

One-Stop University Administration: An Information Architecture for Higher Education

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Keywords

One-stop administration, information architecture, administrative information systems, intranet, service portal, communication, service modelling, processing modelling, TU4U.

1. SUMMARY

Higher education institutions have implemented numerous administrative processes for managing the student lifecycle and research activities. In many cases, the corresponding services units (operating departments) including the HR department, finance department, and student administration design and implement these processes. The documentation of the processes, if it exists, can be found on the web-sites of individual departments.

Consequently, staff and students have to know which service units offer which administrative processes and services. This results in degraded efficiency of the administrative processes. Many hours are lost because staff and students do not know that services exist, they cannot find the right forms, and do not know how to fill them out.

At Graz University of Technology, a new information architecture with a “one-stop university administration” was designed: Students and staff should find all required information, get access to services, and initiate administrative processes in a single information system. This information architecture was implemented as “TU4U”, the university’s intranet and service portal.

2. INTRODUCTION

At many universities, web-sites have existed since the mid-1990s. Not only academic departments but also service units such as the HR department, finance department, the student administration, and the deans’ offices maintain web-sites. The web-sites of service units are usually edited by these units and contain information on the administrative processes they “own”, the corresponding forms to be filled out, and in addition to this, news, contact information, etc. Hence, in terms of information design, service and processes modelling, the service units act mostly autonomously.

This approach has several drawbacks. There is a vast amount of information that is not homogeneous in granularity and style, not clearly structured, and not end-user-oriented. Finding information is sometimes difficult, administrative processes are often not transparent, and access to the processes is not consistent—particularly for new users. Moreover, users find themselves providing the same information in different processes. Almost every form requires users to provide their name, contact information, and the name of their organisational unit or project—although this information is usually already known in the organisation.

At Graz University of Technology, many of these observations could be confirmed. Therefore a strategic project for modeling a new information architecture was established. This information architecture should be user-centered and should facilitate the users’ work at the university. There should be two major systems providing information: an intranet and service portal accessible only by internal user groups (students and staff) and a public web-site for anonymous users including prospective students, parents, research partners, funding agencies, etc. Especially for staff and students, the new approach results in a “one-stop university administration”.

This paper describes how “TU4U”, the new intranet and service portal, was designed and implemented at Graz University of Technology and shares some insights gained during the first months of operation (TU4U, 2014). Section 3 gives a brief overview of previous work in this field. In

section 0, the approach and methodology used throughout the project are detailed. The actual results of the project and an outlook on the future of TU4U are provided in sections 5 and 6, respectively.

3. PREVIOUS WORK

The “one-stop concept” stems from the eGovernment sector, with the aim to enable citizens to use various applications from different agencies in a single one-stop eGovernment portal. Fundamental work on such portal was done in the EU-funded project “eGOV” (Wimmer & Traunmüller, 2003; Traunmüller & Wimmer, 2005).

This demand may seem quite simple. However, the organisational and technical requirements are very complex. Disparate government agencies, ministries, etc. need to be interconnected on an organisational level, i.e., their business processes need to be aligned or at least be made compatible. Furthermore, the technical interfaces between different agencies and their specific applications have to be implemented. The probably most difficult step, however, is to give users the impression, that they are using a “holistic” system as opposed to a large number of loosely coupled systems (Wimmer, 2002).

Successful examples of such one-stop eGovernment portals are GOV.UK in the UK (GOV.UK, 2014) and Help.gv.at in Austria (Help.gv.at, 2014). The structural foundations, on which TU4U is built, are partly based on the experiences gained from Help.gv.at.

