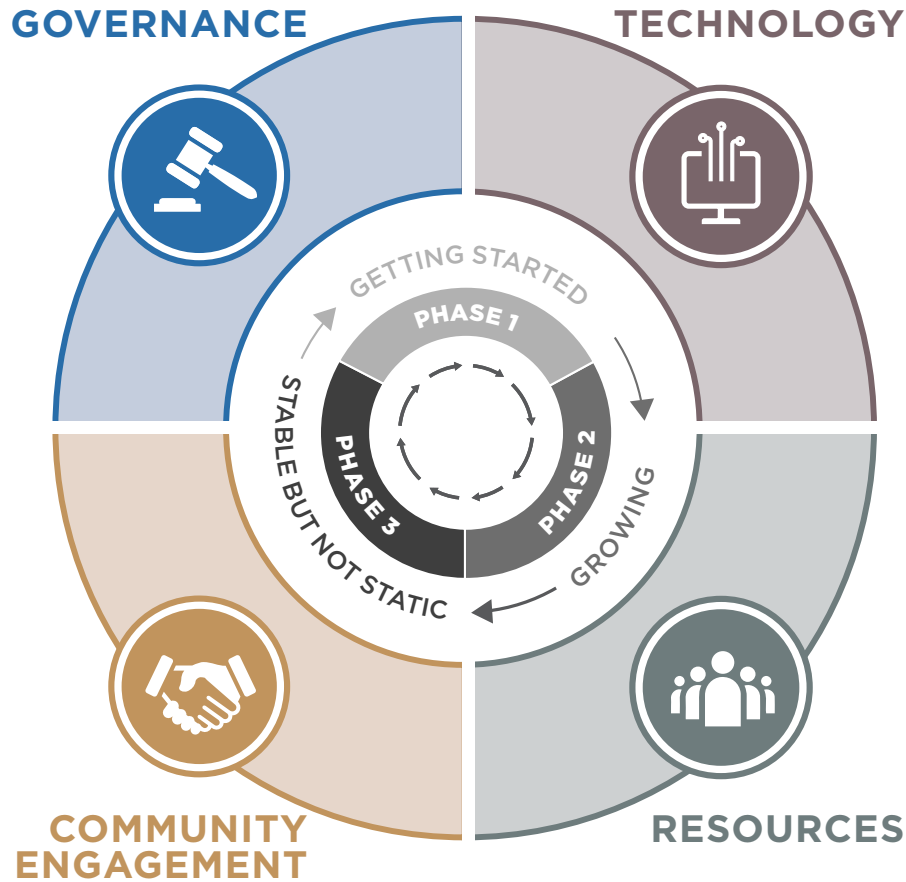# Sustainability Wheel

GOVERNANCE

Phase I: Establishing
Working with original engineers, project staff, or organization. Go to page 11.

Phase II: Stabilizing
Functional but limited in one or more aspects. Go to page 12.

Phase III: Evolving
Strong management structures; not necessarily formal governance. Go to page 13.

TECHNOLOGY

Phase I: Laying the Groundwork
In design, pre-release or early beta testing phase; small set of early adopters. Go to page 20.

Phase II: Expanding and Integrating
Have more than one public release. Go to page 21.

Phase III: Preparing for Change
In production, well-adopted, supported. Technology stack stable. May be looking to next generation. Go to page 22.

RESOURCES

Phase I: Creating Consistency
Funded by single organization, grant-funded or volunteer operated. Go to page 26.

Phase II: Diversification
Distributed resourcing; meeting expenses, small number of revenue streams. Go to page 27.

Phase III: Stable, but not Static
Diverse staff support and income streams; focused on long-range strategy. Go to page 28.

COMMUNITY ENGAGEMENT

Phase I: Getting Beyond Initial Stakeholders
Focused on primary stakeholders; lack of engagement with broader communities. Go to page 32.

Phase II: Establishing CE Infrastructure
Determining how to facilitate engagement that works for community. Go to page 33.

Phase III: Evolving CE
Established infrastructure to enable engagement. Go to page 35.

