

Advancing Hyku: Open Source Institutional Repository Platform Development

Annual Report for Year One, October 2019-August 2020

Funded by Arcadia—a charitable fund of philanthropists Lisbet Rausing and Peter Baldwin

Project Duration: October 2019-September 2021

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Executive Summary

The Advancing Hyku project is on track to complete the design and implementation of specific advances to the open-source community repository product Hyku. Upon project completion, these advances will drive green open access and will increase value to researchers with a combined approach of auto-population and expanding the array of integrated, open source services, making institutional repositories utilizing the Hyku codebase a more attractive dissemination option than current repository interfaces and infrastructures.

The primary institutional partners on the project continue to be the University of Virginia Library and the British Library, both of whom are members of the Samvera community receiving services from Ubiquity Press, which in turn is performing most of the technical development in close coordination with these community partners.

The recruitment of all professionals provided for in planning phases is complete as of July 2020. Our work to scale the repositories automatically by integrating open-resource discovery tools (e.g. Unpaywall and Open Access Button), connecting to author identification and profile services (e.g. ORCID), and establishing pathways to long-term preservation services is proceeding after some unavoidable delays caused by worldwide pandemic conditions. We are drawing upon Ubiquity's publishing experience to treat articles, books, and newer forms of scholarship in repositories as first-class objects, and focus on authors to incentivize their participation. We have already drawn on British Library's expertise on the Hyku architecture to advise and inform integration of Hyku with institutional systems as a way of driving greater value to researchers and institutional administrations.

The partners have thus far worked together over the elapsed portion of the grant period to assess requirements and jointly create detailed, component-specific development plans, resulting in new capabilities collaboratively developed by Ubiquity and the two institutions. All code is being released as open source and merged with the Hyku core codebase in accord with the Samvera Community's practices, including code released as recently as July 2020.

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Progress Toward Outcomes

As detailed in the original award proposal, progress toward stated outcomes can be measured through progress in any three out of four of the following. Note that measurement items 2 through 4 begin in year two of the project, since they occur in institutional repositories piloting or implementing migrations to Hyku repositories, including the University of Virginia and the British Library.

1. All features developed, released as open source, and integrated with the Hyku core code base consistent with Samvera Community standards where appropriate.

The following work has been completed by Ubiquity Press as of the date of this report, and has been approved by the Hyku/Samvera community for contribution back to the Hyku/Hyrax Core code base: (Hyku codebase: allows for institutions with smaller technical resource pools to get a repository up and running quickly and maintain it efficiently. Hyrax codebase: allows for institutions with more significant development resources to customize repository functionality for specific institutional requirements).

- Code contribution by Ubiquity Press team to standardize and align core infrastructure of the Hyku codebase with the Hyrax codebase. Specifically, Upgrade Hyku to Hyrax 2.9, Rails 5.2, and Ruby 2.7. <https://github.com/samvera/hyku/pull/1632>
- Making it easier to customize the deposit form by adding Google Scholar meta tags: <https://github.com/samvera/hyrax/pull/4382>
- Adding new deposit form metadata fields quickly and easily: <https://github.com/samvera/hyrax/pull/4453>
- Port infrastructure for remote identifiers such as DOIs: <https://github.com/samvera/hyrax/pull/4458>

2. A 10 percent increase in deposited content that can be attributed to new auto-deposit capabilities, between the project start and end dates, for Hyku repositories.

- Because work packages impacting this metric are still in development stages and have not yet been implemented in live Hyku repositories at the partner institutions, reports on this metric will be included in the final project report.

3. A 10 percent increase in deposits of complete intellectual objects (as opposed to title/abstract only) in institutional Hyku repositories.

- Because work packages impacting this metric are still in development stages and have not yet been implemented in live Hyku repositories at the partner institutions, reports on this metric will be included in the final project report.

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4. Post-migration analysis of Hyku at the British Library and pilot migration of content from the existing Samvera Sufia platform to a Hyku environment for the University of Virginia, demonstrating a higher degree of feasibility and ease for such migrations of institutional repositories in general.

- Because work packages impacting this metric are still in development stages and have not yet been implemented in live Hyku repositories at the partner institutions, reports on this metric will be included in the final project report.

Progress Toward Broader Impacts from Proposal

1. Increased uptake of Hyku software, particularly by a broader range of institutions (e.g. community colleges, memory institutions) and service providers.

- Because work packages impacting this metric are still in development stages and have not yet been implemented in live Hyku repositories at the partner institutions, reports on this metric will be included in the final project report.