4. APPROACH AND METHODOLOGY

The framework in which the new intranet and service portal was designed, clearly focussed on the end-users. The following guidelines were defined for the design of TU4U:

- **One-stop university administration:** The new intranet and service portal should be seen as one-stop university administration system. I.e., all information about services and processes offered by the university should be documented in a single platform, and all other operational systems should be accessed from there (see Figure 1).
- **Topic-oriented:** The content in the platform should be structured by topics—and not by organisational units. I.e., there should, for instance, be a topic covering all aspects of research projects, no matter if the information actually stems from the finance or the controlling department, etc. In other words, content should be combined where it is consumed, not where it is produced. This can increase efficiency and productivity.
- **Lean structures:** To keep the information easily accessible, there should be no more than ten to twelve top-level topics. The information is structured hierarchically, where the maximum depth should be four.
- **End-user-oriented:** Content should be provided with a focus on end-users. Hence, there are two entry points to the platform—one for students and one for staff.
- **Users’ language:** All content should be written in the users’ language—and not in the experts’ correct, but sometimes difficult legal language.

The entire project was initiated and managed by the IT services department, although it was strictly not seen as an IT project. Therefore, the internal communications department, responsible for various publications for staff, was an integral part of the planning team.

4.1. Analysis and Documentation

With these preconditions in mind, an analysis of the existing content and structures was performed, and the new macro and micro structures were planned. Approx. 25 service units were identified as the ones offering services to students and staff. As starting point, the web-sites and existing forms, handbooks, and further documentation provided by these units were analysed. All pieces of information gathered were documented in a structured list. This yielded about 500 processes that need to be integrated in the intranet and service portal.

For the further documentation, mainly two tools were employed: a mindmap for working on the macro-structure of the content, and a process management system. In order to be able to handle

the relatively large number of processes, these four levels of detail were defined for process documentation:

- **Level 1:** Only the characteristics of processes such as the process name, process owner, and goals are documented.
- **Level 2a:** Processes are graphically depicted (using BPMN 2.0 and the DEMI/RACI scheme), but only the activities to be carried out by the end-users (students, staff) are documented. Activities in the service units are only displayed as a single black box labelled “processed by service unit”.
- **Level 2b:** Similar to level 2a, but the activities in the service units are also detailed.
- **Level 3:** Detailed process descriptions including definitions of forms and users’ permissions are created, which is mainly required for implementing processes in workflow systems.

An analysis of when and how information, services, and processes are generated or altered was performed as well. The result is that the majority of such changes are linked to the rectorate, where the fundamental guidelines might be changed. Hence, the the rectorate’s decision making process needs to be aware of TU4U. Otherwise it would be difficult to keep such a platform up-to-date.

4.2. Design of Structure, Content, and Functionality

The macro structure describes the hierarchy and the top-level topics that are used for grouping the individual articles. The hierarchy was documented in a mindmap, which was very convenient when discussing the new structure with service units (see Figure 2). It consists of ten top level items such as “My Career”, “My Business Trip”, “Teaching” and “Projects”. The aim was to align these topics with everyday activities of the university staff. They are depicted on the main page of TU4U for staff (see Figure 3).

All articles in TU4U should have a similar, easily recognisable, consistent structure. Hence, a micro structure for the individual articles was planned. Articles consist of general information (what does this service provide, who can use it, when can it be used, ...), detailed information on the process (documentation level 2a, see above), deadlines and cost (if any), forms, related guidelines and laws. Moreover, contact information is provided for each service.

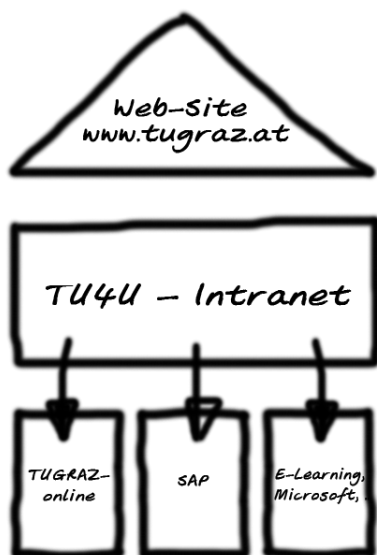


Figure 1: Integration. The intranet and service portal as entry point to administrative processes in other systems.

