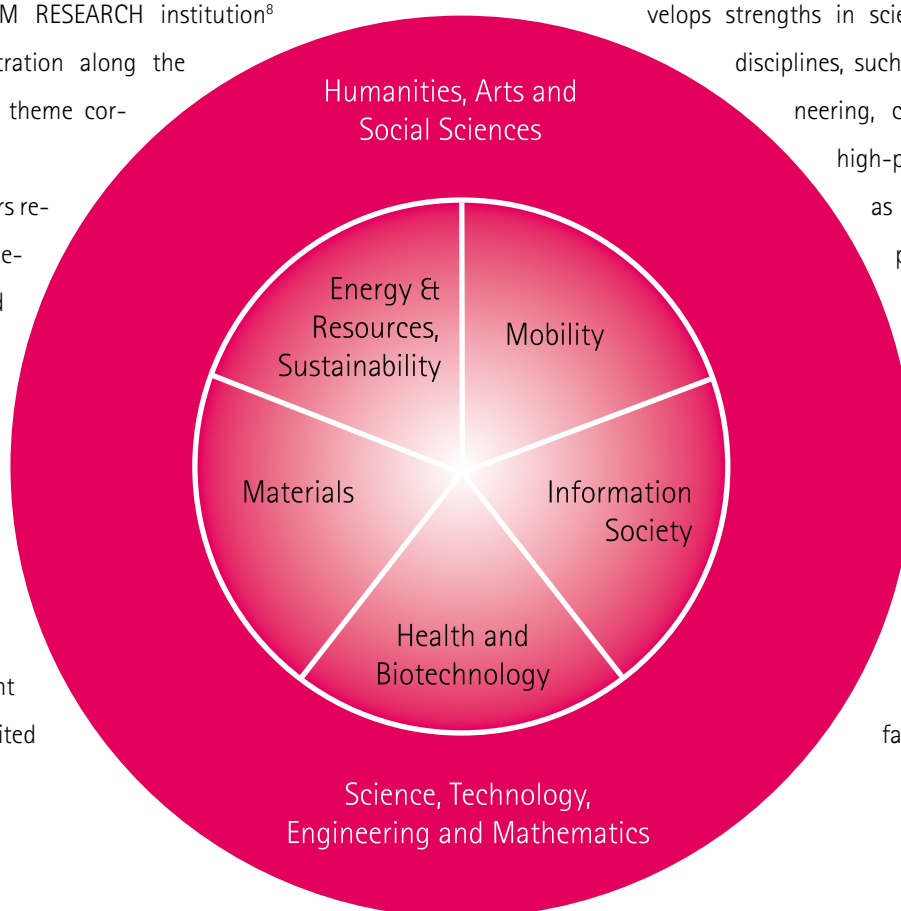
⁶The concept of „Shared Space Science“ was coined in the context of Styrian Conference on Higher Education. Here in the strategy it stands for intensive and flexible co-operation in science and research in the "research and innovation area" of Styria: Offer joint studies, conduct cooperative research, use shared infrastructure.

⁷Economic Strategy Styria 2020

Theme Corridors as a Framework for Alignment

The research landscape in Styria is characterised by many non-university and university research facilities and the diversity of disciplines. Both individual institutions and overarching networks regularly address the questions of strengths and future issues. By compiling the focus areas self-selected by Styrian universities and colleges and the majority state-owned JOANNEUM RESEARCH institution⁸ allows a concentration along the following "major" theme corridors:

The theme corridors relate largely to societal challenges and market trends (see also the main themes of the Economic Strategy Styria 2020). From an extended technological stand point they are well suited



to being dealt with from an holistic perspective that opens up a rich field of opportunity for the humanities, arts and social sciences and thus the initiation of social innovations.

The scientific foundation behind these themes develops strengths in science and technology disciplines, such as mechanical engineering, chemical engineering, high-performance materials as well as basic disciplines such as physics or chemistry. The key challenge therefore lies in strong and well-functioning basic disciplines that work together and contribute to solving the challenges facing society.

⁸See: Science Report Styria 2010/11 and Development Plan 2012, of the University of Leoben

Humanities, arts and social sciences

Humanities, arts and social sciences (HASS) have an important function in terms of complementary and holistic research, as "repositories of knowledge" and a "critical voice" for the socio-economic development.

Higher education institutions are encouraged through key topics to participate in the critical discourse and shaping of social and economic developments. From a regional Styrian perspective cross-institutional networking should also be encouraged and HASS geared in particular more toward practical approaches.

Interdisciplinary research will be stimulated on the part of the province of Styria through calls for proposals and the prioritisation of HASS themes. This will also cover specific topics for Styria contributing to the strengthening of identity. From the perspective of the Department of Science and Research examples of specific theme areas, from which appropriate calls for proposals can be developed, include:

- Demographics: The implications of demographic change in Styria on spatial development, mobility and health
- New work and learning environments for the 21st Century, e.g. aging, learning new technologies, and diversity. Integration and learning, STEM (Science, technology, engineering and mathematics) and learning
- Services Science, Management and Engineering: research for innovation in services⁹.

Prioritisation of joint research programmes under key location themes

The theme corridors serve as a framework for alignment within which a detailed analysis and generation of a strategy is required to determine the specific location advantages that then will support a common approach amongst the stakeholders, from science, education and business, for the development of key projects. This is a process that must in particular be handled by open dialogue.¹⁰ The processes carried out by the research and innovation community will create common „Research Agendas“ that define the vision and strategic objectives and actions for the various fields of research and permit a coordinated output from research. Opportunities at the interfaces between themes should also be incorporated in this by working across themes.