2. For this work to lead to greater use of repositories for research outputs overall, by setting an example of best practice.

One best practice in community software development is the alignment of features across institutions, done with input and discussion in existing forums for inclusion. The Advancing Hyku team understands that to prevent unintentional branching of our project from alignment with the greater Samvera Community's goals, a significant review of alignment of the features proposed in the Advancing Hyku with the greater Hyku and Hyrax community's goals was essential. See Appendix A for this [living document](#), spearheaded by Ubiquity Press senior developer Chris Colvard, and incorporating input from Advancing Hyku partner institutions as well as regular participants in monthly Hyku Community meetings.

Another is the incorporation of DOI minting, with associated citation and usage metrics. These features are being fed back into the Hyrax code base, and so will be available to all Samvera repositories, not only Hyku. This feature has already been identified as a high priority by the Samvera community, and can thus be expected to be widely adopted.

3. By setting an example of how repositories can encourage frictionless green open access, we hope to further reduce barriers to open access overall.

The project is progressing in introducing significant structural improvements and new features to the Samvera Community's Hyku platform. The project team highly values community engagement, and frames its activities around a thorough [communication plan](#) (see Appendix B). In every element, the partners aim for two-way engagement to make sure that the project reflects the needs of its target audience, and to broadcast the work and successes of the project to all stakeholders so that they're able to implement or even build on what the project has achieved. Broadcasting is achieved through regular project updates on the website <https://advancinghyku.io/>, conference participation and social media use. Project partners have to date shared [news and](#)

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[project progress](#) in relevant and targeted events both online and in person. In order to ensure effective community engagement; the project team has regular contact with the Samvera Hyku Community to exchange knowledge, share experience and updates through monthly meetings, Slack channels and mailing lists.

Progress Analysis

The analysis below details how progress of work delivered compares to the timetable in our original proposal, work in progress, narrative of reasons for schedule adjustments for work planned, and actions recommended for adhering to the timetable in future.

Work Delivered

To date, all assessment work has been completed on or close to schedule:

- Project management planning was completed in January 2020 by UVA PI Ellen Ramsey with contributions from all team members.
- Ubiquity Press completed its user interface/usability assessment in May 2020 (led by Elisa Barrett and Brian Hole).
- British Library completed the bulk of their contribution to the Advancing Hyku project in June 2020 with the submission of the [Architecture Review for Advancing Hyku](#) (Appendix C).
- Ubiquity Press completed the assessment review [Advancing Hyku: Alignment of UP's Hyku codebase with Hyku 2 /3](#) (Appendix A).

The only assessment task remaining is UVA's case study of migrating the existing contents of its LibraOpen (Sufia) open content repository to the Advanced Hyku platform, on schedule to begin in January 2021 following completion of feature implementation work packages.

Work in Progress

Work packages are detailed for each sprint of related feature development:

WP0 - Hyku 2/3 alignment

(Implementation of recommendations in Appendix A)

WP1 - Auto-population of repository with OA content

(DOI, Unpaywall/OAButton)

WP2 - Metrics Phase 1

(repository metrics modeled on metrics of online journals)

WP3 - Sync all items in the repositories with author identification and profile services (ORCID)

WP4 - Enable reading, commenting and annotating

(On full text from within repository record)

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WP5 - Increase access and establish pathways to long-term preservation services (APTrust, others)

WP6 - Assessment of user interface, user experience platform architecture improvements (to increase uptake of Hyku by institutions and individual authors)

WP7 - Metrics Phase 2

(Add metrics according to user cases after advanced features have been implemented)

Schedule Adjustment Narrative

Significant delays in beginning work were the result of two situations out of the control of the Advancing Hyku project leads and team:

1. Working with an international funding agency such as Arcadia is less common at the University of Virginia and required additional approvals of grant finance requirements acceptable in both US and UK jurisdictions. Similarly, negotiation of UVA's sub-award to international partner institution British Library required additional negotiation of terms acceptable at both government-sponsored institutions involved.
2. Covid disruptions delayed the ability of partners to hire qualified candidates for some months beyond initial projections. As of August 2020, all professional staff detailed in the original project proposal is productively engaged toward project outcomes.

