

Interdisciplinary hackathons: an innovation grant.

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BACKGROUND

NEW MEDIA Consortium's 2014 Horizon Report on Higher Education notes the shift from students as consumers to students as creators as a key trend accelerating technology adoption. Examples of this trend include the growing prevalence of facilities such as makerspaces and loanable technology centers, as well as crowdfunded entrepreneurial projects (Johnson 2015). In addition, events such as hackathons, datafests, and designathons serve to facilitate technology adoption, innovation, and use by providing facilities and resources to enable creation.

As libraries are the heart of scholarly activities in higher education, they are ideally suited to host hackathon-style events. As The Ohio State University Libraries note, "students have commented they enjoyed the library support of this event and that it encouraged them to think of the library as supporting their entire academic career - both for classes as well as for fun" (Mandernach 2014).

While there is currently a culture of hosting hackathons on the University of Illinois at Urbana - Champaign campus through organizations such as HackIllinois, the Association of Data Science and Analytics (ADSA), and the Institute of Electronics and Electrical Engineers (IEEE), none have specifically targeted the inclusion of humanities disciplines. The University Library currently supports data use through a number of avenues, such as the Research Data Service, the Data Purchase Program, Life Sciences Data, Numeric and Geospatial Data, the digitization of text and image resources, and the HathiTrust Research Center. Additionally, Ayla Stein and Heidi Imker are currently faculty advisors for the "Data Science Across Disciplines" Focal Point Project, which aims to provide graduate students with the opportunity to develop basic data science and research data management skills and to apply those new skills to data. Through existing data and digitization services, the University Library is well positioned to take a key role in promoting multi and interdisciplinary uses of data and the advancement of scholarship through hackathons.

PROJECT DESCRIPTION

INTERDISCIPLINARY HACKATHONS includes three phases: preparation during spring 2016, a community centered hackathon during fall 2016, and a University centered hackathon during spring 2017. Rather than the traditional hackathon model where students work for an intensive 24-48 hour period, each hackathon will span the course of three weeks and include a kickoff event, a workshop, and a judging event. The longer format is intended to be more inclusive to those new to programming, allow for better product development, and allow time for groups to overcome communication hurdles that may result from the required interdisciplinary group structure.

SPRING 2016 PREPARATION:

A 25% time graduate hourly student will conduct an assessment of peer libraries to learn how they have formatted and presented data to encourage use, and then use that information to format and make available data from at least five University Library collections.

Examples of digital collections formatted and presented to encourage reuse of content include the British Library Labs interface, the University of Pennsylvania's OPenn portal, and the University of North Carolina at Chapel Hill's Documenting the American South project website. However, this is not a comprehensive list, and no set of best practices appear evident among them. At the end of the preparation period, the graduate hourly student will have created a data model based on information collected from peer libraries, and made this data available through a data portal where hackathon participants will access it. The data portal will be a website where participants can do to download data, similar to the University Archives' Electronic Records Browser.

University collections included in the data portal will be selected based on the following criteria:

- Diversity of collections: to foster creativity and encourage unique hackathon projects inclusive of various types of data, such as text, image, numerical, and spatial
- Copyright and/or license status: to ensure legal use
- Relation to other available data: to allow for complementary datasets to be incorporated into hackathon projects

Outcomes for spring 2016 include:

- Assessment of data presentation and formatting by peer libraries
- Creation of data model for formats such as text, image, numeric, GIS, and audio data
- Selection of library collections
- Creation of a data portal
- Foundation for a white paper

The work conducted during the spring of 2016 may result in a white paper for academic peers to use as a template for their own data-centered projects. This white paper, as well as the data model, will be submitted to IDEALS. During this time, an IRB form will be submitted in order to use results for potential publication and to follow up with students via survey.

HACKATHONS:

With a data portal available, the Library will host a hackathon in fall 2016 and spring 2017. Each hackathon will follow the same template in that the event will span three weeks and include three events: a kickoff event, a brown bag, and a judging event. Registration will be limited to forty students, working in ten groups of four. Each group will be multidisciplinary, and be required to include a programmer, a designer, and a humanist (defined as someone with a declared major in a humanities field). The fourth team member will function as a wildcard.

