

The Future of Aquatic Commons: Recommendations Based on an Evaluation of Business Models and Stakeholder Consultation

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Abstract

Aquatic Commons is a digital repository established by the International Association of Aquatic and Marine Libraries and Information Centers (IAMSLIC) in 2007 to provide a solution for member institutions that didn't have an institutional repository. It is directed by the Aquatic Commons Board, and submissions are reviewed by an editorial team. Originally hosted by the Florida Center for Library Automation (FCLA), the repository was moved to the International Oceanographic Data and Information Exchange (IODE) in 2011 when FCLA faced major budgetary issues. Aquatic Commons has grown to more than 20,000 publications from over 90 institutions in all areas of the aquatic sciences, including freshwater, fisheries, and oceanography, yet support for the repository has not kept pace with developmental needs. To ensure a sustainable future, the Aquatic Commons Board determined it was necessary to conduct an evaluation and created the Aquatic Commons Evaluation (ACE) team. The team identified and compared four potential business models: 1a) maintain Aquatic Commons as a separate repository but upgrade the EPrints software; 1b) maintain Aquatic Commons as a separate repository but migrate to DSpace software; 2) migrate content to the existing IODE OceanDocs repository but retain Aquatic Commons identity by having a separate DSpace community; and 3) partner with IODE and possibly the Aquatic Science and Fisheries Abstracts (ASFA) to create an entirely new repository with content merged from Aquatic Commons and OceanDocs. The team consulted with potential partners (e.g. ASFA and IODE) and ran a survey to elicit feedback from members, depositors, and other stakeholders about the models,

addressing issues of thematic scope, branding, software, technical requirements, workflows, and training. At the 2019 conference, the team presented a recommendation based on the evaluation in order to initiate a roadmap for the Aquatic Commons.

Keywords: Aquatic Commons, OceanDocs, IODE, Open Access, Repositories, DSpace, Eprints, Survey.

Introduction

Aquatic Commons (<http://aquaticcommons.org>) is a digital repository directed by the International Association of Aquatic and Marine Libraries and Information Centers (IAMSLIC) and hosted by the Intergovernmental Oceanographic Commission's International Oceanographic Data and Information Exchange (IODE) programme. IAMSLIC member Stephanie Haas first proposed it in 2005 as a central portal that would include a repository as well as a harvester of existing repositories (Haas 2005). The repository would serve small institutions and research endeavors without adequate IT support, and surface grey literature hidden in research centers and smaller academic units. The repository, which launched in 2007 using EPrints software, was initially hosted by the Florida Center for Library Automation (FCLA) at the University of Florida (Collins 2007). It moved to IODE in 2011 when FCLA faced major budgetary issues.

Aquatic Commons has grown to over 20,000 publications from more than 90 institutions in all areas of the aquatic sciences, including freshwater, fisheries, and oceanography. In partnership with IODE and Food and Agriculture Organization (FAO)-Aquatic Science and Fisheries Abstracts (ASFA), IAMSLIC has improved access to grey literature and legacy documents and provided a way for institutions to showcase their literature (Carreño, Gribling, & Wibley, 2011; Kalentsits & Gribling, 2013). However, the repository landscape has now shifted: more IAMSLIC members maintain institutional repositories; other repository options exist for publications or datasets (e.g., OceanDocs, MarXiv Papers, Zenodo, Dryad, Pangaea); and the DSpace software is more widely used than EPrints.

The Aquatic Commons Board, which oversees the repository, recognized that the future sustainability of Aquatic Commons was a critical issue, and with approval from the IAMSLIC Executive Board formed a team in May 2019 to conduct an evaluation. The Aquatic Commons Evaluation (ACE) team identified and investigated potential business models, looking for ways to collaborate with existing partners (IODE and FAO-ASFA); reduce duplication of effort for depositors, editors, and steering groups for both Aquatic Commons and OceanDocs, and streamline IT support and development for the software. The team consulted with key stakeholders (Aquatic Commons Board, IODE, OceanDocs Steering Group, FAO-ASFA) and designed a survey to elicit feedback on the proposed models, exploring issues of thematic scope, branding, software, technical requirements, workflows, and training. The survey ran from August 19 to September 15, 2019, and was distributed via email to IAMSLIC members, the OceanDocs Steering Group, IODE National Coordinators for Marine Information Management, IODE Associate Information Units, ASFA partners, and active Aquatic Commons depositors. Below are descriptions of the business models, key survey results, and the recommendation presented at the IAMSLIC conference, followed by the next steps for the repository.

Business Models

In consultation with IODE and FAO-ASFA, the ACE team identified four models and compared them based on governance, scope, branding, costs, software and technical support, effort by editors and/or repository administrators, effort by depositors, and end users (Table 1).

