Building in Agility ... Straight From the Top
How HUIT’s New Cloud & DevOps Program Got Its Groove

HUIT’s commitment to its new Cloud & DevOps program — and creating the team to execute on program goals — was an ambitious one. Achieving the headline goal of migrating 75% of Harvard applications to the cloud during the program’s duration will require not only the “lift and shift” work involved in infrastructure migration, but also a host of other important ingredients: defining system architecture patterns to leverage advantages and realize cost savings of cloud hosting; retraining and reorganizing existing HUIT staff to work in a new team structure on new hosting technologies; and implementing a new operations model for partnering with application development teams. As the program has matured, it’s taken time to better understand how to balance these objectives, but the end result is a pragmatic approach that tackles the big questions organically as part of the migration process.

The Problem
The Cloud & DevOps team has multiple high-level goals that can sometimes work at cross purposes. Revisiting system architecture and operational norms, or automating routine environment management tasks, can add time to the process of migrating applications. However, deferring this sort of work creates a risk of perpetuating inefficient systems or making each migration a much larger effort than it should be. Knowing that the creation of the Cloud & DevOps program also presented an opportunity to improve on legacy implementations meant that early efforts by the team focused extensively on creating architecture patterns and implementing operational tools to make migrations more efficient, as part of the scope of migrating relatively large, complex, and business-critical applications. Ultimately, the sheer number of big problems to be solved delayed the first wave of migrations and made it difficult to choose the right priorities for architecture and automation work.

The Solution
Though meeting other program goals is necessary for success and sustainability, they also serve our overriding priority: Successfully migrate a large number of applications to the cloud. Prioritizing completed migrations ahead of other program goals when goals were in conflict drove a “narrowest scope” approach to targeting applications for migration. The team developed a method for sorting candidate applications into groups with similar requirements, then began to migrate simple applications with similar requirements with an intent to scale up difficulty and complexity from there. This allowed the team to tactically address architectural, operational, and automation needs for active migrations as they arose, and make use of those efficiencies immediately. This approach avoids the pitfalls that come with trying to make major decisions without sufficient real-world implementations to help guide and validate those choices.

The Result
The first wave of application migrations required months of work from the Cloud & DevOps team, in large part because the scope of effort for early migrations forced decisions on a number of major architectural and operational questions that would be difficult to revisit after the fact. The next wave of applications was successfully migrated start-to-finish during single two-week development sprints. These migrations also leveraged reusable artifacts and implementation patterns that can later be expanded as future migrations introduce greater complexity and scope. Best of all, the short timeframes didn’t require cutting corners when it came to tackling larger architectural and operational questions, or doing a lot of one-off “throwaway” work to achieve a migration. In short, the lessons the Cloud & DevOps program team has learned from completed migrations are helping to drive decisions made for later migrations — applying Agile methodology to the organization as a whole.