



Institutional Strategy to promote  
Top-Level Research

# THE SYNERGETIC UNIVERSITY

## PROGRESS REPORT INITIAL FUNDING NO. 1

Institutional Strategy to promote Top-Level Research

**The Synergetic University**

Technische Universität Dresden

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**Progress Report initial funding No. 1  
for the Institutional Strategy to promote Top-Level Research**

"Die Synergetische Universität"

"The Synergetic University"

**Technische Universität Dresden**

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## Table of Contents

1	Introduction	1
2	The Institutional Strategy revisited	2
3	Progress of the Institutional Strategy by Measures	8
3.1	TUD People	8
3.2	Structures	11
3.3	Processes	14
3.4	DRESDEN-concept (DDc)	16
3.5	Internationalization	17
3.6	Gender Equality	18
4	Legal Preconditions	19
5	Prospects	20

## **1 Introduction**

The international competitiveness of a university is, in the final analysis, demonstrated by its success in attracting outstanding individuals in all areas and on all career levels, retaining them and enabling them to fulfill their potential. For maximum impact, the measures of the Institutional Strategy fine-tune a whole series of important adjustment parameters simultaneously. In many cases, the effects will only fully unfold during the course of the funding period and afterwards. Several remarkable successes can, however, already be registered.

In the direct recruitment of top researchers, the innovative Open Topic Tenure Track procedure attracted over 1,340 outstanding candidates from the best research institutions worldwide; the negotiations currently underway will be concluded shortly. The restructuring measures designed to improve the research environment and conditions have also attracted a lot of attention, putting many processes to the test and triggering numerous discussions internally, as was to be expected: A significant number of inquiries from top-ranking delegations representing national and international scientific institutions concerning the initiated processes demonstrate that the measures are addressing important issues. Also, Technische Universität Dresden (TUD) has been requested and chosen very frequently in recent years as a strategic partner, and as a pilot or model institution for studies and new projects - for instance on international university rankings, where TUD is one of two universities selected for a Foreign Office (AA) pilot project -, research ratings and promoting young researchers. Media interest has also increased markedly.

The success of the Excellence Initiative also had a very positive effect on the appointment of professors and on negotiations to retain those already employed, with visibility and status of TUD constituting an important argument. Proof of the attractiveness and the constantly improving visibility of TUD, also within the international context, is available from the increasing number of new strategic collaboration contracts and projects with national and international partners from industry and science (most recently with the Helmholtz Center for Environmental Research, Audi AG, Deutsche Bahn and Rolls Royce), a steady rise in participation in EU applications, funding and ERC grants (TUD currently holds 60<sup>th</sup> place in the overall rankings of those institutions participating in the EU framework program and 5<sup>th</sup> place among the German universities), and also in the continual increase in students from abroad (11% last year). In the area of knowledge transfer, TUD was able to extend its national lead in registering patents. Moreover, as a university focused on knowledge

transfer and imbued with a strongly developed entrepreneurial spirit it once again made the news in 2013, when TUD Professor Karl Leo's spin-off company Novaled AG was sold to the international company Samsung; for TUD's share, a revenue of about € 1.5 million was obtained. The strict implementation of the Institutional Strategy and the now increasingly visible effects of the applied measures promise, in combination with new initiatives in the coming years, significant successes on TUD's path to becoming a top university with worldwide recognition.

## ***2 The Institutional Strategy revisited***

Immediately after announcing the decisions in June 2012, the project organization was finalized. The Rectorate, consisting of the Rector, three Vice-Rectors and the Chancellor, resolved to perform the function of project leadership themselves, in accordance with their institutional responsibilities. This decision was preceded by the transfer of responsibility for the relevant units of the Central Administration to the full-time Vice-Rectors in March 2012. A project group, at the heart of which is a five-person core project team, was put in place for management and communication of the various measures. The decision to use a team structure for project management - contrary to what was envisaged in the original application - took into account the extremely positive experiences during the final phase of the application procedure and the preparation of the evaluation: Working closely with the members of the Rectorate, three project coordinators are in charge of the measures (research support, synergies and university development, education and internationalization).

Two further core project team members coordinate the cross-sectional tasks of project and financial controlling, as well as communication and public relations. The members of the core team cooperate closely, on an equal footing. This structure has proved to be very valuable in the implementation of many single measures due to individual strengths and experiences, and has promoted a constant creative process. However, a flat team structure such as this - uncommon in university administration - also poses a challenge, in particular for internal communication. After a very short time, by rigorously optimizing coordination and communication processes, it has been possible to familiarize staff with the chosen project management structure. To secure and properly implement all individual measures with respect to subsidy or grant law, budgeting and scheduling, the project and financial controlling of the Institutional Strategy acts as an interface between project management (i.e. core project team) and the Central Administration. Decisions concerning the release of funds and the monitoring of the

related contractual aspects, as well as budget monitoring and forecasting, the allocation of rooms and the controlling and monitoring of staff capacities are made by the project controller. The flow of information between project team and administration is ensured by participation of the financial and project controller in the regular meetings of the central administration units. Reports on the current status of implementation of the various measures are standard items on the agenda during meetings of the Rectorate, the Senate and the University Advisory Board.

