Introduction to the Project

We propose to create a Hydra ORCID Integrator Plug-in that can be re-used by any Project Hydra institution[1] implementing the Hydra stack/ Fedora Commons to integrate their Institutional Repository (IR) with ORCID. The prototype plugin will be open-source code shared during the first months of the project on github[2] and employed within CurateND, the University of Notre Dame's institutional repository which is a project Hydra implementation. The proposed project to create an ORCID integrator will benefit all Project Hydra members seeking to implement ORCID iDs within their repositories and will be facilitated by a Project Hydra code sharing event planned midway through the funded effort to ensure successful uptake by multiple institutions.

Project Hydra is a large, multi-institutional collaborative open source Fedora Commons based repository solution used by institutions on both sides of the North Atlantic since 2008 to provide a versatile and feature rich repository environment for end-users and administrators alike. For more information see http://projecthydra.org/. The University of Notre Dame is a code-contributing Project Hydra partner with successful Hydra implementations in sites such as:

- Seaside Research Portal –Archiving the First New Urban Community
- VECNet Digital Library – Entomological, epidemiological, demographic, intervention and climate data for the study and modeling of malaria
- INQUISITO - Manuscript & Print Sources for study of Inquisition History – A collection of several hundred items relate to inquisition activities in Europe and Latin America

Noteworthy Project Hydra Institutional Repository implementations by partners also include:

- Libra at the University of Virginia
- Penn State ScholarSphere

About our Proposed Project

Our proposed project will increase the number of participating organizations' researchers with ORCID iDs and encourage linking of ORCID iDs to resources already public in many participating organizations' repositories.

[1] Boston Public Library, Columbia University, Data Curation Experts, Duke University, Fedora Commons (now part of DuraSpace), Indiana University, London School of Economics and Political Science, MediaShelf LLC, Northwestern University, Penn State University, Rock and Roll Hall of Fame, Stanford University, The Royal Library of Denmark, University of Hull, University of Notre Dame, University of Virginia, Virginia Tech, WGBH, Yale University.

[2] https://github.com/projecthydra is the URL for ProjectHydra Code Share

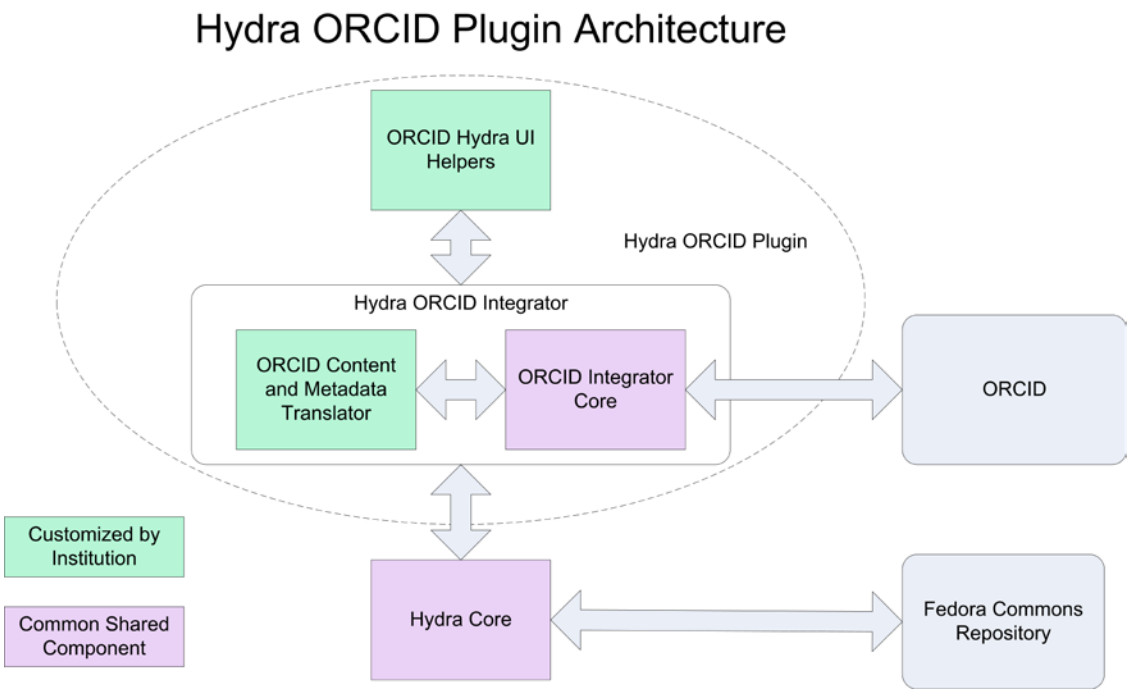
Utilizing the ORCID API, we will create an ORCID integrator that integrates with both the Hydra framework and with a Fedora Commons repository. This Hydra ORCID plugin will support the five main activities listed in the ORCID Member integration guide:

- Create new ORCID iDs for users within a Hydra/Fedora based IR
- Retrieve an existing ORCID iD for a researcher
- Link ORCID iDs to the user profile within the IR
- Export data into ORCID from a Hydra IR
- Import data from ORCID into a Hydra IR

Additionally, this Hydra ORCID Integrator Plugin will enable federated login and identity management of resources in Notre Dame's Institutional Repository, CurateND, owned or managed by external collaborators of a local researcher.

