

DNS-OARC

Domain Name System Operations Analysis and Research Center

2013 DNS-OARC Strategic Review: Survey/Retreat Report and Development Plan

OARC Board, May 2013

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1. Introduction

Since its inception nearly a decade ago, DNS-OARC has had a mixed history, caught between the divergent challenges of the increasing demand for and relevance of protecting the Internet's DNS infrastructure, and the limited resources available to it to fulfill its mission. This has led to cycles in OARC's effectiveness, and a number of attempts to bootstrap it into autonomous sustainability, with varying degrees of success. With the recent appointment of new Board members and a new Chief Executive, the Board decided it was time to review OARC's strategic position, and define a course of action for its growth and evolution with the aim of breaking free of past cycles and constraints.

To this end, a number of steps were committed to:

1. Governance changes to make better use of the available resources
2. Conducting a member survey to get better data on how OARC's Members perceived and used the organization, and its role and future
3. Conducting a Board strategic retreat to review input from the survey and Board members to determine OARC's position and development options
4. Publication of this document, to report the survey and retreat results back to the members, and define a plan for OARC's future development

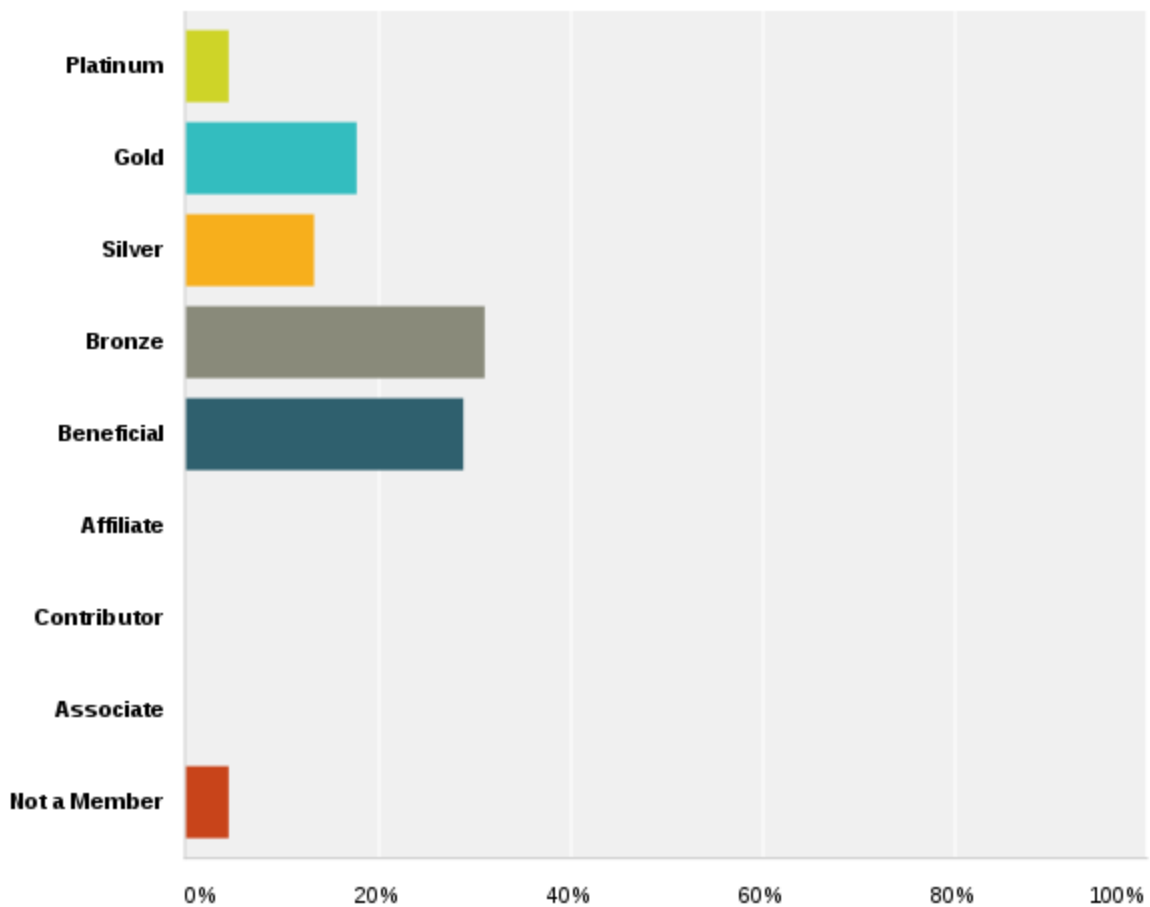
2. Survey Key Points

2.1 Participation

Overall, response to the survey was very good, with some 45 replies received from a member base of 66. This is high for such surveys, and is an encouraging demonstration of the members' interest in and engagement with OARC. The spread of member categories across responses closely matched the distribution of these across the member base, indicating a representative response.

