

## Colloquium

### **Disabilities Information Flow: a disabilities information management system**

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#### **Abstract**

The Disabilities Information Flow (DIF) project at the University of St Andrews has sought to provide a means of efficiently managing all student disabilities information within the institution and provide appropriate role-based service interfaces for all staff who need to routinely interact with this information. This paper describes the software engineering processes used for the context analysis, design and implementation of the DIF.

#### **Introduction**

There is growing evidence across UK academic institutions, and in the education sector in general, that disabled students are being admitted to higher education with little appreciation of the diversity of requirements necessary to produce a positive and successful student experience. Disabled students require full access to the higher education curriculum without suffering from discrimination because of their disability. In order to meet these two requirements it is important that information about disabilities is obtained and communicated to those who need to know, and only those who need to know, as efficiently as possible.

Unfortunately, the management of information flows about students with disabilities within many institutions has evolved on a largely ad hoc basis. Many teaching staff are uncertain and even anxious about working with students with disabilities. Many consider they have too little knowledge and information about, for example, how a disability affects a student's learning, how individuals organise their study and learning activities, what is being understood by students in lectures, and what discretion, if any, to use in assessing students' work.

### **Disabilities Information Flow (DIF) project**

#### *University concern*

The University of St Andrews launched handbook *Academia and Special Educational Needs and Disability Act (SENDA)* (2004), and document *Anticipating the Needs of Students with Special Needs* (2004) in the early part of 2004. The duties under the Act are anticipatory; the University must therefore be considering what it can do to accommodate students covered by the Act prior to their application or acceptance.

Ultimately, responsibility for creating an accessible curriculum lies with schools, which must be aware that designing and implementing such a curriculum is not simply about physical access to buildings; it includes thinking about students with a variety of special needs, including visual and hearing difficulties, problems with language attainment, varying mental health issues, and chronic or progressive illnesses or incapacities. These matters can be taken up at school level, and then the key issues that should be addressed by every module coordinator. Module coordinators should always have checked the needs of students in their modules via a reliable channel.

In addition, it is important to remember that members of the academic staff are not required to become experts in disability issues: in the same way student support services (SSS) cannot become experts in academic fields. Therefore, a reliable and up-to-date information system to bridge the school academic staff and SSS is very necessary.

This information flow issue has been identified in the Teachability Project (Teachability, 2000) funded by the Scottish Higher Education Funding Council and in the Disabilities Advisory Group (DAG) plan at the University of St Andrews. The Disability Information Flow (DIF) project proposed to 'review and enhance communication systems that support flow of information about disabled students' needs'. As there are numerous examples of postteaching reactive approaches and lack of attention to individual student needs, the project focused on preteaching strategies through:

- timely and accurate dissemination of information to teaching staff;
- quality data that is distributed and spread across a number of unrelated systems on a 'need to know' basis; and
- institutional commitment to an efficient disabilities information flow service.

#### *Identifying the principal actors*

There are three main groups of staff within the institution directly concerned with DIF at the University of St Andrews:

1. The disabilities team (DT) is a subgroup within SSS who carry out all the day-to-day work of identifying, interviewing, assessing, and reporting on disabled students' needs, trying to ensure that information gets to the right people, and that these people then know what action to take.
2. The disabilities coordinators group consists of the disabilities coordinators (DCs) from each academic department.

3. The DAG is a small high-level group chaired by a vice principal of the university, which has produced an action plan with a view to conforming to SENDA.

### Approach and development

The DIF system is based on the concept that a lot of information is actually not best conveyed within the institution; the system provides staff with a personalised access point for disabilities information, as well as the administrative functions required to support the academic staff experience where appropriate. Therefore, the user-oriented approach is used which is, at least conceptually, the way the university is enabling the DT and academic staff to access a role-based quick link channel to essential student disabilities information within the institution based on a series of initial domain analysis processes.

The approach can be broken down into four high-level phases with the following characteristics:

Phase 1: Systems analysis and requirements gathering

- identify the principal stakeholders and actors in an activity;
- interviews have two purposes: to try and work out how things operate at present (if at all), and to elicit requirements for a new system;
- try and understand how things work at present (even where they work badly);
- build a model based on the interviews and high-level systems analysis; and
- check the accuracy and sense of the model by revisiting key technical contributors.