Plug-in Architecture

The Hydra ORCID Integrator Plug-in will consist of three primary components: ORCID Integrator Core, ORCID Content and Metadata Translator, and ORCID Hydra User Interface (UI) Helpers.



The ORCID Integrator Core will facilitate all communication through the ORCID API such as creating an ORCID iD, querying for existing ORCID iDs, requesting and receiving records from ORCID, and negotiating authentication of users via ORCID iDs.

When importing records from ORCID, the ORCID Content and Metadata Translator will transform any received orcid-bio and orcid-works records into the appropriate object(s) utilizing appropriate metadata schema(s). The Hydra core will then be called to ingest and index items into the repository and search index. Because metadata schemas, content models, object structures, and workflows will vary by Hydra

IR, each Hydra implementer may need to customize the default implementation of this component to plug into their IR system. Conversely, any objects exported to ORCID will go through a similar process but in the reverse direction.

The ORCID Hydra UI Helpers component will contain baseline helper methods that can make calls to the ORCID Integrator Core and Content and Metadata Translator components. It will also contain default pages and user workflows for creating ORCID accounts, querying existing accounts, linking to accounts, viewing ORCID derived records, etc.; that again may be customized per Hydra institution.

Note: While the ORCID Content and Metadata Translator and Hydra UI Helpers components may require local customization per Hydra institution, it is expected all can reuse the ORCID Integrator Core component.

Creation and Retrieval of ORCID iDs in Curate ND

We will enable a user to either create or link to an existing ORCID iD directly from their user profile within CurateND. Once they input the necessary information into the repository, the Hydra ORCID Plug-in will send a request to ORCID and then the standard ORCID account confirmation email will be sent to the user to confirm the creation of the ORCID iD. Until confirmed, the link to the ORCID iD will be pending within a user profile. Once confirmed, the link will then also be established within the repository. (*See also* Appendix IV –ORCID Use Cases 1 & 2).

Retrieve an existing ORCID

If a user already has an existing ORCID iD, they will have the option to either enter an existing ORCID, or query for a list of possible matches based on their name. If the entered ORCID iD is valid, they can confirm the link immediately. Given a list of possible matches, they will be able to select the correct ORCID iD, and a confirmation email will be sent to the email registered with ORCID to authorize linking the accounts. If no match is found, they will be given the option to create a new ORCID iD.

Large-scale Creation and Assignment of ORCID iDs

To facilitate creation or assignment of ORCID iDs to a group of researchers, the integrator will also support creating ORCID iDs given a list of users that do not already have an ORCID iD. It will support querying the ORCID registry for possible matches that can then be linked to existing researchers. This batch process will be scheduled and managed by the Digital Library Technology team.

Account Linking, Federated Login, and ORCID as IR account

We will link our university accounts to ORCID iDs to provide better authority control and facilitate greater discovery and access of Notre Dame managed resources and harvesting of metadata for external resources linked to related ORCID iDs.

Additionally, we see compelling use cases for utilizing ORCID iDs as a primary IR account id for researchers, and using ORCID's built-in OAuth functionality for federated login to our local IR. As Notre Dame researchers continue to collaborate with external researchers, the need will only increase to allow non-Notre Dame users to manage and contribute content hosted within our repository. Once a

researcher leaves the university, they become an external party but still own rights to content hosted within our repository.

In turn, any researcher that leaves the university could continue to manage their resources by logging in using ORCID credentials instead of a university account. Additionally for external collaborators, instead of relying on a university account as the primary account id, we could create or use existing ORCID iDs for researchers at other universities. Notre Dame is also a member of InCommon and while we intend to use InCommon in a similar fashion, utilizing ORCID iDs has an even greater potential for covering as many researchers as possible. If an external collaborator does not have account accessible through InCommon, we would require a Notre Dame researcher to validate and create an account for their collaborator with an ORCID iD as the primary user key. By allowing external collaborators to create accounts using ORCID iDs, this only increases the number of links and associations that can be created within our own IR and the ORCID registry via related works and ORCID iDs.

Note: Because an ORCID based account would not be a university account, access to other university managed resources would be limited.

Exporting Data into ORCID from the IR

The Hydra ORCID plug-in will support frequent exports of data from the IR into ORCID. It will perform the necessary metadata transformations and mappings of local IR content and profiles into respective orcid-bio and orcid-works xml records for import into ORCID. This will allow any publicly available records in the IR tagged with an ORCID iD to be registered with ORCID.