Facet: Governance

Phase I: Establishing Governance

Core Goal

Plan and implement the governance model or models that best reflect the values of the program and community.

Characteristics

Phase I programs are generally still working with their original software engineers, project staff, funder, or sponsoring organization. The application may not have end users yet, leading to a "good faith over governance" approach. Although it may be unclear what type of governance model a community wants or needs, making plans early in a lifecycle can contribute positively to a program's overall sustainability.

Governance is not one-size-fits-all.

Concerns and Roadblocks

Program staff may be concerned that governance will remove the decision-making process from the primary stakeholders or those who are doing the day-to-day work, slow down the pace of development, or that efficient operations will be bogged down in bureaucracy. These are legitimate concerns. It is critical to understand that governance is not one-size-fits-all. Programs must do the hard work of understanding what types of governance models are out there, and what the benefits and drawbacks of each are in relationship to the community they want to serve with the OSS program, in order to choose the approach that best serves the program and community.
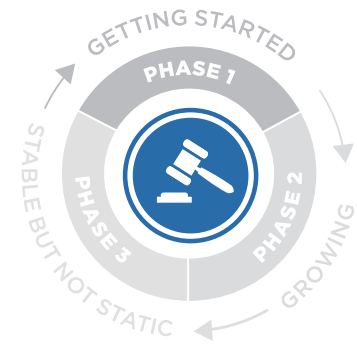
Moving Forward: Objectives

- **Define a need for governance**

  Program staff may ask and answer a series of questions to determine what type of governance structures are necessary, such as: Where is the program having issues that a consensus policy could help mitigate? Is there tension between functional and technical teams that requires a conflict resolution mechanism? Are potential code contributors unsure of the process? Do community members receive regular updates about the program? How is the community engaged with respect to governance and what role do they represent?

- **Review existing governance models**

  Examples of existing governance models to evaluate can be found in the resources section of this Guidebook. To learn about models in use at other OSS programs serving cultural and scientific heritage, reach out to their staff and community members – the participant list for the forum that led to this Guidebook is a great start (Appendix C). Consider convening an advisory group to assist with the governance development process.

- **Select the governance model that works best now for the program**

  Once the program's needs have been defined and governance options reviewed, draft a governance model. Put it to the test with use cases from the program's day-to-day work. Will the draft model provide pathways to solve the issues identified? It is okay to start small and evolve governance over time as needed.

- **Communicate changes to stakeholders**

  After the plan has been drafted and approved by the governance team, share it with program stakeholders, current users, and potential users. A governance plan should be easily findable and understood by the people it affects – users, contributors, funders, potential adopters, and others.

Facet: Governance

Phase II: Stabilizing Governance

Core Goal

Evaluate existing program governance to identify strengths and weaknesses, and determine whether current structures support the needs of a growing program.

Characteristics

Phase II program governance can best be described as functional, but limited in one or more aspects. Documented policies and procedures for community contributions, technical oversight, and budgeting exist, but often still exhibit a strong influence from program founders, funders, and/or specific staff or community members. Moving a program forward requires succession planning to ensure program continuity.

Concerns and Roadblocks

Governance is a balancing act. Governance adds overhead, and when a program is growing, it may seem like too much. Ceding decision-making authority to community members or advisory groups can lead to a loss of autonomy among program staff or sponsors. Governance can slow down the pace of development. Programs need a clear strategic vision for the application and community to properly evaluate whether governance policies and processes are contributing to the success and value of an OSS program or adding an unnecessary burden.

It is not uncommon for a program to outgrow its founding or sponsoring organization.
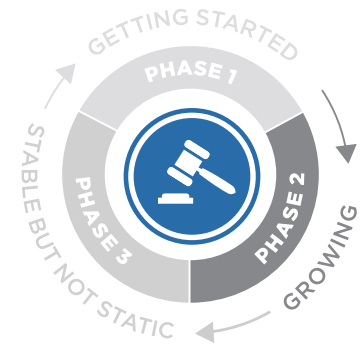
Moving Forward: Objectives

- **Document existing governance policies**

  Make sure that existing policies for code contribution, technical roadmapping, strategic planning, policy decision-making, etc., are all documented and available for the community to access and use. Even if you don't have formal governance in specific areas, documenting how program decisions are made is still a useful exercise and valuable for building trust within the community.