Project Staffing and Recruitment

Position/Incumbent	Partner	Planned Start Date	Actual Start Date
PI/Ellen Ramsey	UVA	September 2019	October 2019
Product Owner/Sherry Lake	UVA	September 2019	October 2019
co-PI/Rachael Kotarski	BL	September 2019	October 2019
Analyst/Rathin Sundar	BL	February 2020	March 2020
co-PI/Brian Hole	UP	September 2019	October 2019
Project Manager/Elisa Barrett*	UP	September 2019	November 2019
Sr Dev/Chris Colvard*	UP	January 2020	June 2020
Jr Dev/Bertie Woole*	UP	January 2020	April 2020
UX Dev/Mattin Delavar*	UP	January 2020	August 2020
Project Manager/Ilkay Holt*	BL	February 2020	July 2020

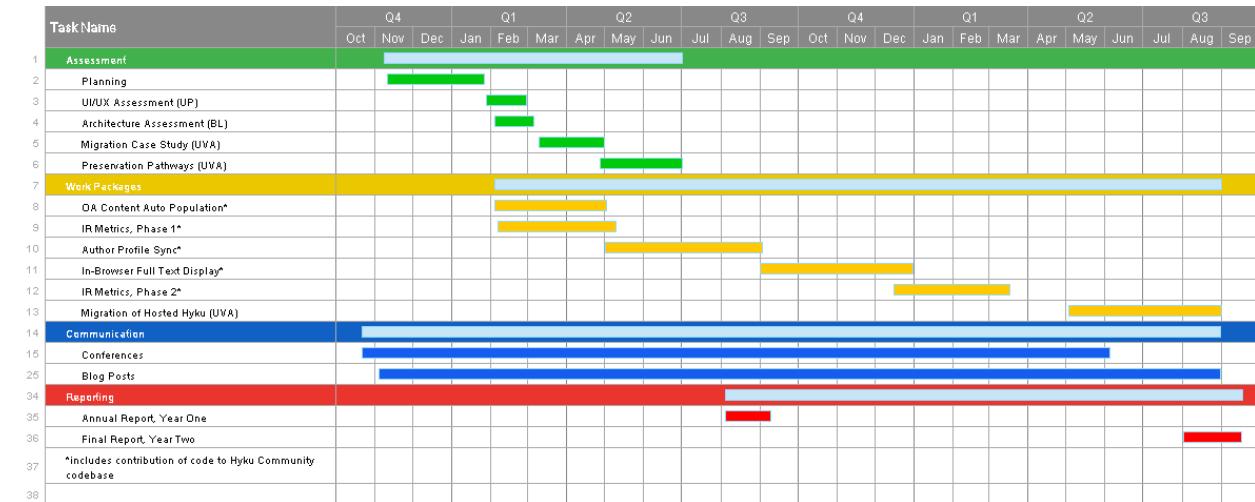
* Grant-funded new hires

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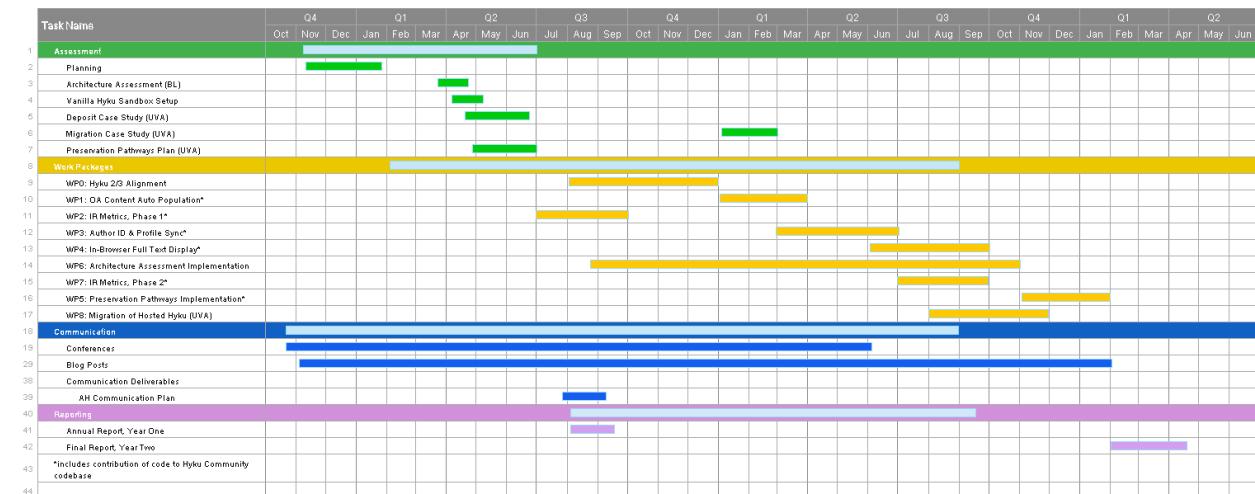
Original Roadmap Thumbnail