Importing ORCID Data into the IR

The plug-in will also support importing records from ORCID given an ORCID iD linked to an IR profile. Additionally, there will be the option to load records from other contributors who also have ORCID iDs. Converse to exporting to ORCID, the plugin will also support mapping orcid-bio and orcid-works records to appropriate metadata objects within the destination IR. These records will then be made available alongside local content hosted within the IR.

About Digital Library Technologies at the Hesburgh Libraries and the University of Notre Dame

Digital Library Technologies, The Hesburgh Libraries: This group is headed by Rick Johnson (project PI) and is comprised of five developers specializing in digital library infrastructure and tools design. They are experienced with Fedora Commons, SOLR, Blacklight, are actively contributing to Project Hydra, and support the University's institutional repository.

University of Notre Dame: Founded in 1842 by a priest of the Congregation of Holy Cross, The University of Notre Dame is an independent, national Catholic research university located adjacent to the city of South Bend, Indiana

The University of Notre Dame provides a distinctive voice in higher education that is at once rigorously intellectual, unapologetically moral in orientation, and firmly embracing of a service ethos.

The University is organized into four undergraduate colleges — Arts and Letters, Science, Engineering, and the Mendoza College of Business — the School of Architecture, the Law School, the Graduate School, 14 major research institutes, two dozen centers and special programs, and the University Library system. Enrollment for the 2012-13 academic year was 12,126 students overall and 8,475 undergraduates.

The Graduate School, established in 1918, encompasses 48 masters and 26 doctoral degree programs in and among 30 University departments and institutes.

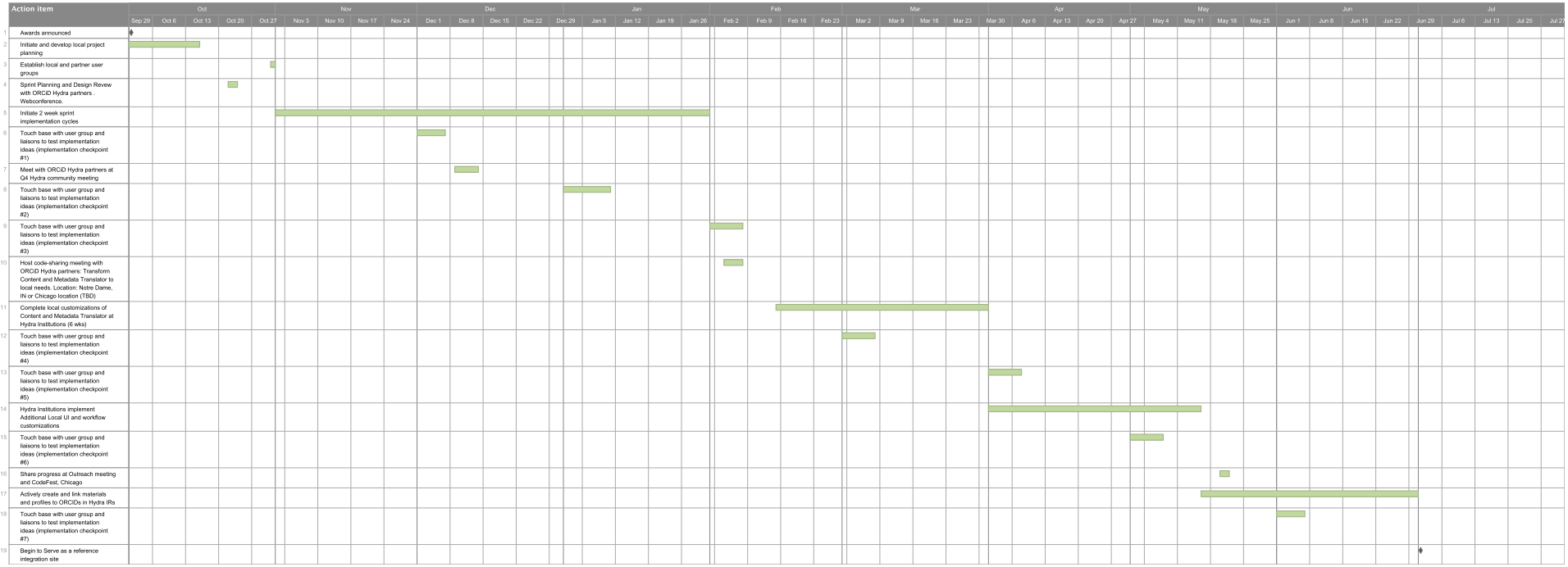
APPENDIX I: Workplan **ORCiD Hydra Integrator Plug-in Project** **Start Date: 10/1/13**
End Date: 7/1/14

