

15 Years of EXIST "University-based start-up programmes"

Development of the EXIST funding programme between 1998 and 2013

Dr Marianne Kulicke

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Fraunhofer-Institut für System-
und Innovationsforschung ISI
Breslauer Straße 48
76139 Karlsruhe

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The EXIST funding approach – University-based start-up programmes

Initial situation prior to the EXIST competition – entrepreneurs from universities

The point of departure for the idea of the EXIST competition in 1997 came in the form of a statement from the US Council on Competitiveness: "... the greatest opportunity to strengthen the national system of innovation lies in improving the synergy between universities, research institutions and industry". At this time, the German Federal Ministry of Education, Science, Research and Technology (BMBF) also identified the following deficits in Germany (EXIST brochure 1998: 2):

- Despite the large number of university graduates, only a small number dare to make the transition into professional self-employment or start up their own companies.
- The level of technical qualification at universities and universities of applied sciences is excellent, however matters relating to entrepreneurship do not feature in curricula, and a culture of entrepreneurship is lacking in teaching, research and university management.
- Despite the increased number of innovative business start-ups appearing in the 1990s, the great potential for start-ups at universities is rarely exploited. Apart from a few examples of universities which have a successful tradition of setting innovative start-ups into motion, the subject of entrepreneurship does not seem to factor at all at many universities.

Spin-offs as a means of technology transfer

In this context, the BMBF wanted to use EXIST to find new ways of promoting technology-oriented, knowledge-based spin-offs. EXIST was conceived as a building block in the Federal Government's package of measures for promoting the transfer of innovation and technology, as innovative business start-ups were regarded as an important tool for the commercialisation of knowledge and research findings. The key objectives formulated were thus closely in line with the 1998 reform of the German Higher Education Framework Act, which was concerned with including "transfer" as a third task for universities alongside their work in teaching and research. Added to this was the BMBF's commercialisation campaign, which was intended to create the conditions for research findings to reach the market more quickly. The abolition of the "Hochschullehrerprivileg" (university lecturers' privilege), which was brought about as a result of the reform in the German Employee Inventions Act at the beginning of 2002, served the same purpose.

Key objectives of EXIST

1. Establish a culture of entrepreneurship in university teaching, research and management for the long term.
2. Consistently translate the findings of academic research into economic value – also for the purpose of the technology transfer mandate for universities as set forth in Section 2 Para. 7 of the German Higher Education Framework Act (HRG).
3. Promote the huge potential for business ideas and entrepreneurs at universities and research institutions in a targeted manner.
4. Significantly increase the number of innovative business start-ups and create secure new jobs in the process.

Innovative approach – combination of funding for institutions and individuals

The concept of EXIST as a competition was based on the BioRegio competition which was launched in 1995. This contributed to strengthening the regional infrastructure for companies in the biotechnology industry as a result of its motivational impact, enabling these companies to tap into a climate in which growth is promoted. The BioRegio competition became a model for numerous subsequent measures, the majority of which were stopped or replaced by other measures after a few years. The German funding system has no other funding programme like EXIST; it has the longest duration and currently follows a series of four phases. The EXIST funding approach, its initial approach and struc-

ture had a clearly innovative character for start-up funding and represented a paradigm shift in funding policies: it directly benefited start-up initiatives with a focus on universities rather than new start-ups. To begin with, the initial conditions – both for individuals and institutions – were to be improved so that more people would venture the step towards entrepreneurship and the quality of start-ups would increase, as well as to ensure that knowledge and research findings would be converted into economic value.

The EXIST funding approach: integrating elements of technological, company and regional funding and focussing on networks which promote innovation

Promoting networking: stronger networks between universities and institutions in the region which provide support for start-ups in varied ways

Promoting integration: participation of institutions that represent large sections of the value chain

Promoting a favourable climate: emphasising that an environment which promotes innovation is a crucial requirement in order to attain goals in terms of technology and innovation

Promoting motivation: increasing the motivation for students and academic employees in universities and research institutions to enter into self-employment

Promoting skills training and qualifications: strengthening knowledge and skills required in order to set up a business and manage a new company by consolidating the qualifications gained in higher education and promoting further training

Promoting consultation: creating services for support and advice which both provide support when preparing for a start-up and developing a company and are tailored to the specific requirements of spin-offs from universities and research institutions

When EXIST was launched, the priority was to encourage a culture of communication and cooperation within a region and to structurally link universities and research institutions with their regional environment (forming networks to support start-ups, including universities as members of the regional system of innovation). This was based on the premise that only with the cooperation of regional institutions in fixed network structures can the quantity and quality of spin-offs from universities and non-university research institutions be improved.

Current EXIST funding programme lines

When the programme was first launched, EXIST focused exclusively on supporting institutions and only provided indirect assistance for individuals and companies. In March 2000, however, a funding line for individuals was introduced in the form of "EXIST-SEED" (a broad approach, replaced by the EXIST "Business Start-up Grant" programme in 2007) and another such scheme came in May 2007 in the form of the "EXIST Transfer of Research" programme (an approach based on excellence).

**EXIST-Gründungskultur
Strukturförderung**
("Culture of Entrepreneurship")

... provides support for universities, enabling them to formulate a holistic, university-wide strategy for a culture and spirit of entrepreneurship, and to implement this in sustainable and visible manner.

**EXIST-Gründerstipendium
Personenförderung**
("Business Start-up Grants")

... provides support for preparing innovative, technology-oriented and knowledge-based start-up projects developed by students, graduates and academics.

**EXIST-Forschungstransfer
Personenförderung**
("Transfer of Research")
(approach based on excellence)

... funds both the development work required in order to prove the technical feasibility of research-based start-up ideas as well as the preparations needed in order to start up the company.

