

DURASPACE™

2016-2017 Strategic Summary



It's all about balance.

Introduction

DuraSpace and the communities it serves are alive with ideas and innovative ways to meet the needs of the ever-expanding scholarly ecosystem that connects us all. Our far-flung community continues to contribute to the growth, advances and adoption rate of DSpace, Fedora and VIVO in 2016-2017. In addition, a growing subscriber base to DuraSpace hosted services is adding to an effective customer service best practices knowledge base while increasing DuraSpace revenues. We are grateful for our community's financial support, and for their engagement in the enterprise we share as we work together to provide enduring access to the world's digital heritage.

With your support our organization took two key opportunities to review and reset our strategic direction in 2016-2017.

The investigation into an intent to merge with LYRASIS during the first half of 2016 provided DuraSpace with a new lens through which to examine our internal business structure and practices. As a result an external SWOT analysis of our organization was launched in collaboration with the DuraSpace Board of Directors, staff, and community in late 2016.

We used this information to develop a 2-5 year strategic plan entitled, "An Agile and Sustainable Approach for Providing Enduring Access to the World's Digital Heritage, Duraspace Strategic Plan 2016 - Preliminary" [1], released in November 2016.

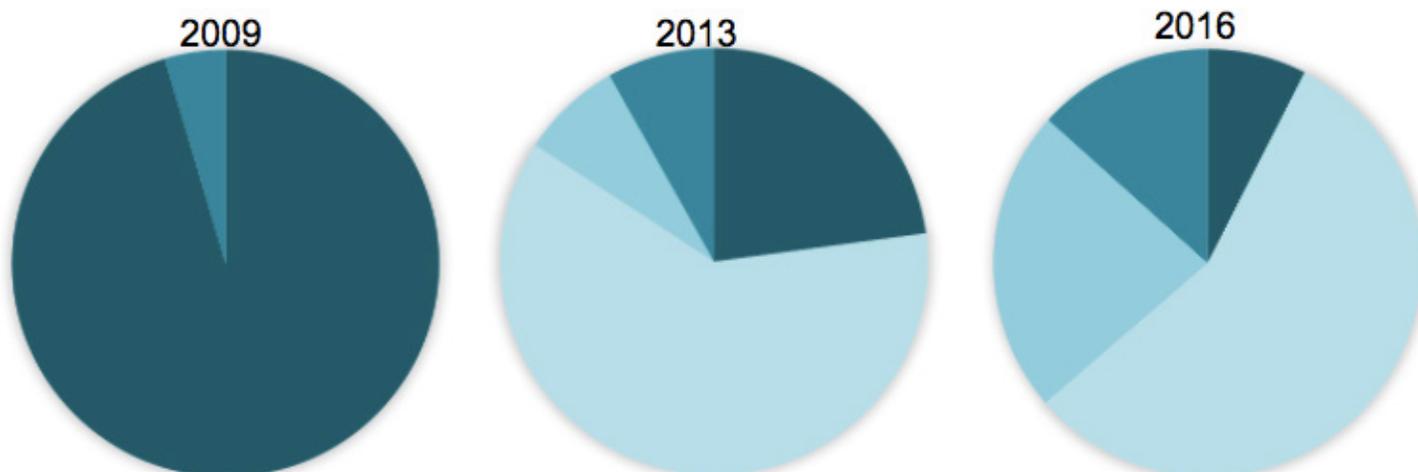
Evolving the DuraSpace business model

At the 2013 Member Summit Michele Kimpton, CEO and Jonathan Markow, CSO presented a business model based on this goal: "Continue to provide leadership in open source software development and collaboration, and develop revenue generating services to to complement our work." At that time membership covered 61% of total organizational costs. Kimpton and Markow laid out a progression of revenue models showing a progression of annual shifts in revenue sources (see below) aimed at diversification.

DuraSpace sustainability strategy is based on a "four-legged stool" support model consisting of membership dollars, grants and hosted services sales that include DuraCloud, DSpaceDirect and ArchivesDirect. In 2016 we laid the groundwork for adding onto the fourth leg of support for our organization and our community based on an external SWOT analysis [2] and a community nsurvey aimed at learning more

DuraSpace sustainability, 2011-2016

DuraSpace sustainability has evolved into a "four-legged stool" support model. The lightest blue on these charts represents community support, followed by the second lightest blue for services revenue—DuraCloud, DSpaceDirect and ArchivesDirect—the medium blue shows projects revenue, and the darkest blue represents support from grants.



Financial results, 2016

DuraSpace revenues grew by 14% or \$250,000 over 2015 with the biggest gain in Cloud Services revenue—up by \$132,000 over the prior year. At the same time DuraSpace expenses grew by less than 2% or \$37,000. A revenue increase of 13% is projected for 2017.

Service Revenue	\$475,446
Project Work	\$143,787
Membership	\$1,128,750
Registered Service Provider Fees	\$32,785
Grants	\$154,925
Other Income	\$131,857
Total Income	\$2,067,550
Staff	\$1,501,865
Support Services	\$40,609
Cloud Storage/AWS	\$160,692
Office Expenses	\$63,710
Travel	\$158,370
Marketing & Meetings	\$36,277
Total Expenses	\$1,961,522
Total Profit/Loss	\$106,028

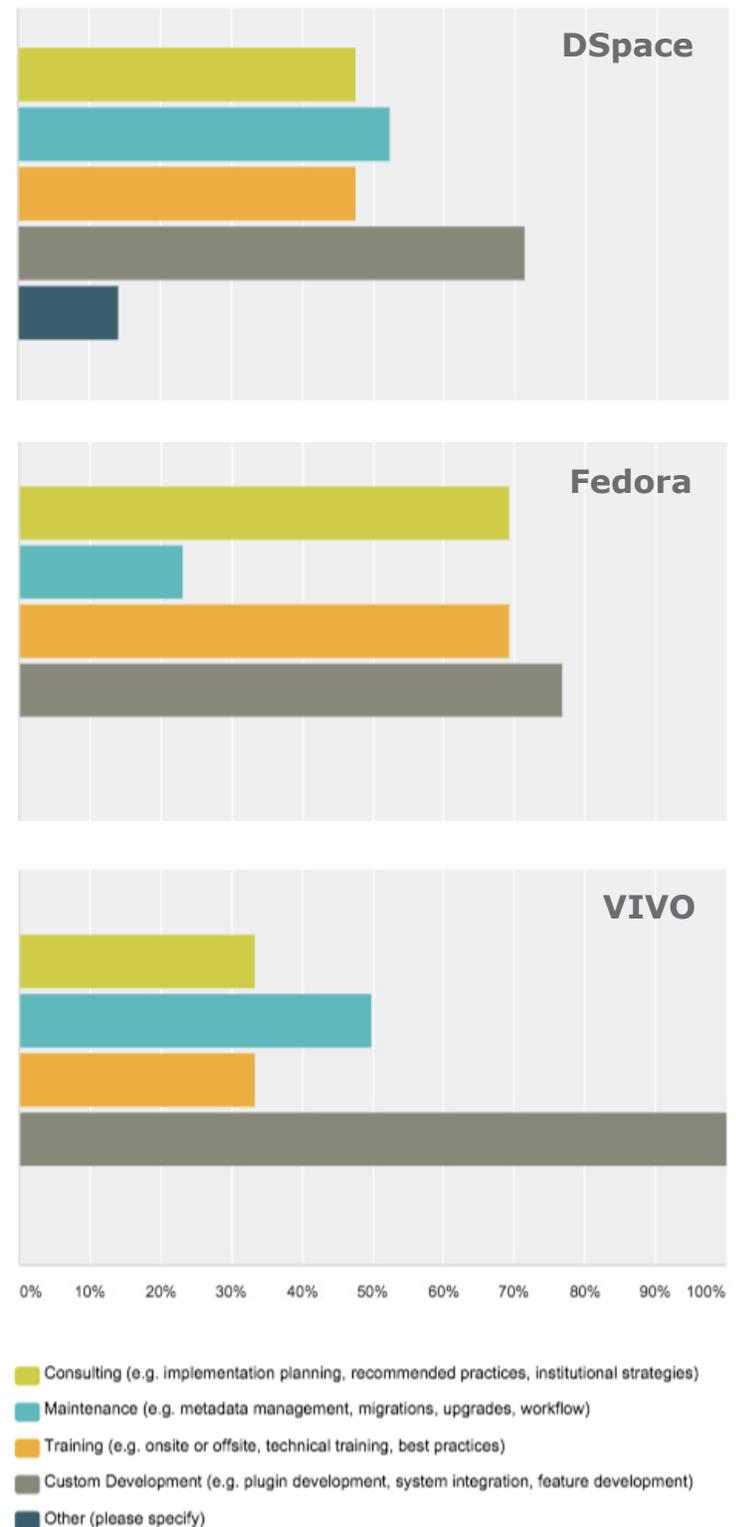
about how DuraSpace might better serve our community [2]. By increasing revenues based on consulting and contract services, DuraSpace aims to reduce the organizational operational support burden for our open source projects over a two-year period to 20% of direct project expenses. A 13% growth rate in revenue is projected for 2017. Half of that growth is derived from from services revenue and the other half represents grant funding.