- **Evaluate each element of existing governance**

  Once you have proper documentation, ask staff and the community to evaluate if the structure and policies are working. Are the needs of critical stakeholders effectively addressed? If not, then why not? Is the policy resilient – would it still work if a key program or community member left? Have confidence in de-prioritizing, sunsetting, or changing the scope of governance policies that aren't working. It can often be helpful to look for outside advice to evaluate governance policies and processes.

- **Increase level of community engagement**

  To avoid an echo chamber where governance appears to be working because it is working well for the program team, look to increase the level of community engagement with the program. This may mean adding formal volunteer positions or advisory groups. Improved documentation may bring new contributors into the fold. Existing community members may be enlisted in outreach efforts to gather more program leaders.

- **Evaluate long-term home organization options**

  It is not uncommon for a program to outgrow its founding or sponsoring organization. Many open source programs explore expanding partnerships, or engaging fiscal sponsors or nonprofits to serve as home or sponsoring organizations providing administrative structure around program activities.

Facet: Governance

Phase III: Evolving Governance

Core Goal
Continue to evaluate and evolve the program governance model to keep up with new technologies, communities, and collaborators.

Programs should not confuse consistency with stagnation.

Characteristics
Phase III OSS programs benefit from strong management structures, although not all have formal governance. Many are part of umbrella organizations that provide the structures needed to move initiatives forward, such as marketing and communications, fiscal stewardship, and grant writing. Phase III programs generally have tried-and-tested business models, which lead to more predictability and a better ability to plan ahead.

Concerns and Roadblocks
Phase III programs often expand their focus outside – outside their country of origin for new communities and implementers, outside their domains for new partners and opportunities. With these shifts in focus, programs without strong management and governance structures risk mission drift or losing focus on core functionality. Governance must evolve to adapt to new cultures and languages.
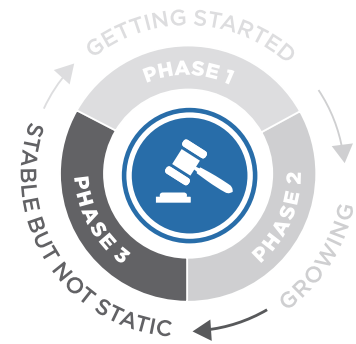
Moving Forward: Objectives

- **Support consistent structures**

  Consistent governance structures provide the community with a trusted place for making contributions of time, effort, and funds, and help new implementers overcome resistance to open source solutions at their institutions. It can be beneficial to have written "job" descriptions for Board members or other elected leaders, so that their responsibilities are clear, both to them and the broader OSS community. This also facilitates succession. Training opportunities for boards are available (e.g. BoardSource), and can be useful for those who are new to OSS program governance.

- **Continue to evaluate and evolve governance practices**

  Programs should not confuse consistency with stagnation. In order to support program expansion, new partnerships, and worthy collaborations, governance practices must evolve to meet the needs of growing and changing communities. Programs should continue to engage in regular evaluations of governance models as priorities, funding streams, and technologies shift.

- **Expand community participation in governance**

  Well established programs should ensure that their governance representation matches the makeup of their community and key stakeholders. It is easy to be dominated by a few well-funded community members. Having participants take on leading roles in working groups or councils can lead to senior leadership positions or "train-the-trainer" style onboarding for new participants in program governance, which can help mitigate this issue.

Governance Resources and Tools

- Benkler, Yochai. *The Penguin and the Leviathan: How Cooperation Triumphs over Self-Interest.* New York: Crown Business, 2011.

- "Boardsource Home." BoardSource. Accessed 1 February 2018. https://boardsource.org/.

- "Community Explorer." REALISE Project. Accessed 1 February 2018. http://fullmeasure.co.uk/REALISE/.

- Fay, Randy. "How do Open Source Communities Govern Themselves?" RandyFay.com. Accessed 1 February 2018. https://randyfay.com/content/how-do-open-source-communities-govern-themselves.