	A	B	C	D
1	**Milestone**	**Action item**	**Person(s) responsible**	**Date due**
2	Implementation Planning (4 wks)	Awards announced		Oct. 1, 2013
3		Initiate and develop local project planning	Rick Johnson, Notre Dame Development Team	Oct 1-15, 2013
4				
5		Establish local and partner user groups	Rick Johnson, plus named Hydra partner representatives (Indiana, Northwestern, Notre Dame, Penn State, Stanford, Univ. of Hull, Yale, Royal Library of Denmark)	Oct 16-31, 2013
6				
7				
8		Sprint Planning and Design Revew with ORCiD Hydra partners . Webconference.	Named Hydra partners	Oct 22-23, 2013
9	Create Original ORCID Hydra Plug-in Prototype (12 wks)	Conduct 2 week sprint implementation cycles	Notre Dame Development Team	Nov 1, 2013-
10				Jan. 31, 2014
11		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #1)	Named Hydra partners plus targeted local users and stakeholders at each institution	Dec. 1, 2013
12		Meet with ORCiD Hydra partners at Q4 Hydra community meeting	Project Hydra Members	Dec, 2013 (TBA)
13		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #2)	Named Hydra partners plus targeted local users and stakeholders at each institution	Jan. 1, 2014
14		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #3)	Named Hydra partners plus targeted local users and stakeholders at each institution	Feb. 1, 2014

	A	B	C	D
15	Implement Content and Metadata Translators for named Hydra Partners (8 wks)	Host code-sharing meeting with ORCiD Hydra partners: Transform Content and Metadata Translator to local needs. Location: Notre Dame, IN or Chicago location (TBD)	Named Hydra partners	Feb 4-7, 2014
16				
17		Complete local customizations of Content and Metadata Translator at Hydra Institutions (6 wks)	Named Hydra partners	Feb 15-Mar 31, 2014
18		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #4)	Named Hydra partners plus targeted local users and stakeholders at each institution	Mar. 1, 2014
19		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #5)	Named Hydra partners plus targeted local users and stakeholders at each institution	Apr.1, 2014
20	Implement ORCiD related UI and Workflow Customizations (6 wks)	Hydra Institutions implement Additional Local UI and workflow customizations	Named Hydra partners	Apr 1-May 15, 2014
21		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #6)	Named Hydra partners plus targeted local users and stakeholders at each institution	May 1, 2014
22	Community Sharing	Share progress at Outreach meeting and CodeFest, Chicago	Notre Dame plus other available Hydra partners	May 20-21, 2014
23				

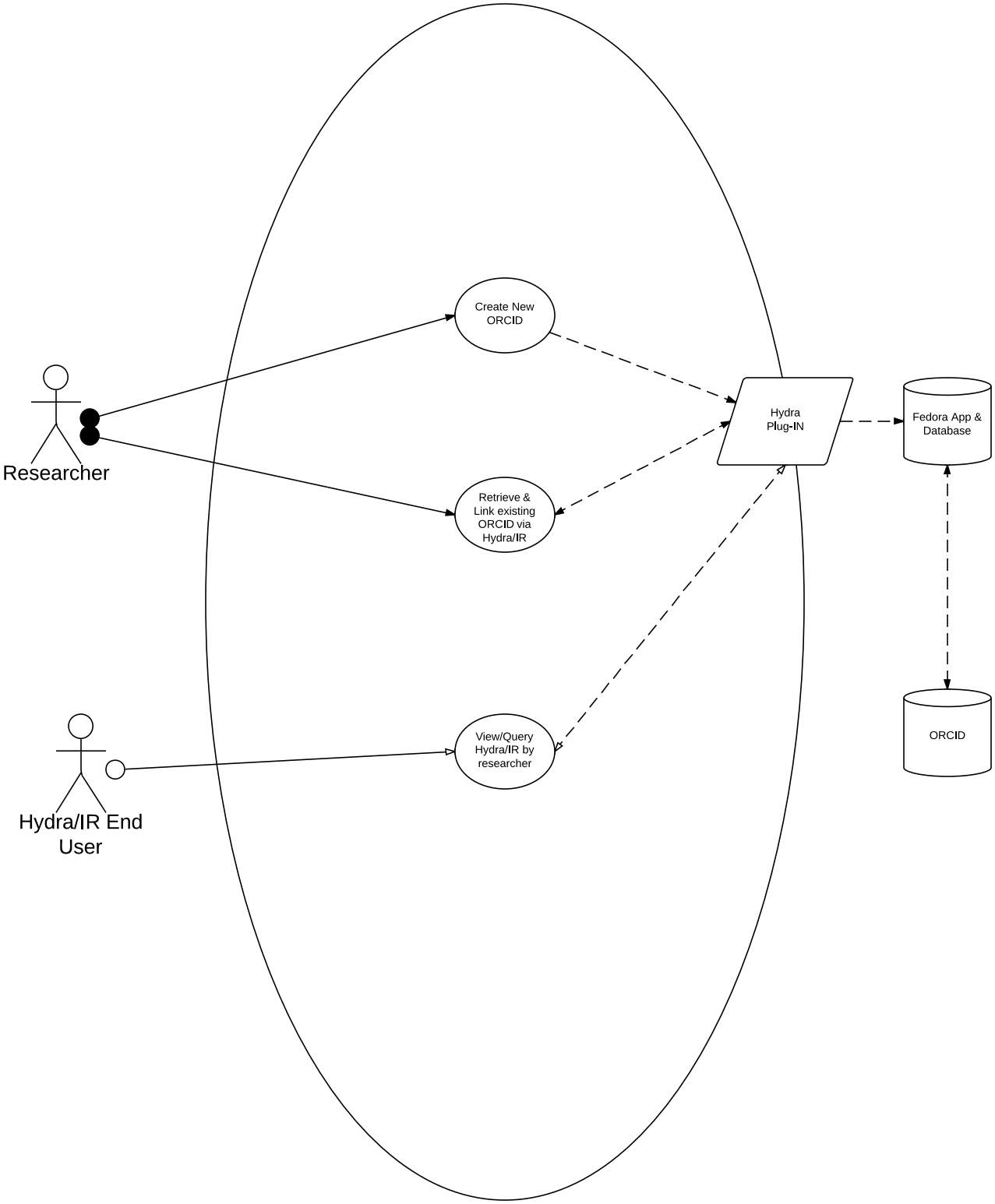
	A	B	C	D
24	Begin ORCID Creation and Deploy ORCiD Integration (6 wks)	Actively create and link materials and profiles to ORCIDs in Hydra IRs	Named Hydra partners plus targeted local users and stakeholders at each institution	May 16-June 30, 2014
25		Touch base with user group and liaisons to test implementation ideas (implementation checkpoint #7)	Named Hydra partners plus targeted local users and stakeholders at each institution	Jun. 1, 2014
26				
27		Serve as a reference integration site		Jul. 1, 2014

