Project Title
Data Reporting, Exporting, and Messaging (DREM) tool
Office of Information Technology
University of California Irvine

Submitters
Francisco Lopez, Manager
Application & Development Support for DUE – IT
Office of Information Technology, UCI
lopez@uci.edu, (949) 824-8818

John Remy, Project Manager and Database Administrator
Application & Development Support for DUE – IT
Office of Information Technology, UCI
jremy@uci.edu, (949) 824-8597

Project Team
• John Remy, Project Manager and Database Administrator, jremy@uci.edu
• Luminita Andricioaei, Database Administrator, landric@uci.edu
• Kenny Lai, Lead Programmer, klai@uci.edu

Project Sponsor
Shohreh Bozorgmehri, Director of DUE – IT, shohreh@uci.edu

Project Summary
DREM tool is a web-based student-data reporting and messaging system; it is designed to speed the delivery of regular reports and ad-hoc data requests. Users are given access to a wide range of departmental and student data via a simple web interface with parameterized inputs. The data can be exported to the user’s local desktop for additional analysis or scripted messages can be sent to the e-mail addresses associated with the queried data. For an increasing number of cases, end-users no longer have to wait for technical staff to respond to their data requests and technical staff is freed from handling data requests that are cyclical in nature.
Project Description

Background
DREM tool began as an idea within the development team in the midst of another programming project, building an on-line student tracking system for the Undecided/Undeclared (U/U) Advising Program within the Division of Undergraduate Education (DUE). While designing the component for handling U/U's academic probation management, the team saw the need for a generic tool to query the student database for a list of students matching specific criteria, refine the list of students, and take action upon the list of students (e.g. updating the database or sending an e-mail notification).

Stepping outside of their current development project, the team began to realize how a generic querying and messaging tool would help them in their day-to-day operational support requests. Roughly 80% of incoming data requests were cyclical and similar enough that they could be abstracted into generic data requests. Building a generic tool would give non-technical staff the option of servicing their own data requests and free the technical staff to focus on more complex support needs.

Design
A key design goal was for a clean, easy-to-understand web interface that would tie the User Management, Menu, List of Students, and Action components into a seamless workflow. Each component has a tightly defined set of inputs and outputs; each piece can be augmented or replaced without impact to the system so long as the input and output functions remain unchanged.

DREM Tool workflow:
User management
The first piece is handling user authentication and authorization. The DREM tool ties into UCI’s campus WebAuth tool to securely authenticate a user using their campus ID and password. This removes much of the need for user account management since user identity and passwords are managed by the central campus system.

Menu
Once a user has signed into the system, they are presented with a list of menu items. These menu items represent the saved queries that a user is allowed to run; this information is retrieved from several database tables. Each saved query is a SQL stored procedure created by the technical staff. The stored procedures can take in input parameters, which are completely configurable within the database and then displayed dynamically as form elements on the user interface without any programming. Some of these form elements include date ranges and pre-defined selection criteria, which the user selects via additional drop-down menus or dialog boxes.

List of Students
After the query is run, a list of students matching the selection criteria is generated and displayed in a results box at the bottom of the web page. These results can be sorted by each column heading and filtered through the search dialog box. The user has the option to deselect individual students from the result set and pass a smaller list of students to the next stage.

Action
The action component performs pre-defined tasks on the refined list of students. The user can choose to export the listing to a comma separated value file for import into another application such as Microsoft Excel for additional user specific processing. An e-mail action sends a slightly customized electronic message to each e-mail address associated with the list of students. The user also has the ability to perform an update action that updates fields in the database for each student in the final result set.

Benefits
One of the most important benefits is that users have increased access to the student data they need to work with. Many users that we support do not have the technical knowledge to perform their own direct queries. Now they no longer have to wait for IT resources for their most common data requests.

The system is extendable. As new data requests are submitted to IT, the technical staff evaluates each one for inclusion into DREM tool. If properly written, a query can be developed once and reused in the future without interaction with the IT team. It is also simple for a staff member to clone an existing query and quickly modify it to be used for a new search. This makes it easier for new staff and less skilled staff to continue to expand use of the DREM tool.

Nine departments and programs are currently using DREM Tool, and another is being added at the rate of about one per month. Because usage of the Tool is currently being
expanded within those units, it’s difficult to estimate total cost savings, but here are two examples:

1) In the 2009-10 academic year, Transfer Student Services (TSS) sent 12 requests to produce lists of emails, each of which cost an average of 2-3 hours of IT staff time and 1-2 hours of end-user staff time. This included multiple communications between the users and IT staff, IT time to develop the query and export the data, and TSS staff time to generate the request and to cut and paste addresses into an email client in batches. After DREM Tool was rolled out to TSS, the number of requests dropped to three. In this limited functional area for a single department, DREM Tool has saved our IT team an estimated 18-27 hours and TSS staff perhaps 9-18 hours over the academic year.

