Graduate School Application Admission Advances from Paper-based to Online

→ *Agile development catches problems that Waterfall would have missed.* ←

Background

A major university in the Southeast was using a number of isolated legacy systems for tracking the graduate student applications for admission consideration. Much of the business process was still being done manually. They needed a solution that integrated all functions into one system and automated application processing.

The legacy graduate school admission process was very paper-intensive. Candidates were required to fill out applications by hand, which were then scanned in by a third-party application. The system was cumbersome to use, tracking was not optimized, and delays were common in transmitting records to each department and notifying students of application status. The systems were managed through an aging mainframe computer.

The Vision

The Admissions department desired a web-based application which resembled in appearance its traditional paper form. Prospective students should be able to apply for admission, provide additional documents (e.g. transcripts) and establish an account with the graduate school online. As the application went through the process, it would flow through different department heads, and provide appropriate progress notifications to all parties, including the students.

MATRIX recommended and developed the new Graduate School Education Management System (GEMS) using Ruby on Rails, an open source web application framework. The MATRIX team employed the Agile software development methodology throughout the project.

Step By Step

The MATRIX team consisted of an architect, Scrum Master, two developers, and a QA tester. The client provided user acceptance testing personnel from the admissions group. The Product Owner headed up the Technical Services group at the University.

While the Product Owner is the final authority, he represented the interests of a much larger group. MATRIX Architect John Brothers said, "At the first meeting we were surprised to see so many stakeholders. Thirty people in this room all with their own ideas. Most of them just wanted to have their voices heard and disappeared after the first meeting. Then we were down to a more manageable core group of admissions people who were most passionate about the project."

With roles defined, the Agile development team deconstructed the application into small chunks, allowing the team to solve problems one step at a time. Two-week sprints were the norm, with the team visiting the client every two weeks to demonstrate progress, obtain feedback, and determine next steps.

Clear Workflow Visualizations. Brothers said the team's rhythm was as follows, "One week and a half of development, then test it out with their tech staff at a pre-demo, then a real demo every other Monday with the admissions staff (Product Owners). Because the admission staff was not technical, it was very important to provide clear workflow visualizations for approval and feedback. We would gather their user stories and work on it for the next sprint."

Brothers said, "The first step was to get a login working. We found out that many rules could be consolidated, thus making it much, much simpler. Then the team "faked out" applications to let them visualize the end product. We kept tweaking it as we went."
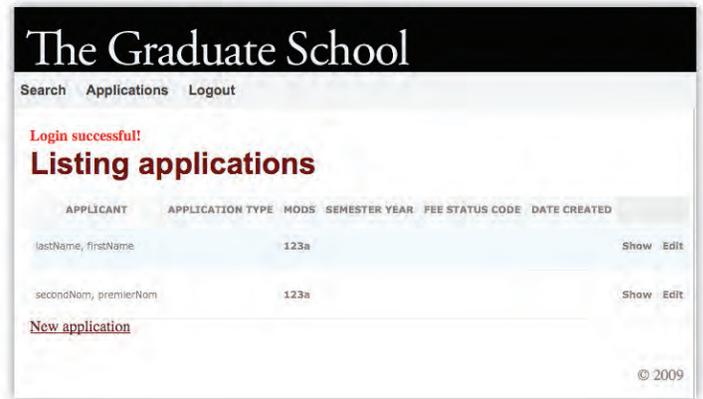
"At first the client was uncomfortable with Agile", said Brothers. "It seemed chaotic. Once they accepted the idea of pre-demos and demos, they loved it. As the project matured, they liked the storytelling, and became comfortable with the back and forth which is the hallmark of Agile."

Adaptation to Change. As often is the case, requirements changed frequently over time. As the client looked at the application, they figured out different things they wanted it to do. Using Agile, MATRIX could show them demos of workflow based on what they had written down and shown to the team. Brothers said, "The key is to ultimately arrive at what they really wanted, rather than what they originally asked for. In some cases when we showed demos and proofs, they might say 'yes that is right, but now that I see it, it doesn't really do what I really want'. "

About MATRIX

Founded in 1983, MATRIX is a leading IT Solutions provider with a national footprint. MATRIX meets the evolving IT services needs of our clients through our Professional Services Division. MATRIX is ranked among the top IT services firms in the U.S. according to IT Services Business Report/Staffing Industry Analysts.

Agile Versus Waterfall

An Agile approach proved its merit compared to a Waterfall development methodology when the team ran into a technical snag with a third party vendor product that needed to be integrated into the application. Prior assumptions about the third party spec were invalid. Because of Agile, the team was able to discover and address this much earlier in the process, and make an explicit tradeoff. Because everything we were delivering was in small chunks, it was easy to de-prioritize other user stories, until the third party integration issue was rectified. With Waterfall, in the case of glitches, changing the software is not only a practical impossibility, but means one has to go right back to the beginning and start developing new code all over again.

On Budget, On Schedule

Using Agile, MATRIX successfully developed the application within budget and on schedule within four months of project kickoff. The new system uploads student application files automatically from a college application clearinghouse and provides a clean interface for the graduate school administrators and departmental users to view student information. Best of all, it was launched by the end of October just in time to address the crunch for fall graduate school rush.

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