Appendix II: ORCID Hydra Plugin Project Timeline



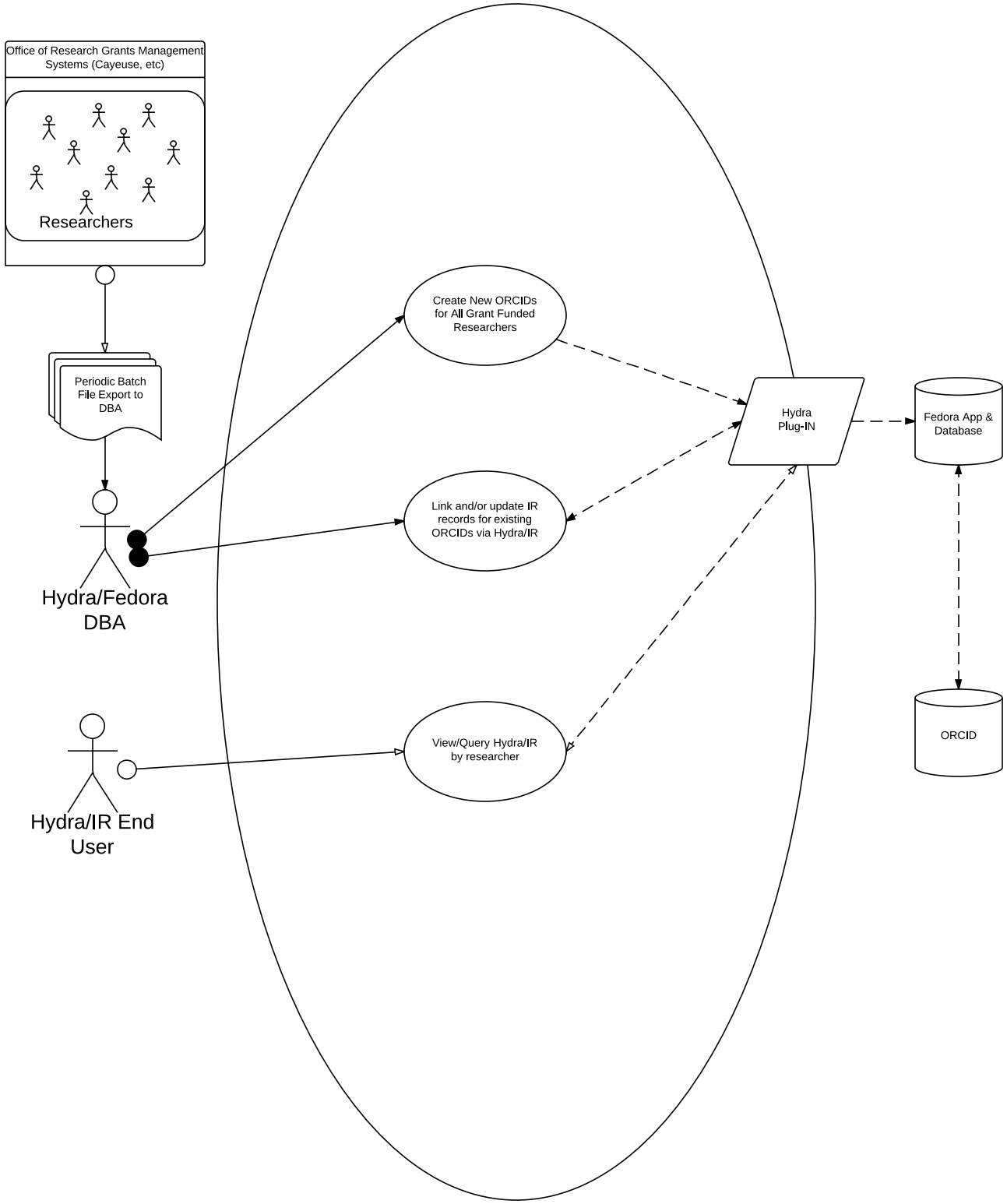
APPENDIX IV: USE CASES

End User Create/Link/View ORCID



APPENDIX IV: USE CASES

Hydra/Fedora IR Data Exchange
Import/Export to/from ORCID



Appendix V: Stakeholders and Letters of support

Named Hydra partners

- Indiana University
- Northwestern University
- Penn State University
- Stanford University
- The Royal Library of Denmark
- University of Hull
- Yale University
- University of Notre Dame

Campus partners (ND)

- Academic Colleges on Campus (College of Arts and Letters, College of Engineering, College of Science)
- Center for Research Computing
- ECK Center for Global Health
- Office of Research
- Office of the Provost

Letters of Support

- Chris Awre, Head of Information Management, University of Hull
- Stu Baker, Associate University Librarian for Library Technology, and M. Claire Stewart, Director, Center for Scholarly Communication and Digital Curation and Head, Digital Collections, Northwestern University
- Birte Christensen-Dalsgaard, Deputy Director General, Information Technology Services, The Royal Library of Denmark
- Tom Cramer, Chief Technology Strategist & Associate Director, Stanford University Libraries
- Daniel J. Myers, Vice President and Associate Provost for Faculty Affairs, University of Notre Dame
- Liz Rulli, Associate Vice President for Research, University of Notre Dame
- Mark Schurr, Associate Dean, Arts and Letters, University of Notre Dame

UNIVERSITY OF Hull

Office for Library and Learning Innovation
65 Salmon Grove
T: +44 (0) 1482 465436
r.g.heseltine@hull.ac.uk

Dear Sir/Madam,

Re: ORCID Sloan Grant – Hydra integration

The University of Hull is very pleased to partner with the University of Notre Dame on the Hydra integration of ORCIDs. The University of Hull is a founder partner of the Hydra project, and has long advocated the benefits of a flexible repository platform that allows integration with such shared services as ORCID. The Sloan grant would provide valuable impetus to enhancing Hydra in this way, benefiting the many researchers at institutions now using Hydra.

As a UK partner in Hydra, we would use our involvement in this project to raise the profile of ORCID use amongst our researchers (~900 staff) and also within the UK repository community, acting as a showcase for others. ORCIDs support researcher engagement within their own communities, a feature that is key to the strategic development of research at our institution.