What is your OARC Membership/Participation Category ?

Answered: 45 Skipped: 0

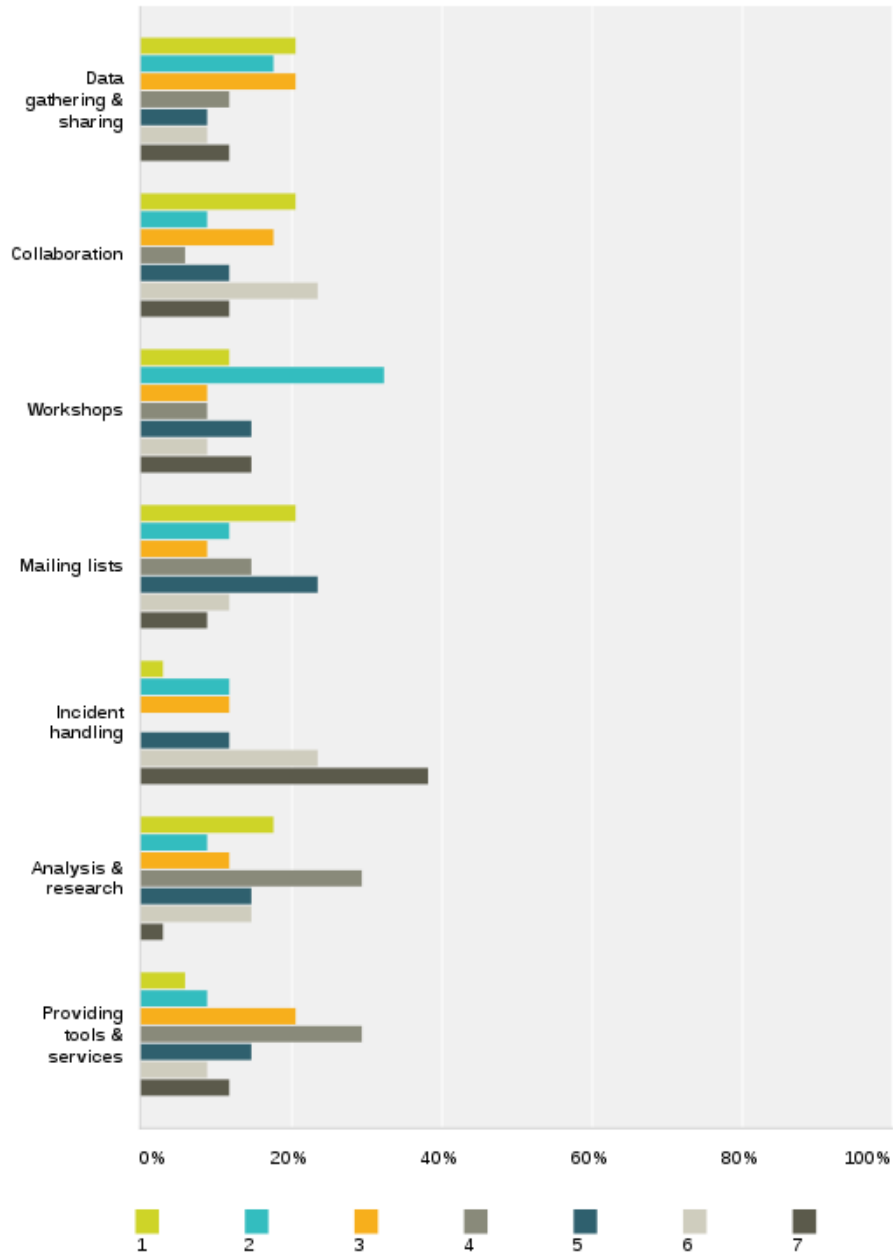


2.2 Functions and Services

Questions 2 and 3 were about the relative important to the Members of the *Functions* OARC exists to perform, as against the specific *Services* that it provides to fulfill these functions.