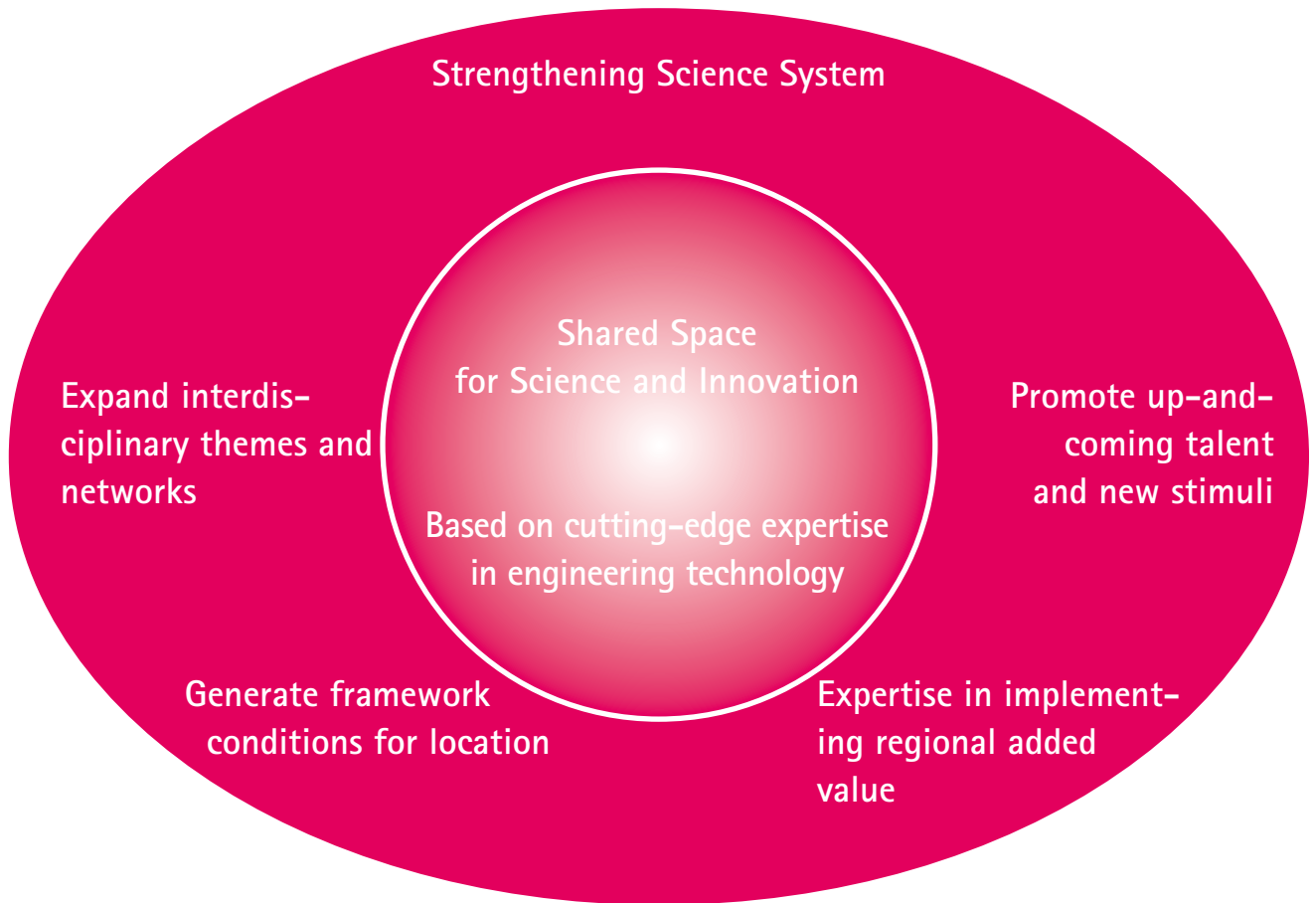
The HASS area should be supported in structuring themes around the location through its own actions with the aim of strengthening its ability to address national and international programmes.

⁹See recommendation "Knowledge-intensive services" of Styria Research Council (RIT Council)

¹⁰This follows the philosophy of "Smart Specialisation". This is a strategic approach to economic development through targeted R & D and innovation support measures to develop niches in regional competitive advantages (see, for example <http://s3platform.jrc.ec.europa.eu>). The strategy of working along strategic corridors, e.g. in the context of clusters follows this approach.

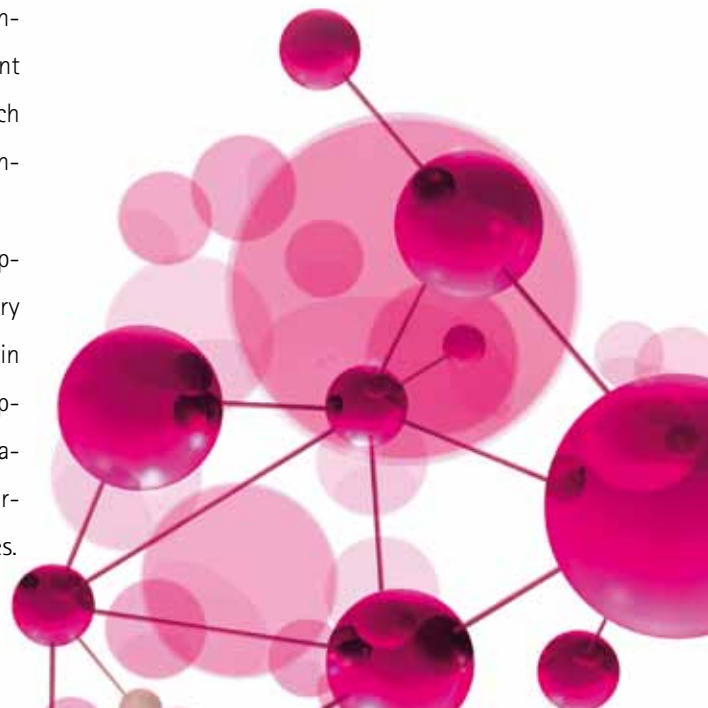


Areas of action of promoting science and research



The major strengths of Styria are seen in collaborative cooperation and the broad range of disciplines. These strengths should be exploited. Incentives for interdisciplinary cooperation are central to this. The development of a continuous innovation chain, from basic research to applied research to product development, provides special opportunities to convert scientific know-how into regional added value.