Yours faithfully,

Chris Awre
Head of Information Management
ORCID: 0000-0002-0964-254X

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University Library

Library Technology
Northwestern University Library
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Evanston, Illinois 60208-2323

NORTHWESTERN
UNIVERSITY

August 29, 2013

Rick Johnson
Digital Library Initiatives and Scholarship
210 Hesburgh Library
University of Notre Dame
Notre Dame, IN 46556

Dear Rick,

We are very pleased to offer this letter in support of Notre Dame's application for an ORCID implementation grant and your proposal to develop a Hydra ORCID plug-in. As a member of the Hydra partnership, Northwestern is eager to have ORCID capabilities and support in the repository applications we support, in particular for the planned launch of our institutional repository, which will be based on the Curate Hydra solution jointly developed with the University of Notre Dame.

Over the last three years, the Northwestern University Library has participated in efforts to launch and improve researcher profiling systems, including the Northwestern Scholars system currently in production on Elsevier's SciVal Experts platform. As with most researcher profile initiatives, author disambiguation is a significant challenge. We also have had difficulty locating reliable information about faculty publications that is unencumbered by license restrictions, and that can be freely exchanged between platforms in support of important archiving, networking and output reporting activities. The ORCID project proposes to address both the disambiguation and the metadata exchange problem, and we will be expected to support it in the systems the library manages.

Conversations about archiving scholarly output, and in particular our recent conversations about funder mandates and research data archiving, have underscored the importance of above-the-campus collaborations and fluidity of data exchange. As you indicate in your grant proposal, an identity solution limited to a single campus is no solution at all. Our systems must be aware of Northwestern faculty's collaborators at other institutions, and be able to reliably identify and easily share services and content. The ORCID identifier and Hydra ORCID plug-in will help us achieve these goals.