August 2019 (See Appendix D for higher resolution)



Current Roadmap Thumbnail

September 2020 (See Appendix E for higher resolution)



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Project Task Timing

Task	Planned Completion	Actual Completion	Explanation
Project Management Planning/Setup	January 2020	January 2020	
UI/UX Assessment	March 2020	Ongoing alongside relevant Work Packages	UX Dev hiring delay, UP substituted existing UI/UX staff
Architecture Assessment (BL)	March 2020	April 2020	UVA-BL Sub-award delay
Hyku Sandbox Setup	not detailed in original proposal	May 2020	Jr/Sr dev hiring delays, UP substituted existing IT staff
Deposit Case Study (UVA)	not detailed in original proposal	June 2020	
Migration Case Study (UVA)	May 2020	March 2021 (projected)	
Preservation Pathways Plan (UVA)	June 2020	June 2020	
WP0: Hyku 2/3 Alignment	not detailed in original proposal	January 2021 (projected)	Jr/Sr dev hiring delays
WP1: OA Content Auto Population	May 2020	April 2021 (projected)	Jr/Sr dev hiring delays
WP2: IR Metrics, Phase 1	May 2020	October 2020 (projected)	Jr/Sr dev hiring delays
WP3: Author ID & Profile Sync	September 2020	June 2021 (projected)	Jr/Sr dev hiring delays
WP4: In-Browser Full Text Display	September 2020	October 2021 (projected)	Jr/Sr dev hiring delays
WP6: Architecture Assessment Implementation	September 2020	across all packages through October 2021 (projected)	Jr/Sr dev hiring delays
WP7: IR Metrics, Phase 2	March 2021	October 2021	Will follow other

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			packages, sync with Oregon Digital
WP5: Preservation Pathways Implementation	not detailed in original proposal	February 2022	Cannot begin until WP8 is complete
WP8: Migration of UVA content to the AH repository	August 2021	December 2021	Cannot begin until WP7 is complete

Alignment work with Samvera community

The Advancing Hyku project partners work closely with the Samvera community to identify ongoing projects, developments in progress and planned for the future, and collaborate with those partners in a proactive manner to avoid duplicating the efforts and mutually benefit from each other.

The Hyku Project has a roadmap (see Appendix F) indicating planned features and the timeline. The Samvera Community has roadmaps adopted separately by subcomponents of Hyrax, Hyku and Avalon. The Advancing Hyku project team communicates with each of them but particularly with the Samvera Hyku Interest Group to align the roadmaps, define the areas of joint interest, and collaborates to minimize duplication of effort and maximize elements which can be shared across the closely aligned Hyrax and Hyku products.

The project team regularly takes part in communication channels, influences the Hyku Roadmap in the interest of AH project partners where possible, makes sure that the Project Roadmap is aligned with the Hyku Roadmap, contributes to the feature development, and takes advantage of the group in terms of getting community input on feature prioritization and functionality.

Within the Samvera Hyku Interest Group, the project team makes particular effort to collaborate Oregon Digital (a partnership of University of Oregon and Oregon State University) on their Hyrax Analytics project to align and join efforts in developing a suite of analytics and reporting tools for Hyrax/Hyku. Another close collaboration is in place with Pennsylvania Academic Library Consortium, Inc. (PALCI) and Private Academic Library Network of Indiana (PALNI) regarding their Hyku for Consortia project. Partners work closely to align and join efforts in developing and feeding back code for the multi-tenant features of Hyku as implemented by BL and PALNI/PALCI in their respective repositories.

The partners have thus far worked together over the elapsed portion of the grant period to assess requirements and jointly create detailed, component-specific development plans, resulting in new capabilities collaboratively developed by Ubiquity and the two institutions. All code is being released as open source and merged with the Hyku core codebase in accord with the Samvera Community's practices, including code released as recently as July 2020.

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Data, Materials and Papers Produced

Data, materials and papers produced are all available free on the internet via deposit in the existing UVA open repository LibraOpen. Statistics about their use by the public are less than reliable or robust in this pre-Hyku repository, which is one of the reasons UVA opted to lead this project.