- 1a. Maintain Aquatic Commons as a separate repository and upgrade to EPrints v3.4.

Aquatic Commons would remain as a separate repository managed by IAMSLIC and hosted by IODE. The EPrints software would be upgraded to version 3.4.

- 1b. Maintain Aquatic Commons as a separate repository but migrate to DSpace software.

Aquatic Commons would remain as a separate repository managed by IAMSLIC and hosted by IODE. The repository would be migrated from the EPrints software to the DSpace software.

- 2. Migrate content to the existing IODE OceanDocs repository but retain Aquatic Commons identity by having a separate DSpace community.

Aquatic Commons content would be migrated from its own repository that uses EPrints software to the IODE OceanDocs repository that uses DSpace. Aquatic Commons would exist as a separate DSpace community within OceanDocs and would be managed by IAMSLIC.

- 3. Create one new repository that is jointly managed by IAMSLIC, IODE, and possibly FAO-ASFA with content merged from Aquatic Commons and OceanDocs.

IAMSLIC, IODE, and possibly FAO-ASFA would partner to create and jointly manage a new repository using DSpace software. Content from Aquatic Commons and OceanDocs would be migrated to the new repository and organized using DSpace communities for participating research institutions.

Survey Results

Forty-nine surveys were completed. The majority of respondents were IAMSLIC members (80%) but also included those involved in Aquatic Commons, OceanDocs, ASFA, and IODE (Figure 1). Most respondents (83%) had some repository experience (Figure 2), with DSpace and EPrints being the most commonly used (Figure 3).

Forty-seven respondents completed questions about their preference for the proposed models. Model 3 (joint repository) was ranked highest by 60% of respondents, followed by Model 2 (AC community within OceanDocs repository), with 28% of respondents (Figure 4). Model 1a (migration to new EPrints software) was ranked last. Results were similar for a subset of responses by 38 IAMSLIC members (Figure 5). Irrespective of repository experience, Model 3 was ranked highest followed by Model 2 (Figure 6).

The top five advantages of Model 3 (joint repository) selected by respondents who ranked it either highest or lowest were scope, costs, software and technical support, effort by depositors, and efforts by editors and/or administrators (Figure 7). A common response in the category of "Other" was the end-user experience. In the comments, respondents highlighted the *"positive effects for users and*

administrators,” “reducing efforts,” “a shared, well-branded product,” and “a first step for a future harvester.”

The top three concerns of Model 3 (joint repository) were governance, branding, and effort by depositors (Figure 7). “Other” concerns included metrics and the ability for unaffiliated researchers to deposit. In the comments, respondents highlighted that the *“repository title would need to reflect the wider coverage”*, *“everyone will need to cooperate”*, and that DSpace does not provide *“usage statistics as analytically”* as EPrints. Of note, governance was viewed equally as both an advantage (e.g., pooled efforts) and a concern (e.g., loss of autonomy, complexity to implement).

The top two advantages of Model 2 (AC community within OceanDocs repository) selected by respondents who ranked it either highest or lowest were the costs, and software and technical support (Figure 8). Model 2 is a *“cheaper, quicker, and technically-friendlier approach (model 2) than setting up something brand new and time-consuming.”* The top concern was governance. Comments included *“perceived IAMSLIC identity loss”* and *“possible confusion for searchers”*.

The final question asked about future roles for IAMSLIC should Model 3 (joint repository) be selected. The top roles identified were depositing, recruiting content, advisory role to ASFA & IODE, training, editing, and promotion and marketing (Figure 9). Fewer respondents chose funding, and technical development and maintenance, although three “Other” responses mentioned advising on technical development.

Recommendation and Next Steps

As a result of the comparison, survey, and discussion with stakeholders, the Aquatic Commons Board recommended Model 3 (a joint repository) subject to these issues being addressed first.

- Branding and scope (including deposits from individuals).
- Repository structure.
- Workflows and editorial review.
- Metadata crosswalks between AC, OD, and ASFA.
- Redirecting persistent links.
- Metrics.
- Harvesting.
- Partner roles, responsibilities and contributions.

During the conference, 23 attendees plus the IODE technical person (remotely) participated in small group discussions about three key issues related to a joint repository: branding, governance and costs, and DSpace software. The discussion was lively, and many good ideas were captured in a document that was shared with partners. Now a Joint Repository Working Group has been formed with members from the Aquatic Commons Board, OceanDocs Steering Group, and FAO-ASFA and has started working through the issues to create a roadmap for a new repository.