Groundwork for change

In 2016 DuraSpace worked with our community to increase support and contributions to DSpace, Fedora and VIVO open source software development through our annual Membership Campaign, while also working to streamline reporting in order to closely track and analyze all business activities. In tandem, DuraSpace services including DuraCloud, DSpaceDirect, and ArchivesDirect were profitable in 2016. Also noteworthy is the fact that our valued members retain their memberships in DuraSpace from year to year at the rate of 91%. This combination of favorable results

Types of institutional support needed by project, 2017*

In a recent community survey respondents expressed a preference for institutional custom development support over consulting, maintenance or training services.



* Results from the 2017 DuraSpace Community Survey [2]

has set the stage for growth and diversification.

DuraSpace strategic objectives going forward were clarified in 2016 based on an internal review and adjustment of business practices and an external SWOT analysis. These activities culminated in publication of “An Agile and Sustainable Approach for Providing Enduring Access to the World’s Digital Heritage, Duraspace Strategic Plan 2016 - Preliminary” [1]

Business opportunities and diversified revenue streams

As our community grows and changes, we in turn are being called on to coordinate and share skills and resources more widely and efficiently. We continue to seek our community’s guidance on how we, a small organization, can help meet community challenges by

getting just a bit bigger, and working more effectively across projects, technologies and international communities.

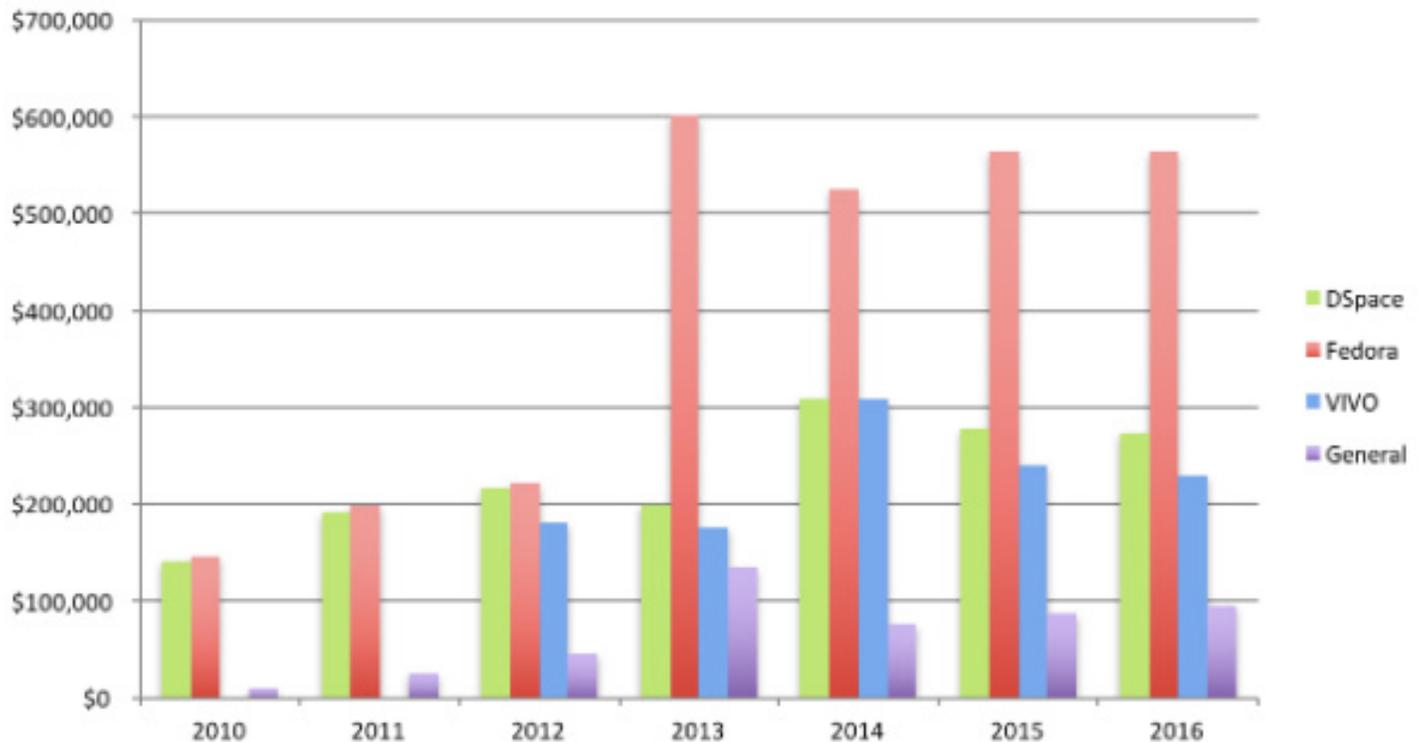
A internal work group is developing preliminary idea and next steps towards developing and tracking integrated business opportunities including consulting services and contract work. As part of that process a Community Survey [2] was conducted in Jan-Feb 2017 aimed at learning more about how DuraSpace might better serve our community. We are moving forward towards taking on contracted and consulting work where possible given the small size of our current staff.

In 2017 DuraSpace is actively pursuing collaborative opportunities to provide solutions to fill gaps in custom development, training, and consulting services as indi-

Community support trends over time, 2011-2016*

There has been overall growth in annual financial support from our community since the launch of the DuraSpace Community Sponsorship Program in 2010, growing from \$298K in 2010 to \$1,161,000 in the 2016 Membership Campaign. This trend represents a 3.5X growth in fundraising revenue since 2010.

Membership revenue was flat in 2016 compared to 2015 which illustrates the need to diversification of income sources.

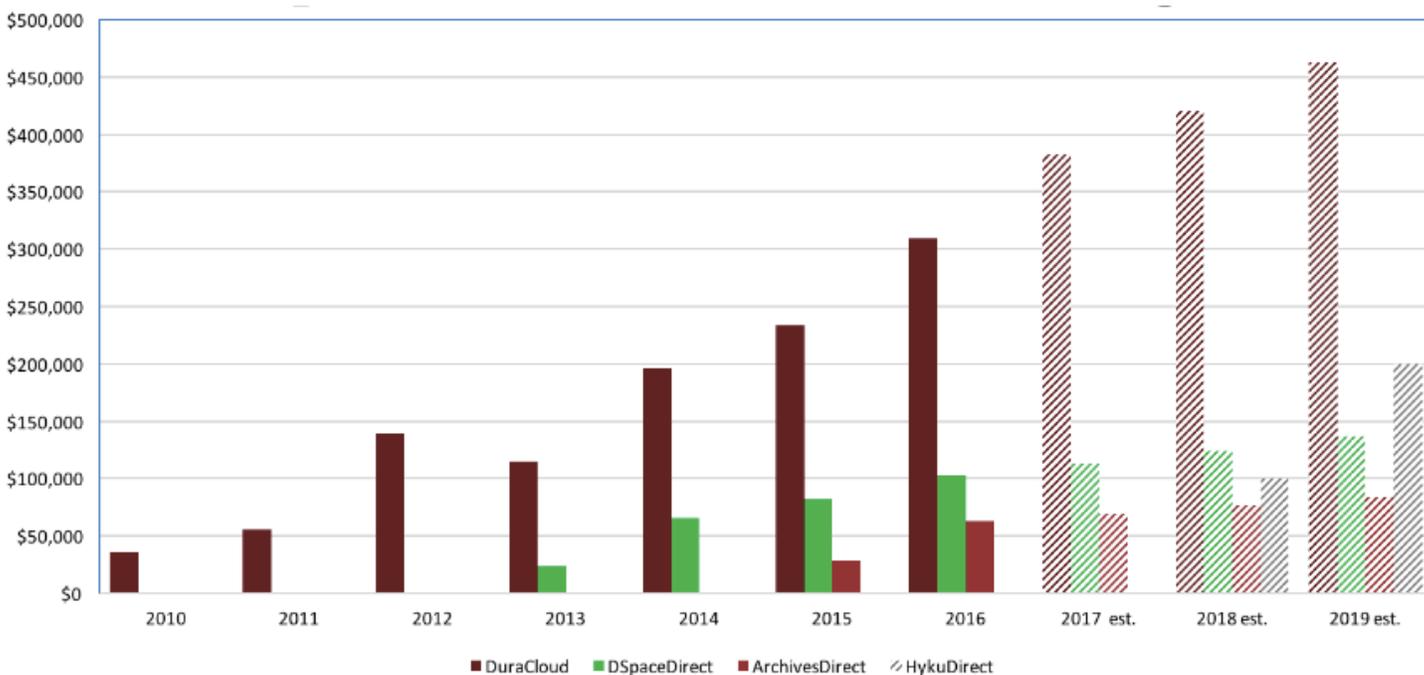


* 2010-2013 pre-dates project directed funding; amounts estimated based on detailed review of Sponsors/Members, Registered Service Providers and Corporate Sponsors.

