

## **Pearl: An Open Source Course Reserves and Reading List System**

### **NLG Program Goal and Objective: 3.1**

#### ***Summary.***

The Private Academic Library Network of Indiana (PALNI) requests \$149,000 to develop a prototype of an open-source reading list system that can be used to embed links to library resources and open-access learning materials into learning management systems (LMS). Over two years, this project will work toward releasing an open-source tool that can connect to various library catalogs or discovery systems and be integrated into learning management systems using the [Learning Tools Interoperability \(LTI\) standard](#).

#### ***Project Justification***

Libraries increasingly provide required reading, learning, and course materials for academic courses, saving money for students, improving outcomes for students ([Mullens and Hoffman, 2023](#)), and reducing inequitable access to course materials ([Wimberley, Cheney and Ding, 2020](#)). Though commercial software exists that can be used to manage and integrate digital library resources into LMS, high software costs ([Zakharov et al., 2022](#)) may be unaffordable for many libraries. Some library catalogs and discovery systems lack tools to organize, manage, and integrate reading lists and course materials into learning management systems. This project would create a prototype of an open-source solution for managing course reading lists that can be utilized with a variety of catalog and discovery tools and integrated into various LMS (e.g., Canvas and Blackboard) using the widely accepted LTI standard ([Clossen, 2018](#)). This would have a far-reaching impact because libraries with a variety of different systems would be able to integrate library resources and open-access materials into LMS, including libraries spanning K-12 and higher education environments. The goals of this project align closely with NLG Objective 3.1, as this project would advance the ability of libraries of all types to integrate digital materials into online learning environments. This tool can be used to increase the visibility and usability of library collections in courses, as well as a simpler way for library personnel to work with faculty to select open educational resources (OER) or licensed content for courses.

#### ***Project Work Plan***

PALNI has developed a working proof-of-concept reading list prototype called *Pearl*. The Pearl proof-of-concept is designed to work with OCLC's WorldCat Discovery application, allowing library personnel and teaching faculty to create reading lists from search results from OCLC's WorldCat Discovery API. In the first year of this planning grant, we will identify project and development partners and create a feature roadmap and timeline to turn PALNI's existing Pearl prototype into a production-level service and application. We will focus on creating integrations and functionality to target integrating at least two library discovery systems (e.g., [VuFind](#), [Blacklight](#)) and two learning management systems (E.g., [Blackboard](#), [Canvas](#)) via the LTI standard. Our goal in year 1 will be to define standard features that should work among all integrations and develop a framework that will enable future development and integration of additional systems so that the Pearl application is as flexible and adaptable as possible. A unique feature of the Pearl application is its intentional design to be implemented in a consortial environment, enabling a single installation of the application to be used by multiple institutions or campuses. Year 2 will focus on feature development.

Planned features to be developed in year 2 include the development of the administrative interface, the user interface, and authentication functionality. The administrative interface, designed to be managed

by library personnel, will enable the connection point to a library discovery system via API and define key metadata to be returned into the Pearl application and embedded via LTI into an LMS integration. This administrative site will enable library staff to define the settings and configuration of the Pearl application so that it can be used by instructors and other library staff. The ability to define course terms (e.g., fall and spring semesters) and create courses (manually or via bulk data load) will be available in the administrative interface. The administrative interface will also integrate with at least two SSO authentication schemes widely used by educational institutions (e.g., Google / OAuth and Microsoft Azure). A user interface will be designed for course instructors and librarians to create and manage reading lists and assigned resources. A search interface will allow course list creators (instructors and librarians) to search the library's discovery system from within the LTI application and select available digital resources (e.g., articles, streaming videos, and ebooks) for inclusion into their reading lists. All interfaces will be designed with accessibility and user privacy as a main priority to ensure users with a variety of abilities can fully utilize Pearl's features and that risks regarding library user data are minimized in the application.

### ***Project Results and Impact***

By the end of year 2 of this project, an open-source, production-level Pearl application release, including documentation and implementation guide, will be available for libraries to implement in their local system environments. Early adopters will be asked to provide feedback on the system and report bugs and issues to the development team. The project team will promote the availability of the project through major library technology conferences, discussion forums and other venues. The outcome of this early release will inform a possible future IMLS Implementation grant that will support further development of the application that can be used by more library systems.

### ***Project Team***

Project Director Noah Brubaker is Associate Director at PALNI, where he is responsible for advancing annually identified PALNI strategic objectives and has extensive experience leading technology and system adoption in a library consortium context. Project staff include Lauren Magnuson and Anna Shields, development coordinators at PALNI with specialized knowledge in application development and building library systems integrations. Additional project consultants include Amanda Hurford, PALNI's Scholarly Communications Director, who will advise on aspects of the project that impact and promote affordable learning and open educational resource use (OER). UI consultants include PALNI Information Fluency Coordinators Ruth Szpunar and Eric Bradley, who bring knowledge and expertise to centering student learning and developing best practices for integrating library resources into online learning environments.

### ***Budget Summary***

PALNI requests \$149,000 for the project. The core expense is development time by our personnel and development partners, estimated at \$100,000 for two years. We will also seek out the expertise of UI designers and accessibility specialists to consult on the interface design and accessibility features at a cost estimated to be approximately \$24,000. We estimate that an additional \$25,850 will be needed for indirect costs, including conference travel and travel to meet with development partners, server and development space, resources, and licensing.