The portfolio of science and research is based on interdisciplinary approach, diversity and equal opportunity. The focus on interdisciplinary cooperation is based on the concept that innovations are generated in particular at the interfaces between disciplines. Diversity and equal opportunity are becoming increasingly important in terms of global relations in science and research. Accordingly, these issues will be given particular consideration in selection criteria as well as the project initiatives.



The basic principle of cooperation

Higher Education: A Shared Space for Science

Higher education establishments have to align themselves to the objectives specified on the part of the State with regard to research output and training. As active stakeholders they act independently. For the individual institutions, as well as for the location of Styria as a whole, there are distinct advantages when they act in concert, make use of synergies and create critical mass through joint research and training. The universities are involved in the newly established and state supported Styrian Conference on Higher Education. The province of Styria considers the Conference on Higher Education to be an important location partner and supports development of a common strategy:

- For teaching and research and
- For the "third mission" (transfer and contributions to public discussions).
- Acting in concert for the location, good teaching, particularly in the STEM areas, and the strengthening of international visibility are of particular interest to Styria.

Areas of interdisciplinary cooperation

Styria intends to consciously develop a special set of location opportunities and regards cooperation as a basic principle to support this aim. The province of Styria can invoke incentives for this (e.g. through quality and assistance criteria) and should be limited to the initiation of this cooperation. The instruments should support, for example, the clusters that form the appropriate platforms for the organisation of business and science contacts (e.g. within the scope of the currently practised "Innovators Clubs").

Instruments and initiatives

The academic and research partners use their own collaboration processes for internal allocation of resources or the development of common formats for conferences and seminars etc. Internationalisation is a major concern. Efforts can be supported on the part of the province of Styria by:

- Event formats for science to science exchange involving international partners to develop collaboration; including foresight

events involving international thought leaders.

- Cross-institutional development of a research agenda or road-mapping projects, which complement the existing decision making processes at the interface between science and business. These should be developed across themes and incorporate the opportunities at the interface between the theme corridors. This involves the consideration of appropriate time frames where business-science decisions aligned more to the short term are supplemented to gain a longer-term research perspective.
- Developed through the research community an agreement should be reached with the Province of Styria on a multi-year, periodically updated "networking concept".