Hosted Services Growth, 2010-2016

Strong growth of the combined suite of DuraSpace hosted services including DuraCloud, DSpaceDirect and ArchivesDirect has led to an estimate of projected DuraCloud revenue of more than \$450,000 by the end of 2019.

For the estimated years 2017, 2018 and 2019, DuraCloud, DSpaceDirect and ArchivesDirect are all assumed to grow at the rate of 10% each year, which is conservative given our experience in the last 2 years when hosted services revenue growth averaged about 25% year over year for both DuraCloud and DSpaceDirect.



cated by our community. These endeavors must align with our mission while sustaining and growing the programs and the DuraSpace organization as a whole.

International outreach

DuraSpace seeks to broaden and extend our reach to support efforts in the ecosystem to preserve and make accessible cultural heritage and academic resources globally. These assets should be accessible and usable by researchers of every stripe to advance interdisciplinary research and discovery around the world. Our reputation as experts in this field combined with our agility, suit us to influence rather than to take ownership of this work and to shape the efforts of community. While our small size and location just outside of academia positions us to adopt and respond to cultural and political shifts, it also makes us vulnerable financially and organizationally. Over the next two years the DuraSpace organization intends to grow large enough to sustain and grow operations internationally while at

the same time retaining the agility of a small organization.

Addressing the vulnerability of our small size and lean funding is chief among our goals in 2017. Over the next two years we will grow staff and operations with diversified revenue streams to sustain and grow the organization. At the same time, we want to retain a nimble approach to finding solutions, and maintain the confidence and trust of a community that has come to rely on the services and expertise we offer individually and collectively.

Extending DuraSpace membership benefits

The current business model that relies on membership funds to sustain our open source projects is not sustainable. Institutions in North America, our main contributors, are facing funding issues. Going forward we aim to develop strategies that will include our large

and growing international users of our open source software in the benefits of membership in DuraSpace.

We are engaged with several international groups as strategic partners including the Research Data Alliance (RDA), COAR and euroCRIS and ORCID. In collaboration we investigate opportunities to develop grant-funded revenue streams in support offering joint workshops and membership to increase both financial contributions and community engagement in community supported open source software development.

In 2017 we will hire a Business Development Manager to cultivate and deepen those relationships and partnerships, particularly with international organizations and consortia to elevate the organization's profile and to expand the services it offers.

Grants and partnerships

In 2016-2017 our focus has been on our ongoing collaboration with Stanford University Libraries and the Digital Public Library of America (DPLA) aimed at developing a new, national, library network through a community-based repository system, enabling discovery, interoperability and reuse of digital resources by people from this country and around the world. This work is funded by the Institute of Museum and Library Services (IMLS).

A Minimum Viable Product (MVP) release of the Hyku repository is planned for spring of 2017.

DuraSpace will use its expertise in developing digital services to construct and deploy the back-end systems for HykuDirect.

Work with the Digital Preservation Network (DPN) resulted in the launch of DuraCloud Vault in December of 2016 as the first DPN node for deposit of digital scholarly resources. DuraCloud Vault was developed in collaboration with Chronopolis.

We continue to work with Artefactual Systems by providing the ArchivesDirect hosted service. The service is built on top of DuraCloud and provides users with a robust preservation workflow plus long-term archiving in a single hosted solution.

Conclusion

DuraSpace will continue to provide a sustainable, equitable and effective home for innovative open source projects now and into the future, with an eye towards balancing strategic partnerships, community services and community governance with new opportunities to support our community and grow the capacity of our shared scholarly ecosystem. To achieve this DuraSpace is developing additional organizational revenue streams in 2017-2018 aimed at growing DuraSpace in a thoughtful manner, while at the same time giving back to our community.

It's all about balance.

[1] An Agile and Sustainable Approach for Providing Enduring Access to the World's Digital Heritage, Duraspace Strategic Plan 2016 - Preliminary

[2] 2017 Community Survey

Referenced documents are included.

An Agile and Sustainable Approach for Providing Enduring Access to the World's Digital Heritage

Duraspace Strategic Plan 2016 - Preliminary

October 2016

Introduction

Purpose

This document outlines opportunities and priorities for the next two calendar years and identifies resources needed to realize these goals. It is the result of internal assessment and external review and is a critical analysis of DuraSpace, its current programs, services, and activities.

Organization

This document begins with an executive summary, revised mission and vision statements, a summary of assessment activities findings, goals, continued assessment activities, and a conclusion. The assessment summary is divided into Strengths, Weaknesses, Opportunities, and Threats and each of those sections is divided into a three part narrative, the first *What I Hear*, is a distillation of the raw notes from the staff analysis, the second part *What I See*, is further analysis by the CEO, and *What Others Say*, reflects feedback from an external review by independent contractor, Declan Fleming¹. The term “projects” is generally used to mean activities that involve discrete work packages and require a budget such as software development. The term “partnerships” is used to mean efforts to build relationships with other individuals and organizations working in the same space in the ecosystem. While relationship-building activities have associated costs we often absorb these costs via indirect funds.

Executive Summary

The DuraSpace organization seeks to broaden and extend our reach to support efforts in the ecosystem to preserve and make accessible cultural heritage and academic resources globally. We want to ensure that these assets are not only made accessible, but that they are also used by researchers of every stripe to advance interdisciplinary research and discovery around the

¹ Declan Fleming conducted an independent SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of the organization. Declan selected ten individuals for an hour long Skype call. The calls started with getting an understanding of how the interviewees worked with DuraSpace, addressed their thoughts on SWOTs, then more broadly asked about their current and upcoming areas of interest in the digital library and data curation fields.

world. Our reputation as experts in this field combined with our agility, suit us better to influence rather than to take ownership of this work and to shape the efforts of community. While our small size and location just outside of academia positions us to adopt and respond to cultural and political shifts, it also makes us vulnerable financially and organizationally. Over the next two years the DuraSpace organization intends to grow large enough to sustain and grow operations while retaining the agility of a small organization.

Addressing the vulnerability of our small size and lean funding is chief among our goals. Over the next two years we will grow staff and operations with diversified revenue streams to sustain and grow the organization. At the same time, we want to retain the agility of a smaller organization and maintain the confidence and trust of a community that has come to rely on the services and expertise we offer individually and collectively.

We will pursue new strategic partnerships and opportunities more aggressively that will help DuraSpace to provide solutions to fill gaps in services, training, and consultation for the community to advance the shared mission to preserve and make accessible digital assets. These endeavors must not only align with that shared mission but must also be able to sustain and grow the programs and the DuraSpace organization as a whole.

To diversify funding to sustain and grow our organization we will achieve the following contributing goals:

- Secure grants to fund investigative work on newer technologies
- (Re)Connect with funders such as the Mellon Foundation, Moore, and NIH
- Seek relationships with for-profit organizations to sponsor development and conferences
- Identify organizations and opportunities we should pursue (and pursue them)
- Actively recruit and onboard other Open Source projects
- Expand hosted services to include HykuDirect, perhaps FedoraDirect, and VIVODirect and to sustain existing services
- Implement a Consultancy Business

In addition to diversifying our funding we want to promote greater autonomy of the projects by making it possible for them to have more control over expenses by implementing the following:

- Consider retaining savings from the position vacated by Jonathan Markow
- Attract and develop additional revenue streams to help share the common good burden
- Implement a fair and equitable common good tax model that taxes use of the common good services appropriately

Over the next two years, we will use several metrics to measure our success and to adjust our planning and resources accordingly. We will use a combination of quantitative and qualitative analyses to assess the fiscal health of each project and the organization, determine which

relationships and activities are perceived as successful and/or useful to the community; and to evaluate staff development and job satisfaction.