Outputs

The outputs are linked on a specific page of the project's public-facing web site: <https://advancinghyku.io/outputs/> and statistics available are as follows:

Output Statistics to September 15, 2020

Title	Persistent Link	Views	Downloads
Advancing Hyku: Open Source Institutional Repository Platform Development (Digital Commons + Great Lakes User Group 2020)	https://doi.org/10.18130/v3-kx6v-ax25	117	67
A Hykurax Panel: Advancing Hyku; Hyku for Consortia; Hyrax Analytics (Samvera Connect Virtual 2020)	https://doi.org/10.18130/v3-g2z3-yt37	38	4
Advancing Hyku: Samvera Partner Call Presentation	https://doi.org/10.18130/v3-mwqg-s426	140	53
Advancing Hyku: Open Source Institutional Repository Platform Development (Samvera Connect 2019, Presentation)	https://doi.org/10.18130/v3-kx6v-ax25	119	67
Shared repositories: Building a multi-tenancy repository service at the British Library (OR 2020)	https://doi.org/10.18130/v3-xt15-3w34	43	10
Driving More Green Open Access: Advancing Hyku Project (Library Publishing Forum 2020)	https://doi.org/10.18130/v3-d6jx-9z41	84	26
Advancing Hyku: Open Source Institutional Repository Platform Development (Samvera Connect 2019, Poster)	https://doi.org/10.18130/v3-wnpz-jg98	86	52
Architecture Review for Advancing Hyku Project (Report 2020)	https://doi.org/10.18130/v3-k4an-w022	69	20

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Financial Report

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Budget Narrative

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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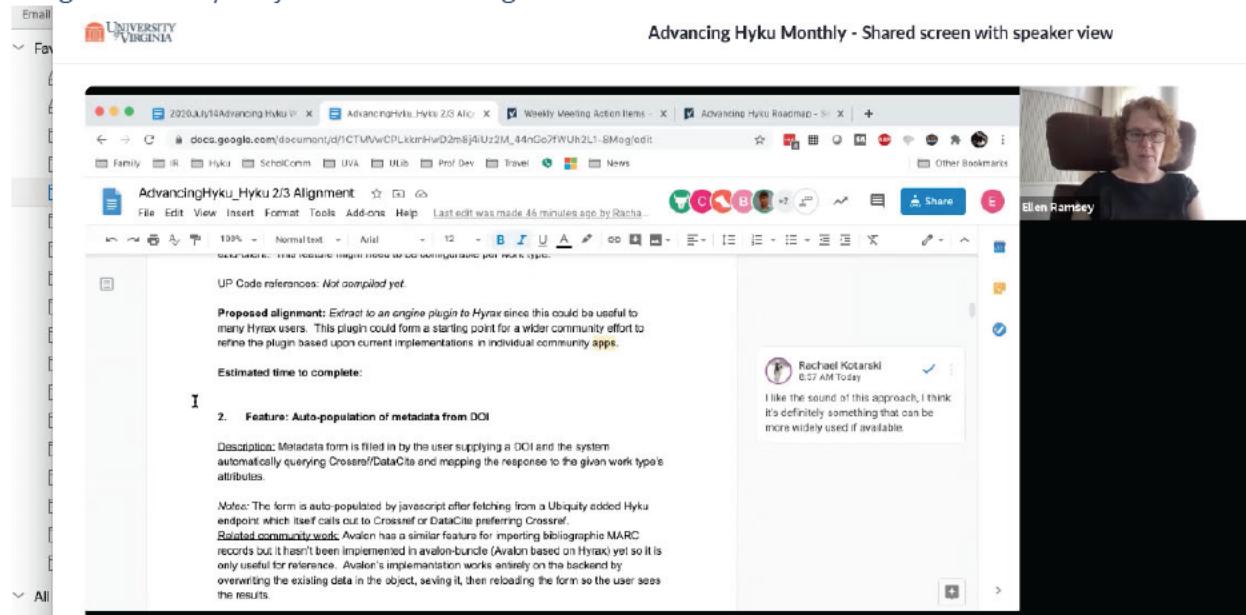
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Project Images

Included below are images relating to work carried out with grant funds within the time period covered by the report, that Arcadia is authorized to use for publicity purposes. Files of the images with 300dpi are provided separately.

