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The Journal of Information Technology in Social Change

Introduction to:

Can We Talk? Innovative Responses to the Data Integration Challenge

The topic of data and workflow integration is an issue of increasing urgency to civil society organizations. As their stakeholders are getting more and more connected, so they find that they can no longer afford to maintain separate silos of relationship management processes. But the market forces so far have not encouraged robust standards and interfaces for interoperability of different tools and repositories.

The authors of this paper have embarked on an ambitious journey. Through literature search, interviews, and ultimately, a nonprofit sector focused survey, they are mapping the shape of the integration challenge. They identify core themes, opportunities, and research questions and they explore each of these in some depth in a series of examples.

Can We Talk?

Innovative Responses to the Data Integration Challenge

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April 2007

Abstract

Today's typical nonprofit organization uses a variety of information management systems for collecting and storing data ranging from client and constituent contacts to program tracking and evaluation. While standards for data exchange and inter-software communication are developing in the nonprofit sector, the vast majority of nonprofit organizations face steep barriers to realizing the benefits and leveraging the power of technology. This practitioner-focused research, building on past research into data integration in foundations, explores data integration in the nonprofit sector, examining the need, challenges faced, necessary conditions, and different approaches.

The research methodology employed a targeted survey, interviews and a scan of relevant literature in both the nonprofit and for profit sectors. The paper offers a snapshot in time of the evolving marketplace of data integration and information sharing solutions in the nonprofit sector. Broad in scope, the investigation begins with an examination of various definitions of data integration and offers a working definition that includes a unified view of information about people, performance and finances. The definition, along with the research findings, proposes the need to place an equal emphasis on the technological and business process aspects of data integration. The paper introduces and seeks to test a framework proposed in the authors' earlier research that developed a set of conditions or preconditions necessary for successful data integration solutions to take root in the philanthropic sector. The framework includes the following three components: a compelling business driver, an opportunity moment, and collaboration and coordination.

The current research revealed a mixed story of push factors that frequently manifest as pain points experienced within organizations driving them to seek integration solutions, combined with pull factors that frequently present as opportunities attracting them to the benefits of integration solutions. The findings reveal a diversity of solutions suggesting there is no one-size-fits-all solution for the sector, cautioning against inclinations to put the "how" of data integration ahead of the "why." The findings also support/confirm the proposed framework as a useful guide for understanding the success factors for nonprofit data integration efforts, while proposing a fourth component: leadership/ownership. Informed by a broad view of the topic in different sectors, the paper offers an evolutionary view of data integration in and across organizations. This view suggests that a dynamic relationship between the outcomes of data integration begins with gaining awareness of the issue and understanding its benefits and potentially leads an organization to adopt innovative practices and approaches which, if internalized over time, may

promote qualities of a learning organization. The paper concludes with several suggestions and areas for further research into the topic.

Introduction

Today's typical nonprofit organization uses a variety of information management systems for collecting and storing data ranging from client and constituent contacts to program tracking and evaluation. While standards for data exchange and inter-software communication are developing in the nonprofit sector, the vast majority of nonprofit organizations face steep barriers to realizing the benefits and leveraging the power of technology.

A typical nonprofit organization's greatest asset is its people. Human resources become even more valuable over time as they gain knowledge and increase their understanding of the organization's mission, programs, operational strengths and weaknesses as well as the threats and opportunities in its external environment. Indeed, the effective use of information and knowledge is critical to the survival and success of a nonprofit organization.

Uncertainty about how to resolve data integration issues plagues the nonprofits most affected by the lack of IT systems and infrastructure. All too often, valuable human resources are unable to utilize their full potential toward advancing the organization's mission through productive and creative sharing and application of relevant information. This, in turn, compromises organizational efficiency and effectiveness. Frustrated and under-resourced staff contribute to high turnover rates, perpetuating the knowledge breaks and gaps in the sector.

One plausible solution to the people and information equation is getting relevant information to the right people at the right time, which implies some degree of data and systems integration.

We began researching this issue in the philanthropic sector, to raise awareness within foundations of an emerging trend towards disaggregated, duplicative, and inconsistent and incomplete data. We interviewed foundation executives and industry experts and reviewed published literature from both the philanthropic and corporate sectors to provide an overview of the issues, and to start to present potential approaches to solutions.