- Gardler, Ross and Gabriel Hanganu. "Governance Models." OSS Watch. Accessed 1 February 2018. http://oss-watch.ac.uk/resources/governancemodels.

- Resnick, Pete. "On Consensus and Humming in the IETF." Internet Engineering Task Force. Accessed 1 February 2018. https://tools.ietf.org/html/rfc7282.

OSS organizational homes and incubators:

- "Apereo Incubation Process." Apereo. Accessed 1 February 2018. https://www.apereo.org/content/apereo-incubation-process.

- "DuraSpace What We Do: Projects." DuraSpace. Accessed 1 February 2018. http://www.duraspace.org/whatwedoprojects.

- "Educopia Institute: Our Work." Educopia Institute. Accessed 1 February 2018. https://educopia.org/about-us/our-work.

- "LYRASIS Open Source Organizational Homes." LYRASIS. Accessed 1 February 2018. https://www.lyrasis.org/technology/Pages/open-source-org-homes.aspx.

- "Software Freedom Conservancy Projects." Software Freedom Conservancy. Accessed 1 February 2018. https://sfconservancy.org/projects/.

Governance documentation examples:

- "Apache Corporate Governance Overview." Apache Foundation. Accessed 1 February 2018. http://www.apache.org/foundation/governance/.

- "ArchivesSpace Governance Board and Councils." ArchivesSpace. Accessed 1 February 2018. http://archivesspace.org/governance-board-and-councils/.

- "Fedora Governance Model." Fedora. Accessed 1 February 2018. http://fedorarepository.org/governance.

- "MetaArchive Resources." MetaArchive. Accessed 1 February 2018. https://metaarchive.org/documentation-resources/.
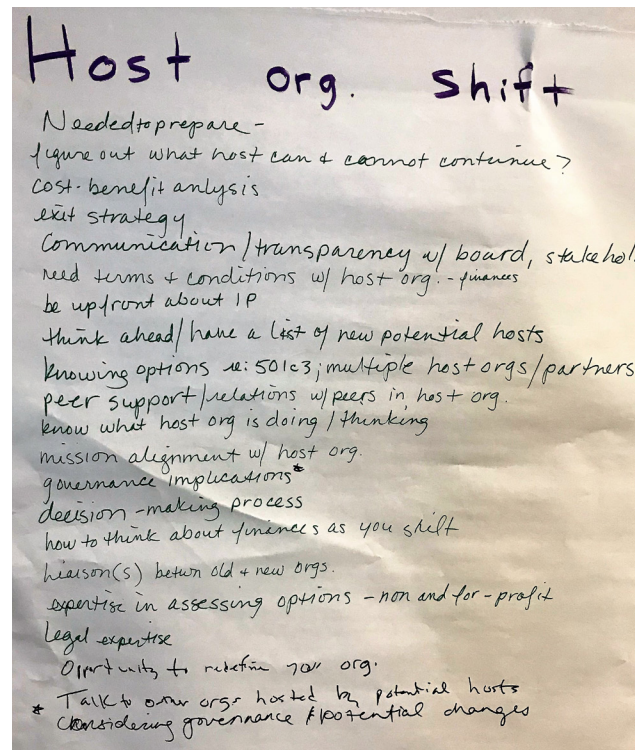
Whiteboard notes captured the forum discussion on governance and organizational shifts.

Governance Case Studies

Guidebook case studies provide first-hand accounts from forum participants about their program's work toward sustainability. Governance case studies are from the Islandora, Material Order, OLE, and VuFind programs.

Islandora

By Mark Jordan
https://islandora.ca/

Islandora's governance model offers opportunities for institutions and individuals to participate in the community at a variety of levels. Institutions can join the Islandora Foundation at the Partner, Collaborator, or Member level. At each of these levels, an institution commits to paying a membership fee but also earns the privilege of appointing a representative to the Islandora Foundation Board of Directors, the Islandora Coordinating Committee, and the Islandora Technical Advisory Group (the fee and the committee depends on the level of membership). Each of these bodies has a specific focus: the Board is primarily concerned with legal and financial aspects of the Islandora community, the Coordinating Committee acts as the operational governing committee for the Foundation's activities, and the Technical Advisory Group provides recommendations regarding Islandora's technical roadmap.