Please rank the following OARC functions in terms of importance to you: (1=most, 7=least)

Answered: 34 Skipped: 11

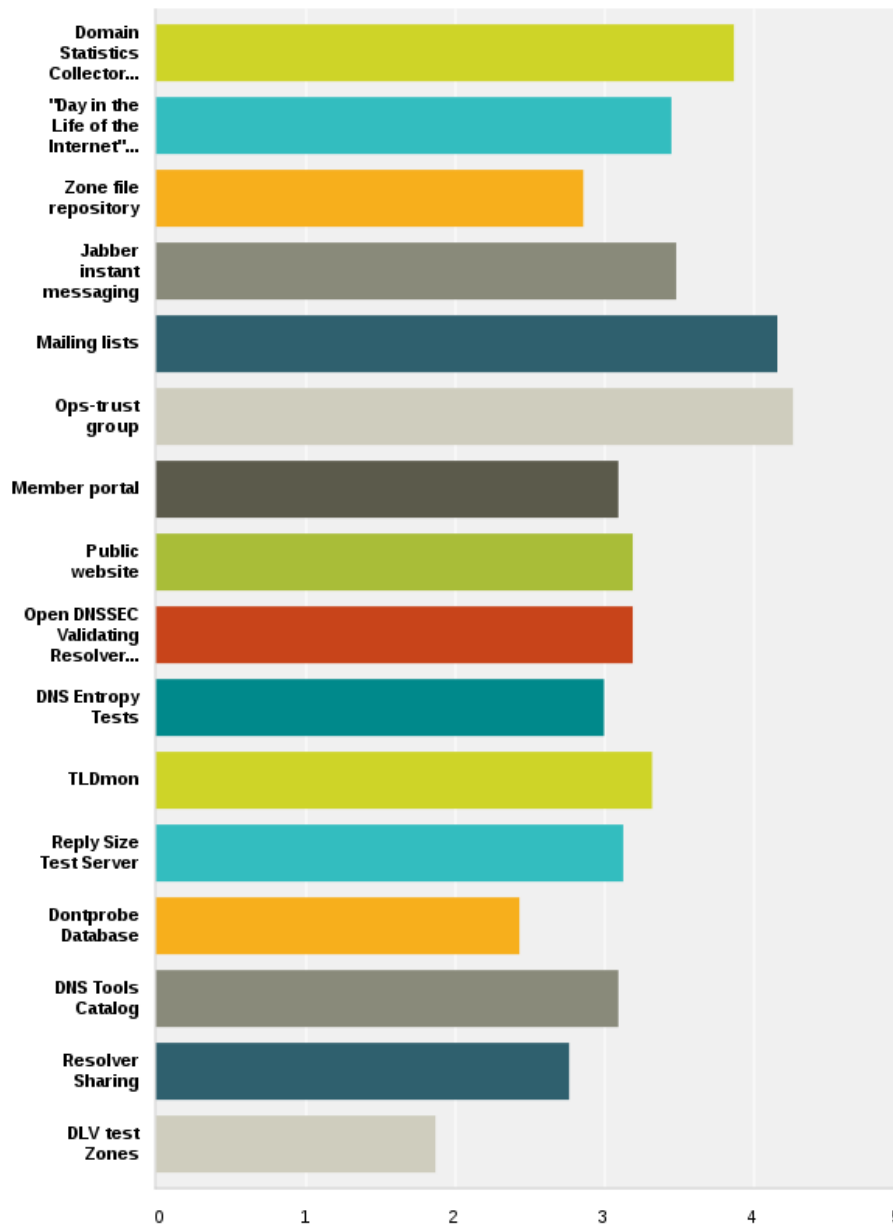


Looking at the ranking of functions, there was a strong message that OARC Data gathering and sharing were seen as its single most important activity. Although Workshops were seen less as OARC's single most important function, they scored highly across all members as being OARC's *second* most important function, followed closely by Analysis and Research activities. Mailing lists were seen as more important than other collaboration activities and providing tools and services.

