How can research and artistic performance of university staff members be measured ICT-based?

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Summary

At the University of Music and Performing Arts Graz (Austria), we followed the 8 steps of DIRKS methodology when developing a comprehensive system to represent the wide-spread range of our staff members’ activities. The paper examines (a) the design process, (b) the technical implementation, and (c) the accompanying measures of the roll-out in 2008 in particular. During the whole development process and especially in the last step of the DIRKS methodology, the Post-implementation review, we have learned that (a) high effort for involving a wide range of persons pays off twice afterwards, (b) sometimes research and management interests in data collection have to be pared down, and (c) extensive instructions, personal assistance, and highlighting beneficial features can make even skeptics or unskilled computer users participate in an ICT-based performance recording.

According to the Austrian Universities act 2002, public universities have to publish three annual reports to the federal government and to the public (cf. Universities act 2002, 2002/2008, §13, §16, §20). One of these reports is called the Intellectual Capital Report (ICR) and “shall, as a minimum, present in itemised [sic] form (1) the sphere of action, social goals and self-imposed objectives and strategies; (2) its intellectual capital, broken down into human, structural and relationship capital; (3) the performance processes set out in the performance agreement, including their outputs and impacts” (Universities act 2002, 2002/2008, §13). In addition, the “universities shall develop their own quality management systems in order to assure quality and the attainment of their performance objectives” (Universities act 2002, 2002/2008, §14). Both reporting and quality management are tasks of the management of a university or of central administration units primarily. But for both task, wide-spread participation and data acquisition across the whole campus and across all levels of university members are fundamental.

The universities themselves also have multiple interests in data about the activities of their staff with regard to governance, to university statistics, to investments, to public relations, and to others. Unfortunately, “colleges and universities have done a horrible job of communicating to both internal and external groups what faculty do and how well they do it” (Middaugh, 2001, 1p.).
Aside from input measures (e.g., expenditures, number of students enrolled) and teaching outcomes (e.g., number of graduates), information about the outcomes of research or public service activities “are integral to a full understanding of what faculty do” (Middaugh, 2001, 54p.). Various stakeholders are entitled to such information not only due to public funding of institutions.

However, the staff members are mainly engaged in their activities such as teaching, research or the advancement and appreciation of arts. Additional administrative duties are out-of-favor and often disregarded. They are taken as a nuisance and as pinching off time from the academic activities. In addition, especially artists and researchers often claim that their work, its quality, and its outcomes can hardly be measured and this holds for quantitative approaches in particular (cf. Middaugh, 2001, 80pp.). Furthermore, institutional rules to make them recording their activities sometimes are regarded as conflicting with “[…] the freedom of scientific and artistic activities […]” (Universities act 2002, 2002/2008, § 2).

Consequently, the two main questions are in this respect: How can research and artistic performance of university staff members be measured? And how can the staff be made to participate in an online tool designed to measure their performance?

The present paper examines the development of an online tool aiming at recording academic performance at the University of Music and Performing Arts Graz (Austria). The processes were executed in line with the DIRKS methodology. This methodology outlined in Australian Standard AS 4390-1996, Records management, proposes eight steps in developing a recordkeeping system and uses the same approach as International Standard ISO 15489 (cf. National Archives of Australia, 2001a, 13p.). Consequently, the present paper will delineate the development processes along the steps of the DIRKS methodology (cf. National Archives of Australia, 2001b).

Our University of Music and Performing Arts Graz is one of 22 public universities in Austria, and one of six public universities of arts among these 22. With about 420 staff members in teaching, arts, and research, 150 persons in support services and administration, and 2300 students, it is the second largest university of arts in Austria. In 2003, we have implemented a new campus management system (Oracle-based CAMPUSonline®, developed at the Graz University of Technology). There was a focus on teaching and course administration in the beginning, but it has been continuously extended since then. In 2007, the developers of CAMPUSonline offered an additional, very flexible feature: this feature allows the university to design and implement itself the detailed measurement of activities of all its members. As compared to pre-defined solutions, the benefit of this flexibility is that the self-designed approach matches the specific emphases and the diversity of fields of our university. On January 1st, 2008, we rolled out our newly designed online tool “Leistungen” [performances] to measure research and artistic activities of the staff members. But the main work, and most steps of the DIRKS methodology, had to be done before.
1. Development of “Leistungen” following the DIRKS methodology

The DIRKS methodology “is a structured and rigorous approach designed to ensure that records and information management is firmly based in the business needs of the organization” (National Archives of Australia, 2001a, 5p.). The steps A, Preliminary investigation, B, Analysis of business activity, and C, Identification of recordkeeping requirements, ensure that the right things are done. The steps D, Assessment of existing systems, E, Identification of strategies for recordkeeping, F, Design of a recordkeeping system, and G, Implementation of a recordkeeping system, ensure that the things are done right. The final step H, Post-implementation review, evaluates how well things are done.