Phase 2: New system design

- analyse the model with a view to identifying weak points, combine this with the requirements gathered, and then recommend improvements; and
- design new value-added service, which addresses requirements.

Phase 3: Piloting

- implement a system and carry out a pilot; and
- evaluate the pilot—this involves a technical review, and also another round of interviews or feedback sessions.

Phase 4: Migration

- accommodate feedback from the evaluation and move towards a full institutional deployment, sometimes called embedding.

Figure 1 illustrates the architecture and operation of the new DIF system.

### Summary

The DIF service has been running as a critical part of the University since the start of the 2003/2004 academic year. It includes an implicit model of the institution based on units (academic and nonacademic), teaching modules, staff identities, and institutional roles. A few DIF screen shots are illustrated in Figures 2 and 3. The project has also

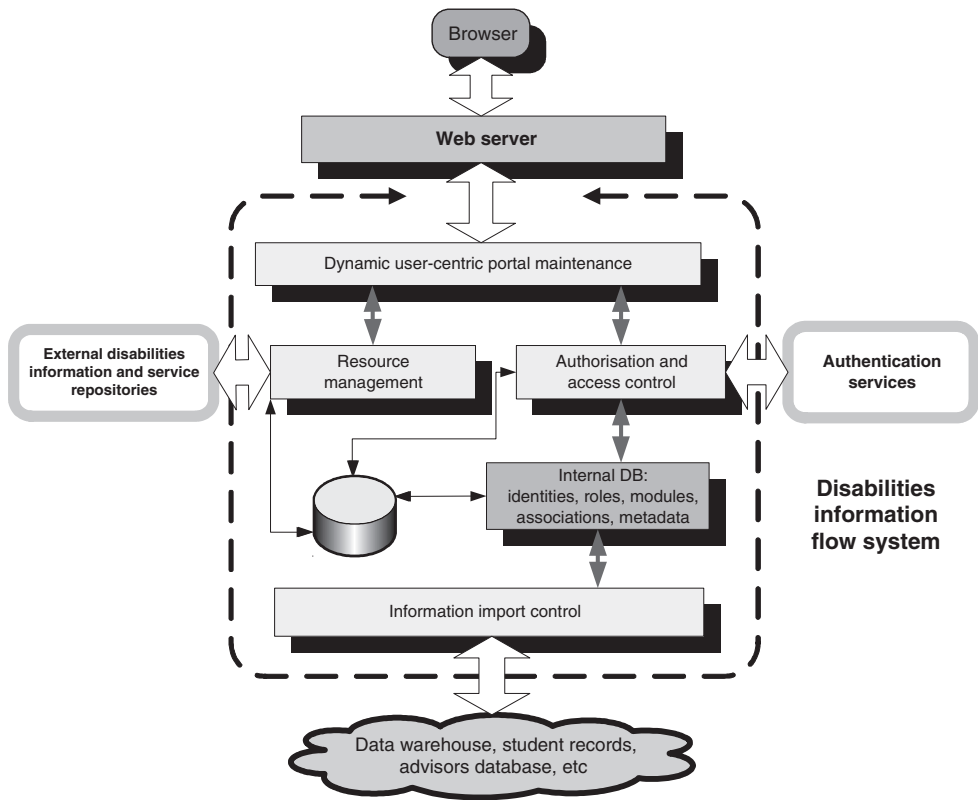


Figure 1: Disability Information Flow system

been documented and reported (DIF, 2004) on its progress, including summaries of interviews, requirements, modelling of existing processes, evaluation results, and recommendations. It is hoped that this will help clarify the role of DC, and what can be expected from central services.

Feedback interviews were done at the end of 2003, involving the DCs in 14 schools and departments within the University of St Andrews. Feedback from the DCs has been generally very positive with regards to the newly introduced DIF system; a significant improvement on the previous paper memorandum system was noted by all interviewees.