Notably, Incident Handling ranked lowest by a clear margin, which appears to send a message about proposals OARC was embroiled in a few years back about whether it should be involved in a "DNS-CERT" initiative (but see 2.6 below).

Please rate the following OARC services in terms of importance to you:

Answered: 31 Skipped: 14



OARC provides a wide range of services, and one desirable outcome of the survey might be some sense of which ones to focus OARC's limited resources on, and any that might be candidates for ceasing. There was however a lower overall response rate to this question, with answers spread across a narrower range, so the conclusions from question 3 are less clear.

The single most important service was seen as the Ops-Trust Group. This is possibly a cause for concern, as it is provided by a 3rd-party platform not operated by OARC and over which it has limited control. Nonetheless it is clear the trust relationships within the OARC community are valued, and bring something to this sub-group within Ops-Trust. Mailing lists scored nearly as high however, and given the wide range and population of mailing lists OARC operates, this can be seen as a validation of our mission here. OARC's Jabber-based trusted secure instant messaging scored below this, but still much more highly than various other tool-based services.

The Domain Statistics Collector also scored highly, and this is a clear pointer towards the need for OARC to continue supporting and developing this. The only slightly lower score of "Day in the Life of the Internet" (DITL) validates the Q2 result that both these data gathering and sharing activities are seen as a core part of OARC's rationale.

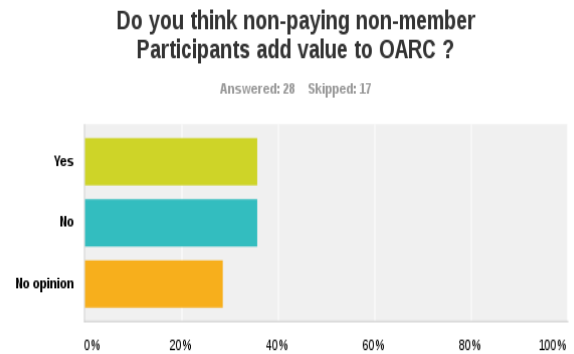
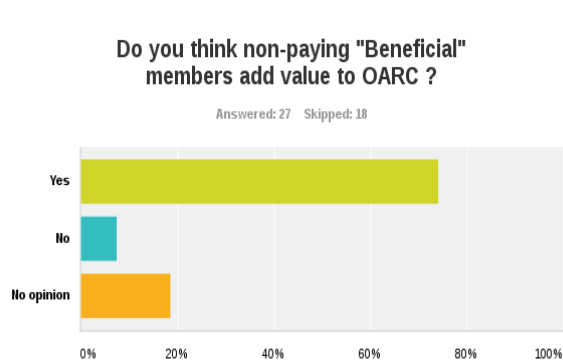
There is then a spread of other tools and services for which there is not much clear differentiation, however, one point of concern is that the public website and OARC member portal are both buried in amongst these. In principle, these are resources which would be expected to be amongst OARC's most frequently turned-to, and the low score suggests there is significant room for both these platforms to be improved.

2.3 Strengths and Weaknesses

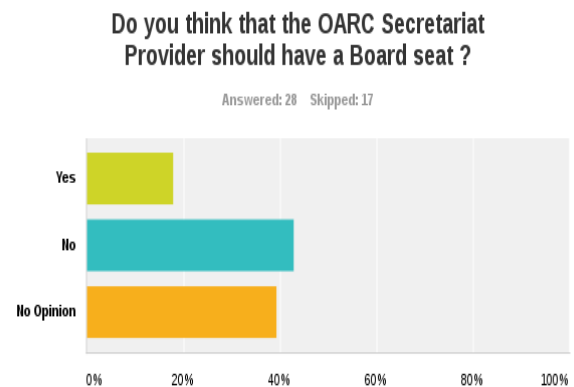
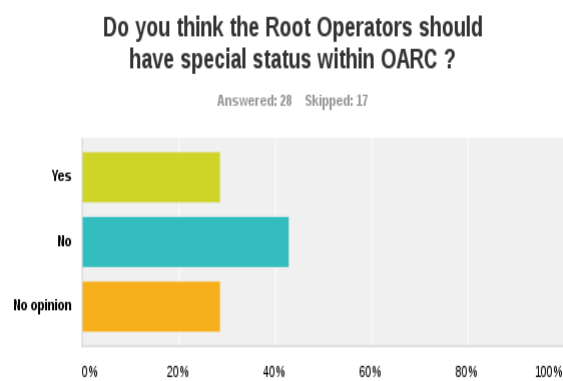
There were some common themes in the answers to questions 4 and 5, and it seems OARC's main strengths are at community building and running meetings/workshops, with some further mention of information/data sharing. In terms of things OARC could do better, there was a wide spread of answers, making information more easily available to members being perhaps the single strongest theme, but also a need to improve our analysis and research activities. It was also clear here and elsewhere in the survey that various members were only made aware of some services by being asked about them here, which is a message in itself !