The library will start marketing the hackathon and open registration at least three weeks before the kickoff event. Marketing will be done through flyers; social media announcements; digital signage in the library, the ARC, and the dining halls; eWeek; GradLinks; and the Daily Illini. Students may register as a team, or individually to be assigned to a team. A sample registration form, modeled from UC Berkeley's #HackFSM: Bootstrapping a Library Hackathon in Eight Short Weeks white paper, is available in the appendix.

Once teams are set up, they will meet at the kickoff event (to potentially be hosted in the Scholarly Commons). The kickoff event is designed for students to meet their teams, go over technical details, timeline, judging criteria, and other questions they may have with the event coordinators, and start drafting their projects. The students will be able to use the space for five hours to work with their team, and by the end of the event should have a draft of their project idea.

The following week, a brown bag will be held for the groups to reconvene and receive assistance from faculty

and staff mentors in various disciplines. For example, we will recruit faculty members from computer science to assist with programming questions, design instructors to encourage efficient design, and others with subject expertise to facilitate projects in addressing community needs or issues. Additionally, in anticipation of difficulty with scheduling mentors or matching appropriate mentors with the topics or technology groups are working with, we will contact a range of mentors ahead of time to be contacted via email if the groups need to do so. A Compass site will be set up during the kickoff event to promote communication amongst the organizers, participants, and mentors.

In the third week of the hackathon, groups will submit their projects via a webform, including information such as a URL for the project code, a list of technical dependencies, an email address for the group's primary contact, names of team members, a brief description of the project and how each team member contributed, and an affirmation that the submission complies with the University of Illinois honor code.

The judging event will be open to the UIUC community and the general public. Groups will have ten minutes to present, and five minutes to answer questions from the judges and audience. Presentation materials, as well as code, will be deposited into IDEALS. Projects will be judged based on a rubric developed by the organizers, and scored during the presentations. Winners will be announced once scores are tallied at the end of the judging event.

After each event, a survey will be distributed to the participating students, mentors, and judges in order to identify motivations for participating, what was successful about the format and overall event, and what wasn't. Data gathered from the fall 2016 event will be used to inform planning the spring 2017 event.

A. FALL 2016 HACKATHON

The fall 2016 hackathon event will focus on the Champaign-Urbana community, and will utilize public datasets such as those from the City of Champaign, City of Urbana, CU-Citizenaccess.org, and MyTreekeeper.org. Additionally, we will utilize data obtained by the University through digitization programs and the data purchase program such as DataQuick data and maps, and other existing APIs and data streams that may be available.

The fall hackathon event will not only serve as a way to support student scholarship, but also as a public engagement activity. In utilizing public data to develop a project or application, the hackathon will benefit Champaign-Urbana community by providing new insights into local culture and infrastructure. In developing projects, students may use the themes outlined in the Visioning Future Excellence report (Board of Trustees 2013).

B. SPRING 2017 HACKATHON

While the fall 2016 hackathon is more outward and community facing, the spring 2017 event will focus internally to celebrate the University's Sesquicentennial. A major emphasis will be utilizing the library's collections, which reflect the University's academic and cultural traditions. Collections and data, such as those drawn from HTRC, the Library catalogs, the University Archives, Division of Management Information, and the digital collections, will be included in spring 2017.

OBJECTIVES

INTERDISCIPLINARY HACKATHONS primarily seeks to promote collections and services of the University Library, such as digital collections, digital humanities expertise, and data services. Hackathons will not only encourage students to take advantage of library collections and services, but also position the library as a campus leader in technological advancement.

Additionally, the hackathons will create partnerships with departments and organizations on and off campus by including a diverse panel of judges and mentors, will engage with the campus and surrounding community through examination of data and development of projects, and will facilitate interdisciplinary collaboration by requiring teams to be composed of students from the arts, humanities, and the sciences.