Following the announcement of a reduction of € 18.4 million in the overall budget, a revised budget taking into account a variety of aspects was agreed in autumn 2012. Here, the basic question was: Which measures could be realized with a reduced budget - if necessary in combination with other sources of income -, without having to make changes that would be detrimental to the general direction of the Institutional Strategy? The budget reductions were implemented in accordance with the suggestions of the Strategy Commission as follows:

- a) Cuts to the overall budget for measures: € 5 million in the budget for the Open Topic Tenure Track Professorships (OTTP) by reduction from 12 professorships to 10 and of € 3.5 million in the investment budget, € 2.7 million in the "Support the best" budget, € 1.1 million reduction in personnel resources for the establishment of the Schools, € 1 million cut in project management/communication, € 0.5 million cut in organization development/change management as well as € 0.5 million cut in the "Eleonore Trefftz" Program for Visiting Women Professors.
- b) For the TUDo measures and for process and document management, € 2.7 million were saved through the provision of mixed financing from household and project funds.
- c) Since it was not eligible for funding, the budget of € 1.1 million for student marketing was removed. For the same reason and based on the fact that over the past years there has been an increase in decentralised support programs for students, the introduction of a centrally co-ordinated Buddy System was renounced.
- d) Also, taking into account the letter of approval, a portion of the initially requested budget for the Self-Assessment for the improvement of recruitment and mentoring of students was replaced by TUD resources; the TOP 5 measure (€ 0.5 million) was completely canceled.
- e) The originally planned Study Festival (€ 0.4 million) was also canceled, as it would have caused problems regarding location and organization, not least due to the 2013 Elbe flooding and the necessary renovation of the New Mensa on the central

campus. Instead, the Uni-Tag (*University Day*) and the campus party were expanded, being attractive features for those intending to study or already studying at TUD.

Additional cuts can be avoided as much as possible by staggering the start of some of the measures.

To cope with the additional administrative burden created by the realization of the Excellence Initiative projects, as well as by the constant rise in third-party funding, 15 full-time staff equivalents are financed in the administrative departments from the overhead budgets, 8.5 of them from the Institutional Strategy's overheads. In addition, the overhead funds are available to cover the indirect costs of the individual measures of the project.

Despite these additional staff capacities, the combination of several factors was responsible for delays during the first year of the project, which in turn resulted in a considerable delay in expenditure from the available funds. The substantial increase in staff numbers posed a challenge on the University and on the Saxonian Real Estate Management with regards to the availability of rooms. The parallel introduction of comprehensive Enterprise Resource Planning (ERP) and Student Life-Cycle Management (SLM) software systems is still binding large staff capacities in the central and in the de-central administration units. The large number of individual measures of the Institutional Strategy that began one shortly after the other has also taken up considerable resources. Further legal checks and individual exemptions/permissions became necessary when the Sächsisches Hochschulfreiheitsgesetz (SächsHSFG) came into effect in November 2012, taking up a great deal of time and requiring modifications to some of the initial plans. Finally, the necessary planning processes associated with the implementation of the revised budget placed an additional burden on University personnel.

For many members of the University, the pleasure they felt because of TUD's success was understandably accompanied by uncertainty and anxiety about the "great unknown" Institutional Strategy - especially before the project started. These reservations disappeared once the project became more tangible and the internal communication was intensified; this was confirmed by surveys carried out throughout the University.

With respect to the specific implementation of the measures, no fundamental difficulties have occurred to-date that would require extensive alterations to the original plans. Care is taken to realize the measures in such a way that they are coordinated and

interlinked to produce an optimal effect of each individual measure and - where possible - the best possible support for other projects. Examples are the consistent integration of the newly created Schools as decision-making and advisory bodies in the implementation of measures (e.g. DRESDEN Fellows, "Support the best", Summer Schools), and also the staggered starting times of measures.

In some cases, a successfully introduced format proved to be a suitable organizational framework for an originally planned stand-alone measure. In this way, the "Grand Professors" have been integrated into the "DRESDEN Fellows" measure without losing its specific contents. Similarly, a joint format bearing the title "Support the best" was developed for the "Fund-if-justified", "Support the best" and "Retain the best" measures listed in the application, combining the three partial measures into one without diminishing their impact. The introduction of TUD-specific Online Self-Assessment Tests was deferred, as the integration of a similar joint project realized by the TU9 group of universities into the new TUD website, which is currently under development, will be considered.

The internal allocation of funds occurs on a competitive, quality assured basis. For each measure, allocation modalities and criteria have been separately developed (see chapter 3) and agreed by the Rectorate. The announcements were made transparent and communicated widely on the University homepage, in the University Magazine, in the Senate, in the regular meetings with the Deans etc. Only the support for areas with low activity and success in acquiring third-party funding was communicated directly to the scientists of the relevant units. Several levels of authority were always involved in the decision-making processes: In the case of the "Support the best" measure for instance, these were the Faculties, Central Administration, representatives from the Schools, and the Rectorate. Similar methods of allocation were also employed for the internationalization measures.