Benchmarks:

- Over a two-year period lower common good charges to 20% of direct project expenses².
- By 2017 document criteria for vetting potential projects and use it to pursue opportunities, documenting how well the criteria worked and adjust as needed.
- Increased adoption of tools worldwide and membership and services revenue that reflect this adoption. Secure funding for outreach to developing countries and for open technologies at government and consortial levels, with an emphasis on increased funding outside of North America, particularly leveraging DSpace adoption.
- Renegotiate MOUs with Project Hydra and DPN to reflect more accurately the cost of services plus a percentage to recover those costs and some small amount to reinvest in the organization. Currently we include 10% but we need to confirm that this is enough to sustain and grow the services.
- Identify one project per year to bring on board either by contracted service, affiliated project, or ideally as a full project.
- Realize some revenue from contracts for consultation services with organizations such as The Ohio State University, The Art Institute of Chicago, and others who have already approached us to advise on repository and preservation needs.
- Secure funding from IMLS or other agencies to address gaps in software development
- Complete market analysis and cost models for consultancy business.

A market analysis of the organization confirmed many of the findings of internal review. DuraSpace enjoys a solid reputation as an organization and its employees are individually respected as committed, knowledgeable professionals. However, some confusion persists as to the focus of the organization as a result of the diversity of tools for repository and preservation services it supports and champions. Community members noted that the small size and relative revenue stream put it at risk financially and organizationally. The community also expressed the need for leadership and consultation for repositories and preservation services on a larger scale.

Existing Mission statement

DuraSpace is an independent 501(c)(3) not-for-profit organization providing leadership and innovation for open technologies that promote durable, persistent access to digital data. We collaborate with academic, scientific, cultural, and technology communities by supporting projects and creating services to help ensure that current and future generations have access to our collective digital heritage.

² The Fedora Project Leaders talked with Michele Kimpton and the Board to set this goal prior to Debra H. Kurtz's arrival.

At the Fall 2016 retreat, staff brainstormed language to describe concisely what it is we do and what we hope will result from our efforts. The following statements attempt to communicate these ideas and will be used in future communications.

Mission Statement - What We Do

Working together to provide enduring access to the world's digital heritage.

Vision Statement - The Intended Impact of Our Work

We envision a world where information is shared, preserved, and used.

Assessment: Internal SWOT and PEST Analyses and External Consultant's Review

Strengths

What I Hear

Our greatest strength is our name, project brands, and reputation. We are a small but efficient and effective organizational home for repository, preservation, and research visualization and discovery, community-supported Open Source software, vetted by respected third party players in the ecosystem such as the Programmable Web, POWRR, and the Library of Congress. DuraSpace has developed a sustainable web services business model for providing these services for organizations who can't or don't wish to implement this software for themselves. Additionally, we are key players in national and global initiatives such as Open Repositories, SHARE, COAR, and NDSA.³ We provide the technical and human resources needed to incubate and develop software in support of this work. Our technology agnostic, mission-driven approach to collaboration advances the community's collective goal to preserve and make accessible the shared cultural heritage and academic record. The desired result is to promote use of these assets by a diverse and global user group to advance research and discovery across all boundaries. This approach benefits and complements the Open Source model, one that encourages participation and leverages the small, agile DuraSpace staff. Our success is a direct result of the stakeholder buy-in for OSS, a model that balances a more democratic process for engaging with technical talent and prioritizing development with the leadership and governance of high level professionals and institutions.

What I See

In addition to more measurable, tangible assets, the DuraSpace team has a strong sense of compassion and mutual respect for their co-workers. Many of our staff do or have volunteered their personal time and talents to support other community efforts such as local volunteer fire-fighting organizations, the Peace Corp, and their hometown churches. This altruistic sensibility informs how they work together to solve operational issues such as developing a tax model to equitably and fairly share the fiscal burden associated with overhead costs and to formulate strategies to integrate products and implement strategies for enterprise deployment of the suite of software we steward. We are often asked how our things fit together. We should

³ A longer list of activities Appendix B.

have answers that address community software needs.

What Others Say

“DuraSpace uses collective action to help break through barriers.”

In interviews, members of the community confirmed that chief among our strengths is our reputation. Our longevity in the field translates to very high brand recognizability and the transparency with which we operate, especially financially, has engendered trust. DuraSpace is seen as a strong partner, delivering high quality products using well regulated processes. DuraCloud, our foundational service offering, is highly regarded for its ability to make cloud storage possible for institutions who can't or don't wish to run preservation services for themselves.

Staff are respected as high quality, hard working, dedicated professionals. Key employees have long been active, visible, and engaged in the community and are collectively viewed as a transparent structure of “doers” who champion Open Source software and open culture. DuraSpace is seen as able to foster products without appearing to take them over or locking them down. Openness extends to communications strategies. There is no hidden documentation for products, and this engenders trust. DuraSpace is seen as a place where complex concepts can be discussed openly.

DuraSpace is regarded for products that apply to every research and cultural heritage institution in the world. The current membership depth affords an almost unlimited license to approach any institution with the confidence of being taken seriously. A global brand awareness and US location make us ideal for potential foreign partners who need a US presence.

Weaknesses

What I Hear

Our greatest weakness is our lack of sustainable funding. We do not have deep cash reserves, net revenue is thin and sources are not sufficiently diverse, and we have limited expertise in securing grants. While most of our membership dollars and coordinated activity is concentrated in North America, there is significant adoption and activity beyond this continent that is going untapped. This makes it difficult to conduct exploratory technical work and market research. In addition to financial limitations, our small and geographically dispersed staff makes it difficult to coordinate projects and integrate mindshare. We have staffing shortages in executive⁴, sales, and at the DSpace Product Manager positions. Losing even one staff member results in staff

⁴ Documentation of Executive activities and research is not readily available. This is not intentional and will be remedied. The example cited in the SWOT activity was documentation for the “Affiliate” program. There is no official program, affiliate describes the nature of a relationship negotiated by the Project Hydra Steering Committee and the CEO whereby services are contracted at an hourly rate plus 10% overhead costs and associated costs. An MOU was signed and archived. The MOU and the pricing proposal can be used to document an Affiliate program.

taking on greater responsibilities, sometimes with little understanding of the new role, spreading staff even thinner.

Coupled with the vulnerabilities of a lean staff, perhaps even as a result of smaller size, projects are not well-coordinated from an organizational perspective, making it difficult to provide a coherent digital scholarship research solution for customers from among the sometimes competing projects. We have few registered service providers outside of DSpace but rely on them to bridge service offerings for hosted Fedora and VIVO. This translates to a transfer of strategic technical knowledge and revenue streams to external organizations. The Open Source model itself can progress slowly as resources at member institutions become more difficult to direct toward code commitments. We have little understanding of markets outside of academia, leaving commercial and governmental data and repository markets untapped.

What I See

Even as we seek to expand our membership and adoption activities beyond North America to non-English speaking countries, our staff and most of the community we foster are not as diverse as would be ideal. There are nuances by project as to the level of diversity and almost all enjoy wide adoption beyond North America. However, while each may foster a diverse community of code committers, they all could benefit from greater diversity in their governance. If we genuinely believe that preserving the world's intellectual, cultural and scientific heritage is vital, we have to recruit, engage, and foster a more diverse workforce and community. Our hiring practices should include diversity statements and we should recruit for multilingual applicants to facilitate communication with community in the non-English speaking world.

What Others Say

Community members noted more operational weaknesses, many of which contradicted perceived strengths. For example, although we are known and respected for our product offerings, there is a perception that products overlap, which gives the impression of a lack of organizational focus. It is confusing to determine if the portfolio is holistic, or a collection of somewhat similar offerings. The website attempts to address this, but it needs clarification: a defined audience, a clear engagement point, and links among products to form an impression of a whole ecosystem. Some feel that DuraSpace services also receive a lesser degree of the support focus that goes into the other Open Source products and that they are treated more like experiments than a solid business offering.

Those surveyed singled out DSpace, its aging codebase, association with an expensive hosting service, and additional confusion about why it is being developed on a completely separate stack from the other offerings as significant product weakness. They expressed additional concern about the product development in general, that over-centralizing development efforts could lead to the community being less inclined to carry development weight at their institutions and wondered if more developers at DuraSpace could help produce better products. These impressions seem to be contradictory, but come from people at different types of organizations with different levels of control over their own products.

The similar names of some of DuraSpace and the products causes confusion, and much of the website's text is written for practitioners rather than decision makers. Fedora users tend to be very DuraSpace aware, but many DSpace users are not. This confusion also leads people to believe that DuraSpace is more than one organization, since the products often have distinct differences and communities. There is no clear indication of the ideal state for the customer.

A perceived messaging weakness is the lack of bold statements coming from DuraSpace leadership. A comparison was made between DPN's groundbreaking and controversial style, which garnered a lot of attention, versus DuraSpace's much more reserved approach. DPLA was also cited as having strong, proactive messaging.

