

Implementing an Open Source Room Reservation System

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Abstract

Miami University's study rooms are used so heavily that they account for 3,600 checkouts per month (6 percent of all loans). Until recently, these rooms were available only through the use of an offline reservation system. After surveying options including the integrated library system's bookings module, commercially available software, and a variety of open source products, the library selected an open source package, phpScheduleIT. During implementation, the library resolved one key issue, and continues to grapple with several others. The project has been successful, with favorable feedback from students (and the Associated Student Government) and increased checkouts.

Introduction

The Miami University Libraries began offering reservable study rooms following a renovation to its central facility, King Library, approximately 15 years ago. These facilities proved popular, and the number of study rooms available has expanded to 26 rooms in King Library, 13 in the newly opened Business, Engineering Science and Technology (BEST) Library, and 3 in the Wertz Art and Architecture Library. Use of these rooms has been sufficiently heavy that the most-circulated items in the Libraries are study room keys, rather than books.

Until 2011, rooms could be reserved only in person, with reservations recorded on a white board behind the circulation desk. The requirement to reserve rooms in person generated dissatisfaction with many students. Although reservations could be made up to 2 weeks in advance, few reservations were made in advance because students tended not to come to the library more than a day or two in advance of their desired meeting time. In 2011, the Libraries decided to examine the possibility of providing an online reservation system.

Background: Other Experiences

Not surprisingly, a review of both professional literature and listserv postings indicates that many academic have faced similar circumstances, which have led to experimentation with the use of online reservation systems. While some integrated library systems offer booking systems, they have tended to be unpopular due to limited customization and inability to accommodate existing guidelines for the usage of study rooms. One study deemed the product from their integrated library systems "cumbersome and awkward" (Doherty and White, 142). In another instance, a library consciously adopted an open source system that interfaced with its integrated library system rather than using the booking module already available with its integrated library system (Schofield).

Some libraries have resorted to commercial products such as Dean Evans and Associates' EMS Enterprise (Sallans, Soule & Gibbons, 5) or UReserve (Poerber). Limitations in the ability to customize commercial products to accommodate library policies sometimes appears as a complaint with these products. For example, one study expresses concerns with being unable to mask identifying information from the public display of the room schedule (Poerber).

Other case studies report adoption of open source products. Virginia Commonwealth University adopted the open source product OpenRoom (Doherty and White 143), and Ball State University adopted this tool after a brief experience with another product (Faust, Hafner, and Seaton). Listserv traffic reveals additional open source tools, with LibCal and LibHours (Wisniewski), and phpSchedulIT (Weber). Portland State University has developed LibRooms software using php and MySQL (Mealey).

The most significant problem encountered with implementation of solutions involves difficulty in configuring software to work with LDAP authentication, so that the product can support existing logins and passwords for their faculty and staff (Faust, Hafner, and Seaton). Ball State University reported that it also encountered difficulties with delayed displays of search results and an inability to create customized displays for other campus entities using the study room system (Faust, Hafner, and Seaton). Although not mentioned explicitly in many articles, the availability of software without purchase or service fees is acknowledged in online discussions as a benefit of open source products (Schofield).

Studies concur in reporting positive feedback from students and increased usage of their study rooms (Faust, Hafner, and Seaton; Doherty and White, 145; Sallans, Soule, and Gilbert, 5). While case studies may note challenges or frustrations, the overall impact of reservation systems have already been describe as positive.

Expectations and Product Selection

Informed by this background information, staff from the Access Services and Emerging Technologies departments and circulation staff from other branch libraries at Miami University met to examine options for online reservations, including the bookings module of the Libraries' integrated library system (Innovative interface), commercial solutions, and open source solutions. This group determined that ideally, an online room reservation system should be able to:

- **Support maximum and minimum loan periods** – To ensure equitable access, the Libraries limit reservations to two hours per day during Spring and Fall semesters. As a part of the planning process, Access Services staff also decided to limit the number of reservations per week to further ensure equitable access. To simplify the process of room usage, 30 minutes was established as the minimum amount of time for which a reservation could be made.
- **Allow exceptions to the rules** – During intersessions and summer school, demand for the rooms is lower than during the academic year. During these times, we

wished for circulation staff to have the ability to extend loan times beyond the minimum of 2 hours per day.

- **Work with differing sets of hours in the Libraries** – The central library is 24/7 during the school year, but branch facilities close earlier (at 10:00 p.m. or midnight) and re-open at 7:00 a.m. An ideal interface should be able to easily support these varying sets of hours.
- **Support use of the students' unique ID and password** – Since other library services use LDAP to eliminate the need for additional logins and passwords, an ideal room reservation system should be able to do so, as well.
- **Email reminders of the reservation** – Since the offline reservation system rarely attracted reservations more than one day in advance, there were concerns that those reserving rooms ahead of time might forget their reservation. Email reminders about upcoming reservations was viewed as a way to mitigate against this problem.
- **Ability for end users to cancel the reservation** – Those who realize that they will not need a room should be able to cancel the reservation without mediation from library personnel.