Acknowledgements

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like to recognize the efforts of IAMSLIC members who spearheaded, planned, implemented and operated Aquatic Commons throughout its history. They include, but are not limited to, Stephanie Haas (Founder of Aquatic Commons and Chair of the Aquatic Commons Implementation Task Force); Jean Collins, Ann Devenish, Snowdy Dodson, Peter Pissierssens, Pauline Simpson, Simon Wilkinson, and Steve Watkins (Aquatic Commons Implementation Task Force), and Joan Parker (former Chair of the Aquatic Commons Board).

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Table 1. Comparison of four proposed business models.

	1a. Maintain Aquatic Commons as a separate repository and upgrade to EPrints v3.4	1b. Maintain Aquatic Commons as a separate repository but migrate to DSpace software.	2. Migrate content to the existing IODE OceanDocs repository but retain Aquatic Commons identity by having a separate DSpace community.	3. Create one new repository that is jointly managed by IAMSLIC, IODE and possibly FAO-ASFA with content merged from Aquatic Commons and OceanDocs
Description	Aquatic Commons would remain as a separate repository managed by IAMSLIC and hosted by IODE. The EPrints software would be upgraded to version 3.4.	Aquatic Commons would remain as a separate repository managed by IAMSLIC and hosted by IODE. The repository would be migrated from the EPrints software to the DSpace software.	Aquatic Commons content would be migrated from its own repository that uses EPrints software to the IODE OceanDocs repository, which uses DSpace. Aquatic Commons would exist as a separate DSpace community within OceanDocs and would be managed by IAMSLIC.	IAMSLIC, IODE, and possibly FAO-ASFA would partner to create and jointly manage a new repository using DSpace software. Content from Aquatic Commons and OceanDocs would be migrated to the new repository and organized using DSpace communities for participating research institutions.
Governance	IAMSLIC retains complete control over the management and policies of Aquatic Commons.	IAMSLIC retains complete control over the management and policies of Aquatic Commons.	IAMSLIC retains some control over the management and policies of Aquatic Commons.	IAMSLIC works in cooperation with IODE and possibly FAO-ASFA on management and policies. Need to establish roles for each partner, and a plan of action should one or more partners need to withdraw.

Scope	Aquatic Commons includes all aspects of the natural marine, estuarine/brackish, and freshwater environments. OceanDocs focuses on marine research, but from the review of content, its coverage is much broader. Two repositories are confusing.	Aquatic Commons includes all aspects of the natural marine, estuarine/brackish, and freshwater environments. OceanDocs focuses on marine research but from the review of content, its coverage is much broader. Two repositories are confusing.	Aquatic Commons includes all aspects of the natural marine, estuarine/brackish, and freshwater environments. OceanDocs focuses on marine research, but from the review of content, its coverage is much broader. Both could be searched together through the one DSpace instance.	One repository that includes all aspects of the marine, estuarine/brackish, and freshwater environments, including ocean research and fisheries.
Branding	Aquatic Commons maintains a separate identity.	Aquatic Commons maintains a separate identity.	Aquatic Commons would have its own landing page as a DSpace community with OceanDocs but would no longer have its own domain. It may be possible to embed DSpace content into an IAMSLIC webpage but this would likely require programming.	IAMSLIC would no longer have its own repository but would instead be identified as a partner.
Costs (migration, maintenance)	Upgrading to the new version of EPrints will only take about 4 full days to be operational, but this is a costly model concerning ongoing maintenance (e.g., server updates, software updates, monitoring, special requests).	This model will cost at least double that of model 1a due to initial installation and migration to DSpace as well as ongoing maintenance (e.g., server updates, software updates, monitoring, special requests).	Although content must be migrated to the DSpace installation at IODE, there are no installation costs, and maintenance costs (e.g., server updates, software updates, monitoring, special requests) would be shared.	This model would require an initial investment by all partners to set up the joint repository and migrate content from EPrints to DSpace, but future shared maintenance costs (e.g. server updates, software updates, monitoring, special requests) would be reduced. For this model, ASFA would consider providing ongoing

financial support (subject to approval by the ASFA Board).