The resulting articles proposed a three-part framework for fostering data integration:

- Compelling business driver: outside forces, from government regulation to market conditions, compel an organization or sector to invest in data integration. Sarbanes-Oxley is a current example in the corporate sector, and, to some degree, in the nonprofit sector;
- Opportunity moment: A sector or organization that is facing a significant challenge, crisis, or opening that creates an opportunity for change. Y2K, for example, compelled a change in data standards. On an organizational level, an example of an opportunity moment is a leadership change;
- Collaboration and coordination: moving towards integration requires different organizations to collaborate to identify and implement a solution.

We built upon lessons learned from prior research and sought to a) apply the framework more broadly to nonprofits and b) test the validity of the framework through looking at examples of data integrations throughout the nonprofit sector.

In focusing more specifically on individual organizations – while still exploring and drawing lessons from inter-organizational and intra-sector initiatives – we broadened the third framework component as follows: Collaboration and coordination: moving towards integration requires different people, departments, and potentially organizations to work together to identify and adopt a solution.

The resulting proposed framework, therefore, is as follows: for data integration initiatives to take hold, the following components generally exist:

- Compelling business driver
- Opportunity moment
- Collaboration/Coordination

Our hypothesis, then, is that the above framework for data integration will hold true in the broader nonprofit sector.

We first describe the methodology undertaken for conducting current research, provide an overview of data integration approaches and understandings in the for-profit and nonprofit sectors, and discuss findings from a survey and 13 interviews, all informed by a scan of literature about data integration. A discussion of themes that emerged from the research is then followed by an outline of trends seen in the corporate sector that might influence nonprofit sector initiatives. Finally, we return to the framework to verify its validity and propose an additional component.

Methodology

The research design incorporated a mixed method approach to gather information from primary and secondary sources. The research methods consisted of a broad scan of the literature, 13 interviews, and a survey sent to a nonprofit-focused online community with approximately 8,000 members. The scope of the research was intentionally limited to (a) interviews with representatives of nonprofit organizations who self-identified as using innovative practices or approaches to data integration, (b) interviews with IT consultants who have helped nonprofits address data integration issues, and (c) a targeted survey of a distinct online population that represents a diverse cross-section of the nonprofit sector. In addition, a handful of illustrated examples were highlighted from among the interview respondents that illustrate unique, innovative or field-building approaches.

The researchers performed a broad scan of the literature on the topic focusing on the nonprofit and philanthropic sector and building on prior research of private industry and the public sector for comparative purposes. The literature review consulted a variety of sources including business and IT trade publications, technology related research and analysis firms, nonprofit and technology online resources (portals, list serves, blogs), and nonprofit and philanthropic trade publications.

Because earlier research for this study focused on the philanthropic sector, the focus of the current study was shifted to nonprofit, non-grantmaking organizations to gather first-hand accounts from nonprofit management, staff and volunteers who have been or are currently

involved in data integration efforts. In addition, interviews were conducted with technology consultants and consulting firms that provide services to the nonprofit sector. Consultant interviews served to help identify additional examples of nonprofit organizations that have undertaken data integration initiatives, to discover trends in what nonprofits are doing to address data integration challenges, and to learn about trends in the nonprofit software market as well as in the types of solutions vendors are recommending and providing to organizations.

An explanation of the authors' attempts to reduce potential bias in the research methodology and of the survey sampling approach is covered in further detail in the Appendices, available online.

Overview of Data Integration

A typical nonprofit uses many different systems and tools for managing, storing, and analyzing information. Frequently, those systems have been acquired over time on a piecemeal or as-needed basis. While any given system may have been state-of-the-art when it was first acquired, rapid advances in technology and the tools available for the sector have left many organizations with legacy tools that form the foundation of their information management systems and processes. And when emerging tools are added – or when funders, boards, or senior management request reports on information from donors to program outcomes – nonprofit staff increasingly find themselves falling victim to the problems that arise from systems that are not integrated, from an inability to extract the needed information from a given tool, to re-keying information several times in different systems, to data not being updated in the organization's core system.

Attention in the nonprofit technology field has turned increasingly to this issue. NTEN recently released a white paper on open application programming interfaces (APIs); Idealware recently published an introduction to information integration, and blogs and forums have been alight with discussion about everything from what recent vendor acquisitions mean for data integration to how to integrate online and offline databases.

In the nonprofit sector, there tend to be three basic approaches to managing donor information across different systems (Quinn, 2007):

- Manual import and export of data: someone in the organization manually exports information from one system and imports it to another;
- Integrated tools: all-in-one solutions that provide nonprofits with a single system for managing constituent data, ideally preventing the need for sharing data between systems;
- Automated connectors: a mechanism built by a programmer to automatically share information between systems using a set of business rules, requiring the existence of an API for at least one of the systems.