The paper will shortly bring up the steps A to E as they are fundamental for understanding the development of our tool. The paper will give most attention to the steps F to H.

1.1 DIRKS – step A: Preliminary investigation

In the very beginning, it was inevitable to get an overview concerning the role of the “organization, its structure, the business, regulatory and sociopolitical environments in which it operates, and major factors affecting its recordkeeping practices” (National Archives of Australia, 2001, A-4). This not only refers to the mentioned legal requirements from the Austrian University act 2002, but also to the identification of stakeholders and their interests in outcome information or of communication structures within the university for instance.

1.2 DIRKS – step B: Analysis of business activity

The Austrian University act 2002 explicitly points to eleven tasks universities have to fulfill within their sphere of action. These tasks include “1. advancement of sciences (research and teaching), and the advancement, appreciation and teaching of the arts” up to “11. provision of public information on the performance of the tasks of the universities” (§3). With regard to the first point, our university staff members do both scientific and artistic activities. The range of such activities can be derived from the various fields of study, including instrumental studies, jazz, conducting, composition and music theory, audio engineering, music education, performing arts, stage design, musicology, and others (cf. http://www.kug.ac.at/en/studies-further-education/studies/fields-of-study.html). In this step, we discerned a characteristic of artistic activities as compared to research activities, namely that they mainly take place outside the university and are subsequently more elusive. Point 11 of the article gives further demand to recording the performance of the university members.
1.3 DIRKS – step C: Identification of recordkeeping requirements

Fundamental to the development of our system is the clear focus on the measurement of research and artistic performance, but not teaching or financial aspects for instance. This self-restriction is due to several reasons such as newly given requirements in this particular area as well as legal, technical, operational, and organizational circumstances.

In this step, we formally set two main aims to be achieved at the end of the development: First, the new tool should represent the wide-spread range of activities of the university members. Second, the new tool should fulfill all requirements from the Austrian Universities act 2002 with regard to quality management and the ICR in particular.

1.4 DIRKS – step D: Assessment of existing systems

At the University of Music and Performing Arts Graz, we had used a paper-and-pencil approach to measure the performance of our academic staff aside from their teaching for some years. A global sheet for a lot of different kinds of activities had been used including only little additional information about an activity like its date and location. It was hardly possible to capture different roles or joint activities of staff members adequately. Persons filled in a sheet describing one single activity and some did so coinciding with the activity, but most filled in all at once at the end of the year retrospectively. And some did not at all, of course. The completed sheets had been collected by the secretary of the respective department and prepared for low-level data analyses. Analyses mainly focused on counting activities in different categories by department and only in certain cases on the individual level. The previous approach did not fully comply with the new requirements from the ICR and was often criticized by staff members as to narrow in addition. Anyway, this previous approach had contained a categorization system that gave us a starting point for designing the new tool.

1.5 DIRKS – step E: Identifications of strategies for recordkeeping

“The purpose of Step E is to determine the most appropriate policies, practices, standards, tools and other tactics that your organisation should adopt to remedy weaknesses identified in Step D and ensure that they meet recordkeeping requirements identified in Step C” (National Archives of Australia, 2001, E-4). The main points to be mentioned are that

- university staff members can participate in performance recording themselves directly (i.e. no further preparation by secretaries is needed)
- participation is user-friendly and accompanying support is provided to users
- participation is possible timely close to activities (to avoid peaks at the end of the year)
- participation provides personal benefits to university members
- the existing campus management system is used (i.e. general handling and log-in procedure is already known by the university members, additional costs are low)
- recorded data can be made visible to interested others, but the users themselves are owners of data and access rights
- last not least, the two main aims mentioned above have to be fulfilled
1.6 DIRKS – step F: Design of a recordkeeping system