Opportunities

What I Hear

The changing landscape of research in favor of Open Access and Open Data encourages local repository development and, in some cases, participation in national and consortial efforts. Research data sharing provides an opportunity for DuraSpace to prove ourselves as thought leaders in this space and perhaps become the eventual home for their related projects. This will require serious resources. Activities like SHARE, RDA, COAR, OpenAIRE and others might afford us opportunities for partnerships, grants, and other funding. This community has diverse needs and DuraSpace could be a catalyst to pull it all together.

Some opportunities are technical and specific such as Open APIs. More service providers recognize the value of Open APIs, making more data available to us and others, simplifying acquisition and metadata management. There is an increasing need for preservation and hosted repository services such as Hydra-in-a-box and DSpace. Additionally, there are opportunities to integrate our software with others in the ecosystem to address national and global needs. For example, there are discussions at SHARE about how to integrate the Open Science Framework with VIVO, Fedora, and Hydra to promote greater discoverability, preservation, and visualization of research outputs worldwide.

What I See

There are many global organizations using our software and, while we have ground to make up in turning that adoption rate into paid memberships, there are other opportunities to promote our work worldwide. We have recently been asked to participate in international programs and outreach including speaking at the Open Access Symposium this winter in Cape Town⁵ and are partners with Northwestern University Libraries to apply for funding to promote Hydra use and conduct training in the developing world. Previously, we have spoken in-person and virtually in South America and Europe about DuraSpace and our work in the Open Source community.⁶

⁵ We were unable to attend due to a lack of funding.

⁶ Selected DuraSpace international speaking events:

- CERN Workshops in Open Access Geneva, Sweden
- Innovatics Congreso Internacional Santiago, Chile

There are often unfunded mandates beyond North America to adopt Open Source solutions for repository software that provide both challenges for funding and opportunities for promotion. These mandates might also provide opportunities for grant-funding but careful consideration has to be given to post grant-funded sustainability to serve the community and the organization over the long run.

What Others Say

DuraSpace can speak to and aid executive decision makers in understanding the value of a repository that includes data and research outputs and profiles and why preservation goes so much deeper than backups. The organization has the central perspective to map out the ecosystem of digital services to help decision makers. This messaging needs to reach beyond DuraSpace offerings, detailing the relationships among the whole community, such as APTrust, DuraCloud, DPN, DPLA, and others in this space.

There are sectors in the community that could benefit from DuraSpace's help. Service providers are very difficult to find and vet, and tend to work in isolation. Individual contributors may be willing to code or consult, but are not organized properly to do so. DuraSpace could create and manage a resources co-op to link individual and group service providers to those needing help. This could start with low cost on an as-needed basis, then grow into something more permanent after assessment of effectiveness within the community and financial return. DuraSpace is already embedded well in the product side of the industry. To sustain long-term financial viability beyond a membership model, consider adding product and process consulting to the service offerings. This could be done with a combination of full time employees and by working with the co-op idea.

The digital library and data curation field has few central resources. Many efforts are local and duplicative. DuraSpace has the focus and scope to help coordinate these efforts, at least at the communications level. Many sub-communities exist in isolation - code4lib, Open Repositories, Hydra, Fedora, DSpace, and others.

DuraSpace's rich member base is an enormous strength. Leveraging the member base to help develop business ideas, perhaps during a focus session or track at the annual Membership Summit, is a key opportunity. Contract and grant partnerships could be proposed to more deeply align with our members. As a trusted entity that does not compete with the members, DuraSpace could also coordinate multi-institution grant efforts. Business development expertise among the members is a very rich resource that could be tapped quite cost effectively.

Community interview participants identified some practical advice such as, DuraSpace should refactor DSpace to allow for newer functionality and features, especially allowing the product to have a native understanding of data sets, and to capitalize on PCDM involvement to actively

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- International Semantic Web Conference 2016 Kobe, Japan
 - Scholars@Cornell will be presented at VOILA workshop
 - Danish Technical University Copenhagen, Denmark

foster other ontology development, especially for VIVO. Also, DuraCloud's Chronopolis offering's TRAC certification should be updated to the newer ISO 16363 standard. Tools like BagIt and Heritrix are widely used, but do not have a place to call home, and web archiving efforts are yielding more tangible preservation objects than most DAMS. DuraSpace could examine the market for services in this area.

Threats

What I Hear

Funding for our continued efforts is crucial and there are many threats to our current membership funding model. Many university administrators prefer what they perceive as greater accountability by software vendors. The budgets they manage are scrutinized if not cut annually and they often express difficulty in articulating the value proposition of Open Source and the DuraSpace suite of tools. At a national level, support for the Open Science and Technology Policy (OSTP) could wane as a result of the outcome of the presidential and congressional elections. Worldwide, more conservative, right-leaning politics do not appear to favor Open Source and/or membership activities. Brexit will have a negative impact on the British economy with rippling effects to the European countries and, it is feared, a latent, equally negative impact on funding for organizations that have or might support DuraSpace. The most immediate impact to the British economy is the decline of value of the pound to the dollar resulting in a 10-20% increase in membership costs for UK institutions. Internally, we have lost or will lose key staff in our hosted services and executive positions. This attrition will make it challenging to provide consistent service to existing customers while planning and executing newer revenue generating projects.

While the US economy seems to be recovering, overseas economies are less robust due to costs of war and conflict, support for refugee resettlement, and Brexit. In addition to Brexit, there are other issues and elections up for vote in the EU including an Italian constitution referendum, Dutch, French, and German executive elections, and European Members of European Parliament elections. All of these may present a challenge to the stability of the EU, and therefore question the funding models of European research institutions. The developing world doesn't have resources that the rest of the world has and must be addressed differently.

Although the dollar is currently strong against other currencies, state support of institutional funding continues to drop. Our membership drive, the largest portion of our revenue, is tied to academic year which makes it challenging to schedule messaging and activity in down periods.

What I See

Many in the academic community favor supporting Open Source technologies because they can influence the direction of the development and exist in a culture that often also champions Open Access/Science/Data. However, the various tools often compete with one another for funding and the stewards of these software solutions fail to distinguish between the tools to help the community determine which is a best fit for their organization. CIOs and administrators at

universities and colleges often favor vendor solutions because they perceive greater accountability by the companies providing them.

What People Say

Threats for DuraSpace break down into three categories: Competition and Marketplace Confusion, Business Model, and Products.

There are other players in the same space who could be perceived as DuraSpace replacements: BePress, Atmire, DPC, DPN, LYRAsIS, figshare, OCLC, Preservica, and other commercial entities like Oracle. Because of high overlap with DPN, Chronopolis, and APTrust, there is marketplace confusion about where to invest time and funds for preservation. The Center for Open Science's OSF offerings cause further market confusion because they seem to be a repository with very esoteric service additions. While DuraSpace makes using the cloud easier than going directly to AWS or other cloud providers, cloud storage is becoming more mainstream and easier to use without a service layer.

A membership model depends on goodwill and is always vulnerable to economic downturn and changing institutional priorities. There is also significant overhead involved in billing and growing the membership body. Much of the sector that DuraSpace markets to, especially in cultural heritage institutions, is poorly funded in the US. Efforts to stay lean limit internal growth, and any staff departure leaves a large hole to fill. Legal restrictions on content and the lack of strong internal legal expertise can threaten opportunities.

DSpace's older code base, especially when compared to Fedora's recent rewrite, has some of the userbase worried that a better replacement could come along. VIVO's main use cases have very demanding data needs that often require significant effort and expertise across an institution to adopt successfully. Finally, while DuraCloud's Chronopolis offering is TRAK certified, that certification is becoming dated.

Goals

Diversify funding

While our small size makes us more nimble it also makes us vulnerable. We aren't staffed or funded to take on more investigative work that might result in viable products and services which in turn leads to more funding from diverse sources. Our primary goal over the next two years is to grow staff and operations with diversified revenue streams to sustain and grow the organization. At the same time, we want to retain the agility of a smaller organization and maintain the confidence and trust of a community that has come to rely on the services and expertise we offer individually and collectively.

To accomplish this goal, we will have to diversify and build revenue streams by achieving the following⁷:

- Secure grants to fund investigative work on newer technologies
- (Re)Connect with funders such as the Mellon Foundation, Moore, and NIH
- Seek relationships with for-profit organizations to sponsor development and conferences
- Identify organizations and opportunities we should pursue (and pursue them)
- Actively recruit and onboard other Open Source projects
- Expand hosted services to include HykuDirect, perhaps FedoraDirect, and VIVODirect and to sustain existing services
- Implement a Consultancy Business

Secure Grant Funding

DuraSpace currently leads efforts to secure an IMLS grant to fund a national digital platform. As a small not-for-profit we better positioned to coordinate the proposal writing process and later the development work leveraging the status of R1 institutions as the primary investigators. Aspirationally, we would like to grow our reputation to win grants as the primary investigating organization.