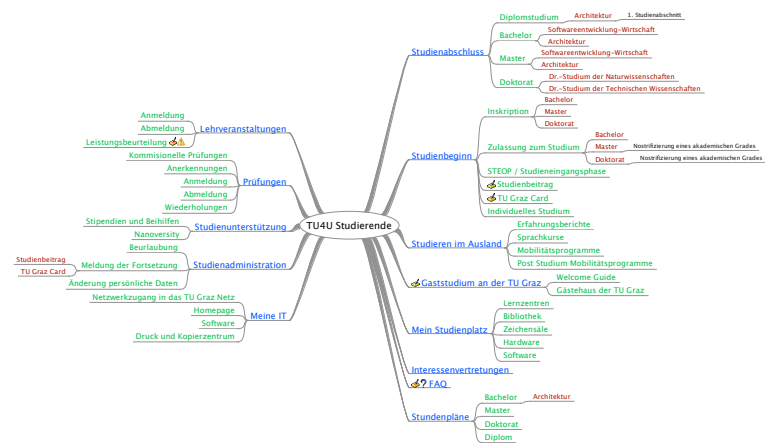


Figure 2: Mindmaps were widely used for structuring the content on a macro-level and for discussing the structure with service units.

TU4U offers functionality related directly to the content such as recently added articles, most relevant articles (most frequently accessed articles), personal bookmarks, full-text search, alphabetical index of articles, index of all forms, etc. In addition to this, features such as a staff

directory, information on public transportation (connections from my office within the next ten minutes), the lunch menus of restaurants close to the university, weather and storm forecast, and weather forecasts for cyclists are available.

In order to promote scarcely known services, a “did you know that ...” function is offered. It is used for informing users in exactly one sentence, e.g., “did you know that the library offers professional book scanners?”

It has to be mentioned, that TU4U makes use of single sign-on technology. I.e., when a user logs on to TU4U and wants to access a process in a different system, the user is seamlessly redirected to the corresponding system. An additional login is not required.

4.3. Implementation

Work on the new internet and service portal commenced with a proof-of-concept implementation together with two service units—the HR department and the HR development department. These departments were selected because their content is linked to each other and comprises a relatively self-contained area.

After the successful proof-of-concept implementation two editors started implementing the new structure and writing the new content topic by topic. This was a major organisational change for the service units: No longer would they themselves work on their web-sites, but professional editors would get the raw material from them, and the editors would produce the articles.

In this phase, the aim was to assure the services units of the long-term benefits both for the service units and for end-users and to get them involved. In order to achieve these aims, an iterative process was chosen. The editors would provide a draft of each new article and improve it together with the service units responsible, until the article is approved by the service units. During this process many suggestions and improvements were made by the service units.

When work on a topic is completed, the service units’ corresponding (old) web-pages are redirected to the new content in TU4U. This means that, gradually, the web-sites of service units do not contain any content, but only redirects. Thus in the long-term, service units that only provide services for students and staff (and do not provide services for the public) will not have a web-site any more.

An attempt was made to not only include information about administrative processes and services into TU4U, but eventually also include the internal communications channels. The rectorate’s newsletter, the staff magazine, and the universities official bulletin were included from the beginning. Hence, TU4U is not only a “static” medium but also offers current information such as news.

5. RESULTS

After approx. 15 months of work, the new internet and service portal TU4U went live in October 2013 (see Figure 3). The launch was coordinated with the internal communications department so that an issue of the rectorate’s newsletter would be published on the day of the go-live of TU4U. This would also be the first newsletter to be published in TU4U. Moreover, the next issue of the staff magazine would feature TU4U on the title page.