Software and technical support	IODE maintains both the EPrints installation for Aquatic Commons and DSpace installations for OceanDocs and OceanBestPractices requiring upgrades and developments to be done on two different types of software.	IODE already runs DSpace for OceanDocs and OceanBestPractices. Although migrating Aquatic Commons to a common piece of software may streamline the expertise required, it is still costly to maintain a separate DSpace installation.	IODE already runs DSpace for OceanDocs and OceanBestPractices, which means Aquatic Commons would benefit from future upgrades and development. In addition, IAMSLIC has a strong DSpace community that would facilitate the transition and use of the new software.	IODE could focus efforts on upgrading and maintaining one publication repository with possible integration from records in the ASFA index to full text in the DSpace repository.
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Effort by editors and/or repository administrators	<p>Aquatic Commons is managed by a Board that focuses on content recruitment, training and policies, and an editorial team that reviews deposits. OceanDocs governance is through the standard IODE project structure with a Steering Group advising a Project Manager and Technical Manager on content recruitment, training, policies, and technical development. Editorial review is lead by the Project Manager, but increasingly editorial responsibilities are assigned to the organizations so that they feel OceanDocs is their own institutional repository. Even so, at the higher level, this means that a small community of individuals is operating two similar repositories.</p>	<p>Aquatic Commons is managed by a Board that focuses on content recruitment, training and policies, and an editorial team that reviews deposits. OceanDocs governance is through the standard IODE project structure with a Steering Group advising a Project Manager and Technical Manager on content recruitment, training, policies, and technical development. Editorial review is lead by the Project Manager but increasingly editorial responsibilities are assigned to the organizations so that they feel OceanDocs is their own institutional repository. Even so, at the higher level, this means that a small community of individuals is operating two similar repositories.</p>	<p>This model does not resolve the issue of duplication of effort unless the Aquatic Commons Board and OceanDocs Steering Committee work together on policy development, content recruitment, metadata, training, editorial work.</p>	<p>Leverage the strengths of its partners and reduce duplication of efforts on policy development, content recruitment, metadata, training, editorial work.</p>
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Effort by depositors	Depositors must decide where to submit publications. Some choose to deposit the same Initially hosted in both Aquatic Commons and OceanDocs, creating duplication of effort for themselves and editors. Other depositors base the decision on scope, depositing publications related to the marine environment in OceanDocs and those on other topics in Aquatic Commons, thus fragmenting an organization's work.	Depositors must decide where to submit publications. Some choose to deposit the same publication in both Aquatic Commons and OceanDocs, creating duplication of effort for themselves and editors. Other depositors base the decision on scope, depositing publications related to the marine environment in OceanDocs and those on other topics in Aquatic Commons, thus fragmenting an organization's work.	A depositor could deposit a publication into one DSpace community and map it to the second one if desired.	A depositor could deposit into one repository.
End users	Need to search for two repositories.	Need to search for two repositories.	Ability to search Aquatic Commons and other OceanDocs communities simultaneously.	One repository to search.

Figures

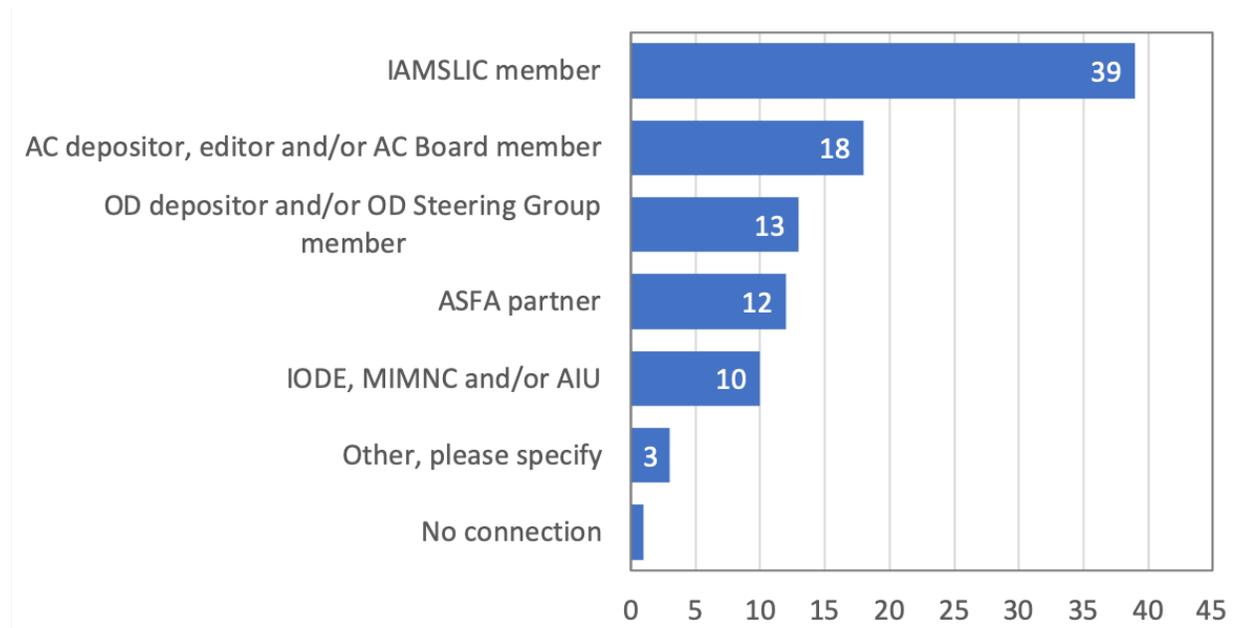


Figure 1. Survey respondents by affiliation (n=49). Note: respondents could select multiple answers.