Seek Relationships with For-profit Organizations

The digital ecosystem includes all manner of organizations including for-profit companies. We sponsor and attend many of the same projects at these companies. We need to seek relationships with them for mutual benefit and to pursue sponsorship dollars.

Identify Organizations and Opportunities We Should Pursue

To expand our reach and increase our influence, we need to engage with strategic partners. Our objectives are twofold: 1) To grow the user base, fostering a larger community and membership base; and 2) to collaborate with the people who are building the future world of preservation and digital asset management to increase the mindshare and promote thought leadership.

We will endeavor to build partnerships by achieving the following:

- Identify the gaps in the communities in which we operate
- Coordinate the relationship management across projects and services
- Focus initial efforts on top five candidates:
RDA, SHARE, EuroCRIS, COAR, and ORCID⁸

Desired Outcome: Increased adoption of tools worldwide and revenue that reflect this adoption. Greater mindshare and thought leadership resulting in grant funded work, hosted services, and

⁷ Complete list of revenue opportunities can be found at Appendix A

⁸ Complete list of potential partners can be found at Appendix B

increased use of software. Measures could include funded outreach to developing countries, funding for open technologies at government and consortial levels, and increased funding outside of North America, particularly leveraging DSpace adoption.

Actively Pursue Other Open Source Projects

While there are few, if any projects, in the ecosystem that come with significant funding, DuraSpace is in discussions with various organizations to see if they are a good fit.

We have committed to recruiting additional projects by achieving the following:

- Identify projects that align with our mission
- Articulate the vetting criteria for evaluating opportunities

Staff identified criteria for vetting potential business opportunities for organizational fit, technical viability, and fiscal sustainability. A group of staff are in the process of documenting them in greater detail and will post criteria by January 1, 2017.

The principal criteria include the following:

- Aligns with our mission
- Advances our vision
- Must cover the cost of our work and provide funds to reinvest in the organization
- Show evidence of sustainable under our business model
- Prove technologically sound

Expand Hosted Services

The IMLS funded Hydra-in-a-Box work to implement a new repository service, HykuDirect concludes in November 2017. At that time, the service should be self-sustaining and directing some funds back to development. DuraSpace can use this experience to build services around other products such as Fedora and VIVO.

Implement a Consultancy Business

DuraSpace aims to leverage our reputation and expertise to provide consultation on preservation, repository, and data and research management to a variety of institutions. Our end goal is to expand and provide these services to administrators such as CIOs, university presidents and chancellors, and ministers of education and research in organizations outside the United States. While the end goal may not be wholly achievable in the span of this strategic planning cycle, we can realize significant progress.

In order to build a successful consultancy we will have to accomplish the following:

- Take on existing consultant opportunities
- Conduct market analysis to target sales
- Cost services affordably but competitively

- Develop billing infrastructure and workflow

Desired Outcomes:

- Q1 2017 Renegotiate Affiliate Status relationship with Project Hydra to reflect cost of services plus a fair percentage of costs to reinvest in the organization. Review MOU with DPN to cost services fairly, affordably and so they contribute to the sustainability of DuraCloud, the service on which the node access is built.
- Q2 Secure funding from IMLS Digital Platform Proposal
- Q2 Market analysis and cost models complete for consultancy business.
- Q3 Consultancy business model complete, contracts in line.
- Q3 2017 Realize some revenue from immediately available consulting opportunities.
- Q1 2018 Identify one project per year to engage in the vetting process with the long-term goal to bring one project into the incubator program.

Provide projects more control over expenses

DuraSpace has evolved over several years and a few funding models. The most recent is the three-legged stool model where membership fees, services, and grants and contracts combine to provide revenue to fund software development and promote exploratory work. Progress has been made to improve the predictability and transparency with the budget process and this work has revealed some questions about how to share common good costs more fairly and more equitably⁹. Other questions have been asked and answered about what constitutes common good and how those costs are currently shared across business units.

Over the next year, we will work to bring common good costs down and spread the burden more fairly and equitably by some combination of the following:

- Consider retaining savings from the position vacated by Jonathan Markow
- Attract and develop additional revenue streams to help share the common good burden
- Implement a fair and equitable common good tax model that taxes use of the common good services appropriately

Desired Outcome: Over a two-year period lower common good charges to 20% project revenues.

Ongoing Assessment

Over the next two years, we will use several methods to measure our success and to adjust our planning and resources accordingly. We will use a combination of quantitative and qualitative analyses to assess the fiscal health of each project and the organization, determine which relationships and activities are perceived as successful and/or useful to the community; and to evaluate staff development and job satisfaction.

⁹ DuraSpace and the Governing Board have begun to use “common good” to describe indirect and overhead expenses. The 2017 Budget will include language to clarify what is meant by common good and where those expenses will be incurred.

Financial:

- Profit: Both gross and net profit margin
- Cost: Reduce and manage costs
- Membership metrics: New/lost/upgraded/shifting project members by region/country
- Membership:
 - Measure fundraising goals over the number of years the program has been in place;
 - Show variance between fundraising goals and actuals
- Cash flow: Manage timely collections and bill payment to ensure positive cash flow
- Line of Business (LOB) Revenue Vs. Target: Compare actual revenue and projected revenue
- Re-examine all costs associated with hosted web services and refine product pricing
- LOB Expenses Vs. Budget: Compare actual overhead with budget

Communications and Marketing

- Review and report monthly web, publications, and social media metrics to focus marketing decisions
- Send out an annual survey to services customers and software users to learn more about how satisfied they are with services and software and follow-up with selected interviews to learn more about their satisfaction level
- Number of services customers: Determine the number of services customers we've gained and lost, and how many have upgraded/downgraded their subscription or storage amount
- Number of members: Determine the number of members gained/lost and how many members have changed their membership affiliation and/or usage of the software

Organizational:

- Integrated mindshare: review timesheets and tally hours spent by staff on activities outside their primary project work, a very simple first step towards measuring how much effort we are expending to integrating mindshare
- Employee Satisfaction: Measure employee satisfaction through surveys and other metrics

Community:

- Collect metrics on global code contributors: Count contributors for each software release and their geographic location

- Collaboration: Measure DuraSpace's participation in ecosystem activities such as DPN, SHARE, COAR, and Open Repositories by counting presentations, meetings attended, and working group activities DuraSpace staff participates in annually

Conclusion

Internal assessment and external review confirm that DuraSpace has accomplished much with few resources. We are trusted stewards of Open Source Technologies and champions of all things Open Access. We aim to expand and extend our reach in these areas over the next two years. To do that we have to increase our financial resources and grow our human resource capacity. We should approach these efforts to grow in tandem, building revenue streams to pay for staff both as permanent employees and contractors. Ordering growth activities one before the other (building revenue before recruiting staff) creates a kind of causal challenge in that the organization also needs staff to do the work necessary to bring in new projects and other opportunities for revenue. It is a delicate balancing act and we have been very intentional in the last year about living within our means but careful budgeting is only part of the equation. We have to have room and resources to experiment with technologies and business opportunities.

The answer may be to apply the same iterative process of action followed by assessment to inform and adjust course that we use in software development to grow the organization. We can set a conservative goal to increase revenue by 10% each year of the or roughly \$220,000 additional revenue each year through a combination of grants, contracts, and new services and projects and we will pursue following opportunities in the next year:

- Submit IMLS National Digital Platform grant proposal to increase Fedora 4 adoptions
- Pursue contract work with The Ohio State University and AIC and create consultancy business based in part on the experience
- Strengthen relationships and renegotiate MOUs with Project Hydra and DPN
- Perform cost analysis of current hosted services to exceed current cost recovery model
- Implement new hosted services HykuDirect and perhaps FedoraDirect, and VIVODirect

Revenue from these efforts will fund additional staff needed to provide technical support, operations infrastructure, communications and marketing, and to pursue other opportunities. In the next year, we will grow services large enough to employ a full time services specialist, now currently a half time contractor. We will also recruit a professional with business development experience to round out the executive staff. As we bring on new contracts, grants, and hosted services we will hire or contract technical staff to support and grow the respective services. We will also need to build the capacity to hire full time project directors for DSpace and VIVO.

We will assess progress quarterly and work with the projects leadership and the governing board to evaluate these opportunities and identify and pursue others. As we expand the organization, we will need to work collaboratively with members of the board to help us think critically and creatively about how to leverage existing resources as we build revenue, operations, and capacity.

