For your eyes only: Leveraging existing data to facilitate individual course evaluation report delivery and integration into QA or BI tooling

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Abstract

We will show how the HSG uses data integrations to automate course evaluation report distribution to individual instructors. We will also look at strategic implications of using the same data as the rest of the institution beyond just report delivery, such as opportunities to integrate into quality assurance or institutional management processes through enabling feeding back data to business intelligence solutions.

1 Introduction

This paper will describe the improvements realized by using data automation for the course evaluations (also known as student evaluations of teaching, module evaluations or just evaluations), both in preparing for a new semester's evaluations as well as disseminating the results of these evaluations to the appropriate persons.

The HSG runs evaluations on a per semester basis. Study programs are evaluated on a two-year cycle. In addition, each semester the study programs may indicate which courses they want to have evaluated. Furthermore, courses that are taught for the first time, as well as courses with instructors teaching for the first time will be evaluated.

The data on which courses to evaluate, which instructors teach those courses, which instructor is new at the HSG as well as which students are enrolled for which courses was all gathered, checked, and cross-referenced manually. As an example, the list of courses and their instructors did not contain the information on which instructor was new at the HSG. This therefore had to be manually cross-referenced. In all, preparing for a new semester of evaluations took about a month each semester and was highly error prone.

2 Automation

The HSG uses an in-house system to perform most of its administrative work related to teaching, called Un.IT. This holds essentially all data pertaining to courses, enrollments, teaching as well as grades and more. In the previous process, individual teams were asked to provide extracts of the data they were working with, which the evaluation team manually reconciled.

A project was started together with Explorance, the provider of evaluation software Blue, to provide the required data in an automated way. The HSG uses BizTalk to facilitate such integrations. Main requirements were a list of courses including information regarding for example the study program, degree level (such as bachelor or master) and other metadata. Separate exports were created for student enrollments, instructor-relations to courses including their role in the course (such as instructor or teaching assistant) and a final export of all involved users including some demographic data such as program enrollment for students.

The created exports are updated daily using the newest information. The HSG uses simple CSV files stored on a network share, but other options are possible (such as database views, or SharePoint folders). The HSG's instance of Blue, Explorance's course evaluation software, then reads these exports and automatically updates its internal databases using the new information.

Those changes are applied to any course evaluations currently ongoing at the HSG. In case of the HSG, students will be added and removed to course evaluations based on their enrollments. Instructors will be linked to their appropriate courses, and the questionnaires will immediately reflect this by adding or removing instructor-specific questions for that instructor. If applicable, e-mail invitations will be sent to instructors or students. Changed course names will also be automatically reflected in the questionnaire.

Once a course has been evaluated by a sufficient number of students, reports will automatically be generated from Blue. The HSG uses a threshold in order to safeguard student privacy. For the reports to instructors this threshold is currently set to five responses, and for the reports to students this threshold is set to ten responses. Using the metadata provided, these reports will be automatically made available through Blue's integration with the Canvas learning management system (LMS).

3 Approach

While developing such an integration may seem daunting if the systems landscape at an institution is fragmented, several factors of the approach the HSG used may be transferable to other institutions.

The primary success factor has been the choice to take an initial relatively uncomplicated set of requirements (in terms of the data used) and ensure the completely automated flow of that data. This allowed all involved parties to gain experience with the used application and its requirements. Specifically, we started with data of which it was known that it exists in university systems: courses, enrollments, instructors, and user information. Even if not all data exists in a single system as is the case at the HSG, Blue has the capacity to pull data from several unconnected systems and create the links internally if some commonalities exist (known as keys or identifiers).

Second, there was close contact between all involved parties, from the side of the software supplier Explorance, as well as HSG internal teams using the application and providing the data. This has given

the data teams more insight of all possibilities of the application and therefore what data might feed those possibilities. On the other side that also allowed the evaluation team to reduce requirements and provide a better scope. The questionnaire used can now directly link to a page with the course goals from the question about those goals, improving feedback quality. On the other hand, a requirement to create a full institutional hierarchy was dropped as it soon became clear that information was not available in a sufficient quality to be of benefit. This hierarchy was then created by hand and still is manually maintained.

Third, short iterations allowed immediate feedback on the correctness of the implemented changes leading to a quicker turnaround. Small implementation details such as the exact formatting of date fields could be corrected very quickly in this manner.

4 Implications

By using the exact same data as is used in other systems, the HSG has realized several major benefits. Firstly, due to automating all data flows, the required time to prepare for a new semester of evaluations has dropped from six to eight weeks to about two weeks, saving a month of time each semester. Additionally, no manual mistakes can be made in assigning an instructor the status of new instructor and thus making their course part of the mandatory evaluations.

Furthermore, reports of the evaluation results can now be prepared automatically and assigned to the appropriate instructor who will be able to view their report from within Canvas. We also increase the engagement by showing pop-ups on Canvas reminder instructors that their course needs to be setup for an evaluation as well as students that there are evaluations to fill out. Despite that, response rates are not at the levels we would like, and we are looking for ways to further engage staff and students.

In addition to the instructors, course evaluation results for mandatory evaluations are also made available to the study program administrations. Using the hierarchy we maintain manually, administrative staff get assigned to the appropriate programs and with the appropriate level of permissions.

The results are also automatically imported in a BI dashboard that study programs use, thanks to the shared information. This allows the dashboard to cross-link course evaluation data with for example grades, or instructor time allocations. The main goal of the current visualization of course results is to highlight any outliers in course rating, therefore a box plot is used.

While the automation has almost eliminated the human factor, mistakes are not eliminated entirely, mostly due to data quality issues. Whether or not a course is marked as a new course is based on if the course identifier was known before the current semester. As study programs sometimes change these identifiers, those courses get marked as new even though they have been running for years. Additionally, instructors sometimes add administrative staff or colleagues to their course as teaching assistants prompting questions as to why they are receiving emails regarding that course.

A final data quality issue is with course start and end dates (i.e., the date of the first activity and date of the last activity). HSG best practices are to evaluate a course the second-to-last week of lectures to have the results during the last week and be able to discuss those results with students thereby closing the feedback loop. Some of these dates as provided by the timetabling department do not correspond to

the actual dates of activities (for example due to academic freedom or instructor or student scheduling constraints) causing reminders to be sent at incorrect times.

5 Future developments

We have started a project to develop the automation even further. A complete automation of the hierarchy as described above is planned so that study program administration access to evaluation results always is up to date and correct. We will also expand course metadata to facilitate new goals in instructor career development as well as streamline existing processes, for example by excluding courses that are unable to meet the report threshold as their number of enrollments is below the report threshold. Furthermore, we will integrate the evaluation results in QA processes such as assurance of learning (AoL) by automatically extracting the appropriate data from the responses and loading them in other tools.

Joris de Vries is product owner for the "(Study) Program Management Cockpit" (PMC) at the HSG as well as technical manager of the course evaluation system Blue, with which he has worked for over seven years. He enjoys finding 'the question behind the question' and translating between IT and business.