“EXIST - Business Start-up Grants” and “EXIST - Transfer of Research” provide direct financial funding for setting up a new company by means of grants. Both of these target the preparation stages of a start-up business, i.e. before the company is officially founded. This enables those interested in the start-up to develop a business model, test its economic viability, secure the required sources of funding and take the first steps in the process of developing the business. Above all, it allows checking whether the entrepreneurial activity can tally with their interests and abilities and whether the start-up team can work well together. All of this can be achieved without taking personal risks during the one-year funding period, which covers the personal living allowance (“lean entrepreneurship”) (see Kulicke 2014). With the “EXIST Transfer of Research” programme, extensive development work for demanding start-up projects can also be carried out in the parent organisation, making use of the resources available here in order to create the commercial basis for a new company. Financial support is provided here, both for the preparation stages of the start-up and the first phase of developing the business after it has been formally founded.

The European Social Fund (ESF) has been co-financing the “EXIST-SEED” and “EXIST Business Start-up Grant” programmes since 2005, and the “EXIST Culture of Entrepreneurship” programme since 2007.

EXIST as a package of opportunities for funding

The three funding lines “Culture of Entrepreneurship”, “Business Start-up Grant” and “Transfer of Research” form the core of EXIST. Other temporary services have also been available in the past. The “**EXIST-HighTEPP**” (High Technology Entrepreneurship Postgraduate Programme), a post graduate college created as a joint project from universities in Jena, Bamberg and Regensburg, was launched in April 2000. In addition to providing university qualifications for young academics, it was also intended to support start-up projects and to contribute to the training of managers for dynamic high-technology companies. The college worked with start-up companies, venture capital donors, business consultants and established technology companies. The practical work, training modules and research activities could be carried out both in Germany and abroad. 21 grant recipients from the fields of business administration, business informatics and the sciences received funding until February 2006. This also included the **EXIST-PrimeCUP**, a business game competition which was initially limited to Baden-Württemberg and has been held throughout Germany since the beginning of 2007, receiving extensive EXIST funding until the end of 2012. The competition takes place every year and consists of four stages: the campus cup (university level), the master cup (regional level), the professional cup (national level), and the champion's cup (final). The best teams at a given level progress to the next level. Lower entrance barriers allow students to familiarise themselves with the subject of entrepreneurship in a game. It is intended to raise awareness and understanding among the target groups and to impart the basic knowledge required in order to start a business; to a certain extent, it also serves to help match entrepreneurial teams. A large number of universities from throughout Germany participate in the competition, and it has been held in the three German speaking countries (Germany, Austria, and Switzerland) since 2013.

Developing new ideas in the form of a competition – knock-on effect of the call for application

The notice of the competition in December 1997 marked the launch of EXIST, and the BMBF used this opportunity to create the impetus to form networks. The support for developing the concepts and the relatively large amounts of funding for implementing the measures provided a strong incentive. It was intended to allow regional players to come together and organise their own common overall objective (impetus in a top-down approach, implementation in a bottom-up approach). The condition was that at least three different partners from a region, one of which being a university, should work together. This was based on the assessment that funding for start-up companies from universities is especially effective if they are founded as part of integrated and interconnected overall concepts. 109 proposals (80 of

which were in accordance with the specifications on the call for entries) were entered into the first round of the EXIST competition by February 1998. Practically every university and a number of "Fachhochschulen" (universities of applied sciences) took part, i.e. over 200 universities, also with a large number of non-university partners taking part. 12 initiatives from these proposals were initially selected by a jury to receive funding for the concept phase. This enabled them to develop a common concept with a variety of individual measures as a consortium of applicants. The final 5 EXIST initiatives were selected in August 1998 and set into motion in December 1998/January 1999.

One of the important environmental factors in the great response to the EXIST competition among the academic community in Germany was the euphoria resulting from the new business possibilities that were opened up by the internet and information and communication technologies at the end of the 1990s, as well as the associated boom on the new market. This positive response came from a huge number of students, graduates and academic staff at universities and research institutions, who now considered an entrepreneurial activity a rather attractive prospect. Once the start-up euphoria had come to an end in 2000/2001, EXIST played a crucial role in ensuring that the subject of entrepreneurship both retained its presence and was further developed within universities (stabilising effect).

Continuous development of the programme

Although EXIST has been funding various start-up initiatives since the end of 1998, it was not originally intended as such a long-term endeavour, and the programme has not remained unaltered throughout this long period of time. The programme has covered four different phases to date in its core area – i.e. the funding of university start-up initiatives ("EXIST Culture of Entrepreneurship") –, with considerable variation in the number of start-up initiatives being funded but only slight variations in the assistance mechanisms.

The 4 phases of the programme are listed below, along with the number of initiatives and universities supported:

- I Funding for 5 EXIST model initiatives, with 20 universities
- II Funding for 10 EXIST transfer initiatives (EXIST transfer), with 37 universities
- III Funding for 47 EXIST projects after 3 rounds of funding (EXIST III), with 86 universities
- IV Funding for 22 EXIST IV projects, with 24 universities (EXIST entrepreneur university)

EXIST – a learning programme

The content is further developed in each of these four phases, building on the experiences gained in the previous phase. EXIST can clearly be referred to as a "learning programme". In actual fact, EXIST is a series of several funding programmes, which overlap both in terms of their schedule and especially in terms of the subjects addressed, but also with smooth transitions. None of the many universities receiving EXIST funding to date have been funded as part of a uniform partnership framework since 1998, and only very few of them have been funded throughout the entire period. This could either be perceived as a lack of continuity or as evidence of permanent development. At the start of 2006, the BMWi (German Ministry for Economics and Technology, now the Ministry for Economy and Energy) took over from the BMBF as the organisation responsible for EXIST. The content of the programme was restructured in the process, and since that time the focus has been on taking research findings and incorporating these into specific business concepts. EXIST III and the EXIST entrepreneur universities were implemented by BMWi.