APPENDIX A - REVENUE OPPORTUNITIES

OPPORTUNITY NAME	RELEVANCE TO MISSION	ESTIMATED REVENUE (Forthcoming)
Member Summit with CNI	Coherence with other non-profits, extends reach to other desired members	
Hydra-in-a-box - Hosted Service	Open Source Repository Software that promotes discoverability and preservation of digital record.	
Hydra - Affiliates	Open Source Repository Software that promotes discoverability and preservation of digital record	
VIVODirect	Open Source Research Profiles hosted service	
VIVO Training	Similar model to Fedora Camp	
<p>Editoria - Partnership of Partnerships</p> <p>UC Press and CDL are jointly at work building a non-commercial, end-to-end content and workflow management web application for managing the production of scholarly monographs, called Editoria. “An Open Source solution for managing a university press's or library publisher's pipeline of scholarly titles, and help make the production of monographs more cost effective overall.”</p>	<p>Open Source Publishing Workflow Software that promotes creation of more affordable scholarly material.</p> <p>Challenges us to address needs of community that don't and will likely never have a pool of developers to build and maintain software.</p>	

<p>The Collaborative Knowledge Foundation developed the software application, and development efforts are well underway.</p>		
<p>DPLA - Co-membership Drive</p>		
<p>ORCID - Consortial Memberships</p>	<p>Promotes standards, discoverability of materials in repositories, profiles, and data management systems.</p>	
<p>IMLS Digital Platform, Duke, UVA, Stanford (Fedora)</p>	<p>Open Source Repository Software that promotes discoverability and preservation of digital record</p>	<p>\$500K (2 engineers at DuraSpace)</p>
<p>Mellon Avalon hosted service, Northwestern, Indiana</p>	<p>Open Source Repository Software that promotes discoverability and preservation of digital record</p>	
<p>Northwestern Corp Sponsors - Developing world outreach (Fedora and Hydra)</p>	<p>Open Source Repository Software activities that target the developing world to facilitate adoption of OSS and to ensure its sustainability.</p>	

APPENDIX B - LIST OF POTENTIAL PARTNERS DISCUSSED AT FALL BHR 2016

VIVO Partners:

Ciencia PR, FAO United Nations, Horizon 2020, OpenAire, Casrai, Orcid, Symplectic, Thomson Reuters, Clarivate, NISO, SciENCv, Sura, NISO, OpenRIF, JISC (future), sciENCv, RDA (future), COAR (future), GunterMedia Services, USDA, EuroCRIS, CTSA Consortium, AgriVIVO, LinkedData4libraries, AIRI, Deep Carbon Observatory, NCAR, Digital Science, W3C HLCS, CrediT, StarMetrics, Share, Center for Open Science, Force11, W3C Prov, OCLC, Mozilla Global Science, NY State Climate Change, Microsoft, Elsevier

Fedora Partners:

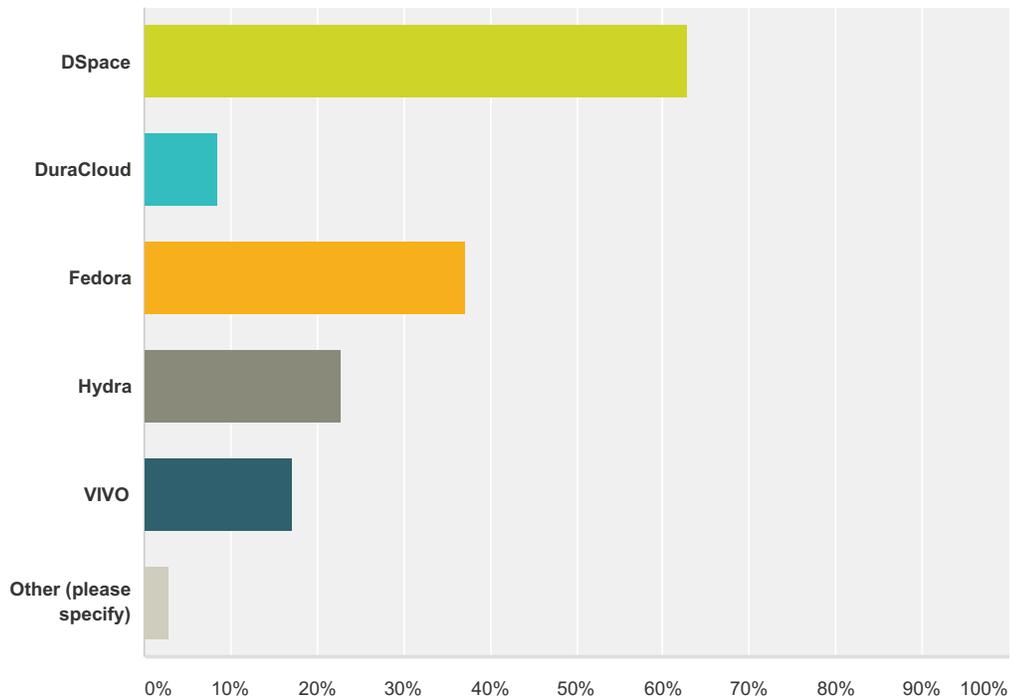
RDA, COAR, W3C, CNI, IIF, SHARE, OSF, JISC

Services Partners:

DPN, APTrust, DLF, Chronopolis, PASIG, Artefactual

Q2 For which repository, solution or technology do you require support? (check all that apply)

Answered: 35 Skipped: 0

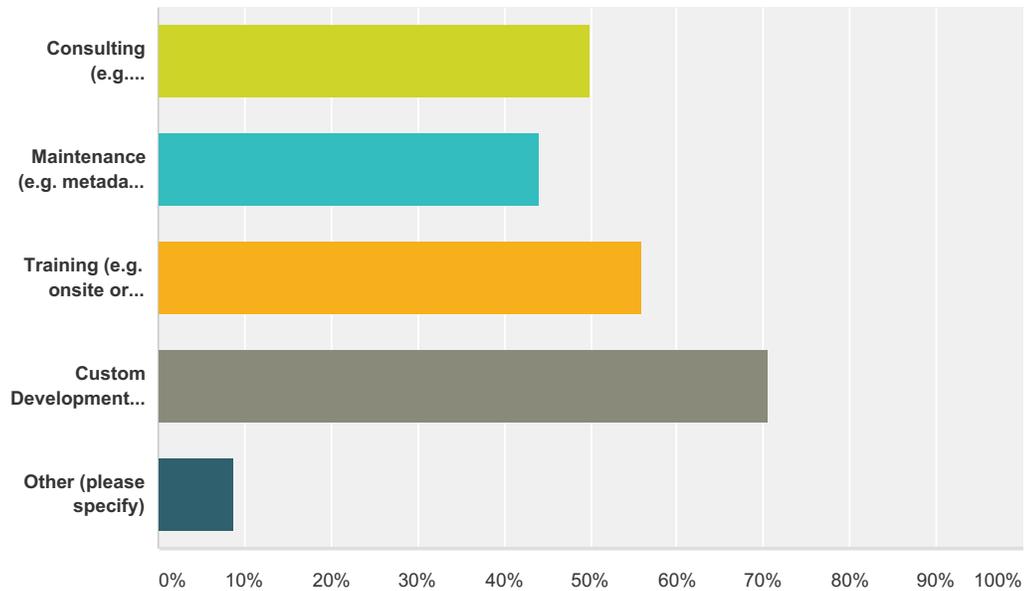


Answer Choices	Responses
DSpace	62.86% 22
DuraCloud	8.57% 3
Fedora	37.14% 13
Hydra	22.86% 8
VIVO	17.14% 6
Other (please specify)	2.86% 1
Total Respondents: 35	

#	Other (please specify)	Date
1	Islandora	2/13/2017 8:56 AM

Q3 Which type of support would your organization benefit from? (check all that apply)

Answered: 34 Skipped: 1



Answer Choices	Responses
Consulting (e.g. implementation planning, recommended practices, institutional strategies)	50.00% 17
Maintenance (e.g. metadata management, migrations, upgrades, workflow)	44.12% 15
Training (e.g. onsite or offsite, technical training, best practices)	55.88% 19
Custom Development (e.g. plugin development, system integration, feature development)	70.59% 24
Other (please specify)	8.82% 3
Total Respondents: 34	

#	Other (please specify)	Date
1	Hosting	2/13/2017 9:47 AM
2	Help with occasional problems	2/13/2017 9:40 AM
3	Open Metrics, in relation with COAR Interest Group	2/13/2017 9:29 AM

This survey is aimed at learning more about how DuraSpace might better serve our community