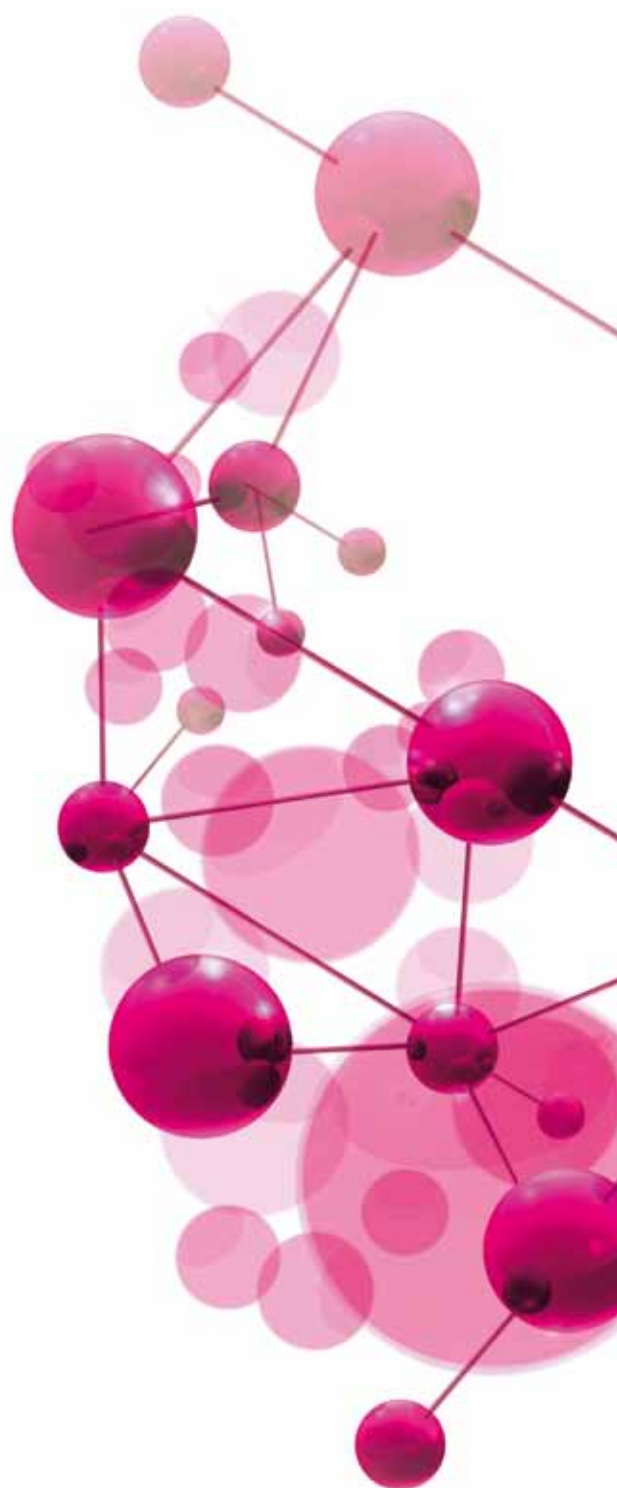
Strengthening the science system

The essential prerequisite for the location is an excellent scientific innovation system, whereby the development of continuous innovation chains, from basic research to applied research to product development, offer special development opportunities. This requires a dialogue on the areas where these innovation chains should be "concluded" and where they require appropriate infrastructure for the location. Above all, equipping the research infrastructure is viewed as a success factor in high need of improvement. It is the responsibility of the federal government to ensure adequate funding for both research and teaching and for the related infrastructure. Support can be provided on the part of the Province of Styria in areas with recognisable, cross-institutional location interests in the form of endowed chairs and infrastructure. This should fulfil a "catalytic role" for the coordination of research output for the needs of the location. In themes of excellence development of pilot projects will be supported, especially if they allow the positioning of Styria within the scope of global programmes.

Instruments and initiatives

Where all of the location is strengthened in the themes relevant to the location through reinforcement of the scientific part of the innovation system or stimuli can be generated by special fields of research the following instruments will be implemented on the part of the province of Styria:

- Promotion of research infrastructure that enables collaborative exploitation between research institutions or in cooperation with industry.
- Support of endowed chairs initially for a 3-5 year period to strengthen the scientific innovation system in important themes for the location of Styria. The eligibility criteria for support are:
 - Excellent scientists at the beginning of their career, which initiate innovative stimuli that impact location.
 - Transparent appointment procedures that guarantee equal opportunity.
 - Evidence that the regular funding of the universities has been met.
 - Opportunities to partner with companies within the location.
- Seed money for development of flagship projects, participating in international research networks and European programmes such as Horizon 2020, insofar as they are relevant to the location.



Attracting up-and-coming talent and generating new stimuli

It is vital to always pay attention to new stimuli that place young people and up-and-coming researchers at the centre. One area of focus is therefore the integration of ambitious up-and-coming scientists. This applies at all levels, including in academic appointments. "Young ambitious people" bring new stimuli with them. Even if they subsequently move away from Styria, it still serves in expanding global research networks. The conscious management of equality and diversity forms an essential foundation for success, because interdisciplinary approach and diversity are essential for innovation.

Instruments and initiatives

Important instruments for the development and networking of young researchers are international university collaboration, student networks, alumni networks and the targeted use of contacts with researchers who are working at other locations.

Within the scope of the Science Fund, as a complement to existing instruments and measures, a priority will be set on the part of the Province of Styria on:

- **Ambitious up-and-coming talent:** Proposals for interdisciplinary engaged, young scientists to develop new ideas. In terms of the range of disciplines for the location of Styria special emphasis is placed on the connection of humanities, arts and social sciences with the science and technology disciplines. Here, the development of international research contacts will be supported. The design of selection procedures in terms of equal opportunity and selection panels with scientists at the beginning of their academic careers should encourage innovative targeted approaches. Up-and-coming talent in science, technology, engineering and mathematics: For the future, we need to join forces to make science and research, and the natural sciences and technology accessible and in particular to discover and develop talents in the STEM subjects. A crucial starting point is the educational sys-

tem. The Department of Science and Research cooperates across departments and supports measures for the promotion of young talent in the STEM areas¹¹- for example, through the promotion of STEM teachers at teacher training colleges, or good courses in the STEM area, for example through academic prizes. This includes particularly attention being given to engaging young talented women for STEM subjects and science and research.



¹¹See Recommendation MAJUT (mainstreaming youth and technology) of the Research Council of Styria (RIT Council)

Framework to help shape science and research

An awareness of the importance of science and research in the Styrian population can make decisions on research location clearer and inspire people. The openness to new ideas and positive attitudes towards entrepreneurial risk are less pronounced than for example in the Scandinavian countries. Science and research in Styria is not ascribed sufficient importance in the population and by young people.¹² The direct scientific work environment as well as the quality of life and opportunities for families are important to researchers to draw them to the location of Styria. "Dual career services", international schools, an open culture and the deliberate promotion of diversity management in science and industry are important elements of this framework.

Instruments and initiatives

Academic and research partners are encouraged to gear themselves, in their actions, strategic alignment and their thinking, towards the broader picture and their contribution to long-term site development.

- Strengthening the public discussion on science and research and social issues, for example, by collaboration in an open dialogue campaign as part of the implementation of the RTI federal strategy.
- Measures to increase the attractiveness of Styria for international researchers, for example supporting the development of services such as dual career packages in cooperation with companies, university towns, research institutions and universities.

¹²See Science Study Styria 2010

JOANNEUM RESEARCH – an application-oriented research organisation for the province

The Research Council of Styria recommends "a clear distinction between the universities¹³, the universities of applied sciences and JOANNEUM RESEARCH in terms of their "research profile", with the goal of complementary support. Added value can be created through collaboration structures, preferably within the scope of project activity, ... The universities¹³ should cover a range from basic research to applied research, with the mid-point focus being closer to basic research. JOANNEUM RESEARCH, however, should have a focus in the field of applied research with the ability to integrate technology (up to prototyping and small batch production, in particular for SMEs), and conduct basic development only for the creation of the technology base or platforms. ...The research at universities of applied sciences should be solely focused on practical application and the resolution of industrial problems.

As an important instrument of the Province of Styria in securing the research, innovation and business location of Styria, JOANNEUM RESEARCH has accordingly undergone a process of repositioning. The strategy process led to a concentration of research activities into the four flagship institutes of Materials, Healthcare, Digital, and Resources together with the Policies Centre.