Sincerely,

Stu Baker
Associate University Librarian for Library Technology

M. Claire Stewart
Director, Center for Scholarly Communication and Digital Curation
Head, Digital Collections

DET KONGELIGE BIBLIOTEK

NATIONALBIBLIOTEK OG
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CVR: 28 98 88 42
EAN: 5798 000 79 52 97
EMAIL: bcd@kb.dk

To whom it may concern

J.nr. 2013-002079

Letter of support

I am pleased to express The Royal Library of Denmark's support for University of Notre Dame's plans for integrating the Hydra/Fedora software with ORCID.

Being ourselves a partner in Project Hydra, we have had the opportunity to review Notre Dame's draft application to the *ORCID iD Adoption and Integration Program* for implementing a Hydra ORCID plug-in for the purpose of such integration. We would like to express our intention to use a Hydra ORCID plug-in, such as proposed, for our institutional repository solutions for University of Copenhagen.

In Denmark there is work underway to promote ORCID, facilitated by a project under *DEFF, Denmark's Electronic Research Library*. The Royal Library is currently building our new digital library infrastructure, based on the Hydra and Fedora technology stacks. As we will be going to transfer our existing repository solutions into Hydra/Fedora, it would be a natural step to integrate ORCID. A Hydra plug-in, such as being proposed, will help making such a step a priority.

Sincerely,

Birte Christensen-Dalsgaard,

Deputy Director General, Information Technology Services

STANFORD UNIVERSITY LIBRARIES
STANFORD, CALIFORNIA 94305

August 25, 2013

Rick Johnson
Co-Director, Digital Initiatives and Scholarship Program
Hesburgh Libraries
Univeristy of Notre Dame, IN 46556

Dear Mr. Johnson:

I am writing to convey my support for the proposed work to be led by Notre Dame to create a Hydra ORCID plug-in (HOP). Integration of ORCID functionality is on the roadmap of enhancements to the Stanford Digital Repository (SDR), but not yet scheduled. Notre Dame's proposed work, if funded, would have the joint benefit of accelerating our planned adoption of ORCID while reducing the level of effort required to implement and maintain it on our own.

As proposed, the work would also be a significant benefit to the larger Hydra and Fedora communities. Hydra is currently in a phase of rapid growth, with roughly two dozen adopters and partners, and on pace to double in the next year (as it has done in each of the last two years). Integration of Hydra-based systems with community authorities is a top and common need within the Hydra community—especially for institutions focused on research data curation. The proposed architecture for HOP fits into the Hydra technical framework, and should facilitate incorporation across institutions—regardless of the particular code base of any given "Hydra head."

As a member of the Steering Group for Fedora 4 development, I can also say that the proposed work would be an excellent example of extending on Fedora 4's lean core functionality, and adding modules to support integration with other systems (both ORCID and data curation systems built around Fedora).

Both the Hydra and Fedora communities have demonstrated successful patterns of cross-institutional development and code re-use. This project fits that pattern, and would be a welcome addition to the suite of community-sourced software available to Stanford and its partners.

Sincerely,

Tom Cramer
Chief Technology Strategist & Associate Director

UNIVERSITY OF
NOTRE DAME

OFFICE OF THE PROVOST
VICE PRESIDENT AND ASSOCIATE PROVOST FOR FACULTY AFFAIRS

300 Main Building
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46556-5602 USA

Daniel J. Myers

tel (574) 631-9488
fax (574) 631-4782
email dmyers@nd.edu
w*eb* http://provost.nd.edu

August 29, 2013

Amy Brand, Chair Outreach Steering Group
ORCID, Inc
10411 Motor City Drive, Suite 750
Bethesda, MD 20817

Dear Dr. Brand,

The Office of the Provost at the University of Notre Dame is pleased to support the efforts of the Hesburgh Libraries in the pursuit and execution of their project proposed under the ORCID iD Adoption and Integration program.

The opportunity to integrate ORCID iD with systems that manage faculty publications and other research work is a valuable enterprise, broadly speaking, and especially important to us here at Notre Dame. I know that we all use this kind of data in many ways, to advance our rapidly growing research enterprise, to assist in the education of our student (especially graduate students), but also in our administrative work as we try to understand the functioning and standards in various fields and as we decide about investing in new initiatives, refreshing research programs, and even personnel matters. Indeed it is critical to understanding scientific systems and tracking the functioning of higher education—all the more important as the industry is coming under increased pressure for accountability and self-reflection through outside review and accreditation processes.

We have great confidence in the Hesburgh Libraries staff to execute the necessary infrastructure development and I note that our Office of Research and Vice President for Research has also expressed enthusiasm for the project and sees great value in the proposed activity. Therefore, we are more than happy to endorse this proposal and will be happy to shepherd any necessary administrative support that is to engage and complete the project.

Most sincerely yours,

Daniel J. Myers

UNIVERSITY OF NOTRE DAME
OFFICE OF RESEARCH

940 GRACE HALL Notre Dame, Indiana 46556-5612
tel (574) 631-7432 *fax* (574) 631-6630 *email* researc2@nd.edu

August 28, 2013

Amy Brand, Chair Outreach Steering Group
ORCID, Inc
10411 Motor City Drive, Suite 750
Bethesda, MD 20817

RE: RFP 2013-06: ORCID iD Adoption and Integration Program

Dear Dr. Brand:

The Office of Research at the University of Notre Dame is pleased to support Hesburgh Libraries and their proposed effort under the ORCID iD Adoption and Integration Program. This grant is very valuable to the continuing efforts that the Office of Research is making to grow, strengthen, promote, and safeguard the research enterprise at Notre Dame.