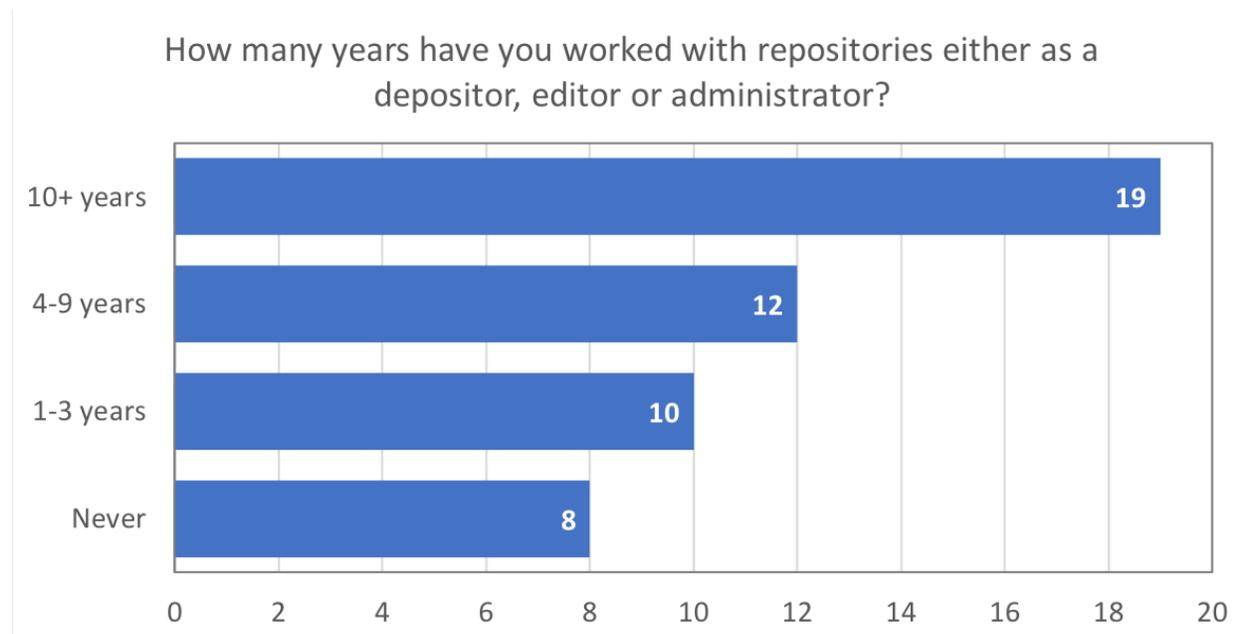


Figure 2. Survey respondents by experience working with repositories (n=49).