According to the Framework Plan for the Province of Styria positioning will be pursued, as a "professional entrepreneurial provider of innovation and technology" along the following lines:

- A focus on applied research and technology development
- Alignment to priorities determined by the current and medium-term technology needs of the Styrian economy (technology portfolio)
- The capability to deliver complete solutions (System Solutions)
- Extended added value up to prototype and potentially demonstration plants and small series production

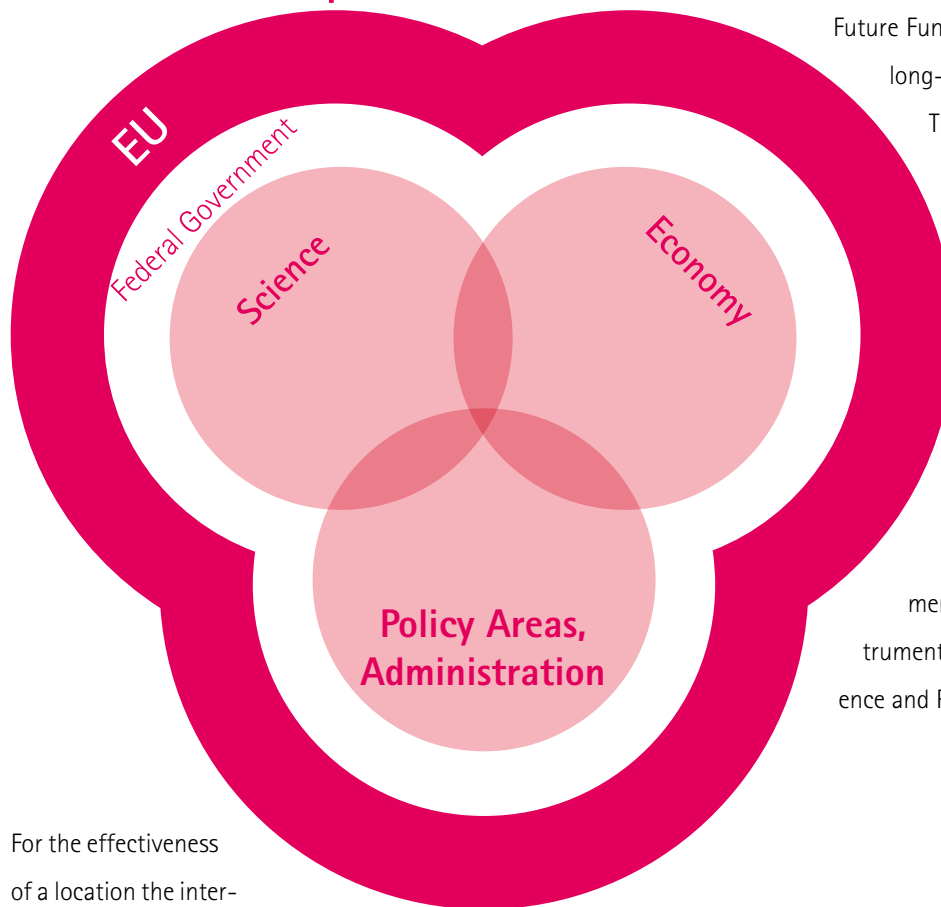
JOANNEUM RESEARCH is also encouraged to engage as an active developer of focus themes, to develop international markets and pursue strategic partnerships initiatives at an international level and in conjunction with the universities and universities of applied sciences. In parallel with this, the research facilities have a strategic mandate to pursue an active strategy of technology spin-off, and to take on a CDP (continuous professional development) function i.e. specific career development and training. The transition phase is to be completed by 2013. Subject to a positive final assessment of the transformation process through the "Steering Committee", the transition to normal operations will then follow.

¹³Translator's comment: Universities = other than Universities of Applied Sciences

The Department of Science and Research

In the area of science and business, as well as in politics and administration every organisation conducts planning and negotiation autonomously in the light of the different contexts, markets and time horizons, incentives, customers and financing options that they find.

International Competitors



For the effectiveness of a location the interaction between science and industry is of particular importance. The federal government sets out a number of important instruments for this cooperation in applied research, both in its own right and in collaboration with the Province of Styria through the Department of Economy and Innovation, such as industrial innovation and R & D subsidies, support for centres of excellence and cluster organisations as platforms for location development.

Synergies and interfaces can only occur when each area is fully developed. This is mainly dependent on the questions that impact development within each area of research and therefore create the preconditions for the interfaces. This is the area of influence where the Department of Sci-

ence and Research positions its instruments.

The estimated budget allocation of resources of the Province to science, research and corporate R & D funding is around 2.5%,¹⁴ which include institutional funding used for centres of excellence and the majority state-owned JOANNEUM RESEARCH. The

Future Fund Styria currently does not have any long-term, secure funding at its disposal.

The basic strategy for development funding operates through "enabling" and "leveraging" of funding at national and international levels. This allows a substantial and significant contribution to be made to the location Styria and its science and research with the use of fewer resources. The instruments used in the previously mentioned areas of action and the instruments applied by the Department of Science and Research are summarised below:

¹⁴Estimate based on the information in the Science Report(s) Styria 2008-2011.