Limitations to the bookings module of the Libraries' integrated library system promptly removed it from consideration. Library staff working on this project examined both open source and commercial products, and the Libraries' experience with using open source products for other library services pre-disposed us to an open source solution. Ultimately, after focusing on a small group of open source products, we selected phpScheduleIT, an open source web-based reservation and scheduling system. This software allows users to sign in and then place reservations on any kind of resources. phpScheduleIT supports authentication through LDAP, multiple schedules are supported with unique resources, management of blackout times, and varying levels of permissions for users (meaning that staff can have permissions to over-ride policies).

Implementation

The Libraries' phpScheduleIT setup was configured by an Emerging Technologies Librarian in concert with a staff member from a circulation point who was completing a library science degree at the time of implementation. The system was set up so that students, faculty, and staff users may log in to the system to see the times that rooms are already reserved, and may reserve a room up to two weeks in advance for a minimum of 30 minutes and a maximum of one hour. Library staff were assigned additional permissions, which allow them to view names of the individual reserving the room and override the maximum length of the reservation, either in the event that there is low demand for study rooms, or in the event that a room is out of service for repairs of some kind. One staff person at each of the three libraries which houses study rooms is responsible for blacking out times when their libraries are closed two weeks in advance.

Challenges

The most significant difficulty with the online reservation system after the initial installation was that it did not default to the current date on the staff login. This resulted in considerable confusion. This problem resulted in circulation staff frequently looking at the schedule for the wrong day when verifying patron reservation and checking out keys. However, when the library was open during limited hours for a holiday, issues came to a head. At the time the library opened, a large group of people appeared to pick up their keys; weekend staff were unaware that information for the following Thursday, rather than the current day, was being displayed, and chaos ensued. This situation was resolved when the library school student working on the project identified and installed a patch that changed the default settings so that the room reservation system defaults to displaying reservations from the current date.

Some smaller, additional challenges have remained. These include:

- **Need for staff intervention** - Another non-technical issue associated with phpScheduleIt was the need to assist students, faculty and staff in navigating through the interface to make a reservation. During preliminary discussions, it had been suggested that the Information Desk could provide assistance, since it was equipped with 2-way computer monitors. However, during implementation, this task devolved onto Access Services staff. To address user needs, a computer was added to the patron side of the circulation desk to provide a place for staff to assist students who were new to the software, and has been retained to provide students with easy access to the reservation system. Although current students have learned the system, each Fall (and to a lesser extent, each Spring), a new batch of students require assistance in learning the system. Although we had hoped that students would appreciate the ability to book study rooms from any internet accessible computer, many students continue to reserve rooms only from the computer at the circulation desk.
- **Forgotten logoffs** - Students sometimes forget to log off at the end of their session. If the next user isn't savvy enough to notice that someone else's name is displaying in the upper right corner, they sometimes inadvertently and unknowingly a reservation in somebody else's name.
- **Blocked reservations (exceeding the time limit)** - Although students are required to assent to a set of use guidelines when logging into the system, they do not always read or understand them. They may be confused when their attempted reservation request was rejected because it exceeds the maximum or minimum time limits for the day or for the week.
- **Blocked reservations (interface features)** -- Another source of confusion is that phpScheduleIT disallows reservations made in the past. This has the laudable purpose of preventing students from accidentally reserving a room in the past. However, since phpScheduleIT is very literal about the "past," it will reject a

reservation for a study room from 9:00 to 11:00 that was made at 9:02, because in its literal way of thinking, this reservation would begin 2 minutes in the past. This issue is the issue that requires the greatest amount of intervention by the circulation staff at the library's service points.

Because use of our integrated library system allows for inventory control and billing, we continue to use it to check out keys. A necessary complication is that this approach requires staff to look at two different windows, one to determine the time and location of the reservation, and another to check the key out. It also means that when staff authorize an exception to policy and allow a checkout longer than two hours, they must manually alter the due date in the ILS to reflect the changed deadline for returning the key. Having to rely on the ILS and a software compounds the existing problem of having to switch between multiple services (ILS, phpScheduleIT, Interlibrary loan software (ILLiad), and our statistics recording service (LibStat)). In each case, we believe that we have the best available products for the services we provide – but it would be convenient if a single, truly integrated library system could handle all of these responsibilities well.

The project benefitted from having one of the people who worked with the phpScheduleIT setup who regularly worked a circulation desk. His familiarity with circulation workflow helped him to be attuned to how the product settings impacted work at the circulation desks, and, as noted above, motivated him to seek out a solution for one of our most challenging issues with phpScheduleIT.

Current Usage and Benefits

At the time of writing, Miami's phpScheduleIT system has now been used for 2 academic years. During the last academic year, it handled 36,555 reservations, and as demand has grown for study rooms, the Libraries added four new rooms in Spring 2013. Study room checkout makes up an increasing proportion of our circulation. As a percentage of total checkouts, study room key checkout grew from 8.2% in fiscal year 2011/12 to 10% in fiscal year 2012/13. The reservation system has proved popular with the student body. Miami's Associated Student Government has passed a resolution thanking the Libraries for implementing this system, (Levy 2). and individual students have suggested that other campus entities should consider adopting this system for reserving other facilities. Although no other entities have expressed interest in such a system on our campus, other Universities have had interest in extending this system beyond the library system (Faust, Hafner, and Seaton).

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