In general, there are three big successes of this project:

First, DIF increases the competence and confidence of academic staff in understanding the needs of disabled students. DIF indeed provides staff with the tools for discussing such issues in the unit, hence raising the profile of the issues. And it also raises the

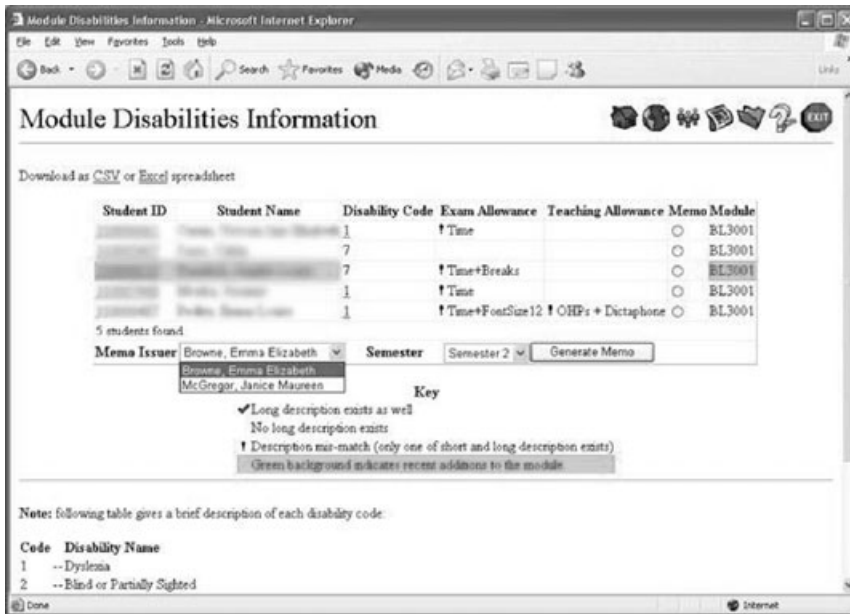


Figure 2: Overview of the module disabilities information



Figure 3: Overview of the user-role association editor

awareness of academic staff so that they adopt an inclusive approach and make them cognisant that it is an issue that they are responsible for. Although academic staff might seek the advice of the SSS for expertise in particular areas, there is a level of awareness-raising and discussion that needs to take place within the faculty and in an academic arena. The practice of examination and assessment is a good example of such an area.

Second, the DIF enables academic staff to prepare teaching materials well in advance of teaching of students with a variety of learning disabilities. It also provides good quality data while respecting confidentiality and increases the need for reducing administrative duties on academic/teaching staff.

Third, the DIF helps academic staff to understand the issues relating to the development of an accessible learning environment. DIF includes some useful information (eg, school profile and 'who does what', role, table, etc), to schools that has not been previously available regarding roles of staff and meaningful statistics.

### **Reflections and future work**

The DIF project has aimed to understand and document the current state of play with regard to information flows about disabled students throughout the institution at the University of St Andrews.

The next significant deliverable of DIF probably is to provide an information portal for disabled students. In addition, there are many aspects of the environment that can disable the person and are out of the control of the individual student (eg, accessibility of materials, communication strategies, and assessment policies). It is hoped that DIF can provide practical examples of how changing the learning environment can lead to an accessible university in the future.

### **References**

- Academia and SENDA (2004). Retrieved, from [https://webct.st-andrews.ac.uk/SCRIPT/SALT\\_CurrAccess/scripts/serve\\_home](https://webct.st-andrews.ac.uk/SCRIPT/SALT_CurrAccess/scripts/serve_home), June 2004.
- Anticipating the Needs of Students with Special Needs (2004). Retrieved, from [https://webct.st-andrews.ac.uk/SCRIPT/SALT\\_CurrAccess/scripts/serve\\_home](https://webct.st-andrews.ac.uk/SCRIPT/SALT_CurrAccess/scripts/serve_home), June 2004.
- Teachability Project (2000). Retrieved, from <http://www.teachability.strath.ac.uk/>, March 2004.
- Disabilities Information Flow (DIF) (2004). Retrieved, from <http://distsyst.dcs.st-and.ac.uk/dif/>, August 2004.

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