Summary of instruments

Area of action	Basic principle of cooperation	
Interdisciplinary themes and networking.	Promotion of consultation processes through events, interdisciplinary networking and roadmapping, development of regional Research Agendas	Initial funding for the development of flagship and lighthouse research and for international and European calls for proposals
Strengthen science system	Endowed chairs in location effective theme corridors	Research infrastructure, if it can be used cooperatively
Attracting up-and-coming talent and generating new stimuli	Tenders for researchers at the beginning of their scientific career: new themes (only as boost for innovative ideas), interdisciplinary work and STEM; support for initial investments in European call for proposal	Support the promotion of up-and-coming STEM talent
Establish Framework Conditions	Promotion of awareness measures for the general public, prizes for the transfer of research to young people & for course excellence	E.g. Dual career services, facilities for internationalisation (appropriate schools, child care etc.)
Expertise in implementing added value	Interface: Economic Strategy Styria 2020: centres of excellence, clusters and support for operational innovation	
Governance	Networking and dialogue in politics and government Information for the science location (e.g. research institutions catalogue, science report)	Lobbying for the research location Styria Active incorporation in national and international processes

The mix of instruments – priorities

This mix of instruments requires weighting and prioritisation. The following instruments are viewed by stakeholders as being particularly important:

- Research infrastructure is accorded the highest priority. It creates sustainable location advantages and supports the "Shared Space for Science and Innovation," for collaborative use. Above all it should facilitate funding under the EU ERDF programme.¹⁵
- Endowed chairs are regarded as very important, but they should be used highly selectively. Within a period of 7 years it is possible to support some 3 to 4 endowed chairs.
- Networking and cooperation was judged to be very important. Within the themes that are dealt with by the Styrian „clusters“, they should be carefully supplemented through collaboration between science and industry.
- Project funding for calls for proposals: There will be a transition from individual project funding to a system for calls for proposals in which primarily young researchers and involvement of STEM themes will be supported. Calls for proposals will be used very selectively to address the major themes for Styria and to initiate collaboration.

For researchers at the beginning of their careers, especially in the STEM areas, simple complementary funding opportunities will be maintained (e.g. in the area of travel and events).

¹⁵However, this also requires a realignment of EU ERDF funding conditions.

Creating interfaces: Expertise in implementing regional added value

The cooperation between science and business in the location is of particular importance for the effectiveness of applied funding. In relationship to the areas of cooperation between science and business and operational funding the Economic Strategy Styria 2020 sets out the key interfaces. Through joint policy the strengths of science, research and business can be effectively evolved for the location.

The Economic Strategy Styria 2020 focuses on growth through innovation. Expertise in the implementation of regional added value is a particular goal. To achieve this, the following interfaces with science and research are defined.

Location management at the interface science and industry

- Location management emphasises the coordination of stakeholders from industry, science and education as a key success factor for development of competencies under the key themes of "Mobility", "EcoTech" and "Health Tech" as well as the technological core competencies such as "materials technology".
- Impulse centres will focus on the management of high quality specialist properties (including laboratories) for technology-oriented companies, in combination and coordination with research and educational institutions.
- Clusters play a supportive role in the location management as regional platforms. They manage the processes of location development. This includes enhanced synchronisation of the stakeholders in business, science and education

Science and industry collaboration: Centres of Excellence

Next to independent knowledge creation and exchange between science and industry, structured cooperation between science and business within the programmes and projects is the key element for the innovation performance of Styria. The participation of Styria in particular in cooperative programmes such as the centres of excellence will play a central role. Styria is actively involved in the financing of the centres of excellence. The centres of excellence establish "innovation clusters" in which medium to long-term collaboration between science, research and business is structured and enabled. They help create critical mass, allowing a systematic cooperation and are seen as an important instrument for location development. It is important that Styria maintains a key position in the strategic cooperation between science and industry.

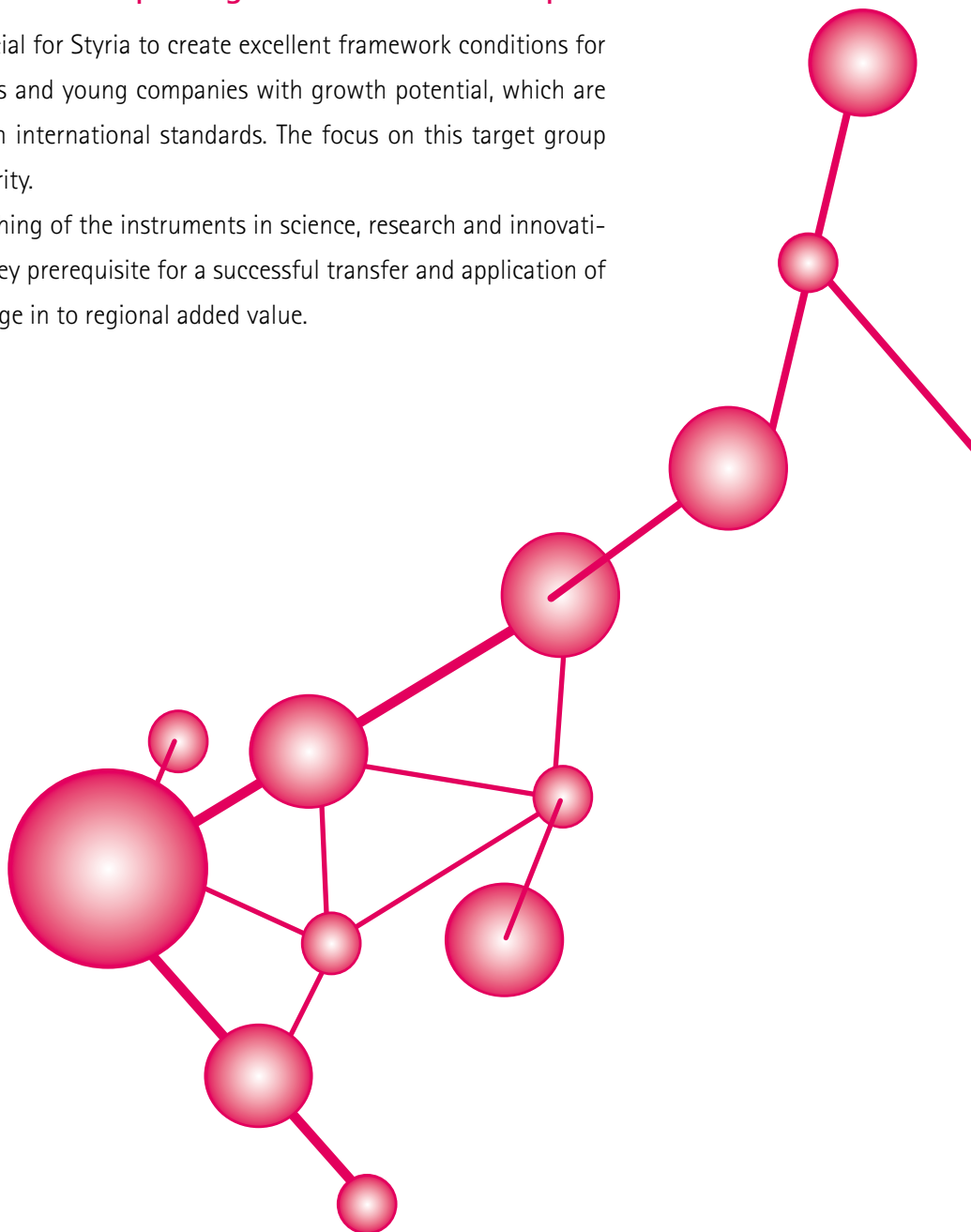
Operational innovation and R & D funding