Clear knock-on effects of the EXIST competition on universities in Germany

The first phase of the programme was very selective and only funded five initiatives, but the impact of the EXIST 1997/98 competition reached far beyond these initiatives: According to a study of 47 non-funded networks (Krantz/Lilischkis/Wessels 2000) from the first stage of the competition whose con-

cepts were deemed worthy of funding by the jury, around two thirds of these implemented at least parts of their concepts. 77 universities were involved in these projects. Funding came from German federal states or private sponsors. Fraunhofer ISI has been carrying out supporting scientific research for EXIST since 1999, and in mid-2001, it counted 37 entrepreneurial support networks in Germany (mostly with 2 to 3 universities and partners), 42 university-wide initiatives and 16 existing individual initiatives at universities. A total of 159 universities were involved in these 95 initiatives.

From the concept of a network to the entrepreneur university

The initiatives from the first phase of the programme represented distinct network partnerships involving one or more universities and a variety of partners from academia, industry, the financial sector, as well as public and private consulting institutions, infrastructure suppliers, economic development agencies and the like. The five model initiatives were **multi-measure/multi-player approaches** geared towards bundling services and resources from these players with different interests in generating spin-offs from universities. The "EXIST Transfer Initiatives" also represented networks, but of a significantly less distinct dimension. The EXIST III projects were either smaller networks with a maximum of two partners or only focused on one university. They did, however, have everything from very close to loose network relationships with many institutions from their regions although these institutions did not receive any EXIST funding. The focus of EXIST IV is clearly on individual universities and developing a culture of entrepreneurship here, but this does not mean that other institutions do not also benefit from the funding by means of subcontracts. Nevertheless, no associations are explicitly supported.

The heterogeneous target groups of EXIST

The **target groups** of the EXIST competition in terms of institutions were all of the state universities in Germany, however non-university research institutions were not excluded from being network partners. This initial focus was reflected in the name of the programme: "EXIST – Entrepreneurs from Universities". From 2006 onwards, this institutional orientation towards research institutions from outside universities was documented by the change to "EXIST – University-based Start-ups". Institutions of this kind played a significant role in few initiatives (see Dornbusch/Kulicke 2010). Particularly in the first phase of the programme, in which the basic structures and services of the entrepreneurial support programme were first developed, implemented and tested for effectiveness, part of the funding also went to non-university network partners. This dropped considerably in the subsequent phases. EXIST addressed students, university employees, graduates and non-university entrepreneurs as its **personal target groups** from the start. In the first two phases of the programme, the majority of services geared towards motivation and qualification provided by the initiatives were aimed at students. It was only in the third phase that more wide-reaching measures explicitly tailored to academic staff or alumni were implemented, with the aim of harvesting greater amounts of their potential for technology-oriented, knowledge-based business start-ups. Active idea scouting and technology screening provide just one example of these kinds of measures.

Conceptual approaches for implementing EXIST objectives as a selection criterion

In all four phases of the programme, only those applications deemed to be of high quality by the jury went on to receive funding. Proportional representation according to the type of university (technical university, full university, universities of applied sciences) or regional representation were not taken into account. There was ultimately a particular incentive for universities with less of an emphasis on research, and it was evident that the players in large, renowned universities had bigger hurdles to overcome at least in the first two phases of the programme. Universities of this kind rarely managed to develop their technical/scientific departments to a greater extent than smaller, less renowned universities.

EXIST covers the entire process of creating the business from the start-up onward, employing a very broad approach

One of the specific characteristics of EXIST is the fact that the individual measures of the initiatives are put into practice as the entrepreneur starts the process of founding the company. The first step – before specific start-up plans are supported, as is the procedure with other federal and state funding measures – is concerned with raising awareness among students, academic employees and even professors, motivating them and providing them with the skills they need in order to tap into the innovative potential of the academic institution and non-university research institutions through new start-ups. EXIST aims to get entrepreneurial processes up and running, and not just those that lead to more start-ups in the short term. In fact, the aim is to encourage more graduates and academics to embark on an entrepreneurship, as well as to give them the skills they will need in order to set up and manage a new company at a later point in their professional careers. A wide range of advice, coaching and access to laboratory equipment, devices, and related activities is aimed at spin-offs directly connected with a degree or research activities. In the third phase of the programme (as of 2006), "generating business ideas" through systematic idea searches or technology screening was added as another important action area. This area did not play a large role in the first phases of the programme, even though EXIST was designed as a means of information and technology transfer.

Very demanding where initial conditions are unfavourable, long funding periods required

The claim made by EXIST was very ambitious in view of the initial conditions; however, the processes of change take a long time as the aim is make a relatively broad impact on the complex university organisation. The BMBF initially assumed that, after three years of financial support for the five "EXIST Model Initiatives", the funding goals would be achievable and it would no longer be necessary for the state to make a further commitment to funding, with other institutions taking over the additional funding. The same applied for the other phases of the programme, which only budgeted for a three-year funding period for each initiative at the most. With EXIST IV, the funding can be continued for a further two years provided that the first three years have proved successful. Even in the first phase of the programme, it was clear that successfully implementing the concepts depends very much on those who promote the concepts in universities (professors, first and foremost), and on support from those who manage the universities. The incentive of generous funding from the BMBF provided motivation, and the funding gave them the opportunity to produce successes in order to reduce the high levels of – partly justified – reservations within universities with regard to the subject of entrepreneurship. Since then, the topic has appeared on the agenda at many universities, as is shown by developments such as the concept proposals and strategic concepts in EXIST IV applications.

The effects of EXIST can only be measured after a long period of time has passed

EXIST is geared towards developing a culture of entrepreneurship in teaching, research and administration and stimulating entrepreneurial activity from universities. From a short-term, mid-term and long-term perspective, it is concerned with start-ups which are put into practice immediately or at a much later point in time. It is almost impossible to determine the effects of the EXIST initiatives, particularly on the entrepreneurial behaviour of individuals, five or ten years after they have left university.

Availability of experienced start-up consultants: a challenge for all initiatives

One problem that has been facing many EXIST initiatives from the very outset is the shortage of qualified (academic and non-academic) staff available to provide entrepreneurial support. This is because the three-year duration of the funding paid at public service rates is not as attractive for experienced individuals as the benefits of a position in industry. This is particularly the case for those with practical experience in the sectors of consulting/training, networking and financing. Many of the people involved in providing entrepreneurial support at universities could no longer be kept on after the first two phases of the programme. From the third phase of the programme onwards, the majority of universi-

ties could at least partially make the positions stable and thus retain the staff experienced in providing entrepreneurial support.