New decision-making mechanisms were developed and implemented for several of the measures. For example, the innovative and complex selection procedure for the Open Topic Tenure Track Professors (OTTP) was carried out in this form for the first time in Germany, and relied on the expertise of a selection committee composed entirely of external experts. Further examples are the new governance processes in the context with the introduction of the Schools. To strengthen core areas of research as well as individual measures of the Excellence Initiative, the enormous value of DRESDEN-concept e.V. (DDc) and its underlying committees was proven. In the case of the OTTPs, the DDc partner institutes activated their worldwide networks to identify

potential candidates for these unique academic positions, and thus produced a pool of applicants which surpassed all expectations.

Since 2011 - frequently together with DDC partners - it has been possible to identify and attract many high-level collaborative projects that are of great importance for the continuing development of TUD and completely in tune with the goals formulated in the Institutional Strategy. For instance, the founding of the Center for Advanced Water Research (CAWR) with the Helmholtz Center for Environmental Research continues the stringent development of the synergetic concept (contract signed on 08/10/2013; see annex 8.2 for contract). By bringing together more than 500 scientists, one of the largest centers for water research in Europe was established, which has a strong cooperative and international outlook. In cooperation with the United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), which was also recently established in Dresden, a unique research landscape with high international visibility has been created.

The significant number of new strategic collaborations with partners from industry clearly demonstrates that TUD is an attractive partner for business enterprises as well. In this context, the establishment of an interdisciplinary scientific center of competence with Audi AG to promote young researchers or the strategic partnerships with Deutsche Bahn AG and with Rolls Royce should be mentioned. In summer 2013, three partnership initiatives of science and business within the innovation "Zwanzig20" program of the Federal Ministry of Research and Education were successful (in total, only 10 were awarded), two headed by TUD and a third coordinated by a DDC partner: The "Carbon Concrete Composite (C3)" project (€ 45 million funding granted until 2020, plus € 23 million contributions from the participating companies) for the development and market introduction of a high-tech construction material with carbon fibers, the "FAST – Fast Actuators Sensors and Transceivers: Technological Breakthrough due to Real-time Capability" project with more than 80 partners from science and business (€ 45 million funding + € 30 million from the companies) as well as the project "Additive Generative Manufacture - The 3-D revolution in product manufacture in the digital age" for a key industry 4.0 technology directed by the DDC partner Fraunhofer Institute for Material and Beam Technology. On the European level, TUD has also made decisive contributions to a range of prestigious projects, e.g. in the two successful FET flagship initiatives *HBP* (Human Brain Project) and *Graphene*. Together with Ruprecht-Karls Universität-Heidelberg and the University of Manchester, TUD is the main partner in the design and creation of the *HBP*'s "Neuromorphic

Computing" platform. Several TUD professors and DDC partners are involved in *Graphene*. Intense international networking is also promoted by the Institutional Strategy: Prof. Roche from the Catalan Institute of Nanotechnology, and one of the main players of *Graphene*, will be coming to TUD this year as a DRESDEN Senior Fellow. Overall, it has been possible to secure 10 ERC grants, of which 6 are Starting Grants, 2 Advanced Grants and 2 Proofs of Concept. A further, extremely attractive international collaboration was initiated in 2012 with the opening of the "Twin Lab", a joint program for doctoral researchers, involving TUD and the Masdar Institute of Science and Technology in Abu Dhabi for the development of 3-D chip technologies (see annex 8.1 for contract).

Strongly benefitting from an initiative supported with funds of the Institutional Strategy is the newly established Dresden Center for Nanoanalysis (DCN), a pilot project that is carried out together with the cfaed Cluster of Excellence. The DCN has already been able to obtain two large research facilities worth several million Euros as part of the "Materials Integration and Kinetics of Reliability-Limiting Degradation Mechanisms in 1D Electronic Systems" program (BMBF, total funding € 32 million). Applications for further funding are under preparation and expected to be successful.

However, the emphasis of the Institutional Strategy lies only partly on successes that can be achieved in the short-term. Comprehensive reorganization measures, in particular the creation of the Schools, which will affect the University as a whole necessarily require mid to long-term planning and execution, which is not always in line with a five-year period. Also, developing new collaboration models for university and non-university institutions often requires extensive coordination processes and legal assessments, as this is uncharted territory. Nevertheless, we remain firmly convinced that the future of top international research in Germany lies in these cooperation models and that every step along this path is worthwhile and will finally pay dividends. In that spirit, TUD is also looking forward to developing adequate models for extending its international strategies beyond 2017. This will allow the initiated processes to continue and unfold their full potential to ensure the ongoing development of the ambitious models of inter-institutional scientific cooperation.

### **3 Progress of the Institutional Strategy by Measures**

#### **3.1 TUD People**

The *TUD People* package of measures aims at attracting and supporting excellent scientists at all stages of their careers with a spectrum of measures targeted specifically at junior researchers.