The first main aim was achieved in four steps. Based on the given system and the known suggestions for enhancements, a small working group developed a revised system as the first step. This group consisted of persons responsible for evaluation as well as for reporting, but also of a vice rector of the university. So, experiences from the previous approach, requirements from the ICR, and strategic and management considerations were combined. The result was a categorization system that was broadened at several points, but also slimmed at some points as compared to what we had before. In the next step, the revised system was discussed with external experts. Since measurements of research activities and outcomes are much more standardized as compared to the fields of arts, the emphasis was on the latter. In doing so, we had to discuss the whole range of questions from “How to identify an artistic activity and where to draw the lines?” to “Should a series of concerts be counted as one or several activities?” Our main partners in this step came from two other Austrian universities of arts in Vienna and Salzburg, because their core orientation is also on music (as compared to the fine arts) and they had to meet the same requirements from the ICR. After these discussions and further consulting with other partners, the result consisted of accurate definitions and differentiations as well as a consensus with comparable universities with regard to some specific ICR-indicators. The third step then consisted of internal discussions to get feedback about the categories and definitions. This was partly done timely overlapping the former step to combining internal and external views. Anyway, we tried to involve a great variety of members of our university to represent not only scientific and artistic main fields or quite usual kinds of activities, but to identify formerly hidden or maybe even unknown niches. In addition to the categorization system fitting the existing diversity of research and artistic activities, we have got high affirmation from the prospective users by the broad participation in the design process. Fourth, the newly designed categorization system and the associated definitions were completed by a detailed list of attributes that should be included in the specific measurement of each category. Mostly, these measurement details had been already touched on in steps two and three in connection with the superior categories.

Aside from these steps concerning the first aim, the responsible project owner had to keep in mind the ICR-indicators as well as to clear up the internal management requirements. Anyway, achieving the second aim was much less extensive than the first aim.

At present, we use eight groups of categories, namely Artistic activities (11/0/0), Research-related activities (4/0/2), Pedagogic activities (6/0/0), Publications (12/5/0), Projects (1/1/1), Functions and activities (10/5/1), Awards (3/2/0), and Administration and service (6/2/0), with the numbers in brackets indicating the number of included categories editable by all individuals first, by both all individuals and all organizational units second, and by certain units with specific right only third. It might be of interest that the categorization system is handled dynamically at our university. That means that on the one side some small adaptations of existing categories or their attributes are done due to user feedback and on the other side also additional categories can be added on demand. For instance, the last group of categories was added some months after the roll-out based on user and management requests and completely goes beyond the requirements from the ICR. Additionally to the measurement of various activities and academic performance in particular, we now use the tool for data collection by the university’s event unit too. The entries in the respective categories provide all necessary information for the event calendar on our homepage where data is transferred to directly by means of a database link.
1.7 DIRKS – step G: Implementation of a recordkeeping system

Due to a new feature of our campus management system, we were able to implement the data acquisition for performance recording in CAMPUSonline. The system can be reached via internet from the campus and elsewhere (http://online.kug.ac.at). General information is available for every visitor. After logging-in, staff members and students can use various features. The editing area of the “Leistungen”-tool is accessible for staff members only at the moment for several reasons.

![Figure 1: Completely configured category “Keynote or other speech”](image)

The “Leistungen”-tool offers an administration area to be used via an internet browser for flexible configurations. The configuration has to be done on four levels from the groups of categories to the details of the single attributes. The first and second levels are transmissions of the categorization system. The first only contains the names and the order of the groups of categories, while the second is more complex. Here, aside from the name of the category and its definition to be displayed to the users, the allocation of editing rights (i.e., to individuals or to organizational units, with general or specific restricted access) and of applicable date types as well as various other configurations have to be done for each category. On the third level, the specific details to be measured are attached to every single category. These details are called attributes and can be defined as obligate or optional for the data acquisition. The last level contains the parameter...
values for each attribute like the contents of single- or multiple-choice lists. Altogether, these four levels lead to a specific data entry window for every single category to be measured. Figure 1 gives an example of completely configured category including the second level information at the top, then the attached attributes, and the superior group in the bottom line. Configuration of level 4 has to be done separately. Figure 2 shows the outcome of the completed configuration. This is the data entry window the users see when selecting “Keynote or other speech” from the list of available categories.