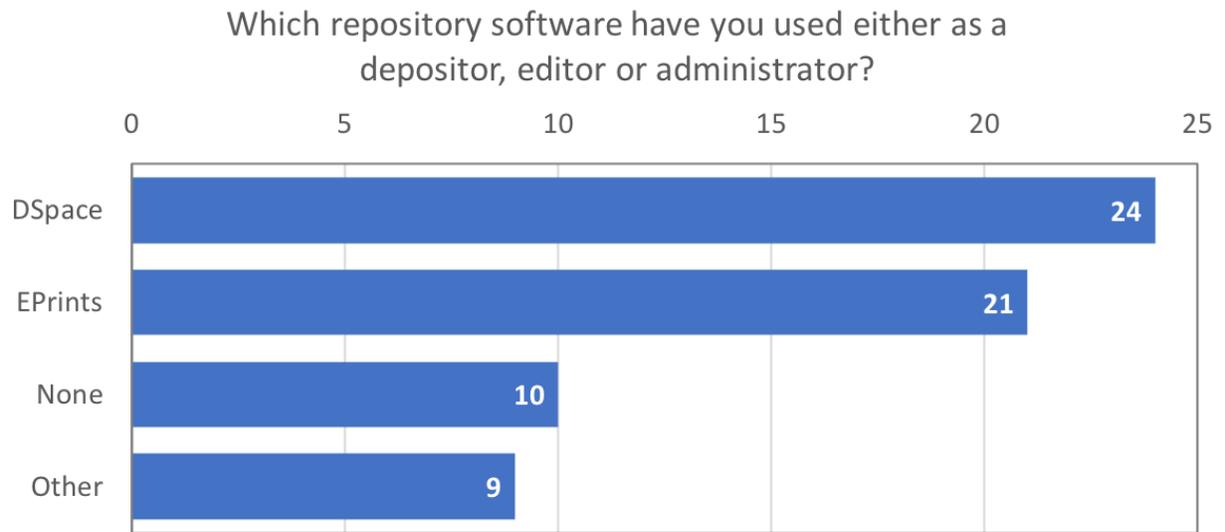


Figure 3. Survey respondents by experience with repository software (n=49). Note: respondents could select multiple answers.

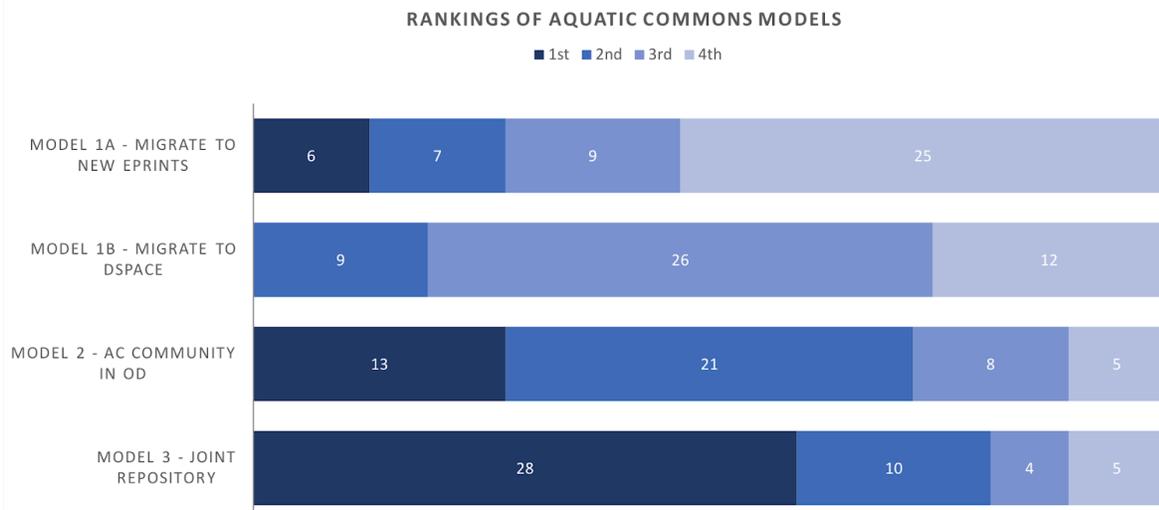


Figure 4. Ranking by all respondents of proposal models (n=47).

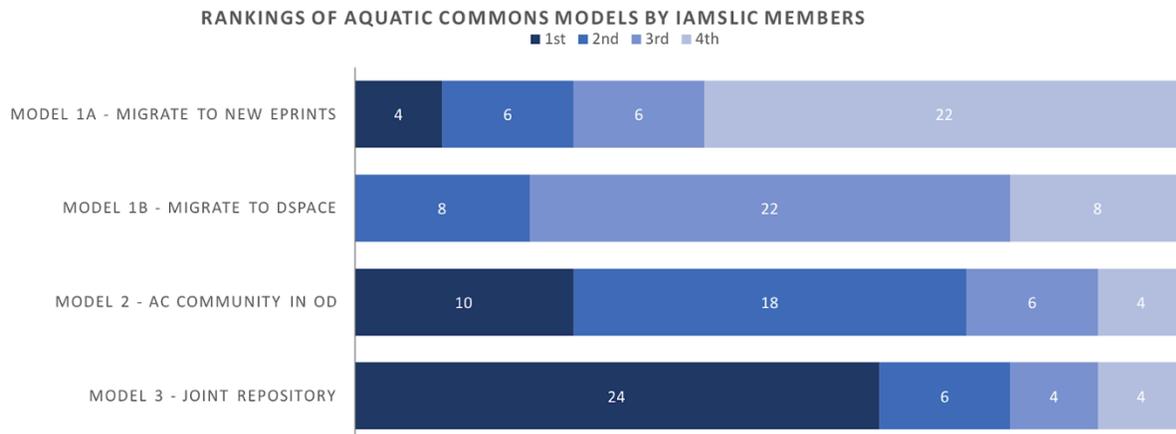


Figure 5. Ranking by IAMSLIC members of models (n=38).