2) In the 2009-10 academic year, the Peer Academic Advising Coordinator sent 44 requests for numbers, reports and data changes. After DREM Tool menu items were rolled out, this number dropped to three for the following academic year. It is estimated that responding to these requests cost an average of two hours per request, so the savings over one year was potentially two weeks of IT staff time.

Both IT and DUE staff are experiencing similar time savings in other areas as the DREM Tool is implemented in additional programs and departments. The enthusiasm is such that academic advising offices across UCI, other OIT departments, and even the academic advising offices of other UC campuses have expressed interest in learning about the DREM Tool and associated applications.

**Project Timeframe**

November 2009

- Business Requirements Gathering

January 2010

- Design & Architecture

March 2010

- Implementation begins

September 2010

- Testing begins

November 2010 – December 2010

- Deployment to DUE programs
Technology Utilized
Microsoft Windows Server 2003

The server environment used for development, QA, and production.

Microsoft SQL Server 2005

The backend database storing student records and many of the DREM Tool control elements including the messaging action.

ASP.NET 3.5 with MVC 2.0 framework

The programming language used to build the application.

Javascript with jQuery framework

The scripting language used to control the UI elements.

Objective Customer Satisfaction Data
“I would like to endorse you both [Shohreh Bozorgmehri and John Remy] for the Sautter Award Program based on my experience using the DREM Tool and the positive way in which it has assisted my office. This tool was installed in the Transfer Student Center (TSC) in November of 2010 and has been a wonderful asset! We use it to send targeted emails to our transfer students regarding events taking place the TSC, are able to filter students based on various criteria for Tau Sigma National Honor Society for Transfer Students (an organization I advise through TSC), and are able to track student visits to our office. This tool is very intuitive and easy to use, and I’m sure we’ve only scratched the surface of its capabilities. The Transfer Student Center is very excited to be using such a fantastic tool and look forward to its continued use.” – Melissa Gilbert, Transfer Counselor

“Research is at the very core of what we do at the University of California, Irvine. Even as an academic counselor, it is imperative that I can pull together information on groups of students at any given time. The Division of Undergraduate Education Information Technology team recognized the research needs of the Undecided/Undeclared Advising Office and created a data querying system called the DREM Tool. The DREM Tool allows me to instantly create lists of students who belong to a particular student population, such as athletes or probation students, and then gives me the functionality to export the list to Excel for my use, or generate an e-mail to send to the group. The DREM Tool removes the middle man of an IT person or an Access whiz to put together the information I need on a daily basis to do my job. Gone are the days when I’d have to submit a request and wait possibly a day or two to get the data I need. I now have the power, at my fingertips, to query pretty much any data the Registrar can provide on our students. The DREM Tool has really streamlined the process of tracking and staying in contact with our students. They should have named it the DREAM Tool!” -Christina Treble, Academic Counselor
18 May 2011

Selection Committee
2011 University of California Larry L. Sautter Award
UC Information Technology Leadership Council

Dear Members of the Selection Committee:

I write to support UC Irvine’s innovative DREM Tool.

I am the Director of the Academic Testing Center at UC Irvine. My office conducts placement, exemption and distance testing for undergraduates. One of our major tasks is to identify and contact those incoming freshmen who have not satisfied the Entry Level Writing Requirement and who have not taken the Analytical Writing Placement Examination. A related task is identifying and contacting those new students who need to take the Academic English (ESL) test. The Office of Information Technology’s development team produced for our use a DREM Tool application that allowed us to query for these two sets of students on a continuing basis and send the students advisory emails. The consequences of having this application were fourfold. First, we were able to identify earlier in the summer our target students and could alert the academic programs (Composition and Academic English) of the number of students yet to be placed. Second, we could send timely advisory emails to an updated set of students throughout the summer, notifying them of writing testing events on campus. Third, we could track those students who had not tested with us by the start of fall quarter and could notify advising units of these students’ status. Finally, the efficiency of this DREM Tool application meant that freshmen students this academic year were placed in writing courses more quickly than in previous years. I should add that this application, apart from its efficiency and ease of use, saved my office approximately 20 hours of staff time during summer 2010.

I have also used a DREM Tool application to support the Dean of Undergraduate Education’s Educator Recognition Program. The program, part of the Dean’s academic outreach to high schools and community colleges, invites high achieving freshman and transfer students to identify the educator who most influenced their decision to pursue university studies. The DREM Tool enabled us to identify the pools of high achieving freshmen and transfers, send email invitations and reminders to nominate, and track which students had and had not nominated an educator. Two major advantages resulted: the querying and emailing functions were contained in a single user-friendly front end, and the speed of the process and information gathering was greatly improved. At a minimum, the DREM Tool application for the Educator Recognition program saved us 10 hours of staff time.