The categorization system was implemented all at once and all details to be measured were fully configured in the beginning. Afterwards, we tested the usability of the “Leistungen”-tool with several staff members. These test takers were selected consciously in several respects. We were looking for persons from different scientific and artistic fields with regard to content. We also were looking for a wide range of computer-handling skills from daily users to rather inexperienced users with regard to usability.

Although CAMPUSonline offers a wide range of possibilities to enter information, some of them are rather complex to use. Therefore, we asked our test takers to pay attention to these certain parts in particular. As a consequence, some reductions of the attributes had to be done. On the one hand, we have learned that some aspects that were taken as rather important information in the
theoretic discussions were misapplied or did not meet the practical situation. On the other hand, we have learned that the users often had difficulties when additional browser windows were opened for data entry, when clickable icons were not obvious (e.g., a single pencil symbol placed between select lists or text fields; see Fig. 2), or when the details were not arranged in an absolutely logical order. Especially the second and the last point turned out to be mutual exclusive in some cases for technical reasons during the reconfiguration. A similar conflict resulted from the claim to representing variety, leading to several rather excessive selection lists, and the low usability of such long lists. However, we realized the remarks from the test takers in a stepwise procedure. So we had the chance to find out the most comfortable and most clear layout for the users by testing several alternatives. In addition, we have seen in this phase that explanatory notes are hardly read, no matter whether they are shown before the test takers reach the data entry window or directly at the respective item.

At the end of the year 2007, we finished the technical implementation, the testing, and the subsequent adaptations of our new tool. In January 2008 and according to plan, we rolled out the “Leistungen”-Tool to be used by all staff members of our university. This was the starting point for the social implementation that was maybe more crucial for the success of our tool. According to Stähler, innovation does not necessarily succeed even if it there is a benefit for the customers or users. Acquisition of usage-related knowledge is linked to time, and time is a restrictive factor in digital economy in addition to money. When implementing a new tool, existing knowledge has to be skipped and new knowledge has to be acquired by the users (cf. 2002, 290pp.). Corollary, an innovation will be accepted when both benefits from usage are high and time demands for acquiring knowledge are small. We tried to highlight the first by means of communications and to reduce the second by means of support.

Communication followed given structures and hierarchical orders. From the rectorate as the top level of the university, information were given to the executives of the departments in personal meetings and in written form. These persons then informed the members of their organizational unit. In addition, the secretaries of the departments reminded single persons of entering data and also advised them of training offers. Furthermore, some users offered themselves as multipliers to their colleagues. These word-of-mouth advertisings were supported with an information sheet providing an overview about the main features of the tool. Taken together, the information spreading worked fine at the time of the roll-out, but we have to admit that it might have been better with some more direct communication to the staff members. In communicating the “Leistungen”-tool to the users, we highlighted two aspects: First, we pointed to the requirements from the University act. In this respect, we tried to appeal to the staff members’ commitment to the university: Let’s pull together as one, as we all benefit in reputation and allocated resources from the best presentation of our university. Second, the users can decide to easily show their entered activities to other persons, how to change or deleted entered data, and why to use feedback about the participation in data acquisition. We have seen significant increase of data entered by the users by peer reviewing by peer experts. The “Leistungen”-tool facilitates the self reporting due to the step H: Post-implementation review

Due to prior experiences, from implementing other parts of CAMPUSonline for instance as well as our testing, we knew that the roll-out would fail without accompanying support for the users. We mainly concentrated on three kinds of support. First, a detailed script of more than 60 pages was prepared. Therein, every single category and all its attributes were explained: Definitions and differentiations were presented and a screen shot of the respective data entry window was shown with further hints. In addition, some general information were included in the script, like how to
present entered activities to other persons, how to change or deleted entered data, and why to use the “Leistungen”-tool and to record one’s performance at all. This script was printed and handed out in trainings for instance, but is available for download too. Second, we provided trainings for small groups of staff members up to eight persons at once. One session took about two hours and offered some background information to establish some more comprehension as well as practical instructions to the participants. The participants of one session always came from the same department of our university and mostly had rather similar computer-handling skill. The latter turned out to be very helpful during the sessions as the instructor adjusted himself to the skill level of this certain group of participants. Anyway, somewhat more important was the origin of the participants from the same department. This allowed to focusing on the data entry of activities related to the scientific or artistic fields of the participants and to discuss them in detail in a training session, while skipping others. And as can be presumed, it is hardly interesting for a researcher how to enter data about an artistic gig or for a stage designer how to enter data about acoustic engineering or for a musician how to enter data about a published article in a scientific journal or for an actor how to enter data about a new composition. Third, personal assistance is offered on demand by email or telephone. Regardless of trainings and the script, questions about how to deal with very specific activities and users who disremember instructions or a certain procedure are the main reasons for helpdesk requests. The requests usually can be answered quickly, but in some cases they even initiated enhancements of the tool. In addition, personal assistance provides the chance to keep in touch with the users and to motivate them.