Sustainability of EXIST funding proved difficult in the beginning; considerable progress in the interim

At the end of 2005 and the beginning of 2006, the state funding for the 5 model initiatives and the 10 transfer initiatives came to an end. The vast majority were able to continue their services, but some with a reduced scope. Part of the financing was provided by universities (often 0.5 to 1 position per university), and part was provided by funding from federal states or the EU. A large proportion received additional funding from EXIST III at a later stage. Only a very small number of initiatives were completely or largely stopped. Most importantly, the Entrepreneurship Education programme had been established at this point (see Schleinkofer/Kulicke (2009)), as had the services for consultation/coaching – mostly in cooperation with other university or non-university based institutions. Conversely, the measures for accessing and raising awareness among the target groups had been significantly reduced. Some of the initiatives ended up merging with other regional initiatives for promoting entrepreneurship, as a greater number of activities geared towards promoting entrepreneurship emerged in Germany after EXIST was introduced (e.g. regional business plan competitions, start-up networks, initiatives promoting entrepreneurship), partly prompted by this programme, and partly independent of it. There was no way that a practical solution for the problem of "securing sustainability" could be offered without public funding, at least with regard to the start-up initiative as a whole. This did not affect entrepreneurship education, as this was not financed using EXIST funds and was secured predominantly by means of funding from the university itself. Attempts to generate profits to support the start-ups of trusted entrepreneurs or venture capital donors proved unsuccessful. Some universities managed to secure private sponsors to provide considerable funding for individual measures.

To a large extent, the 47 EXIST III projects managed to continue with parts of the support services they had developed using funding from the BMWi, EFRE and ESF funds (2007 - 2013 funding period) opened up significant scope for some of the German federal states (predominantly in the eastern and the structurally weaker West German states) to promote start-up initiatives at universities and thus consolidate the developments initiated by EXIST. A study by Fraunhofer ISI (Kulicke et al. 2012) found that, in all of the 117 universities receiving EXIST funding since 1998, significant progress has been made on the path toward achieving a culture of entrepreneurship in teaching, research and administration in the various departments. A whole range of the entrepreneurial support services and structures which were introduced as a result of funding from EXIST were consolidated to varying degrees, even after the funding came to an end. Entrepreneurial support is embraced as a duty by the majority of the 117 universities. Chairmanships and professorships of entrepreneurship contributed to this in teaching. Technology transfer services or specific centres for entrepreneurship or for business start-ups also play an important role in making the subject visible within academic institutions.

Characteristics of the four phases of the programme

The first five EXIST initiatives – models for effective ways of supporting entrepreneurship

The aspect that played a decisive role when selecting the five initiatives was the idea that the initiatives should implement their concept as models for other regions, thus gathering experiences of how the EXIST objectives are viable in completely different regional and university-related contexts. The intended impact on the regional potential for innovation and the universities was also largely reflected in the objectives of the initiatives. They were heterogeneous in terms of the number of their network partners and the organisational implementation of the individual measures (decentralised/centralised organisation, university-based/non-university based project coordination). 20 universities and universities of applied sciences contributed to the five model initiatives.

Steps geared towards implementing these multi-measure/multi-player approaches:

- Forming organisations, grouping the existing resources and skills, increasing staffing capacities
- Integrating network partners (at the end of 1999 there were between 15 and 60+ network partners per initiative) to varying degrees
- Drafting, implementing and testing out new proposals in different subject fields, and adapting these based on the experiences gained from using the services
- Expanding what was originally a very limited circle of university employees involved in implementing the EXIST initiatives
- Attracting professors from the fields of economics and technical/scientific subjects, who picked up on the subject of entrepreneurship in courses and other activities in their professorships

The "EXIST Model Initiatives" were largely entering into uncharted waters in universities by developing new services and measures for the purpose of both creating a culture of entrepreneurship and training, supporting and raising awareness among those interested in entrepreneurial activities. The EXIST funding gave them the finances and time they needed in order to try out new teaching and learning formats, demonstrate how supporting spin-offs could benefit their institutions, enter into cooperative activities with regional and cross-regional network partners and much more (see Kulicke (2006)). Some of these proved to be productive, whereas others were less efficient and some proved ineffective.

The most important issues for the EXIST initiatives

- Raising awareness of entrepreneurial potential (students, graduates, university employees)
- Media presence/PR for the measures, diffusion of information to those interested in starting new businesses, involvement of non-university institutions as network partners
- Skills development and qualifications (services embedded in the curriculum, opportunities for further training for those interested in starting a business/budding entrepreneurs)
- The search for specific start-up ideas
- Consultation/coaching for start-up projects
- Guidance as part of EXIST SEED
- Incorporating external best-practice knowledge relevant to EXIST, exchanging experiences with different establishments at a regional, national and international level
- Start-up research

During the course of the implementation of the concept, a circle of key players who were primarily responsible for the operative activity as well as the strategy's development was formed for all of the model initiatives. The core team consisted predominantly of university representatives (professors, employees from the technology transfer offices), and other partners supported the initiatives point by point on individual issues. Many of the institutions involved in the original application for EXIST funding

were either unable to get involved in the network as part of the concept's implementation or quickly pulled out of the process as their expectations were not met or business start-ups were no longer part of their field of business (primarily holding companies, business angels, private business consultancies, companies, credit institutes). This was linked first and foremost to the end of the internet/multimedia boom, which saw the subject of entrepreneurship attracting much less attention from the public as had previously been the case.

The original expectation of the funding sponsor was that, after three years of knock-on financing the initiatives could be continued without BMBF funding using other funding possibilities. However, it soon became apparent that the process of creating a culture of entrepreneurship in universities takes a long time and comes up against many hurdles. Even the first stage (designing and implementing measures to stimulate entrepreneurship) proved very time-consuming, thus it became clear early that a second phase of funding would be necessary. It started early in 2002, with the aim of securing the networks after the BMBF funding period. It no longer covered all of the expenses, and the increasing contributions from the participating organisations varied between the old and new German states.