Image 1: Weekly Project Team Meeting

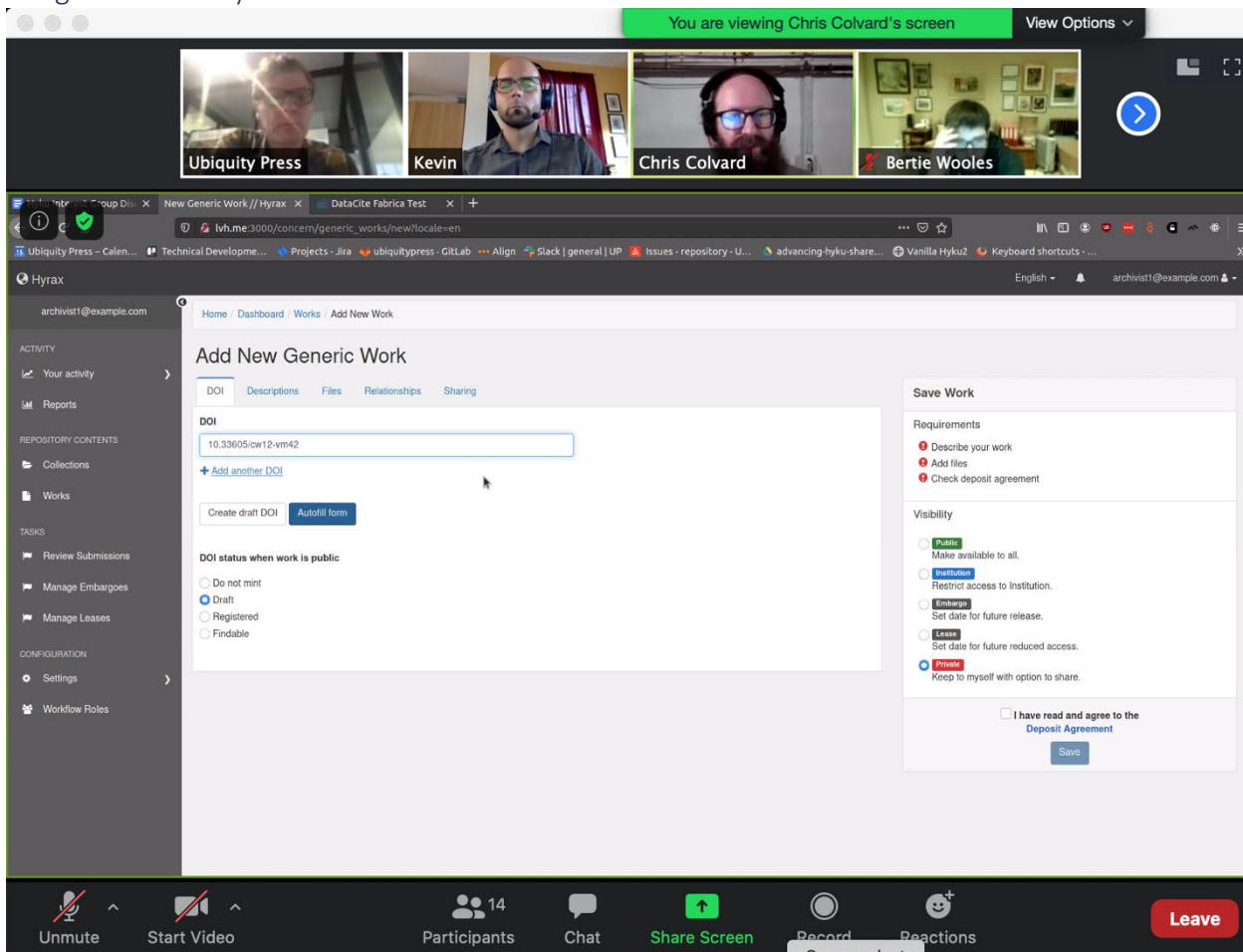


Advancing Hyku PI Ellen Ramsey leading the July 14, 2020 weekly meeting via Zoom.

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Image 2: DOI Entry Demonstration