Individuals participate in other ways. The most common, and easiest, is answering other users' questions in the discussion groups. Other ways include testing bug fixes, joining the biweekly committers' calls, volunteering at an Islandora Camp, and becoming involved in the semiannual software releases as documenters, auditors, or release managers.

We find that this two-part model works well. Institutions can participate by helping support the Islandora Foundation financially (and gain a direct voice in governance at the same time), while individuals can become involved in the more general Islandora community in ways that require a variety of levels of commitment.

Looking forward, the Islandora Foundation is working on refining its strategic goals for 2018 so that they articulate achievable ways to improve our software and to strengthen and broaden our community. The new goals will highlight even more ways for institutions and individuals to participate in our community's governance and sustainability.

> "Institutions can participate by helping support the Islandora Foundation financially … while individuals can become involved in the more general Islandora community."

Governance Case Studies

Material Order

By Ann Baird Whiteside

https://wiki.collectionspace.org/display/deploy/Material+Order

The Material Order Consortium grew out of a collaboration between the Harvard University Graduate School of Design (GSD), the Fleet Library at the Rhode Island School of Design (RISD), and CollectionSpace to design a collection management system for materials samples collections. The team developed a Materials Profile in CollectionSpace based upon earlier work between GSD-RISD. The earlier work included in-depth studies of the GSD written Materials Classification Protocol, which developed into a broader and more relevant materials taxonomy and database schema. Key concepts of the taxonomy provide multiple points of access to meet material research needs – composition, form, properties, material ecology, process, typical uses, and associated geo-locations.

In 2016, we opened the doors to institutions hosting materials samples collections across the US with the statement that Material Order provides a community-based approach to management and access to design materials collections utilizing and developing standards and best practices. This includes an open source collection management database and an access system that allows searching across international materials collections to support research and applications in the design fields. Current work in 2018 includes bringing in additional collections, and the development of a user front-end.

As the GSD and RISD were developing the concept of a consortium of materials collections, we understood that we were entering into the development of an organization, and that we were going to require tools and processes to support a consortium if it is to be viable. We had team members who had previously been involved in consortia that shared technology tools, one project of which had high level structures around it (RLG) and the other which was very informal (one reason it did not survive over time).

In early 2016, we were led to a consultant who had strengths in identifying the needs of "start-up" organizations. We hired the consultant to help us map out the first few years of Material Order as a full consortium. Our work with the consultant helped us to articulate our vision and mission, and the scope of the consortium. Further work also outlined a complete organizational structure – governing structure, requirements for participation, benefits of participation, and intellectual property rights. We developed a governance structure that outlined charges for all potential sub-groups, operating principles, and deliverables – from the steering team through working groups.

For the year and a half after we drafted foundational documentation for the consortium, we felt that given we were

> "… Because we laid our groundwork in developing a framework early on, we have something to fall back on."

still only two organizations, the prescriptive structure that we had developed was unnecessary.

In the last year, we have had several institutions express interest in the consortium and we are in the process of bringing two new consortium members into the organization. This is leading us to think about governance issues again, and because we laid our groundwork in developing a framework early on, we have something to fall back on.

Having guidance as we started the consortium helped us think through how we want to work as a consortium, setting the stage for our future. In 2018, we will begin implementing some of the formal structure of the consortium as collective decisions will need to be made regarding further development.

Governance Case Studies

Open Library Environment (OLE)

By Michael Winkler
https://www.openlibraryenvironment.org/

The Open Library Environment (OLE) formed in late 2008 under funding from the Andrew W. Mellon Foundation and leadership from Duke University. OLE conducted community workshops to determine the interest in a community-supported, open source library management system to replace increasingly monopolistic market choices. The review of the workshops and input of hundreds of librarians found solid support and enthusiasm for an open source solution.