The **Open Topic Tenure Track Professorships** are a central element of this package of measures. After the amended SächsHSFG came into effect in November 2012, a procedure deviating from that originally planned in the application was taken in order to be able to start recruitment and appointment as quickly as possible. This procedure is based on Section 61 of the SächsHSFG and required no changes to the University Charter. The experiences now collected will form the basis for further adjustments to the process, which may subsequently be embedded into the University Charter. The announcement to appoint up to ten OTTPs (published in March) was met with an extraordinarily positive response: More than 1,340 applications and nominations from all over the world, among them 26% from women scientists, were received. The high percentage of applications from abroad (44%) speaks for the international appeal of TUD and the attractiveness of the procedure. Reviewing and evaluating the applications was the responsibility of a high-ranking selection committee consisting of 12 external experts: Four scientists from the fields of Mathematics, Natural Sciences and Medicine (Team 1), four from Engineering Sciences including Informatics (Team 2), and four from Humanities and Social Sciences including Psychology (Team 3). Team 1 processed approx. 47% of the applications, Team 2 just over 19%, and Team 3 almost 34%. The selection procedure consisted of several stages: First, on the basis of the reviews and in-depth discussions of the application documents, the selection committee chose 50 candidates who were invited for personal interviews. 26 of these applicants were shortlisted and were then given the opportunity to get to know TUD and the city of Dresden during visits of several days' duration in October 2013, as well as to introduce themselves through individual meetings and lectures to the Faculties, Institutes and DDC partner institutions. These visits, which were extraordinarily intensive in comparison to standard German appointment procedures, were evaluated very positively by all those involved. They provided the chance to discuss expectations personally and, at the same time, to find common research interests and opportunities for collaboration. Moreover, the personal visits gave the Faculties and Central Units of TUD the possibility to evaluate each applicant. In parallel to these visits, the selection committee collected at least six external expert assessments for each of the chosen

applicants. These assessments together with the statements of the interested Faculties formed the basis for the selection committee's final shortlist, which was submitted to the Rector in January 2014. The percentage of women among the first ten candidates is 40%, i.e. significantly higher than the percentage of female applicants. Negotiations for these appointments have begun, with the announcement of the appointments expected to be made by the Rector in spring 2014.

In addition to the recruitment of top researchers, a range of Institutional Strategy measures is aimed at supporting the already existing research staff in the university.

The allocation of resources within the **"Support the best"** program has attracted a lot of attention and been very positively received. In 2013, three application rounds took place in which 5 to 10% of the most strongly performing scientists were able to apply for individual, tailor-made support, not least to break up the time-consuming cycle of constant negotiations (Bleibeverhandlungen). 75 applications from all five Schools in the University were received with a total volume of € 22.67 million. 41 proposals (approx. € 9.5 million) were approved by the Rectorate based on preliminary selection by the Deans and recommendations of a newly created "Research Advisory Circle" made up by one representative from each School. The prerequisite for approval was the strength of the performance of the applicant(s). The decision was made mainly in favor of proposals not already covered by established funding programs as well as for structure-creating projects of a largely interdisciplinary nature. The following aspects are particularly noteworthy, so far: The measure met with a unanimously positive response, as did the selection procedure and the final decisions, although it was clear from the beginning that only a small percentage of the scientists would benefit directly from the funding. And indeed, with few exceptions, only top-performing researchers of the University applied. The various requests for support may be subdivided into distinct areas: i) applications to ease the burden on academic staff (financing an interim replacement for a chair during a sabbatical leave to enable in-depth work on a research idea); ii) creating opportunities for exceptionally talented young researchers; iii) developing new networks of competence and new key research topics as nuclei for later project applications of mostly interdisciplinary nature; iv) transforming the results from funded fundamental research projects to make their applicability simpler, broader and more varied. Compared to what was originally expected, there was a markedly higher demand for additional personnel than for investment in infrastructure. Therefore, 15% of the investment resources for this measure were reallocated to staff funding.

In addition to this individualized funding measure for TUD's top scientists, the

**DRESDEN fellows** program for visiting scientists allows for excellent young (junior fellows) and established (senior fellows) researchers to be invited to Dresden for up to six months. The program was announced in May 2013. The Schools were asked to nominate candidates with whom a more intensive cooperation is envisaged - be it through later recruitment or by setting up sustainable collaboration projects. The first two DRESDEN fellows from the University of Manchester were already welcomed at the School of Engineering Sciences in June 2013. To date, 13 guests - ten senior and three junior fellows - from the USA, Great Britain, Poland, the Czech Republic, Italy and Portugal have been invited by the Rectorate. Five research visits are already concluded or currently underway. It is still too early to evaluate any long-term effects of the visits. However, the fact that the first two DRESDEN fellows, Prof. Azapagic and Dr. Perdan, already returned to TUD after a few months to take part in an International Summer School can be seen as a first positive sign of the effectiveness of this measure. Moreover, a collaboration agreement was signed with the Politecnico di Torino, the home institution of DRESDEN fellow Dr. Corinto, following his stay at TUD. Promoting junior scientists and academics is one of the Institutional Strategy's most central topics. With the **TUD Young Investigators** measure, particular attention is paid to the highly qualified independent junior research group leaders within TUD and in the non-university institutions of the DDC partners. The Young Investigator status, which is awarded for a limited time, facilitates integration into the Faculty, e.g. by officially supervising and reviewing doctoral degree procedures. The new SächsHSFG provides the legal framework for this; a procedure has been worked out and communicated to pilot Faculties. As the interest among group leaders is very keen, the first TUD Young Investigators will be nominated as soon as the altered regulations for doctoral degrees (Promotionsordnungen) of the Faculties have been agreed by the required authorities. A measure for funding those areas of TUD whose performance in raising third-party funds is below the national average also addresses the potential of junior academics and scientists: Post-docs from these areas who would like to prepare an independent application for funding from a public provider of third-party funds can apply for additional resources for this purpose with a minimum of red tape, and will also receive support with their application from the **Project Scouts**. This new team of five members of staff trained in science and science management/research funding - each of them representing one of TUD's research priority areas - work in close cooperation with the central research support department, but offer their support much earlier and more proactively, and accompany closely the development and implementation of

applications for joint research projects.