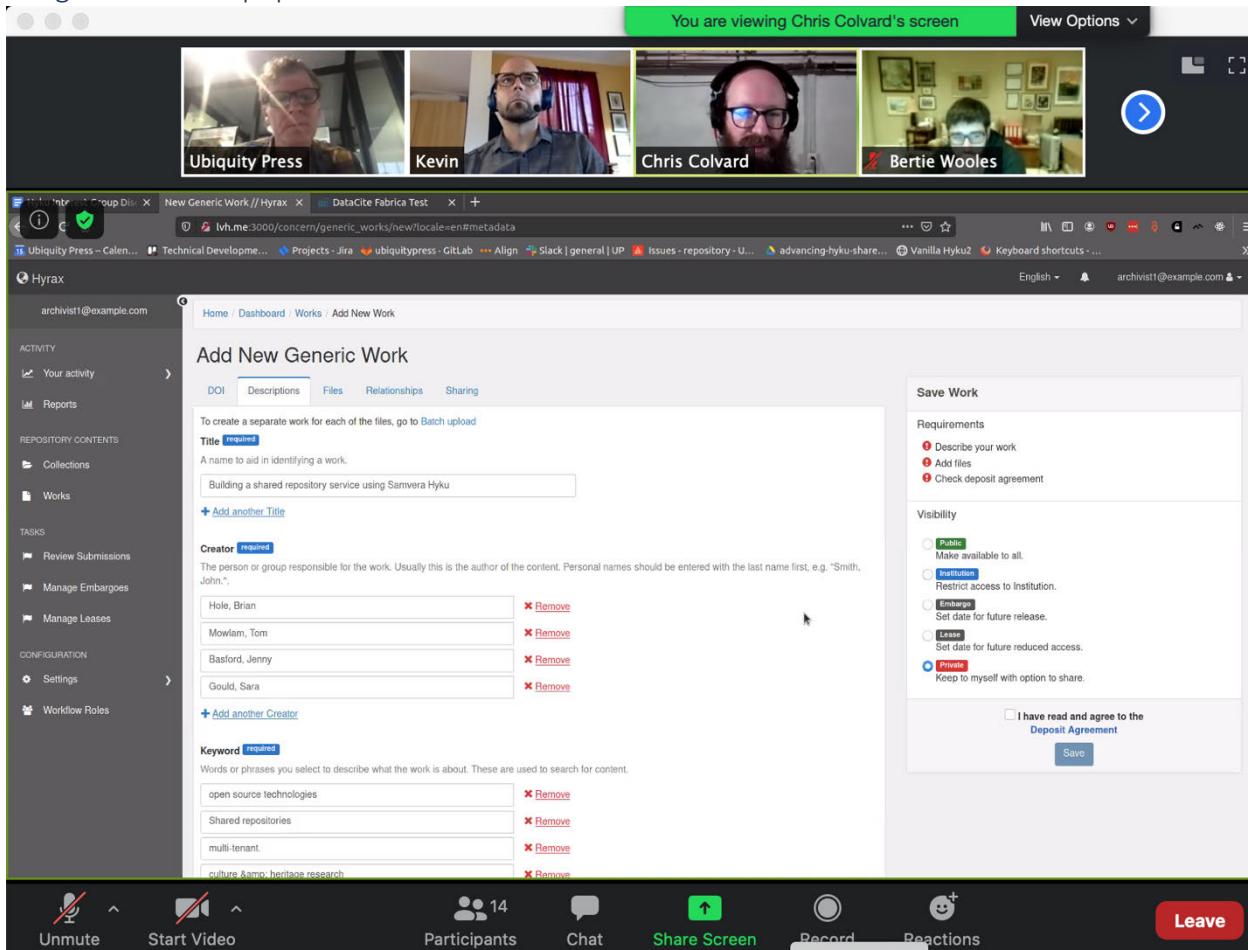


Advancing Hyku lead developer Chris Colvard showing DOI minting demo at August 27, 2020 Hyku Community Call.

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Image 3: DOI Autopopulation of Metadata Demonstration



Advancing Hyku lead developer Chris Colvard showing DOI minting demo at August 27, 2020 Hyku Community Call.

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Image 4: Monthly Project Update Meeting



September 8, 2020 monthly update meeting via Zoom. Special guests Andrew Diamond and Lauren Work from APTrust/UVA demonstrated the DART auto-bagging workflow for long term preservation of repository contents. Project sponsors/co-PIs not pictured: Brian Hole, UP; Torsten Reimer, BL.

Further Information

No-cost Extension Request

Because of delays in starting work caused by factors detailed in the Progress Analysis section above, the Advancing Hyku team respectfully requests from Arcadia a no-cost extension of the grant period for six months to successfully complete project objectives. A six month extension would move the project completion date to February 16, 2022, with the final grant report due date accordingly adjusted to April 16, 2022.