Encouraged by these outcomes, in 2010 OLE and a new set of partner libraries formed the OLE Partnership and sought further funding from the Mellon Foundation to pursue building a next-generation, open source library management system with utility and availability to libraries worldwide. The OLE Partners sought membership in the Kuali Foundation, a not-for-profit organization with a mission to deliver open source administrative software for higher education. The OLE Partners prospered under the administrative umbrella of the Kuali Foundation, adding five new members and developing and releasing our first production release in 2013. By 2015, three of the OLE Partners had deployed the Kuali OLE software to manage their libraries.

The OLE Partners adopted the Kuali community governance model that included a governing board of directors that oversees vision, goals, and resourcing for the partnership. OLE formed functional and technical councils to guide specifications and requirements for developing software. The Partners hired a project management team to coordinate the activities and operations of the project, with development outsourced to a commercial partner to provide velocity and deep software development expertise. The Kuali community was based on a buy-in model of membership and relied on participant institutions to bring sufficient capital to the project to underwrite the cost of software development. The OLE Partners fulfilled our budget requirements with a mix of grants and self-funding that mobilized over 7M USD by 2015.

In 2015, the Kuali Foundation community undertook a review of its open source business. Their Board determined that a new business model was necessary to improve software quality and uptake. The Foundation formed a for-profit corporation, KualiCo, to "professionalize" software development and implementation. While retaining an open source license going forward, Kuali software products would seek to have an exclusive relationship with KualiCo as the sole service provider. Further, the Kuali Foundation decided to stop development and support for the critical middleware component, Kuali Rice, on which Kuali OLE was developed.

These changes at the Kuali Foundation prompted a moment of reflection for the OLE Partners, assessing our community, our resources, and our software. We found that while we were successful as a community with over seven years of collaboration, growth and production, our software was difficult to implement and operate, we were missing critical functionality required to encourage further adoption of the software, and we had failed to internalize sufficient technical understanding of our software to allow delivery of our vision of modular and flexible software for widescale adoption. The decision by the Kuali Foundation to abandon the Kuali Rice middleware would require a complete refactoring of our software, and the OLE Partners had few available resources to begin that task. Additionally, the OLE Partners felt that the new Kuali business model did not match the OLE community's values for openness nor with the need to encourage a rich and diverse commercial support ecosystem.

Coincident with these assessments about the state of the Kuali OLE community was a new opportunity for collaboration through a partnership with EBSCO Information Services. Together, we have developed concepts for what has become the FOLIO project and community. FOLIO was to be a "green field" development thus addressing the technical debt resident in the Kuali middleware stack.

Governance Case Studies

Open Library Environment (OLE)
(Continued)

EBSCO and Index Data as partners bring new resources to blend with OLE resources to marshal sufficient capacity to undertake new software development. The FOLIO community model of wide inclusiveness and low barriers to participation – that encourages a growing and healthy ecosystem of librarians, developers, and service providers – matched OLE's concern about an exclusive business model. The remaining issue for OLE was to find a host organization to enable the collaboration and community ownership of the effort. The OLE Board developed a plan to take action. The plan, which we began in the spring of 2016 was to:

- Join with EBSCO and Index Data as founders of the FOLIO Project
- Leave the Kuali Foundation and form a new not-for-profit – the Open Library Foundation – with broad library services/collaboration mission
- Complete Kuali OLE software to provide sufficient stability and capability for implemented partners
- Implement a hybrid business model that combines cash and effort contributions from Partners

As OLE enters 2018, we have completed our pivot. Our partnership is strong and growing, adding three new partners in the second half of 2017. We are enthusiastic about our work in FOLIO and looking forward to software releases in 2018, and potential implementations in 2019. Our business model is still evolving, but we are adopting a hybrid model of mixing cash contributions with contributed staffing. The lessons that we learned during this hard turn can be summarized into several primary takeaways. OLE is powered by the commitments of its Partners. To sustain efforts for years requires a business model that is easy to join without extraordinary financial burdens on participants. It is important to encourage and reinforce deep staff engagement and invest in our own expertise in technology, functionality and leadership. OLE's experience demonstrates how the web of dependencies resident in complex networked applications can have dramatic impact on how a community is governed. OLE not only survived shifts in the environment and in our project, but prospered. I attribute this to the Partnership's commitment to openness and inclusiveness. For us, these were not simply platitudes, but formed the reservoir of strength that allowed us to hold together and support our partners who had taken a risk to implement the OLE code, to assess and endorse a pivot to the FOLIO project, and to empower the many functionalists and technologists within our partnership to take leadership roles and work together towards a more sustainable future.