With its **Innovation Sheds**, TUD offers staff members and students flexible space for developing and testing new and innovative project ideas. Converted construction site office containers open up "free spaces" all over the campus, creating a relaxed atmosphere for discussions and puzzling over details in simple surroundings. Initially used by members of a new interdisciplinary doctoral program at the interface of Engineering and Social Sciences, they presently house a pilot project with student participation headed by a junior professor of TUD for designing flexible furniture and fittings. If the project is a success, the furniture and installations will be purchased and made available to future user groups of the Innovation Sheds.

Attracting and promoting the best minds right at the beginning of their careers is also on the agenda of *TUD People*. To target outstanding young pupils and inspire them to study at TUD, the coordination of school contacts is being revised and structurally integrated into an overall concept which will also include the cooperation with the TUD-DLR\_School\_Lab which has been established in Dresden as a joint initiative.

### **3.2 Structures**

The newly established **Graduate Academy** (GA), with its services for all doctoral candidates and postdocs at TUD, is to be placed at the interface of the *TUD People* and *Structures* measures. A short time after it has been set up, the GA is already in great demand and features in internal surveys as the most popular of the Institutional Strategy measures. As early as September 2012, the decision was made to create the GA as a Central Academic Unit at TUD and it was thus implemented for the long-term. In April 2013, the newly recruited team moved into its own building located centrally on the main campus. In July/August 2013 the GA regulations were published and the board was appointed. *Ex officio*, the Vice-Rector for Research is the director of the GA, in order to guarantee its close link to the Rectorate. Deputy director is the Vice-Rector for Academic and International Affairs. In addition, representatives for each of the five Schools, from a structured doctoral program, from a DDc partner institution as well as representatives from the doctoral candidates are members of the board. In August 2013, the GA's web site was launched, including an online registration portal for applying for voluntary and free membership. The internal funding programs were also announced. In the 2013/14 winter semester, the qualification programs were started with 24 courses, more than half of which are in English and partly organized in cooperation with the DDc partners. More than 75% of the places were filled, with those events dealing with career prospects, management and leadership as well as

academic writing proving particularly popular. In November 2013, the board made a first decision about the applications for funding and was able to approve 37 of them. The second round of applications ended on 31/01/2014; 107 applications were received for the five funding programs announced; 68 of them were approved recently. The total number of GA members to date (15/03/2014) is 752 (461 PhD students, 111 post-docs, 4 associated members and 176 supervisors). This not only proves how attractive the GA services are, but has also brought TUD much closer to achieving its declared goal of high-quality, transparent and reliable supervision for all doctoral degree procedures. To become a member of the GA, doctoral candidates and supervisors need to sign a supervision agreement in which the rights, duties and expectations concerning the doctoral phase are set out in detail. Moreover, official acceptance as doctoral candidate in a Faculty must be provided. The early registration of doctoral candidates is the basis for the continual monitoring of the PhD system undertaken at TUD with the support of the GA: At present, procurement of a special software to be used throughout the University is underway. Specific optimization measures can then be developed and carried out more efficiently on the basis of reliable data.

By consolidating the **14 existing Faculties into five Schools** - Civil and Environmental Engineering, Humanities and Social Sciences, Engineering Sciences, Science and Medicine - TUD aims at far-reaching structural and procedural optimizations. Based on guidelines agreed upon at the same time as the establishment of the Schools, charters for each School were drawn up in a process of intensive dialogue and cooperation. As part of a formal framework, they provide orientation for the future organization of structures and processes. To raise the level of acceptance and motivation for such a fundamental change within the Faculties, the participation of everyone involved was given high priority, and the inclusion of School-specific aspects in the relevant regulations was possible. To safeguard the flow of information between Rectorate, Central Administration and Schools, regular meetings of the various stakeholder groups have been introduced; in particular, a two-day joint retreat of senior academic and administrative staff takes place every year. The Schools have each been equipped with an administration unit which, among other things, is in charge of shaping efficient and effective support processes for research and teaching, to separate increasingly academic functions from those of an administrative nature, and to grant the Schools greater flexibility in their strategic development. Basic staffing of the School Administrations (School Manager, Controller, International Affairs Advisor and

Team Assistant) has largely been completed. The School Administration are subdivided into the areas of finance/controlling, human resources, international/public relations, IT, and student affairs. In view of the complexity of the process of change, the development of key administrative processes is initialized through different pilot projects allocated to the five Schools, e.g. selected hiring procedures and elements of procurement. Experiences collected in this way can then be taken into consideration when designing the overall administration. At present, teams are being set up to prepare the detailed structure for these fields of activity and to define the necessary responsibilities and competencies.