	Model 1a	Model 1b	Model 2	Model 3
All responses (47)	3.1	3.1	2.1	1.7
No repository experience (6)	3.3	3.2	2.0	1.5
Has 1 - 3 years repository experience (10)	3.1	2.9	2.3	1.7
Has 4-9 year repository experience (12)	3.2	2.8	2.3	1.8
Has 10+ years repository experience (19)	3.2	3.2	2.3	1.4

Figure 6. Ranking of models by repository experience (n=47).

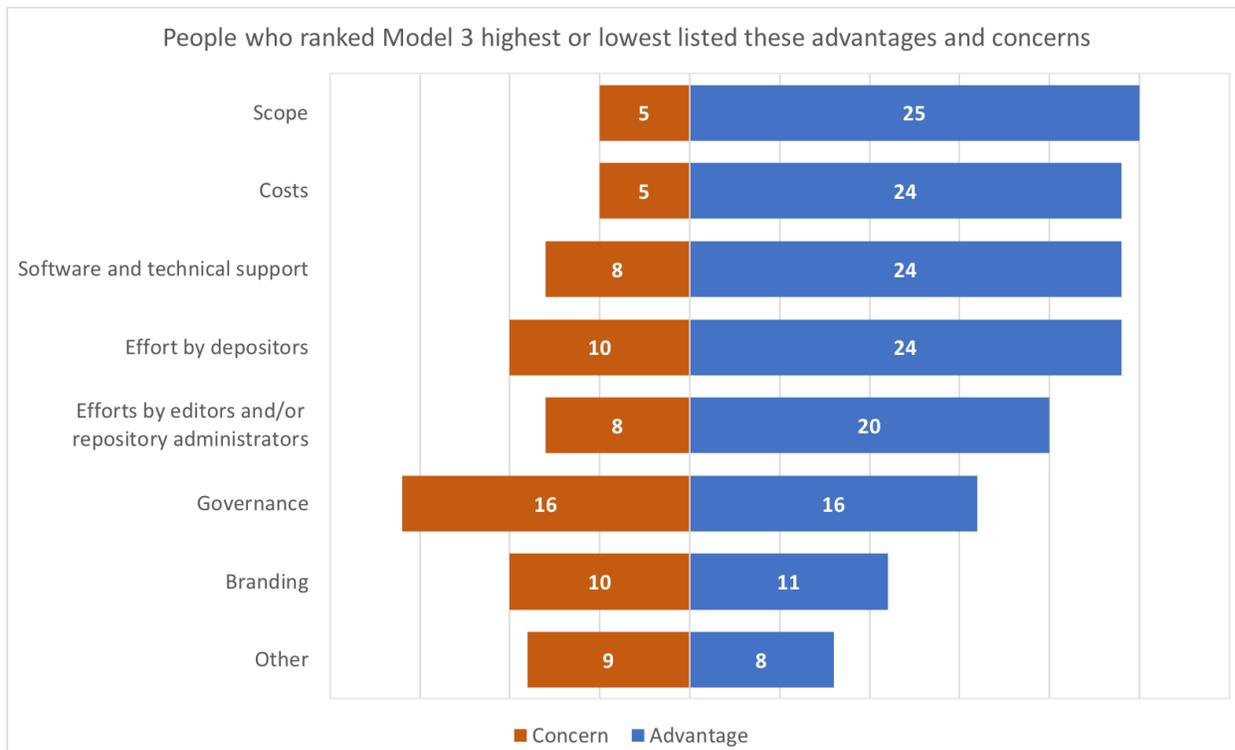


Figure 7. Advantages and concerns with Model 3 by respondents who ranked it highest or lowest (n=33).