2.4 Special Membership Categories

One issue that regularly arises in OARC's struggle to sustainability is the large proportion of non-paying ("Beneficial") Members and ("Associate/Contributor/Affiliate") Participant categories. Questions 6 and 7 attempted to understand member support for these. In general, there was support for Beneficial members provided there was a tangible contribution of some kind. Support for the non-paying Participant categories was less clear (35% each for and against).



There has also been discussion about OARC Governance reform which would potentially normalize the special Board seats granted to the Root Operators and the OARC Secretariat contractor. The answers to questions 8 and 9 would appear to support proposals to convert these seats to regular ones:



2.5 Paying More for OARC

Around a dozen OARC members indicated they would be willing to fund OARC to fund new research/development projects, and/or pay for new services, with very few opposing this. This is consistent with the Q14 result indicating not much willingness for OARC members to unconditionally pay more for what they are already receiving, but an openness to increase depending on the rationale.

2.6 OARC Activities

The answers to questions 15, 16 and 17 were mixed. There is a theme that OARC needs to do better at what it is already doing, specifically DSC, website/portal, and existing tools and services, before taking on new activities.

Q17 was intended to get clarity on the whole DNS-CERT debate. However, the answers were slightly at odds with the low ranking for "Incident Handling" in Q2, suggesting there might be a **limited** role for OARC provided resource constraints could be addressed.

2.7 Workshops and Meetings

Questions 21 to 26 were intended to get some objective data on the oft-debated pointed of the best frequency, duration and location of OARC meetings. The data was very clear that OARC meetings should be:

- Twice a year
- Last 2 days
- Combined with other Internet meetings

For co-location, RIPE and IETF meetings came out joint top, closely followed by ICANN then NANOG meetings. SATIN, CENTR and DNSeasy conferences also got a mention. For the Q4 2013 workshop, IETF88 Vancouver and NANOG59 Arizona came out ahead of ICANN48 Buenos Aires or having a stand-alone meeting. All this data will be extremely useful in meeting planning and will taken on-board by OARC.

2.8 Satisfaction with OARC

Despite some of OARC's recent difficulties, there seems to be positive news in the responses to questions 29 through 33. For Q29, several answers indicated members were "already convinced" of the benefits of OARC, and a clear majority of responders to Q31 would recommend OARC to others to some degree. Overall satisfaction with OARC rated at 6.54 out of 10, indicating a perhaps satisfactory performance but with definite room for improvement, backed up by some of the comments to Q33.

3. Retreat Objectives and Analysis

3.1 Objectives

Previous retreats have focused solely on "big picture" strategizing and brainstorming, or on OARC's immediate tactical needs during periods of transition. The Board wanted to strike a pragmatic balance between these two outliers for the 2013 retreat, and at the outset defined a number of goals for this process:

1. A 3-5 year development plan set out in this document, for Member review
2. Some short-term achievables to demonstrate tangible progress
3. Determining sources of OARC funding, income and resource
4. Deciding whether OARC's best future path is one of steady state or growth, and if the latter, how
5. Better defining OARC's role
6. Ensuring Member engagement and outreach
7. Improve the output and visibility of workshops and meetings

3.2 OARC's Mission Statement

One item considered early in the retreat was OARC's mission statement, defined at a previous retreat some years ago. This is:

"The Domain Name System Operations Analysis and Research Center (DNS-OARC) is a non-profit, membership organization that seeks to improve the security, stability, and understanding of the Internet's DNS infrastructure.

DNS-OARC's mission is: to build relationships among its community of members and facilitate an environment where information can be shared confidentially; to enable knowledge transfer by organizing workshops; to promote research with operational relevance through data collection and analysis; to increase awareness of the DNS's significance; and to offer useful, publicly available tools and services."