The Office of Research at the University of Notre Dame will commit to the Hesburgh Libraries' ORCID iD Adoption and Integration Program project through the sharing of research award data to the libraries to ensure that all actively funded researchers are given the opportunity to have ORCID records and through the involvement of our personnel in support of automating this ongoing data sharing effort. It is clearly a priority for us, and our researchers will be well served.

In closing, I would like to say that I support the way that the Hesburgh Libraries have proposed to participate in the opportunity presented by the ORCID iD Adoption and Integration Program.

Sincerely,

Liz Rulli
Associate Vice President for Research

UNIVERSITY OF NOTRE DAME
College of Arts and Letters

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Notre Dame, Indiana
46556-5639 USA
tel (574) 631-7085
fax (574) 631-7743
www.al.nd.edu

August 23, 2013

Amy Brand, Chair Outreach Steering Group
ORCID, Inc
10411 Motor City Drive, Suite 750
Bethesda, MD 20817

RE: RFP 2013-06: ORCID iD Adoption and Integration Program

Dear Dr. Brand:

The College of Arts and Letters at the University of Notre Dame is pleased to support Hesburgh Libraries and their proposed effort under the ORCID iD Adoption and Integration Program. This grant will be very useful to us in helping promote research and faculty development.

The proposed project will offer many opportunities for us to more effectively track faculty productivity and to identify areas where additional support of the College is needed. We will be happy to facilitate collaboration between the College administration and faculty with the Hesburgh Libraries' ORCID iD Adoption and Integration Program project. We hope the program will help us better associate faculty grant activity with publications in ways so that we can use that information to advance the grant and publication success of the faculty.

Thank you very much for your consideration of this proposal. Please contact me at any time if you need additional information or if I be of assistance.

Sincerely,

Mark R. Schurr
Associate Dean for the Social Sciences and Research

Appendix VI: Review criteria (with ND responses)

(1) Does the organization demonstrate readiness to integrate and the ability to demonstrate a prototype within six months of award?
YES –We can rapid prototype this. Our department's CAS integration w/Hathi Trust, VECNet Digital Library prototypes, and authentication w/Pittsburgh Supercomputing Center are examples of our ability to do rapid implementations involving the Project Hydra Stack.

(2) Will the organization make their integration code available as open source?
Yes, on GitHub.com as we do for Hydraproject: http://github.com/projecthydra

(3) Does the integration involve a common platform, such as DSpace, Fedora, PeopleSoft, or similar that can be broadly repurposed to expand ORCID adoption?
YES, as members of the Hydra Project e we use the Fedora Common Platform and will distribute our integration code as compatible for broadly repurposed implementations.

(4) Is more than one office or school involved, such as Arts and Sciences, Library, Research Office, Graduate School, and/or Provost Office?
Yes - Hesburgh Libraries implementation of ORCID in CurateND, the University Repository, will involve and support the information needs of the Office of the Provost & the university's chief academic officer, The Graduate School, Office of Research, the Institute for Scholarship in the Liberal Arts(ISLA), and will support ORCID iDs for faculty in College of Arts and Letters, College of Engineering, College of Science, and for research faculty in various centers like ECK Center for Global Health, Center for Research Computing.

(5) Is the proposal from a large research university?
Notre Dame's involvement and commitment to research is burgeoning at the university following significant investments in the past ten years as described here: http://research.nd.edu/research-investments/
In Fiscal Year 2013, research expenditures from external sources and research awards to Notre Dame were approximately $100 million. In Fiscal Year 2012 research awards to Notre Dame topped the $100 million mark for the third consecutive year. The figure of more than $104 million represents an increase of almost $30 million from four years ago, and an increase of almost $80 million in the last 10 years. Additionally, Notre Dame's Center for Research computing operates a state of the art High Performance Computing (HPC) facility providing parallel supercomputers, clusters, grid networks and storage (around 10,000 cores total and 350TB storage) of advanced computing support to researchers within Notre Dame, the local community and industry. The University of Notre Dame is also a member of The Great Lakes Consortium for Petascale Computing (GLCPC). The GLCPC facilitates the widespread and effective use of petascale computing to address frontier research questions in science, technology, engineering, and mathematics at research, educational, and industrial organizations across the United States.

(6) Is the proposer willing to serve as a reference for other organizations interested in carrying out a similar ORCID integration?
Yes, we are not only willing to serve as a reference we have a plan for knowledge transfer. See Workplan for details about our proposal to share code developed under this grant and our plan to assist other Hydra Institutions to implement the Hydra Plug in locally in their IRs.