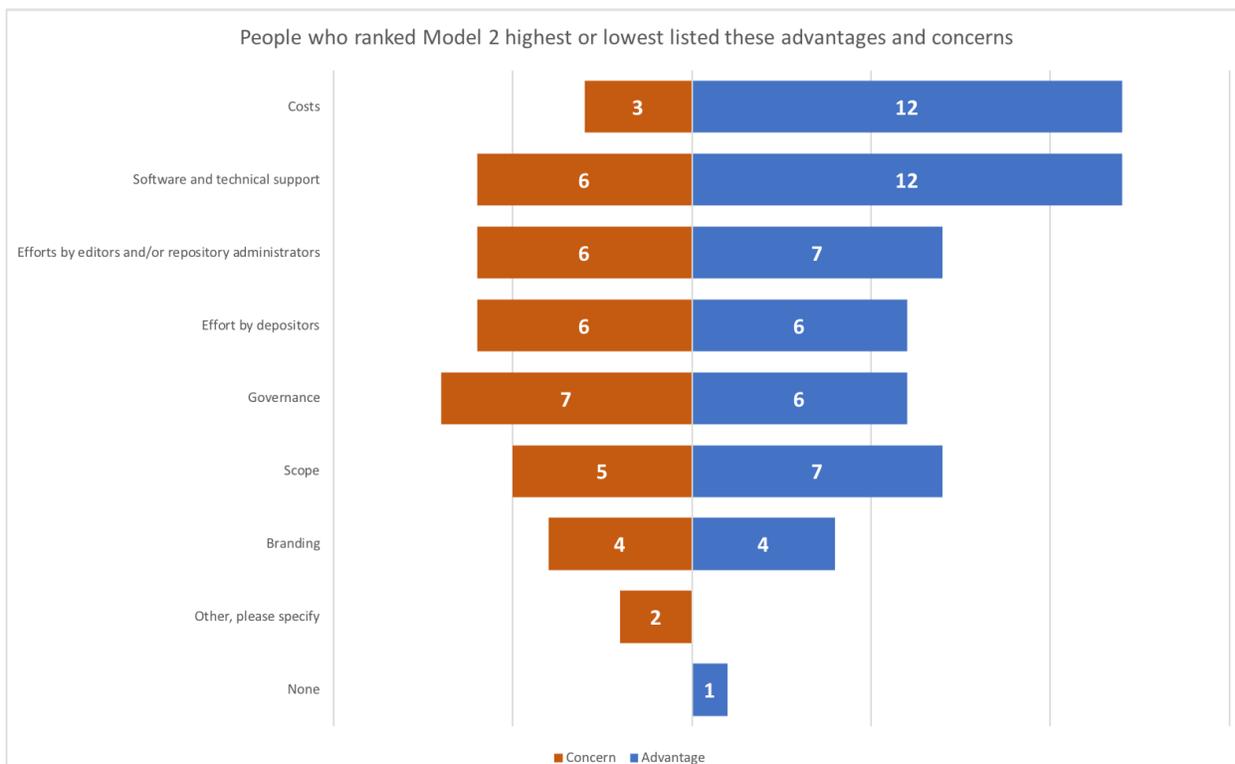


Figure 8. Advantages and concerns with Model 2 by respondents who ranked it highest or lowest (n=18).

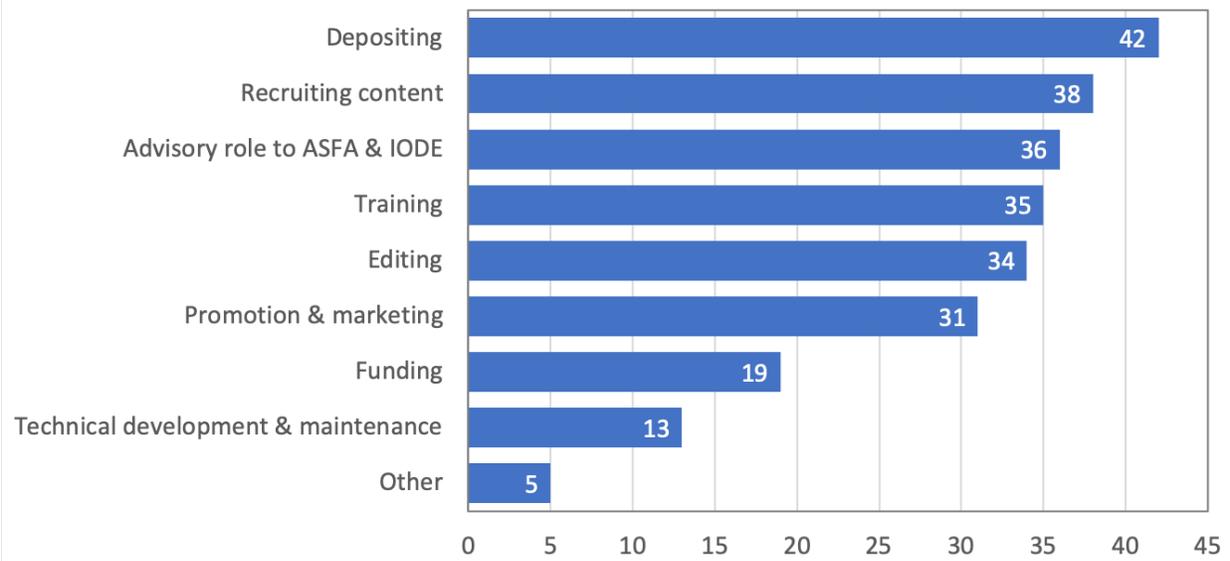


Figure 9. Potential roles for IAMSLIC with a new repository (n=49).