After some discussion and consideration, the Board determined that this statement defines OARC's role as effectively as it ever has, and there was no particular reason to amend it at this point.

4. The Challenges of Organic Growth

It has been recognized for some time that OARC has a *bootstrap* issue. The current annual revenue of some ~\$300k is sufficient to support existing infrastructure and services, together with approximately 1.5 FTEs (currently 0.6 President, 0.8 Engineer, ~0.2 Secretariat). As an autonomous nonprofit organization, there is a certain amount of resource tied up in keeping the existing corporate entity working, e.g. billing, contracts, administration, audit, taxation, member support, systems admin. In practice this, in addition to providing OARC's existing range of services, leaves little if any additional capacity for growth, whether by soliciting additional member subscription revenues, or additional project/service/grant-based funding. This in turn makes it difficult to grow OARC to the point where it has sufficient resources to both exist and grow.

It is clear previous OARC staff, through no specific fault of their own, have stumbled on this core contradiction, which has in turn led to short periods of tenure, contributing to lack of continuity and exacerbating many of the development and stability issues. It would appear that unless OARC can grow beyond its current resource constraints, it is going to be in constant threat of repeating the stumbles it has experienced over recent years.

Any development strategy for OARC needs to address this fundamental challenge, and find a way to raise enough additional resources, even if only as a short-term one-off bootstrap, to ensure OARC can both sustain, and grow and develop itself. Past experience with Internet infrastructure non-profit membership organizations suggests a staff complement of 4-5 FTEs is both necessary and sufficient initially to achieve this.

One constraint that has become less of a challenge over recent years is the cost of storage hardware. For the many 10s of Terabytes of data OARC gathers and curates, even as recently as 5 years ago this required expensive non-standard hardware configurations. Any OARC development plan thus required an element of significant capital investment in addition to operational expenses. Fortunately, the cost per capacity of storage hardware has decreased significantly since OARC started, and almost all requirements can be met with standard off-the-shelf hardware. So, development plans which require creation of new projects or services can be done with a much lower capital investment threshold, freeing up more resources for investment in operational capability.

Past experience with OARC has shown that with current staff resources, using careful and pro-active administration and a basic level of outreach, it is possible to organically grow revenue solely through new member subscriptions by at least 10% year-on-year, and this is the target for the 2013 budget. While this is good for organizational stability, an additional ~\$30k/year remains only a fraction of an FTE, and any development path based purely on organic growth is going to remain a long one, even assuming it can be sustained without further staffing or other disruptions along the way.

Based on this analysis, it is clear to the Board that another path has to be found to OARC sustainability, and the following section outlines a possible achievable plan to take us there.

5. Our "Ideal OARC"

Noting all the above, the Board decided it would be a valuable exercise to set out our vision of where we ideally wanted OARC to be, rather than getting caught up in its current situation. The approach was to determine what needed to be offered and the resource levels to support this, from that the revenue/funding required, and then the means to achieve this funding level. A timescale of 3 years was felt to be a reasonable basis for attaining this target.

5.1 Staffing

This appears to be one of the biggest bottlenecks to OARC effectiveness. Addressing all the functions which meet member service expectations and corporate entity requirements, sustainable OARC staffing could comprise:

- Engineering (system admin, tool/service development, research/analysis): 2 FTE
- Project Management: 1 FTE
- Outreach/sales/marketing: 1 FTE
- Admin/Finance: 1 FTE
- Leadership: 1 FTE

Depending on seniority, location, facilities, this could potentially be achieved with a total annual employment cost in the region of US\$500-600k. Adding the costs of infrastructure, services, meetings, travel & other overheads suggests a target annual revenue level of US\$1M would be in the right ballpark.

5.2 Funding Mix

How might a target revenue of US\$1M/year be achieved ?

For subscriptions, assuming additional outreach resource was engaged early in the process, a year-on-year revenue growth of 30% could be attainable. This would involve pro-actively engaging with wider global coverage of existing ccTLD operators, new gTLD operators, ISP DNS resolver operators & registrars; increasing average revenue per member by reducing the proportion of non-paying members (i.e. by converting non-paying to paying in preference to increasing subscription fees); and soliciting new member communities through marketing and PR activities.