In addition, the implementation of the Institutional Strategy is intended to improve services for students and academic staff by means of student offices at the School level. Functioning as a central first port of call for students, these offices will supply, among other things, initial information relating to the degree program and to organizing studies, (e.g. timetable-planning and exam registration), receive applications and check that they are complete, and issue certificates. Against this background, objectives for all Schools and Faculties have been agreed, which will open a motivational framework for activities and can then be developed thematically in decentralized teams. With a separate focus on improving guidance for students, a cross-departmental working group with the participation of student representatives is envisaged. Parallel to passing the School Charters and setting up the School administration units, the Schools have already initiated and supported measures to promote interdisciplinary cooperation at TUD. Within a process of strategy development specific to the Schools, the Engineering Sciences, for example, have identified four key interdisciplinary research areas: Robotics, energy storage, industry 4.0 (Smart Factory) and smart materials. The further development of these key areas is supported by strategic funding from the Institutional Strategy measures "Support the best", DRESDEN Fellows and International Summer Schools.

Since it became obvious from several discussions that the terminology "Knowledge Architecture Unit" does not provide a proper indication about the subject and benefits intended by this measure, the project management decided to rename this measure "**Center for Synergy Enhancement**" (Zentrum für Synergie-Entwicklung, ZSE). It was very fortunate that Professor Gunter Henn, one of *the* leading minds in the field of Knowledge Architecture has been willing to head the Center as scientific director without remuneration during the crucial phase of early development. Thus, it was possible to integrate the already existing Center for Knowledge Architecture into the

newly established Center for Synergy Enhancement and to focus on appointing and promoting junior staff.

The **Center for Interdisciplinary Learning and Teaching** is intended to be developed as a central element of instituting research-oriented, interdisciplinary teaching at TUD. As part of a superordinate Central Academic Unit for imparting trans-disciplinary competencies, the Center for Interdisciplinary Learning and Teaching will coordinate research-oriented projects in which students from various disciplines cooperate.

With the newly implemented **Transfer Office**, which has been installed into the Central Department for Research Support and Transfer, a visible structure has been created for internal and external users. It combines and coordinates the services and participants in the area of transfer at the university level, and may extend this in the future to the whole scientific region of Dresden. A Transfer Officer, a lawyer and several other staff members have been employed to complement the already existing staff.

Simultaneously, the **Chair for Knowledge and Technology Transfer** which will be financed in cooperation with the TU Dresden AG (TUDAG) has been advertised. The Faculty of Business and Economics is in charge of the appointment procedure. The planned **Society and Industry Relay Center** (SIRC) is being developed and implemented together with the Transfer Office.

### **3.3. Processes**

In the "structures and processes" **Quality Management**, a concept for a system for the area of administration has been designed and is presently under discussion within the University. It is based on self-assessment according to the Common Assessment Framework model, the joint European quality assessment system for the public sector.

In the "research" quality management, the main areas of work lie in further developing and complementing existing measures relating to quality into one QM system, and in improving university information management in the field of research (particularly by renewing the current research information system). In addition, TUD has been selected by the Institute for Research Information and Quality Assurance (iFQ) and the German Council of Science and Humanities to assume a pilot role in the project "Research Core Dataset". Both projects support the development of a QM system for which a concept will be drawn up in 2014. The Institutional Strategy measures are hence accompanied by procedures to assure quality. For example, for the DRESDEN Fellows, the Trefftz-Professorships and the Summer Schools, feedback is collected by means of questionnaires and internal reviews and improvements are being introduced for the subsequent round of advertisements. After a start-up phase, structural and process-

oriented measures of the Institutional Strategy will be subject to targeted evaluations in the coming two years, to identify any need for adaptations and to exploit potential for optimization. A comprehensive evaluation of the Schools is planned for 2016.

The **Change Management** at TUD has a cross-cutting function, especially for the measures concerning the creation of the Schools, personnel development and quality management. The change management team supports the responsible staff in the realization of the desired objectives. The cooperation is complemented by chairing meetings, workshops or retreats, as well as by targeted group or individual interventions and coaching. The change management aims at successfully executing the measures in close cooperation with the goals set by the Institutional Strategy.

**Improving the Administration** is an important aspect of the Institutional Strategy, with the long-term goal being to maximize the efficiency of central and peripheral administrative processes with effective IT support. Therefore, the implementation of an integrated Enterprise Resource Planning (ERP) system has been initiated for finance, human resource and real estate management. For the administrative support of student processes, the implementation of a new student life cycle management system (SLM) is in the project phase. The introduction of the application management began with the productive roll-out of the first modules of the ERP system. It should not go unmentioned that the integrated ERP system has resulted in great challenges for the staff in the University administration. The existing processes require significant checking and adapting in order to make full use of the capabilities of the ERP system. To achieve this, intensive support by process and change management is necessary. With a view to extending and developing a service-oriented organization culture, decentralized access to the ERP system has already provided increased possibilities for exchange between the central and the de-central units. The planned roll-out of ERP functions into the Schools is in the pilot phase; the general prerequisite for this is first to stabilize processes in the Central Administration and to coordinate the process chains between central and de-central activities. Specialized staff training courses for the ERP system have been carried out since March 2012, for the SLM system since May 2012. At the office of the Vice-Rector for University Planning, a port of call for university-related improvement management has been created in the shape of "OPTIMUM" (named "Efficiency Office" in the original application). This easily accessible service provides staff and students of TUD with the opportunity to put forward their ideas and suggestions for improving the conditions, processes and structures. During the past two years, it has been possible to implement 16 of the 22 proposals submitted.