Finally, a secondary objective with perhaps the most lasting impact is to discover how students and scholars are interested in using Library collections and data. What collections are they most interested in? What objectives do they have? How are they searching for and discovering our collections? Attempting to answer these questions through a post-event survey may help to shape future collection development policies and practices as well as user experience and discovery tools.

EXISTING LIBRARY ACTIVITIES

INTERDISCIPLINARY HACKATHONS pulls from numerous existing library activities, including collection development, digitization, data purchase, and events and services related to digital humanities and data.

The Scholarly Commons currently sponsors digital humanities activities such as maintaining a listserv for DH news, hosting an annual symposium, and Savvy Researcher workshops taught by English and Digital Humanities Librarian, Harriett Green, GIS Specialist, James Whitacre, and Eleanor Dickson, HRTC Digital Humanities Specialist. Additionally, the Scholarly Commons, alongside the Research Data Service, has been promoting services such as finding, formatting, and using data through workshops and consultations.

The Undergraduate Library has done a similar project, titled “The Student/Library Collaborative: Toward Transformative Mobile Library Service,” funded through an IMLS grant. While the Undergraduate Library project focused on creating mobile applications based on library data and so has a different scope, much can be learned through examination of the project’s processes and results.

Hackathons will serve as an extension of Library collections and services while placing students in the position of creators rather than consumers.

RESOURCES NEEDED

1. GRADUATE HOURLY ASSISTANT - 200 HOURS AT \$20.62/HOUR = \$4,124

The graduate hourly student would work for approximately ten hours per week during the spring 2016 semester and potentially into the summer. The student would be responsible for conducting an assessment of peer library data models and data portals, formatting University Library data, and developing a data portal in consultation with Library IT.

2. LIBRARY IT ASSISTANCE AND SERVERS - \$1,035.10

Each team will be given a development server to use for the month of the hackathon. Costs for the servers from Technology Services at Illinois are \$21.17/month. For ten teams this would amount to \$211.70/month, and for two months for the two hackathons it would amount to \$423.40. Code from the projects will be ingested into IDEALS for preservation following the events.

For the data portal, we would need space on a server with some extra storage space. For 21.17/month + \$0.04/GB/month *1,000 GB = \$61.17. We would use the server for approximately ten months from August 2016 to May 2017, which would cost \$611.70. A recommendation regarding the data portal server will be included in the final report.

The total amount spent on server space would be \$1,035.10.

3. FACILITIES

This project is capped at forty people in order to be able to use library facilities, such as the Scholarly Commons for the kickoff and judging event, and Room 106 for the brown bag event.

4. PRIZES - \$10,400

To encourage participation and competition, each member of the first place team will be awarded \$1,000. Each member of the second place team will be awarded \$300. These prizes are in line with the awards at the UC Berkeley Library hackathon, which were determined after researching prizes offered at other hackathons. The total amount of prizes offered will be \$10,400. Before prizes are announced, this will be reviewed by the Library Business offered to ensure compliance with local rules and restrictions.

5. MENTORS AND JUDGES - \$100

We will reach out to faculty, staff, alumni, and individuals from local companies to find five mentors that will also be able to serve as judges. This will allow for one mentor for every two teams. As a small thank you gift, mentors will receive a \$20 gift certificate to Espresso Royale.

6. REFRESHMENTS - \$2,080

10 Papa Dell Pizzas per kickoff and judging event x (fall+spring) = \$800

Water and soda for kickoff and judging event x (fall+spring) = \$200

Box lunches for brown bag = 45 people at \$12/pp x (fall+spring) = \$1,080

7. PROMOTION AND MISCELLANEOUS SUPPLIES - \$1,000

Digital screens in all 25 undergraduate dining halls for 1 week x (fall+spring): \$100

Digital screens in ARC for 1 month x (fall+spring): \$400

Five MTD digital kiosks for 30 days (spring): \$150

Markers, poster board, names tags: \$100

Printing costs for flyers: \$50

Daily Illini advertisements (fall+spring): \$200

TOTAL REQUESTED: \$18,739.10

SUSTAINABILITY

*I*NTERDISCIPLINARY HACKATHONS will be framed a pilot project, giving the library time to assess sustainability at the end of spring 2017.