"EXIST-Transfer" – Diffusing experiences to another ten start-up initiatives

In parallel with the second funding phase of the "EXIST Model Initiatives", the BMBF announced another competition in spring 2001: "EXIST-Transfer". This aimed to achieve a broad transfer of results and experiences to a larger circle of initiatives, primarily in the sectors of entrepreneurship education, entrepreneurial qualifications, network development and coordination, project management, entrepreneurial support and coaching. The decision was made to forego a concept phase that would be funded over several months. This was because the vast majority of applicants were already running an entrepreneurial support programme using state funding after participating in the first EXIST competition in 1998. Furthermore, they did not require too much room for manoeuvre in terms of organisation as the intention was for them to adopt effective proposals of the EXIST model initiatives in a manner which was adapted to their university environment. Each EXIST transfer applicant had to name one or several model initiatives as partners whose experiences were to be incorporated into the development and

As of summer/autumn 2002, ten EXIST transfer initiatives received financial support. This amounted to €1.1 million per start-up initiative (regardless of the number of universities involved), effectively based on a period of approximately 3.5 years. The funding from the BMBF, which was considerably lower in comparison to that of the EXIST model initiatives, suggested that initiatives with a limited number of network partners should be developed. However, this number referred primarily to non-university institutions rather than the universities involved. Credit institutes and private consultancy agencies were rarely among the network partners, and only a few non-university research institutions were partners – and only in a marginal capacity at that. Many of the ten transfer initiatives were, however, on a level with the EXIST model initiatives in terms of the large number of universities and technical colleges involved. The process of integrating several universities into the networks – particularly with larger universities – proved difficult or at least time-consuming in certain cases, as the lower amount of EXIST funding offered less of an incentive. The turnaround in the general start-up euphoria of 1998/2000 also hindered the process of embedding the concept of entrepreneurship into universities and also negatively impacted on the target groups' perception of the EXIST transfer initiatives. Moreover, the ten initiatives were faced with the challenge posed by the fact that far-reaching transition processes were beginning in various areas of the universities during this decade (e.g. the change in German degree courses to adopt the Bachelor's and Master's format). They offered opportunities for improving the integration of the subject of entrepreneurship in university education, but only allowed the management of universities financial leeway in certain respects. For instance, at around the same time as when EXIST was launched in 1998, a variety of services geared towards supporting technol-

ogy-oriented start-ups and other kinds of start-ups appeared in practically every region of Germany, and the EXIST-Transfer initiatives were also able to cooperate with these without intensive support.

When the start-up euphoria came to an end in the late 1990s, entrepreneurship became noticeably less attractive as an alternative form of career to pursue after university or later on in professional life. After this time, it also became more difficult to attract professors who would incorporate the aspects relating to entrepreneurship into their lectures or be seen to promote the subject. In general, a more time-consuming and lengthy process was required in order to get promoters involved. "EXIST-Transfer Initiatives" with several university locations and a larger number of sub-projects quickly reached their limits in terms of staffing. Their focus was on the same areas as the "EXIST Model Initiatives": raising awareness and understanding of the issue of starting a company, developing entrepreneurship education and further education related to entrepreneurship, services for consultation, coaching and incubation (see Kulicke 2005). They did not, however, have the same financial room for manoeuvre as the considerably more intensively funded "EXIST Model Initiatives" in the first phase of the programme. Certain "EXIST-Transfer Initiatives" covered a number of universities located at a distance from one another. This proved to be an obstacle during the operational work and also prevented the implementation of programmes gathering students from several locations together. Most of the initiatives were, however, able to call on the co-financing of sub-projects from the respective German federal state or other sources of funding. In some cases, the initial effects of EXIST funding even proved positive when it came to continuing the initiatives after the funding period had ended.

From the beginning, it was decided that the three-year funding period for the "Transfer Initiatives" would not be extended by the same length of time. The reasons for this were more of an internal BMBF nature rather than objective. The intention was for applicants to develop concepts geared towards ensuring sustainability after the phasing-out of the funding while they were still receiving funding. But ultimately, due to a lack of options for funding, the sustainability measures from the majority of initiatives were somewhat vague.

EXIST III – Restructuring EXIST with 3 rounds of funding (2006, 2007, 2008)

As of 2006, and after the shift in management from BMBF to BMWi, the previous assistance mechanisms underwent partial reorientation. However, no significant changes were made to the key objectives of EXIST or its approach to funding.

Areas in which the restructuring of the previous assistance mechanisms is evident:

Developing the network of more or less uniformly structured, university-related start-up initiatives was no longer the priority, rather the focus was on funding clearly delimited projects in order to fill the remaining gaps in the qualification and support services provided by universities and research institutions in a targeted manner in order to achieve EXIST objectives and implement new approaches.

The BMWi took the greater importance of the research institutions into account by changing the name of the programme: "EXIST – University-based Business Start-ups". This meant that research institutions became the partners of funded universities significantly more frequently, however the majority of them were not among the key players in the initiatives.

There was now a stronger emphasis on gearing funding towards students in technical/scientific departments (as potential entrepreneurs for the long term) and academic personnel in universities and non-university research institutions (as potential entrepreneurs for the short term), as well as towards alumni.

The action areas explicitly referred to were also expanded to include the subject of "Generating ideas - generating and implementing concepts for technology and knowledge-based business start-ups".