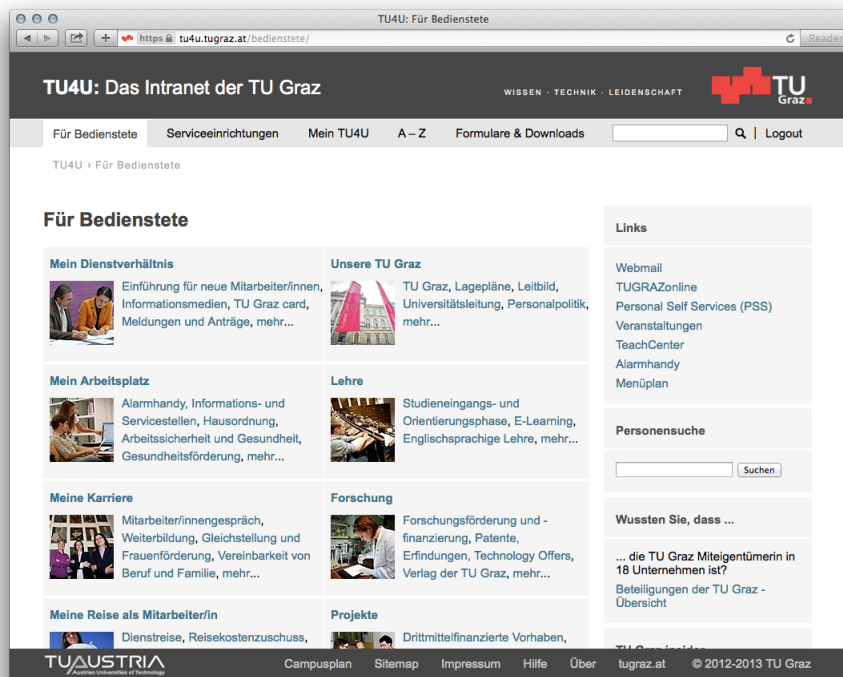


Figure 3: TU4U’s main page for staff showing 8 of the 10 top-level topics and additional information such as a list of frequently used links, searching the staff directory and “did you know that ...”.

The acronym “TU4U” symbolises what the “Technical University [does] for you [as student or employee]”. Users like this idea and make intense use of TU4U. Within the first three months, approx. 120.000 visits by 3.000 employees were counted. The feedback is overwhelmingly positive, with more than 90 percent of users rating TU4U as “very positive” or “positive”.

Some features are very frequently used, while others are hardly ever utilised. The bookmarks functionality, for instance, is employed only by very few users. The feedback mechanism that allows users to comment every single article, however, is used very frequently (see Figure 4).

War diese Information hilfreich?
 Ja
 Nein

Vielen Dank für Ihr Feedback!

Ihre E-Mail-Adresse wird gespeichert, damit die Redaktion Sie kontaktieren kann.

Figure 4: Feedback mechanism: “Was this information useful?”

At this stage, a high level of collaboration between the editors and the end-users can be seen. Users are actively reporting things that are not “perfect” and things they are missing. Thus, people want to get involved through this seemingly tiny functionality. It has to be noted, though, that every comment by end-users is responded to by the editors. Hence, there is a high level of communication between editors and end-users.

Through the single sign-on mechanism, many other relevant systems such as the campus management system, e-mail access, and even deep links to applications within other systems can be

seamlessly integrated into TU4U. This makes TU4U a good choice as browser default home page for many users.

6. OUTLOOK

Currently, TU4U is a successful and widely used intranet and service portal and is indeed utilised as a one-stop university administration portal. One of the central questions the project team faces is how users can be made to come back “voluntarily”, i.e., which incentives can be provided to have users actually use TU4U. This proves difficult because TU4U addresses users not on an emotional level but rather on a factual, objective one.

In large corporate settings, intranet portals are either mandatorily set as the browser’s default home page, or there are competitions or games on the intranet portal’s main page. In higher education settings, the first measure would, most likely, be rather unpopular, and the second one might, due to restricted budgets, not be feasible in the long run.

TU4U for staff has already gone live, while work TU4U for students is about to begin. With students being a completely different target audience than staff, it remains to be seen, which functionality and communications channels they require—and what can make them use TU4U regularly.