1.8 DIRKS – step H: Post-implementation review

Step H is a conglomerate of different measures after the roll-out of our online tool. The initial point to implement a new online tool was the governmental prescription to annually publish an ICR. The ICR about the year 2008 was the first one with a large number of indicators reporting data from the “Leistungen”-tool. In this respect, we are highly satisfied with the design and implementation of the tool. It meets the requirements well and provides better data in quality and quantity as compared to previous approaches. Furthermore, it makes the analyses much easier as compared to former paper-and-pencil approaches because all entered data are available instantly within tables and views of an Oracle database and thus, indicators can be calculated by means of SQL-statements directly and repeatedly. It is worth to note that current experiences from preparing the ICR about the year 2009 clearly confirm this impression.

In addition to the ICR, we conduct overall analyses of the data with a consecutive internal report to all departments periodically, starting six months after the roll-out. These reports present the cumulated activities of the members of each department in different categories within a certain period of time. Comparing the own results with some other departments often stimulated ambition and communication inside a department. Over and above the quantity of activities, it was also a feedback about the participation in data acquisition. We have seen significant increases of data entries in the periods closely after publishing one of these reports.

Furthermore, the new tool provides substantial information for internal evaluations of individuals and departments. Part of nearly every evaluation procedure is a self report about the academic activities and performance of a single person or of all members of a department, succeeded from a reviewing by peer experts. The “Leistungen”-tool facilitates the self reporting due to the availability of necessary data by few clicks, but makes these presentations of a person or a
department more traceable for reviewers. In some cases, main parts of self reports were even replaced by just a short reference to the online tool. This is possible because we do not only ask for the number of activities but for relevant additional information that enables experts in the field to evaluate the quality of the performance, like the scientific relevance by means of the kind of publication or the artistic relevance by means of the location, program, and other involved musicians if so. Taken together, we go beyond a mere quantitative approach as “the qualitative dimension of faculty productivity is in fact characterized by specific, measureable activities” (Middaugh, 2001, 81p.).

At the end of 2009, two years after the roll-out, we have exceeded the amount of 10.000 data entries in our “Leistungen”-tool. The participation rate of our academic staff members is two third with difference between departments. Measures to increase the rate will now focus on certain department with rather low rates, but should not forget to appreciate showcase departments with rates up to 95%.

Enhancements of our online tool are going on. Aside from adding categories, we will discuss the quality management with regard to the entered data. Our aim is to assure the quality of individual entries with simultaneously increasing their quantity and without restricting the individuality of artistic and research activities. So, the challenge is to make the staff members participate in a rather quantitative approach of measurement, but at the same time to carefully enter data and to deliberate about where to draw the line. After the successful implementation of our new tool, another Austrian university of arts asked for a cooperation. The University for Art and Industrial Design Linz uses the same campus management system as we do (and also nearly twenty other universities in Austria and Germany). Starting in summer 2007, the design process was operated together to combine our experiences with their local knowledge about the fields of work of their staff members. Then we conducted the technical implementation as well as the development of database queries afterwards. Experiences in Linz were very similar to those in Graz. But less testing and adaption was necessary of course as we had built on our prior development. Not only the request from the other university was a confirmation for our work, but the transferability of our system to another university was a validation of our approach.

2. Conclusions

Our new online tool designed to measure the artistic and research performance of our university staff members was successfully implemented. The tool provides fundamental data for performance statistics of single persons, departments, and our university, in our Intellectual Capital Statement for instance. Following the steps of the DIRKS methodology, we were able to comply with both quality standards and various practical requirements. To summarize our experiences, we have learned that (a) high effort for involving a wide range of persons pays off twice afterwards, (b) sometimes research and management interests in data collection have to be pared down in favor of usability in practice, and (c) extensive instructions, personal assistance, and highlighting beneficial features can make even skeptics or unskilled computer users participate in an ICT-based performance recording.
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References


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