While the hackathons include upfront costs such as the graduate hourly student to perform the necessary preparation, the majority of the expense comes from ongoing costs such as prizes, promotion, servers, and refreshments. However, the monetary value of the data models and workflows produced by the graduate hourly student may become apparent as the library continues to provide digitization and data services. Should this work prove valuable to other units interested in reformatting data for similar projects or goals, it will eliminate the need to hire a student or use staff time for the same purpose. We may also discover that we can cut down on refreshments, prizes, etc. based on feedback we get from students and mentors. Changing the format of the event may eliminate some costs in the future.

As interest in hackathons, datafests, and designathons continues to increase, the Library may look to other campus units and local companies to sponsor future hackathons. CITL, the Graduate College, NCSA, GSLIS, the Department of Computer Science, the College of Fine and Applied Arts, Wolfram, and many other organizations are likely potential funders.

TIMELINE

Spring 2016

JANUARY: Post job advertisement for graduate hourly student

FEBRUARY: Hire graduate hourly student. Start assessment of peer libraries and data models for multiple media formats. Write IRB application.

MARCH: Continue assessment of data models. Have draft of a report by the end of the month. Work with Library IT to set up a server for a data portal.

APRIL: Identify Library and public data collections to include. Submit IRB application.

MAY: Format data collections and start posting them to the data portal. Work with Library IT to set up servers for student teams for the fall hackathon.

JUNE: Wrap up data formatting and data portal.

Fall 2016

AUGUST: Reserve facilities to be used during the hackathon

SEPTEMBER: Develop flyers and digital signs and start marketing. Develop registration form and create a publish.illinois.edu page as a landing page for the hackathon. Find mentors.

OCTOBER: Close registration and match teams up. Develop judging rubric. Create Compass site. Host kickoff event third week of October.

NOVEMBER: Host brown bag event. Host judging event. Develop post-hackathon survey and have on hand for students in person, and send out the next day after the judging event.

DECEMBER: Discuss survey results with planning team. Write mid-project report. Consult with campus legal regarding potential use of projects developed.

Spring 2017

JANUARY: Review data portal and add any additional data for a University Sesquicentennial themed hackathon. Work with Library IT to set up student development servers.

FEBRUARY: Continue reviewing data and making necessary additions. Find mentors.

MARCH: Start marketing and open registration form. Close registration just before spring break. Create Compass site.

APRIL: Host kickoff event, brown bag, and judging event. Distribute survey to participants.

MAY: Discuss survey results with planning team as well as next steps forward. Write final report for innovation funding award.

ASSESSMENT

THE ASSESSMENT of the hackathons will be done in relation to the project's goals and outcomes, and will be quantitative and qualitative.

The overall success or failure of Library Sponsored Hackathons will be determined based on the metrics assessed against their objectives. The number and quality of finished projects will convey if the hackathons' format was successful, while the attendance of the judging events will indicate the success of these events as a promotional and outreach activity.

Objective	Metric
Promote collections and services of the University Library.	Number of participants for the hackathons, as well as usage statistics for library collections post-hackathon. Attendance of judging events. Amount of publicity generated about event.
Produce white paper based on data model	Number of times downloaded and/or cited
Create partnerships with departments and organizations on and off campus	Feedback from participating departments regarding the success or failure of event. Interest in future collaborations involving staff time or monetary sponsorship.
Facilitate interdisciplinary collaboration	Number of humanities and arts students participating in future campus hackathons. Feedback from students about interdisciplinary groups.
Create a public engagement opportunity	Public interest in projects developed and value of projects to the community. Participation of community members serving as judges or mentors. Attendance of judging events.
Examine user needs and attitudes regarding library collections	Feedback from participants post-hackathon and possibly adopting that feedback into collection development policies.

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