If successful, this could increase subscription revenue from some \$350k to \$650-700k over a 3-year timescale.

The member survey, and some private discussions, indicate a significant subset of members would be willing to fund OARC for more than their existing subscriptions if it was towards developing new projects (e.g. software tools) and/or offering new services. With appropriate development plans in place for perhaps 2 major projects, it seems feasible to raise perhaps \$200-300k/year revenue from such projects total.

In-kind donations are not something OARC has used for growth much to date, though there have been various generous one-off donations of used capital equipment from members.

Some OARC members have indicated it would be easier for them to donate (e.g. intern) personnel resources to OARC than cash, and even 1-2 FTEs of same could be worth to OARC some \$150k/year as part of a project funding mix.

To date, OARC has made very limited use of sponsorship, mainly for meeting facilities and/or socials. Experience with other Internet nonprofits suggests the market for vendor meeting sponsorship remains robust, and with some outreach effort, it seems achievable that OARC could raise perhaps \$50k/year in sponsor revenues for e.g. promotions during workshops and vendor collateral.

There are other possible sources of OARC revenue, which were not explored in more detail - these might include commissioned research and/or reports, and sources of grant and/or endowment funding.

Finally, due to staff underspend during the 2011/12 hiatus, OARC has accumulated cash reserves of as much as \$150k. These represent a one-off opportunity the Board feels at least some of which could be spent on development activities.

5.3 Target Revenue

Combining all the above funding sources, the annual revenue base for an "Ideal OARC" in 2-3 years might look like:

Subscriptions	\$650-700k
New Projects/Services	\$200-300k
In-kind donations	\$150k
Sponsorship	\$50k
Reserves (year 1 only)	\$0k-\$100k
TOTAL	\$1.05M-\$1.3M

While this may seem ambitious, there are also elements of this plan which can be implemented at low risk levels, and expense elements which need not be taken on until there is revenue to support them.

6. Infrastructure and Systems

OARC's systems infrastructure is key to fulfilling its mission, but despite the best efforts of various volunteers over the past years, is suffering from a lack of strategic planning, investment and attention. There is also too much reliance on legacy hardware, some of which was donated previous-owner, and some of which has simply been running too long and/or with legacy OS software. Significant work needs to be done, but with our cash reserves and the engagement of a new Systems Engineer at 80% loading, we are in the best position to do this in some time.

Priority goals identified were:

- Commissioning of the recently-purchased storage server. This will allow for consolidation of data (primarily historical DITL sets) currently spread across legacy systems and space borrowed from ISC. Once this is completed, OARC will be in a strong position to conduct DITL2013 and address a backlog of data access requests.
- Replacement of obsolescent general-purpose servers on which many of OARC's critical services are currently running. This will be via the purchase of 2-3 new servers over the course of the year, which may be supplemented by member donated equipment for less critical functions.
- A complete re-design of OARC's website and member portal. These are based on legacy software platforms for which more modern and maintainable alternatives exist, and have accumulated a difficult-to-understand tangle of hacks, work-arounds and errors over the years. Part of OARC's current budget reserves have been set aside to engage a professional web developer to perform this work.
- Automation of OARC member administration workflow as much as possible. While most of the information required to manage OARC membership is held in a central database, the interfaces to this are unstraightforward. Better integration with a new member portal and existing services would significantly reduce the administrative overheads of signing up and supporting OARC members.
- Better support of workshops, via an e.g. conference management platform.

7. Governance

Given the survey input, and experiences of various Board members to date, a number of Governance development goals to make OARC more effective and representative were identified and are proposed:

1. Splitting the concepts of *Member* and *Participant* into separate agreement documents. Having these combined is causing some confusion, it would be much easier if the principles of Member rights vs data sharing responsibilities were separated out. Having existing (non-paying) Participants sign a new agreement would also allow for a clean-out of those that are dormant and/or contributing no value.
2. Normalizing the "Special" Board seats. Assuming survey responses correctly indicate member consensus for converting the Root and Secretariat Board seats into normally-elected At-Large Seats, resolutions enacting this could be passed at the AGM in Q4 2013.
3. Ensuring greater diversity of candidates for Board positions, so that it reflects wider interests and engagement than the well-represented European ccTLD operators. This is mainly a matter of planning and solicitation.
4. Moving the AGM date from June to Q3/Q4. This is closer to how OARC runs its year in practice, and would save the need for a postponement resolution every June.
5. Formally remove voting rights for Beneficial members. This was a privilege previously granted out of concern of ensuring a quorum at OARC General meetings. It is now felt the member base has grown sufficiently for this to be a non-issue, and that there needs to be greater differentiation in benefits between paying and non-paying members. Again, assuming member consensus that this is the correct path forward, a resolution enacting this could be passed at the AGM in Q4 2013.
6. Rationalizing the confusing multiple non-paying Participant categories into just one.
7. Ensuring there is a process where the annual budget is submitted to the members for review during Q1/2 of each year.

8. Project and Service-based Growth

As brainstorming sessions during this and previous retreats has demonstrated, there is no shortage of ideas for new projects and services that OARC **could** offer. However, with limited resources and a legacy of past partly-launched services, it is clear OARC needs to **focus** on the limited subset of possibilities which will give most benefit to its members and address OARC's needs for sustainability. These should meet the criteria for raising additional project/ service funding as outlined in the "Ideal OARC" targets above.

After some consideration, the Board determined the following two projects would best meet this criteria:

8.1 Next-Generation Domain Statistics Collector ("DSCng")

This has been mooted for some time, and it is clear there is a demand by members both for an improved toolset, and also to continue the DNS traffic data sharing across the OARC community that having this common interface between OARC and its members enables.

Unfortunately there has been little progress on this since 2010, mainly due to a lack of project management resources within OARC. A development plan nonetheless exists at <https://www.dns-oarc.net/files/dsc-plan-201102.pdf>.

The Board determined that the need to re-start this work with support from interested OARC members, and to seek funding and resources in support of it, was a high priority.

8.2 DNS Benchmarking

There has similarly been an initiative over the past 12-18 months amongst vendors of DNS software for a reference suite of tools which would allow for performance, conformance, vulnerability and interoperability testing of the growing range of diverse DNS server implementations. The majority of these vendors are already OARC members, and there seems to be good consensus OARC would be an appropriate home for this project. Such software should in principle also be directly beneficial to these vendors' businesses, and it is hoped they would be willing to fund OARC via development grants and/or in-kind resource donations to perform this work.

This project is less developed than DSCng, and highlights the need for OARC to build a general-purpose, low overhead, project management capability. Once again, the Board determined that the need to bootstrap this work with support from interested OARC members was a high priority.

8.3 Other Projects

A number of other project possibilities were identified, in particular support for the "DNS Looking Glass", and building capacity for performing data collections for DITL and further RSSAC contracts - it is envisaged these can be performed, at least initially, within OARC's existing capabilities.

8.4 Funding

In addition to pursuing funding for the above projects from interested OARC Members, there are a number of potential other public benefit funding sources which could be approached. These potentially include ICANN, US Government DHS, the Internet Society's "Deploy360" and Community Grants programs, and Comcast's recently announced R&D Grants Fund.

Preparing project proposals for submission to these funding sources would be a good source of structure and discipline for generating material that can in turn be presented for member-based fund-raising, and it would seem that for all projects a diverse approach to seek a mixture of multiple funding sources would be good practice.

9. Output and Next Steps

The Board was determined that the output from the strategy process would be a series of tangible decisions and next steps as part of a plan for action, and not just further discussion and/or business as usual. Based on the above, the proposed plan of action is as follows:

1. Publication of this document to OARC Members
2. Progress on a number of short-term achievables, including:
 - Support for the DNS looking Glass Project
 - Deployment of a conference management platform for enhanced workshop support
 - Adding and refreshing some straightforward changes to website content
3. Presentation of the contents of this document and proposed plan to the OARC Spring 2013 workshop, seeking member consensus on it as a way forward
4. Developing a detailed business plan to achieve the "Ideal OARC" resource and revenue targets on a 2-3 year timescale
5. Creating a framework for development Project management and funding, while using it to kick-start the DSCng and Benchmarking projects
6. Implementing the changes to meetings lead-time, location, frequency and duration as per survey results
7. Conducting improved member outreach, while cleaning up the contractual relationships with non-paying members
8. Improving relationships with the Researcher community, including potentially setting up a Scientific Committee