- Improving the framework conditions for research transition and transfer capability should lead to the increasing use of research results from universities, research institutions and centres for innovation.
- In the development of industry highly innovative projects and those impacting location in particular will be supported, e.g. the relocation or construction of R & D facilities for new product lines. Particular importance is attached to research transition projects.

Entrepreneurship and growth of new start-ups

It is crucial for Styria to create excellent framework conditions for start-ups and young companies with growth potential, which are based on international standards. The focus on this target group has priority.

The meshing of the instruments in science, research and innovation is a key prerequisite for a successful transfer and application of knowledge in to regional added value.



Creating interfaces: Opening up networking with the regional education policy

The general interest of young people in science and research, and targeted promotion of young talent as well as the encouragement of young women into the STEM disciplines (science, technology, engineering and mathematics) is a major concern for the research area of Styria. Tackling these concerns requires active creation of the interfaces for integration, education and school policy as well as the coordination with the numerous initiatives from science and industry (Children's University, "The Fascination of Technology", work placements and academic prizes).

A Styrian-wide coordination platform for career guidance is desirable, especially for STEM education:

- Coordination of early interventions and initiatives (nurseries, the Children's university, etc.)
- Promotion of internationalisation and integration in schools and nurseries
- Promotion of the development of STEM priorities in the training of teachers at colleges of education
- Coordinated communications campaign for STEM subjects in location Styria

Support of national objectives

At the national level, the Austrian government has determined a new RTI Strategy¹⁶. By 2020, it is envisioned that Austria will advance from the current position of an "innovation follower" - to be amongst Europe's top group of "innovation leaders" thus positioning itself as one of the most innovative countries. The federal government aims to increase the R & D ratio to 3.76% by 2020, with the share of private R & D funding increasing to 70%. Styria is an important partner in Austria for achieving these objectives, whereby the quantitative target of the research ratio is already exceeded. Accordingly, it is necessary to further develop the position of Styria.

¹⁶Federal Republic of Austria (2011): Realising potential, increasing dynamics, and creating the future. The path to innovation leader. Strategy of the government for research, technology and innovation



Use of European programmes

The strategic architecture at European and national level has been re-designed following the Europe 2020 strategy and European instruments such as the Framework Programme and the EU Structural Funds will be coordinated and realigned. Europe 2020 aims at a sustainable and inclusive growth as well as smart growth supported by knowledge and innovation.

It is valid for Styria to participate in the support opportunities of the European Framework Programme. The main aim of the European Commission in the proposed "Horizon 2020" programme is the increased integration of research and innovation. The three pillars of the programme ("Excellent Science", "Industrial Leadership", and "Societal Challenges") reflect this. Styria already holds a good position in the participation in the Framework Programme within Austria. However, there is still significant potential to engage further at a European level.

Not least because increasingly larger flagships initiatives are arising out of the new initiatives at European level, oriented toward major societal problems, in which scientific research and new infrastructures interact with economic problem solving skills. This emphasises the necessity of an interaction between research centres, leading businesses, and the public sector (academia and industry). Regions that can manage such initiatives well develop specific location advantages. New forms of research management associated with business development are the future. The European regional policy instruments that are also important for Styria will be linked to Europe 2020. The Structural Funds and the Fund for Rural Development will in future focus more on R & D and innovation. An appropriate positioning of Styria in the area of RTI is important here. However, this requires creating the appropriate conditions from the funding regime of EU Structural Funds at a European and national level in order to make projects viable.



Governance

Budgetary provision

Higher education establishments and research institutions and their services, together with the innovative businesses provide the core location resource for securing the future of Styria. They are among major providers of employment and bring both education and new approaches to the economy and society. This also requires adequate budgetary provision for this policy field, because only then can the long-term competitiveness of the country be secured.

Supporting impulse generating location projects through the Styria Future Fund

Larger impulse projects gain strategic importance for the location but can rarely be funded from normal budgets. They are often positioned at the interface of "education, science and industry". In the first instance the "Styria Future Fund" should come into play here. The Styria Future Fund should be endowed accordingly and focus primarily on the promotion of projects, which are of vital importance and generate an impulse for the scientific, research and industrial location of Styria.