Projects of a model character and with the potential to set an example for other institutions and initiatives were eligible for funding, as were projects which adopted tried-and-tested approaches from previous EXIST networks or similar initiatives and transferred these to a university setting. In practice, however, the concept of project-oriented funding to fill gaps in a targeted manner was not implemented quite so consistently, as a large proportion of the recipients of funding only offered entrepre-

neurial support on a small scale, i.e. EXIST funding was used to scale this up and the broaden the target groups. Overall, there was a greater consideration of the specific characteristics of the university contexts and initial situations. Everything from very large universities, technical universities and large to relatively small universities of applied sciences were involved in the EXIST III projects. This meant that the number of students and academic employees in the technical/scientific departments varied. This range within the university contexts and the initial conditions proved very successful. In the less research-intensive universities in particular, it was often much easier to anchor the subject of entrepreneurship with a larger circle of professors than often the case at universities with a reputation for research, in which professors often demonstrated a considerably more sceptical stance towards the subject of entrepreneurship ("lack of a connection with academia"). The way in which entrepreneurial support was accepted and anchored in the university ultimately also depended on the incentives for university management and professors.

The EXIST III projects eligible for funding were intended to cover a number of carefully defined action areas.

EXIST III action areas

Generating ideas: generating and implementing ideas for technology and knowledge-based business start-ups

Consultation: advising and supporting technology-based and knowledge-based start-up projects

Qualification: developing and implementing measures geared towards fostering entrepreneurship skills and gaining qualifications in this area

Raising awareness and understanding: raising awareness among and motivating potential entrepreneurs

Supporting the "EXIST Business Start-up Grant": planning and implementing activities geared towards increasing the level of participation in the "EXIST Business Start-up Grant" programme

The three phased selection rounds (in 2006, 2007 and 2008) and the focus on project funding resulted in a significantly higher number of individual projects than ever before, and a greater level of heterogeneity between these projects. 17 EXIST III projects were selected for funding in the 2006 funding round, and 15 projects were chosen in both the 2007 and the 2008 rounds, following a two-stage selection process in each case. 86 universities were involved in the total of 47 projects. The first projects were set in motion in spring 2006, and the funding for the last projects came to an end at the beginning of 2012.

The broadening of the measures to encompass the technical/scientific disciplines (students), the explicit targeting of academics and the great importance placed on the new "generating ideas" action area came about due to the fact that the number of fast-growing technology-oriented or knowledge-based start-up projects was deemed too low. These shifts in the emphasis demonstrate the way in which the EXIST funding programme consistently continued to develop after the subject of entrepreneurship had been well anchored within the economic sciences, and at student level in this area; this was primarily due to the activities of those holding professorships in entrepreneurship or economic sciences with a connection to entrepreneurship, and partly due to experiences gained in terms of developing technical/scientific departments with a relevance to entrepreneurship.

The universities employed a broad range of different procedures in the "generating ideas" action area; some of these proved effective, whereas others turned out to be less effective. The process of generating ideas is generally regarded as an important aspect of programme promoting entrepreneurship in universities. In this case, the aim is not only to support those who have developed an interest in starting a business, but also to improve technology and knowledge transfer. Hence, beside measures designed to raise awareness and promote skills development, it is also crucial to get researchers with useful knowledge and research findings interested in commercialisation. EXIST III is intended as a way of developing the somewhat lacking culture of commercialisation (albeit with considerable differ-

ences depending on the subject in question) among persons with knowledge and know-how at German universities. The process of incorporating the subject of entrepreneurship into research groups, developing business models derived from research findings, providing researchers with guidance on the path to becoming entrepreneurs and matching them with co-entrepreneurs is a very time-consuming process that requires an intensive use of personnel.

Various ways of providing motivation, skills development, consultation, and incubation for entrepreneurship were explored in EXIST III (see Kulicke/Dornbusch/Schleinkofer 2011). There was also an active exchange of experiences between the EXIST III projects and other start-up initiatives at universities. At some universities, additional projects for more spin-offs were also supported by funding from the EU, the Land or the BMBF funds.

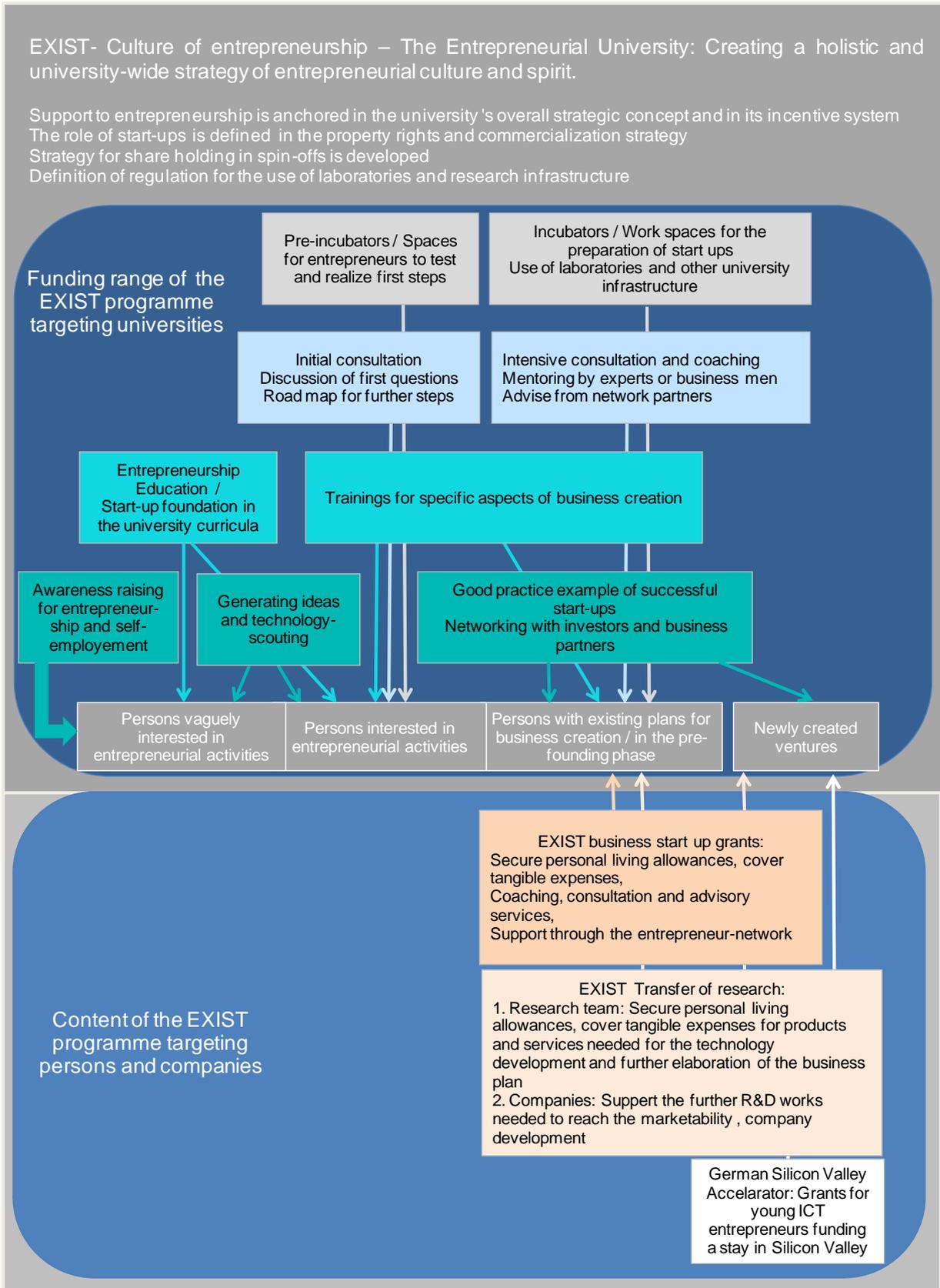
"EXIST Entrepreneurial University" – The university institution at the focus of the funding