7. CONCLUSION

The concept of the one-stop university administration presented in this paper is a different approach to structuring and presenting the information, services, and administrative processes of a higher education institution. The approach and methodology described take both the need for a new information architecture and the organisational complexity of universities into account.

At Graz University of Technology, this concept was realised in some 15 months. Since the go-live, the system has been widely accepted and is used by staff on a daily basis. There has been a considerable amount of feedback, and many users want to get involved in improving TU4U. It can be anticipated, that this approach can also be applied to other educational organisations.

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9. PROJECT DETAILS

9.1. Goals of the Project

The aim of this project is to radically re-structure the information already available at Graz University of Technology. A strict differentiation between an intranet and service portal for students and staff on the one hand, and the public web-site on the other hand is to be implemented. The

intranet should act as a one-stop university administration portal, where users can make use of all relevant services, can initiate all relevant administrative processes, and can consume all relevant internal communications. Thus, the access to information will be easier, and productivity and efficiency can be increased.

The project should not re-design the actual administrative processes or model new services.

9.2. State of Development and Further Developments

The introduction of TU4U is split into four phases:

1. analysis and design;
2. proof-of-concept;
3. TU4U for staff;
4. TU4U for students.

Currently, the first three phases have been completed. The fourth phase, TU4U for students, will commence in Q1-2014 and is scheduled to be completed at the end of 2014.

Further technological developments mainly include functionality requested by the internal communications department and improvements. Furthermore, a responsive design of the user interface will be implemented for mobile devices (smartphones, tablets).

The content is currently only available in German. Since several users requested English versions of the articles, a plan will be drafted to have the content—at least the most relevant articles—translated to English.

9.3. Applicability to Other Institutions

The concept of the one-stop university administration portal and the approach for designing and implementing it, is generic. It describes the steps required for analysing the existing content and for designing the macro and micro structures of content. Moreover, ways to integrate further information such as internal communications and additional functionality such as feedback mechanisms are explained. Also, the organisational aspects of the implementation are briefly outlined.

It is believed that this generic model can be applied to other institutions with several administrative units and a heterogeneous information architecture.

9.4. Organisational Project Environment

This project is carried out as part of the strategic programme “Strategic Information Management”. This programme is a measure to introduce a new information architecture and re-structure the existing information. A clear distinction between “intranet”, the information for university-internal user groups (students, staff), and “internet”, the information for the public, should be made.

The entire programme consists of the following projects:

- introduction of an intranet and service portal, a one-stop university administration portal;
- re-launch of the public web-site (new structure, web design, content, technology);
- implementation of a new groupware solution;
- introduction of a project portal for researchers;
- IT strategy 2013 - 2016.

The programme was started in July 2012 and ends in October 2015. The total budget is approx. 850,000 €. The resources required for planning and implementing TU4U are restricted to personnel. Since July 2012, approx. 25 person months have been spent.

9.5. Technical Project Environment

As a technical university, Graz University of Technology has a long tradition in implementing highly sophisticated IT solutions. Currently, a consolidation is taking place, and the IT Services department puts a focus on three operational pillars: CAMPUSonline as campus management system, SAP as ERP and BI platform, and Microsoft products for basic and collaborative services. TU4U is developed “on

top” of these three pillars and acts as the entry point to all services and administrative processes actually implemented in these systems. TU4U uses Typo3 as content management system.

10. AUTHOR'S BIOGRAPHY



Josef Kolbitsch has a PhD in computer science from Graz University of Technology, Austria. His research interests include knowledge management, digital libraries, and the applications of business intelligence systems. Since 2008, he has been head of the Business Solutions & Information Services unit of the university's IT Services department. Currently, his focus is on the university's new information architecture which mainly consists of "TU4U", and the public web-site. Moreover, his team currently designs and implements a "project portal" for supporting researchers in managing their research projects.