Strategic coordination of location partners

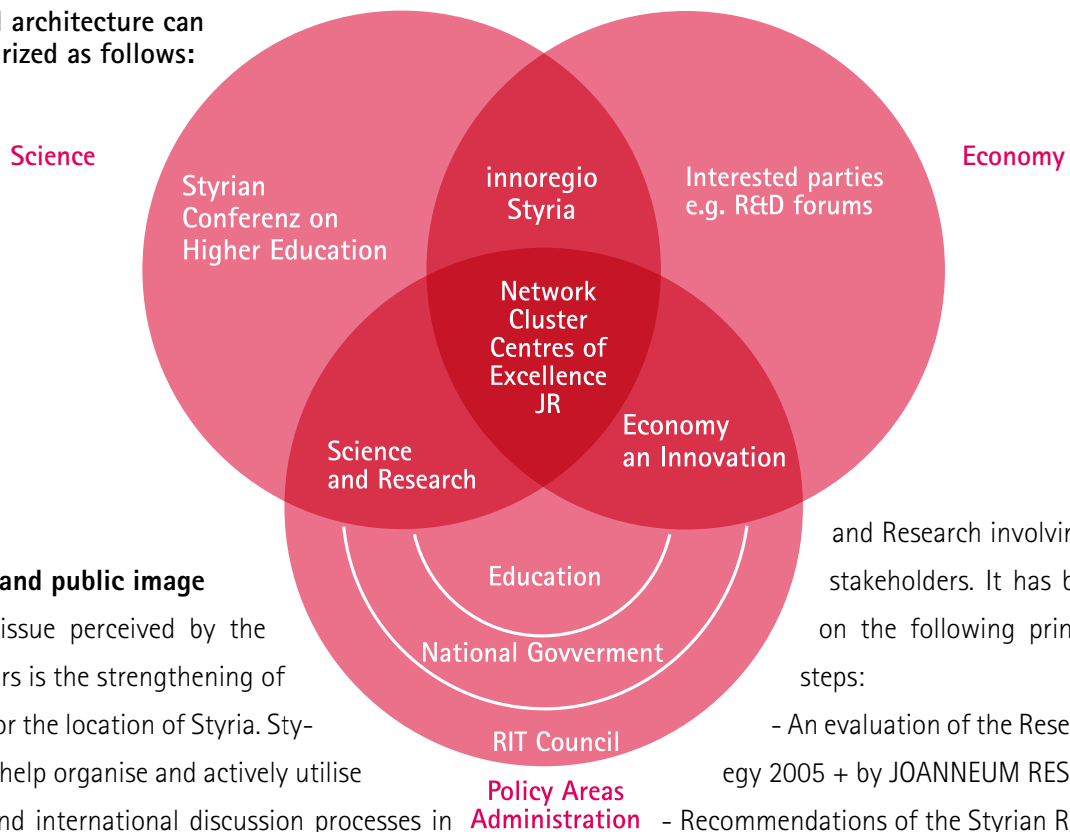
Coordinated development of the science and research base must be based on an internal provincial coordination between relevant ministerial departments and based on a concerted set of instruments. This requires a strategic communication and exchange of information between the ministerial departments involved about the science and research location including consideration of the initial brief.

In recent years, a number of "platforms" and "networks" have arisen:

- Innoregio as a platform with wide sponsorship from science, research, and industry as well as promotion and development facilities, and representatives of interested parties
- Conference on Higher Education: Coordination of the universities; partner for development of higher education and location-relevant projects
- (Research) networks and clusters as a support for location development, in particular through the development of strategic positioning of science and business
- JOANNEUM RESEARCH as an application-oriented research organisation with majority state ownership
- Styrian Research Council advising the Government especially on strategic concepts and monitoring of strategy(ies)
- University campuses: Of particular relevance here are the natural and applied science university campuses. They are key partners in relation to the framework conditions (e.g. nurseries and international schools) and location quality in terms of the cultural environment.



An overall architecture can be summarized as follows:



Lobbying and public image

A critical issue perceived by the stakeholders is the strengthening of lobbying for the location of Styria. Styria should help organise and actively utilise national and international discussion processes in science, research and innovation. This requires the presence and organisational capability on a national and international level, which in turn requires the appropriate conditions to be created.

Location Information

In cooperation with the location partners, work is currently in hand to prepare the essential foundations for the science and research location Styria. This includes, for example the "Styrian research institution catalogue" as an information base or monitoring on the perceived importance of science and research in the Styrian population.

Planning cycles

The strategy will be implemented through the annual planning processes by setting priorities and revised as a "living paper". A comprehensive realignment will be made at the latest within seven years, based on a review. The steps for implementation and the application of promotional funds will be documented in the Science Report Styria.

Development of the strategy

The strategy of the Province of Styria for the Promotion of Science and Research has been developed in the Department of Science

and Research involving relevant stakeholders. It has been based on the following principles and steps:

- An evaluation of the Research Strategy 2005 + by JOANNEUM RESEARCH
- Recommendations of the Styrian Research Council (RIT Council) (2006-2011)
- Internal departmental analyses and preparation in respect of objectives, action areas and instruments
- Interviews and coordination meetings with representatives of:
 - The research facilities
 - Industry and representatives of interest groups
 - The science and research policy and the state administration
 - The RIT Council Styria
- Stakeholder workshop with representatives from academia, industry, social partners, and policy and management in collaboration with innoregio Styria
- Discussion in the Styrian Conference on Higher Education
- Discussion of the Research Council Styria

In this context we would most sincerely like to thank all stakeholders for their active participation.