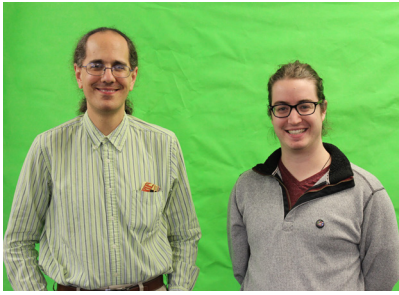*"It is important to encourage and reinforce deep staff engagement and invest in our own expertise..."*

Governance Case Studies

VuFind: Community History

By Demian Katz and Christopher Halberg
https://vufind.org/vufind/

The VuFind project began in 2007, when a team at Villanova University began developing an open source discovery tool, inspired by the faceted search capabilities of North Carolina State University Libraries' commercial Endeca system. The largely unsatisfactory state of most commercial OPACs at the time inspired substantial interest, and an informal community of developers quickly formed around the project.

Despite a strong start, the project faced a crisis shortly after issuing its first release candidate late in 2008: the project's lead developer, Andrew Nagy, left Villanova for another position and could not maintain the full-time effort of his former leadership role. While this scenario can kill a project, in this case, Villanova was able to hire another developer to continue Nagy's work. Demian Katz took over the lead role in July of 2009, and, with the support of Nagy and the existing community, was able reinstate a reasonably regular release cycle before the year ended, reaching a stable release 1.0 by July 2010.

Despite receiving the community's trust and support, Katz wanted to create a formal mechanism for community decision-making. After discussion on the project's mailing lists, the community decided to create an administrative decision-making group. Volunteers filled out a "skills survey" showing how they could contribute to the project, and an election was held to select administrators. By September 2009, a dedicated VuFind-admins mailing list was created to facilitate this group's decision-making.

This initial experiment with an administrative group proved largely unsuccessful, simply because there was insufficient conflict within the project to require a formal voting body. Problems were solved and decisions were made organically on the technical mailing lists, and the admin list stagnated.

A year later, VuFind held an in-person conference at Villanova University to discuss plans for the next generation of the software. This conference highlighted the importance of real-time conversation to the community and development process. To allow conversations started at the conference to continue on a regular basis, an online developers' call was established by November of 2010. This call quickly superseded the admin mailing list as the forum where major decisions were discussed.

The pattern established in 2010 has held to this day. Annual in-person meetings create the long-term plans that drive the VuFind project. Bi-weekly online calls create an open dialogue where developers and users report progress, discuss problems, share ideas and make decisions. A coding philosophy that welcomes additions that are modular and configurable also contributes to the success of this model. The contribution of ideas and code is encouraged when the core team focuses on improving all viable contributions rather than choosing which to include or exclude.

This inclusive, contribution-driven model is not without costs. While it does offload most of the steering away from the core team, it also brings a heavy code-review load. This can create a bottleneck when contributions are particularly complex. Additionally, the success of the project is dependent on the limited number of developers capable of performing critical review and integration work.

VuFind has been very fortunate to have the support of Villanova University funding core developers throughout its development. While there are no signs of this support waning, it would be irresponsible to count on it forever. One of the clearest future steps is to secure VuFind in an institutional home separate from its sole source of financial support. This may require some new ideas about governance and the development of succession-planning contingencies.

The success of VuFind to date is not an indication that formal governance is unnecessary; it is certainly conceivable that a situation could arise where the current informal system would prove to be a liability. Yet, this history does demonstrate the difficulty of establishing governance in the absence of a pressing conflict or need. When a community consists primarily of software developers working in a collegial environment, the focus tends to be on solving problems and meeting goals, and if this is happening organically, it is difficult to impose a formal structure on top of it in the absence of any external pressure to do so.