### 3.4 DRESDEN-concept (DDc)

DDc has undergone further development in terms of its structure, content and organization. The association has now grown to 23 members since the original application. In total, TUD has already been able to realize 29 joint professorial appointments with the DDc partner institutions, several additional joint appointments are expected for 2014. This includes top-class scientists whose appointment would have overstretched the capabilities of the University (2011-2013, see annex 6). Also, a joint appointment of TUD and the Dresden State Art Collections is in the concluding stages.

Third-party funding of € 29 million raised by TUD in 2013 through collaboration with the DDc partners is an indication of the fruitful scientific cooperation. Among the many joint projects with DDc partners in recent years are the opening of the new "OncoRay" building and the proton accelerator for medical radiation research in oncology, the establishment in Dresden of the German health centers for diabetes, neuro-degeneration and oncology, the foundation of a Center for System Biology (together with the Max-Planck Society), as well as the successful projects within the "Zwanzig20" BMBF program (cf. chapter 2). With the "DRESDEN-concept Project Center" a central unit has been implemented in the university to create a suitable institutional framework for collaborative scientific projects in Dresden.

During the past 2 years, DDc has established an administrative office and extended its responsibilities and staffing. For example, the **Welcome Center** now works under this organization with four members of staff together with the **Dual Career Service**. A total of 550 international guests used the Welcome Center's services in 2013.

To coordinate and optimize administrative activities within DDc, the Administration and Infrastructure Committee (AIC) established a task force for the main areas of procurement management, facility management, qualification measures for staff members, information/documentation/literature, and commercial IT.

The **Common Technology Platform** has been further developed. Currently, data for the large-scale equipment of the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and the Max-Planck Institute for Molecular Cell Biology and Genetics (MPI-CBG) are being collected. In 2013, a new project started with the Biopolis Dresden Imaging Platform (Bio-DIP), a Dresden-wide network of optical- and electron-microscopy facilities which provides scientists with open access to state-of-the-art imaging technologies. At present, more than 50 optical- and electron-microscopes are available at eight locations in five Dresden research institutions.

### 3.5 Internationalization

The internationalization measures of the Institutional Strategy aim at improving TUD's visibility and at increasing the number of international students and staff in the University. Even though these are longer-term targets, some progress has already been made during the first year of funding. In this context, the five **International Summer Schools** should be mentioned which also made a contribution to the promotion of junior researchers. The events also marked the starting point for further research collaborations, e.g. a joint project application within Horizon 2020 is planned together with the Institute for Energy Systems and Electrical Drives at TU Vienna.

Moreover, individual measures within TUD have made a significant contribution to a new quality in the discussion on internationalization, its limitations, possible effects and long-term goals. For example, the call for proposals to select strategic university partners has also revived discussions about the subject-specific and strategic orientation of the Schools. Furthermore, the **additional funding for Internationalization** fosters the development of a general environment that is focused on internationality. For non-academic staff, a professional training program was developed in the first year of funding to strengthen qualification in foreign languages and intercultural competences. The "Certificate for International Competence" will be offered from February 2014 under the name "SprInt" and includes workplace-related English training, courses to acquire intercultural competency, and an optional stay abroad within the ERASMUS staff mobility program. Already, there are indications of substantial interest in this offer. TUD has also initiated a steady extension of administration documents available in English. The envisaged updating of the English web presence, which is taking place within the current "TUD Web Relaunch", rounds off the measures for improving the English-language infrastructure at TUD.

The remarkable 11% increase in the number of international students indicates that the success of the Excellence Initiative provides TUD with increased international visibility, also among potential international students. The introduction of three English-language Master degree programs in the past three years has made an additional contribution to reaching our targets. At the same time, the number of international appointments at post-doctoral and professorial level has also shown a small but nevertheless steady rise over the last three years. The two Clusters of Excellence, the International Graduate School DIGS-BB as well as other important research centers at TUD already have an above average share of international junior researchers and make a notable contribution to the internationalization of Dresden as a scientific location.