University-based start-up initiatives entered a new phase of funding in 2010. Key objective 1 of the EXIST programme is particularly concerned with changing the institutional conditions. In order to achieve this, the guidelines of the fourth phase of the programme set significantly more ambitious demands for the universities to be funded than was the case in the earlier phases. This point of departure represents the crucial point in the reorientation of EXIST IV: An "excellence approach" is now being employed in order to support universities and universities of applied sciences which would like to further develop their status as institutions with a reputation for entrepreneurship, with a view to sustainably exploiting the potential for technology-oriented and knowledge-based start-ups in a given university location and enhancing the entrepreneurial approach and behaviour adopted by students and academic staff. The aim is for the university as a whole to make the subject of entrepreneurship part and parcel of the institution, and not just an external funding project supported by a professorship in entrepreneurship and/or the technology transfer institution. The university should try to establish a culture of entrepreneurship in its teaching, research and management. To do this, the "EXIST Culture of Entrepreneurship" requires the funded universities in the duty to anchor entrepreneurship support in their general principles and the incentive system for professors and academics. They must also attach a specific level of importance to start-ups based on property rights and research findings in the patent and commercialisation strategy, formulate a strategy for becoming involved in spin-offs and communicate this within the university, and ensure that regulations are firmly in place for the use of laboratories and the research infrastructure.

A further requirement is for entrepreneurial support ("Entrepreneurship Centre") to be anchored into the institution for the long term; this should cover broad sections of the university in a sustainable and cross-departmental fashion. The "EXIST Entrepreneurial University" is a continuation of the previous five action areas from EXIST III in terms of the person-based starting points, as well for the intermediaries and in the infrastructure sector.

Only universities wanting to take such a far-reaching step receive significant financial support from the BMWi in EXIST IV. The requirements of EXIST IV presuppose a longer process of development in the final years for entrepreneurial support structures, and these requirements cannot be satisfied by a university which has not previously been supported by funding programmes such as EXIST or a federal state measure. This was demonstrated by the 83 applications for concept phase funding in EXIST IV that were received after the first notice of the competition in 2010. These applications do, however, also emphasise that a surprisingly large number of universities and, above all, those who manage these universities are very much interested in the programme and are prepared to become a university with an entrepreneurship profile, with the far-reaching consequences in individual university departments. With a maximum funding of €2.5 million per university, EXIST gave the universities the incentive to develop and become a university with such an entrepreneurship profile. This amount is

considerably higher than was the case in phases II and III and is also provided for up to 5 years. By doing so, the "EXIST Entrepreneurial University" is pursuing an approach which promotes excellence.



The 22 EXIST universities selected in 2011 and 2013 after two funding rounds are again expected to implement their strategic concepts in an exemplary fashion. The progress reports from the first ten universities at the beginning of 2014 show that a large number of the measures planned have been implemented, although there have also been certain implementation problems.

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Milestones in the development of EXIST

First phase of the programme: EXIST model initiatives

08/12/1997	Nationwide "EXIST – Entrepreneurs from Universities" competition announced by the German Federal Ministry for Education and Research (BMBF) Impetus for universities and their partners from industry and politics to draft concepts for regional networks for the purposes of educating and training, advising and supporting entrepreneurs. Requirement: Cooperation of at least 3 different partners from one region, one of which must be a university Two-stage selection procedure
By 20/02/1998	Regional players meet and organise themselves to establish a common overall objective Submission of 109 proposals for networks to promote innovative business start-ups involving over 200 of a total of 326 universities (75 proposals from the old federal states and 33 from the new federal states, one submitted from abroad)
End of March 1998	Conclusion of the first stage: jury selects 12 initiatives The jury decided that around 80 of the proposals submitted fully met the requirements of the notice of the competition; 52 were deemed worthy of funding.
04/1998 – 07/1998	These 12 proposals were developed into detailed concepts, with funding of up to DM 100,000 (70% of the funding rate) for each initiative Consortia with numerous partners develop concepts containing a variety of individual measures Consortia incorporate different "worlds" (in addition to universities, these include capital providers such as banks and holding companies, non-university research institutions, public and private consultancy agencies, providers of infrastructure facilities, existing companies)
End of August 1998	Conclusion of the second stage: The 5 winning regions are selected by the jury: bizeps: University of Wuppertal with FernUniversität Hagen, companies, technology and start-up centres, cooperative banks and other partners Dresden exists: TU Dresden and 27 partners from research, industry, the financial sector and management (regional and international) GET UP: TU Ilmenau, Jena University, Jena University of Applied Sciences, Schmalkalden University of Applied Sciences and regional partners, and later Bauhaus Universität Weimar, Erfurt University and Erfurt University of Applied Sciences, Nordhausen University of Applied Sciences KEIM: Karlsruhe Research Centre, Karlsruhe University and University of Applied Sciences, Pforzheim University of Applied Sciences and over 100 partner organisations from research, industry and management PUSH! Universities in Stuttgart and Hohenheim, Esslingen, Nürtingen, Stuttgart Universities of Applied Sciences (2), a number of non-university research institutions and more than 70 partners from industry, the financial sector, economic development programmes and the like. Exceptional vote and grant for the project "Virtual University for Entrepreneurs" (Kaiserlautern, Saarbrücken) which should combine different approaches as cross-cutting issue.
12/1998 and 01/1999:	Implementation of the 5 winning concepts funded with a total of DM 45 million, subsequently increasing to DM 47 million
12/2000 - 01/2001	The 5 "EXIST Model Initiatives" are subjected to intensive assessments on the spot by members of the I expert committee; positive assessment of the progress made and recommendation to continue with EXIST.
First quarter of 2002	First funding phase of the 5 "EXIST Model Initiatives" comes to an end
By the end of 2004/beginning of 2005	Second phase of funding to consolidate the services and ensure sustainability