I recently have also used a third DREM Tool application to help the Composition Office identify and contact those incoming freshmen who had not satisfied the Entry Level Writing Requirement and had not yet taken the May Analytical Writing Placement Examination of the availability of summer session writing courses and summer financial aid. We are hoping that the
information we emailed students will encourage more new freshmen to enroll in summer session to complete their first lower-division writing course, thus accelerating their progress through the three-quarter lower-division writing sequence. At a minimum, this DREM Tool application saved 8 hours of staff time.

Given the DREM Tool applications’ efficiency and ease of use, I am enthusiastically recommending the tool to my fellow managers in the Division of Undergraduate Education and have been consulting with my contact for the development team on further applications for my office. DREM Tool applications will boost very significantly my office’s ability to improve undergraduates’ placement into courses, our communication with students, and the detail of information we can provide advising units around campus.

Craig Longuevan
Director
Academic Testing Center
Division of Undergraduate Education
Appendix A:
Sample User Story
Undecided/Undeclared Advising Program
DREM Tool: Undecided/Undeclared Advising Office: Placing Student Holds

Chien is an administrative assistant working in the academic advising office for students who have not declared majors. Every fall and winter quarters, Undecided/Undeclared students are required to sign up online for an advising appointment by a particular date. Once the deadline passes, Chien uses the DREM Tool to do the following:

1. Bring up a list of all Undecided/Undeclared students who did not sign up for appointments.
2. Place a record of the hold in the Undecided/Undeclared office's local student tracking system.
3. Download and send an Excel list to the Registrar's Office which will place a registration holds on these students' records as a batch operation.
4. Email the students to notify them that a hold was placed on their records, and that they will be removed as soon as they sign up for and attend an advising appointment.
First, Chien logs into the DREM Tool using UC Irvine's central web authentication system. He sees the menu items available to U/U career advising staff. He clicks on the "UU Students without Advising Appointments" menu item.
Second, Chien inputs the date range. Through this, he has the flexibility to customize the list without making a separate request to IT staff. He then clicks submit to run the query.
A list of 238 Undecided/Undeclared students who did not sign up for an advising appointment within the date range are returned. He can customize the list by unchecking individuals. Chien then selects the "Place Hold Record" action (please note the "Email" action). Also, he clicks on the spreadsheet icon (right above "Show 10 entries"), to export all of the checked records to an Excel file, which he then sends to the Registrar.
Chien is able to select what kind of hold he will be placed on the final list of students. After he submits and confirms his choice, a batch update is performed on those students' records in the Undecided/Undeclared Student Tracking database.
Finally, Chien returns to the student list screen and selects the "Email" action, and is presented with the following form. He enters a message notifying the students on the list that a hold has been placed on their student record, and hits submit. This task is complete, for this quarter.
Appendix B:
Sample User Story
Transfer Student Services
DREM Tool: Transfer Student Services Use Case

Maria is a counselor working in Transfer Student Services. At the end of each Fall quarter, she begins the membership drive for Tau Sigma, the Transfer Student National Honor Society. She uses the DREM Tool to do the following:

1. Bring up a list of all current transfer students who meet Tau Sigma eligibility requirements.
2. Input the gpa and unit parameters.
3. Email the students to invite them to consider joining Tau Sigma.
4. Send Excel lists to the advising offices in each school.
First, Maria logs into the DREM Tool, which displays only the menu lists that she has authorized access to. She selects the "Tau Sigma" link to pull the list of students who fit the Honor Society's criteria.
Second, Maria focuses the recruitment population by selecting the Admission term, and by entering the minimum GPA and units.
After Maria submits the query (parameters: Fall 2010, min. 3.5 GPA, min. 12 quarter units), the DREM Tool returns a list of 403 students.
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</table>
By clicking on the spreadsheet icon, Maria exports this list to Excel. She can use this list to send data to the academic advising offices at each school.
Finally, she selects the "Email" action on the student list screen. She types in a personalized message informing students of their Tau Sigma eligibility and inviting them to consider joining.
Maria is able to see a preview of the email before sending it to all 403 students who fit her criteria.

Email Preview
The following is a sample of what the email will look like to the first student in the list.
Click 'submit' to email all 403 student(s).

From (name):
Transfer Student Services

From (email address):
transfer@uci.edu

Subject:
Tau Sigma

Body:
Dear LINGLING,

Eligibility is determined by a transfer student's GPA only during their first full-time quarter at UCI (it must be 3.5 or higher).

See you soon,
Transfer Student Services

Message from webpage
This will send the email out to all the students. Are you sure?

OK  Cancel
Once she hits submit, the recruitment drive has been kicked off, and this task is completed for this year. Next fall, she is empowered to use the same DREM Tool menu and actions without any need to involve the IT staff.