### 3.6 Gender Equality

In 2013, the implementation status of the 2009 TUD concept for gender equality was assessed by three external reviewers, who also made recommendations for the ongoing development of this concept. The revised concept is a strategic document with regard to the change of structures and routines for pursuing resolutely the objective of gender equality. The gender equality measures of the Institutional Strategy are also part of the concept. A significant innovation for future activities was the setting of ambitious target quotas for the whole University. These quotas apply to the individual Schools with regard to professorships, habilitations (or other post-doctoral qualifications), to doctoral degrees and academic staff, and have been agreed upon with strong commitment from the Faculties and Schools. Extending gender monitoring will increase transparency and support the Schools and Faculties through advisory services regarding the development of measures for promoting gender equality. While TUD has already attained a top position in Germany with respect to the percentage of women doing doctorates and of female academic staff, the current CEWS Gender Equality Ranking shows that there is still a need to increase habilitations and, above all, professorships, even though the latest developments do show a positive trend: In the most recent years, the percentage of women doing doctoral degrees rose by 6% to 44.2% and that of working on habilitation theses and in junior professorships by 6% to 21%. For professorships on the C3/W2 salary scale, the number rose by 6% to 18.7%, while the percentage among those on the C4/W3 salary scale increased only by 1.7% to 8%. The background to this nevertheless positive development is that in both 2012 and in 2013, a quarter of all newly appointed professors were women.

Various measures in the Institutional Strategy are intended to further contribute to improving gender relations at TUD. In the **research project "Gendered University - Gendered Hierarchies at TUD"**, for instance, local gender structures and social processes are investigated. The project began in August 2013, following the recruitment of personnel. In the first project phase, the theoretical framework of reference was prepared with special focus on 'gendered organization', 'micro-politics', 'university as specific organization' and 'gender knowledge', and the methodological design was agreed. Work was also carried out on expanding the interconnection of the project within the scientific community and with positions relevant to gender equality within the University.

In 2013, the **Eleonore Trefftz Programme** for Visiting Women Professors was started. The Faculties proposed eleven well-established women researchers and junior

researchers for this program. From these, the Advisory Committee on Gender Equality selected two scientists from Mathematics as well as a Physicist and a Slavonic Studies researcher. In the 2014 round of applications, the focus will be on candidates with higher seniority.

#### ***4 Legal Preconditions***

Overall conditions in the Saxon higher education community have changed during the period covered by this report. The associated goal to strengthen the autonomy of universities and to advance university development can only be beneficial for the Institutional Strategy of TUD. The Saxon State Ministry for Higher Education, Research and the Arts has set the strategic guidelines with the 2020 University Development Plan.

A central concern is the development of clear and complementary profiles of the various universities and other institutions of higher education, which is necessary to maintain a strong higher education system and innovative diversity. Integrative processes covering the whole State of Saxony are to be advanced via the "Campus Saxony" model and regionally in the "Scientific Regions". These scientific regions are intended to bring together all relevant players in society, industry and academia, a model which TUD already puts into practice with its DDc partners, even though with a strong focus on research excellence.

The coming into force of the SächsHSFG in November 2012 also influenced the implementation of Institutional Strategy measures. While not all suggestions of TUD were taken into account - e.g. the legal framework for an adequate/appropriate tenure track system is still missing -, a legal basis has nevertheless been created to increase the flexibility of the financial and human resource planning, as well for the performance-related management of the universities overall and of their internal units. A grant and subsidy agreement for the period from 2014 to 2016 has been signed by the State Government of Saxony and the public universities and other institutions of higher education. As a result, the universities will have financial planning security until 2016. At the same time, the universities have negotiated agreements on objectives with the Saxon State Ministry for Higher Education, Research and the Arts, committing them to achieving defined goals and to sharpening their profiles on the basis of the 2020 Saxon University Development Plan. Within the current legal framework, TUD has, by virtue of its right to self-administration, undertaken the necessary organizational changes and agreed statutes and directives.

## **5 Prospects**

In the coming twelve months, establishing and integrating the OTTPs will constitute one of the central activities. The new professors are to be welcomed and supported in the best possible way, so that they quickly feel at home in Dresden and are able to realize their potential together with their colleagues at TUD and in the institutions of the DDC partners.

Regarding the creation of the Schools, the next year will be dominated by structuring and restructuring as well as by activating the organization of the Schools. This includes preparing strategies for the Schools, carrying out the planned piloting projects for selected operative tasks and establishing the student offices. In order to increase the visibility of scientific activities at TUD, the current research information system of TUD will be rejuvenated together with the SLUB, which will, in the future, allow the creation of research maps relating to Dresden as a scientific location.

Regarding DDC, the goal in the coming twelve months will be to link the current 23 partners even more closely with each other. In addition to further cooperative R&D projects, additional joint professorial appointments and a more active mutual participation in the supervisory boards of the partner institutions shall be initiated. A fiscally adequate cooperative model for the Dresden Genome Center is to be developed despite considerable bureaucratic hurdles, as a paradigmatic solution for the joint operation of scientific infrastructures by universities and non-university institutions. In our opinion, this may have model character for inter-institutional scientific cooperation in Germany. Following the example of the Center of Advanced Water Research (CAWR), a joint activity of similar size is planned for the competence areas lightweight materials and materials for mobility and energy. In the coming year, DDC also wants to draft recommendations for policies on the development and cultivation of scientific collaborations, and on their specific benefits, particularly for the development of the Dresden scientific area.

In this spirit, the further rigorous implementation of the initiated strategic projects and their constant revision, adaptation and improvement in order to realize their full potential, as well as to create sustained synergy effects for the University and the Dresden scientific area, will be at the very heart of the ambitions and efforts of TUD in the forthcoming year.