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Appendices

Appendix A: [Advancing Hyku: Alignment of UP's Hyku codebase with Hyku 2 / 3](https://docs.google.com/document/d/1CTMVwCPLkkmHwD2m8j4iUz2M_44nGo7fWUh2L1-8Mog/edit?usp=sharing)

https://docs.google.com/document/d/1CTMVwCPLkkmHwD2m8j4iUz2M_44nGo7fWUh2L1-8Mog/edit?usp=sharing

Appendix B: [Advancing Hyku Project Communication Plan](https://docs.google.com/document/d/1M9UAYviJjVLBwKdlBLP68QBkNQOYDNxn6ADC9z0Iv4A/edit#heading=h.hbiutirqx2qu)

<https://docs.google.com/document/d/1M9UAYviJjVLBwKdlBLP68QBkNQOYDNxn6ADC9z0Iv4A/edit#heading=h.hbiutirqx2qu>

Appendix C: [Architecture Review for Advancing Hyku](https://doi.org/10.18130/v3-k4an-w022)

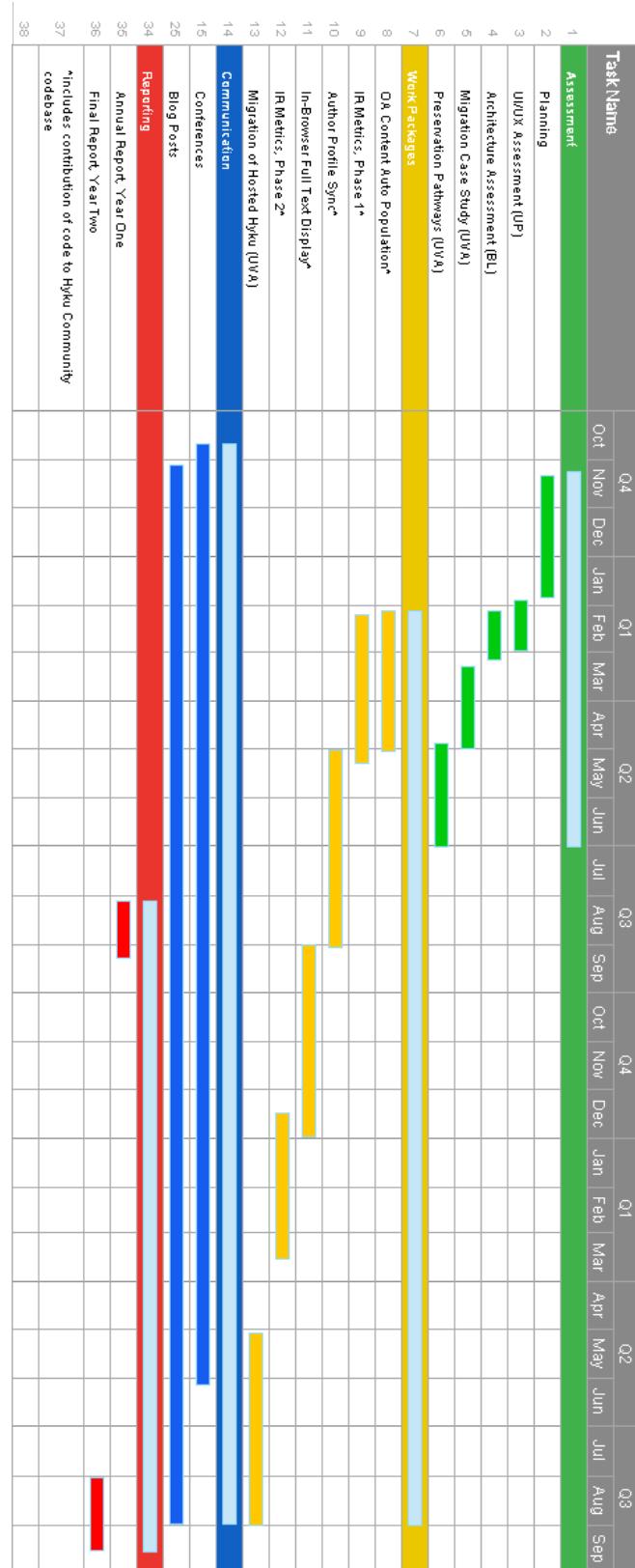
<https://doi.org/10.18130/v3-k4an-w022>

Appendix D: [Hyku Community Roadmap](https://wiki.lyrasis.org/display/samvera/Hyku+Roadmap)

<https://wiki.lyrasis.org/display/samvera/Hyku+Roadmap>

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Appendix E: Original Roadmap Image, October 2019



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Appendix F: Current Roadmap Image, August 2020