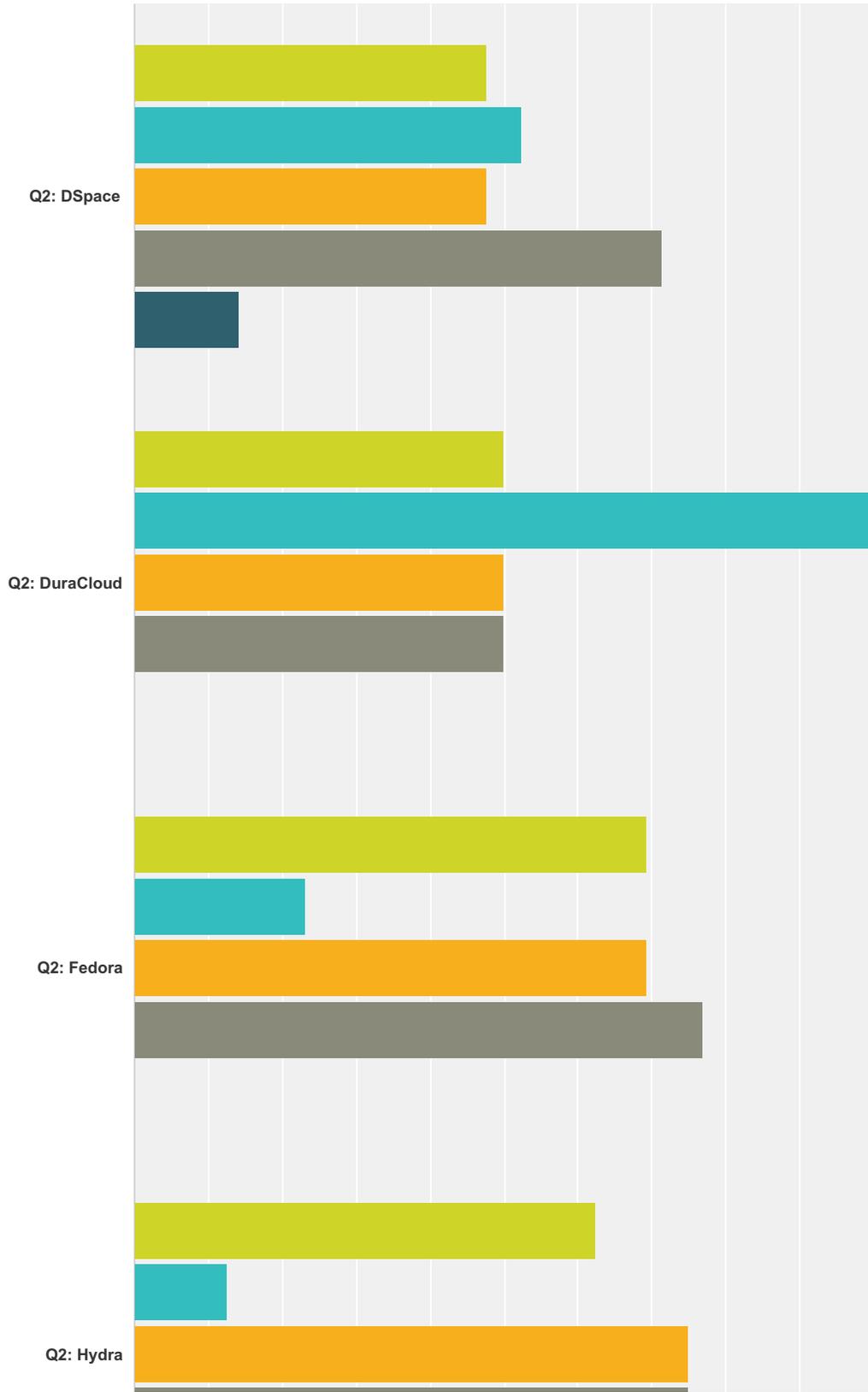
Q4 Are there other ways that we can help you develop, manage and maintain your digital infrastructure? Please share with us what you need help with.

Answered: 10 Skipped: 25

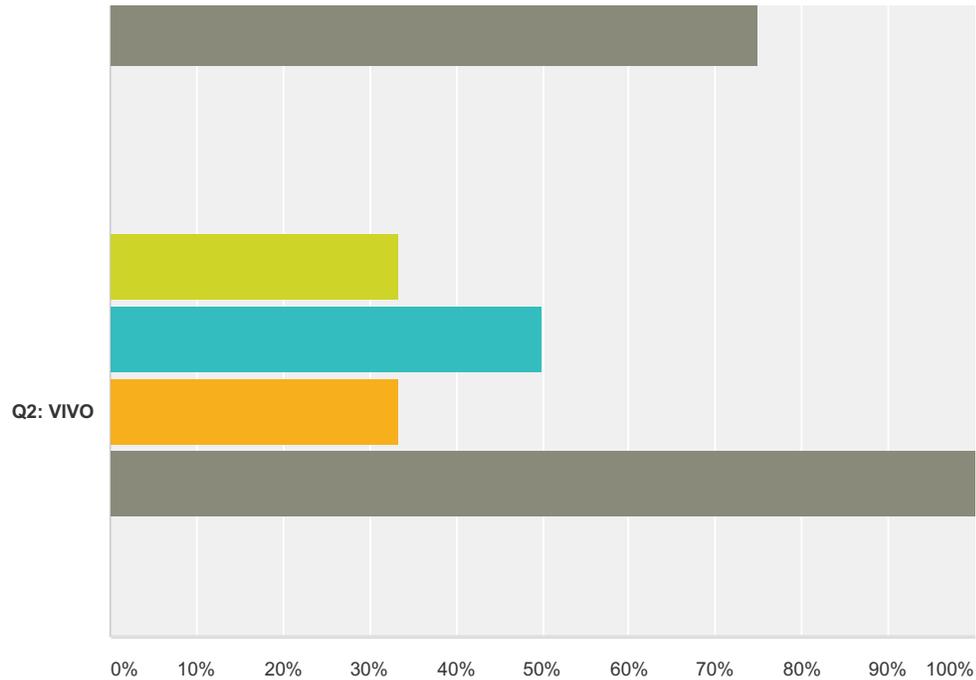
#	Responses	Date
1	Java development for Fedora users who don't have that those skills in house.	3/1/2017 4:59 PM
2	more documentation on customizing look of a VIVO instance; development and documentation of API;	2/18/2017 1:43 PM
3	We do grant-funded development using Fedora and Hydra, and could potentially make use of custom development resources on those projects.	2/15/2017 2:47 PM
4	Better documentation, especially for new/revised features.	2/13/2017 11:56 PM
5	Support for upgrades and improvements to the platform, for entities that do not have their own development capabilities	2/13/2017 7:58 PM
6	Front AWS	2/13/2017 2:44 PM
7	Perhaps webinars on best practices from time to time	2/13/2017 12:36 PM
8	cloud strategy/architecture and associated cost models	2/13/2017 10:55 AM
9	It might be helpful to have a listserv or work group for smaller institutions that host their repositories with DSpaceDirect. It would provide a way to share information and strategies. We are also struggling with some big pictures issues such as long-term preservation of master files and establishing best practice workflows.	2/13/2017 10:12 AM
10	Administrative (finance, etc), product & technical leadership,	2/13/2017 8:45 AM

Q3 Which type of support would your organization benefit from? (check all that apply)

Answered: 34 Skipped: 1



This survey is aimed at learning more about how DuraSpace might better serve our community



- Consulting (e.g. implementation planning, recommended practices, institutional strategies)
- Maintenance (e.g. metadata management, migrations, upgrades, workflow)
- Training (e.g. onsite or offsite, technical training, best practices)
- Custom Development (e.g. plugin development, system integration, feature development)
- Other (please specify)

	Consulting (e.g. implementation planning, recommended practices, institutional strategies)	Maintenance (e.g. metadata management, migrations, upgrades, workflow)	Training (e.g. onsite or offsite, technical training, best practices)	Custom Development (e.g. plugin development, system integration, feature development)	Other (please specify)	Total
Q2: DSpace (A)	47.62% 10	52.38% 11	47.62% 10	71.43% 15	14.29% 3	144.12% 49
Q2: DuraCloud (B)	50.00% 1	100.00% 2	50.00% 1	50.00% 1	0.00% 0	14.71% 5
Q2: Fedora (C)	69.23% 9	23.08% 3	69.23% 9	76.92% 10	0.00% 0	91.18% 31
Q2: Hydra (D)	62.50% 5	12.50% 1	75.00% 6	75.00% 6	0.00% 0	52.94% 18
Q2: VIVO (E)	33.33% 2	50.00% 3	33.33% 2	100.00% 6	0.00% 0	38.24% 13
Total Respondents	17	15	19	24	3	34