Second phase of the programme:

Autumn 2001	"EXIST-Transfer" competition announced Addressing university regions where structures that promote start-ups are already in place in universities, as well as newly emerging initiatives Two-stage selection procedure
12 and 13/11/2001	Conference on strategies and experiences of the 5 EXIST initiatives from the first funding round, chance for interested initiatives to obtain more detailed information on individual measures and to make contact with experts
01/2002	45 concepts received by "EXIST-Transfer"
03/2002	20 regions selected for the second stage by a jury that can differentiate their concepts (no

	funding from EXIST)
05/2002	10 "EXIST-Transfer Initiatives" selected; EUR 1.1 million in funding, initially for 3 years, effectively extended to 3.5 years of funding with increases in capital and funding-neutral periods
Mid-autumn 2002 – end of 2005/beginning of 2006	Funding for the 10 "EXIST-Transfer" initiatives: BEGIN (Potsdam/Brandenburg), BRIDGE (Bremen), fit-exist (Trier), G-Dur (Dortmund), GROW (East Bavaria), GründerFLAIR MV (Mecklenburg-Vorpommern), KOGGE (Lübeck/Kiel), Route A 66 (Frankfurt/Wiesbaden/Offenbach), START (Kassel/Fulda/Marburg/Göttingen) and SAXEED (South-West Saxony)

Third phase of the programme EXIST III

05/2006	Guidelines for promoting entrepreneurship at universities and research institutions (EXIST III) published by the BMWi Two-stage selection procedure
2006 funding round	07/2006: 79 project proposal received 09/2006: 29 project proposal received 10/2006: 17 projects selected for three-year funding
2007 funding round	03/2007: 63 project proposals received 05/2007: 27 applications received 07/2007: 15 projects selected for three-year funding
2008 funding round	03/2008: 46 project proposals received 05/2008: 21 applications received 07/2008: 15 projects selected for three-year funding
Participating universities:	Aachen, Bamberg, Bayreuth, Bielefeld, Bremen, Erlangen-Nuremberg, Freiburg, Gießen, Greifswald, Halle-Wittenberg, Hamburg, Hannover, Jena, Cologne, Lübeck, Magdeburg, Marburg, Munich, Münster, Oldenburg, Paderborn, Potsdam, Rostock, Saarbrücken, Siegen, Weimar, Wuppertal, Würzburg
Participating technical universities:	Berlin, Clausthal, Cottbus, Darmstadt, Dortmund, Dresden, Hamburg-Harburg, Kaiserslautern, Karlsruhe
Participating universities of applied sciences:	Bielefeld, Bochum, Bremen, Coburg, Dortmund, Dresden, Emden/Lehr, Furtwangen, Hamburg, Hof, Jade, Jena, Kaiserslautern, Cologne, Mittelhessen, Munich, Münster, Neubrandenburg, Nuremberg, Offenburg, Stralsund, Vechta, Wismar, Würzburg-Schweinfurt
Other universities involved:	Evangelical and Catholic Universities of Applied Sciences in Freiburg, Helmut-Schmidt University of Hamburg, German Sport University Cologne, "Konrad Wolf" University for Film and Television of Potsdam

Fourth phase of the programme: "EXIST Entrepreneurial University"

04/2010	Guidelines for promoting a culture of entrepreneurship at universities are published Two-stage selection procedure
Funding round 1	06/2010: 83 applications received 09/2010: 24 universities selected to receive 6-month funding to develop strategic concepts 07/2011: 10 universities (including 3 which have been awarded the title "EXIST Entrepreneurial University") selected to receive 3-year funding for the purpose of implementing strategic concepts "EXIST Entrepreneurial Universities": TU Berlin, HAW Munich, University of Oldenburg Additional universities selected: TU Dortmund, Düsseldorf University, Halle-Wittenberg University, Jena University, TU München, Ostfalia HAW, University of Potsdam 02/2014: Progress reports and work plans for the two-year project phase B assessed by the jury, recommendations made to continue the funding
09/2011	Start of the 2nd round of the competition "The Entrepreneur Universities"
Funding round 2	12/2011: 41 application received 02/2012: 20 applications selected to receive funding for the concept phase 01/2013: 12 universities (including 3 which have been awarded the title "EXIST Entrepreneurial University") selected to receive 3-year funding "EXIST Entrepreneurial Universities" Kassel University, University of Lübeck, Saarland University Additional universities selected for funding: RWTH Aachen, University of Applied Sciences of Berlin, TU Darmstadt, Esslingen University of Applied Sciences, Freiburg University, TU Hamburg-Harburg, Karlsruhe Institute of Technology (KIT), University of Koblenz-Landau, University of Lüneburg