Each alternative has benefits and drawbacks, and, as the article suggests, there is no single solution that is right for every organization.

In addition to donor information, nonprofits manage a multitude of other types of information, from financial information to program outcomes to client or case data. A complete approach to data integration or information sharing across all organizational data – what might be called “enterprise information management” in the corporate sector – requires information sharing

across a greater diversity of systems than those involved in constituent management. Our review of available solutions in the corporate sector suggests that additional technical solutions to large-scale integrations are available, but may not yet be fully utilized or explored in the social sector.

Additional potential approaches range from manual batch transfers of data to database gateways that facilitate reaching into different data sources to access and present data (Freidman, 2005). An example of a more comprehensive approach involves the creation of a data standard in which a group of organizations, generally under a governing body, agrees to a common set of definitions of data which allows pieces of information to be read in the same way by different pieces of software, providing each adheres to the standard. A successful example is the airline industry, which developed a standard called AICC (Peeler, Bagnell Stuart, and Goldstein, 2006). AICC is now commonly-used and enables learning platforms to access third-party-created learning modules (courses, lectures, tests, etc.) as long as both the module and the platform are AICC-compliant.

A less successful example was the Open Philanthropy eXchange (OPX), which will be discussed in further detail later in the paper.

In some cases, the marketplace sets the standard. For example, Microsoft's significant market share, coupled with users' desire for interoperability of other programs, provides Microsoft with the power to dictate how other applications should interact with Microsoft products.

Salesforce.com seems to be positioning itself similarly in the customer relationship management (CRM) marketplace, though with a more open system and integration possibilities.

Gassman (2005) suggests that there are several options for real-time or near-real-time data integration, but they vary widely in cost, needed expertise, and time to implement. Organizations should consider the business case to justify additional expense for real-time or near-real-time data integration and whether something like overnight batch processing might meet their needs at a much lesser cost.

Again, different organizations require different solutions. Further, we posit that while data integration is a technological problem with a technological solution, it is also an organizational (cultural, behavioral, financial) problem with organizational solutions. These issues will be explored in more detail throughout this paper.

There seems to be little disagreement that data integration is necessary in both corporations and nonprofits. As one interviewee pointed out, the absence of data integration is something we would not accept in other situations, so why should we accept it in the nonprofit sector? Steve Birnbaum, of Jacobson Consulting Applications, framed the analogy as follows: "Let's say there was a bank, and the ATM was different from the system that the cashier used which was different from the online banking system. If that bank said, 'We may get to your balance eventually; it's kind of close now,' we would never accept it! Why should nonprofits and their constituents accept systems that are not integrated?"

But “data integration” means different things to different people. Supporting our postulation that data integration refers to both technological and organizational issues, several themes emerged in survey responses to the question of what data integration means:

- Avoiding duplication of data in different systems (a business driver, or “push”):
 - “Consolidating or synchronizing data so that to reduce IT costs, complexity, streamline operations and achieve positive results”
- Aligning data to facilitate decision making and understanding of organizational performance (an opportunity moment, or “pull”):
 - “Use technology to collect/store/process/manage and make all available business information within an organization available to anyone at any time for decision-making.”

As the overview of different data integration approaches points out, the “how” of data integration is varied and evolving. There are new technologies and new approaches under constant and continuous development. A manual export/import may be sufficient for a small organization – indeed, it may be all that organization has the resources to do – but it serves the purpose of integrating data for that organization.

The “why” of data integration is fundamentally ensuring that the right people get the right information at the right time in an efficient manner to support the organization’s operations, performance, and understanding of itself and its many constituents. This can mean that the development director of a nonprofit has the correct phone number for a major donor after that phone number has been updated in the organization’s events management system. For some organizations, it might mean that the executive director has a web-based dashboard with real-time performance and financial data for all aspects of the organization. Whatever it means for a specific organization, there are numerous technological and organizational elements involved, which this paper begins to explore.

Our working definition of data integration is as follows: “Data integration is connecting and sharing of different types and instances of information between and across systems to provide a unified view of information that supports understanding, monitoring, and analysis throughout the organization.”

Findings

The Status Quo

Some innovative examples of data integration will be explored later in this paper. Most nonprofits, however, are either using systems that are not integrated/do not share data, or are using the manual export/import technique described above.

Responses to the survey are indicative of the current state of data integration in many nonprofits:

- “...we cannot generate the kinds of reports we need even though the data IS IN THE SYSTEM!”
- “Lack of data integrity, cohesiveness, and negative donor relations due to lack of follow-up.”

Responses are also indicative of a strong desire on nonprofits' part to have more integrated data:

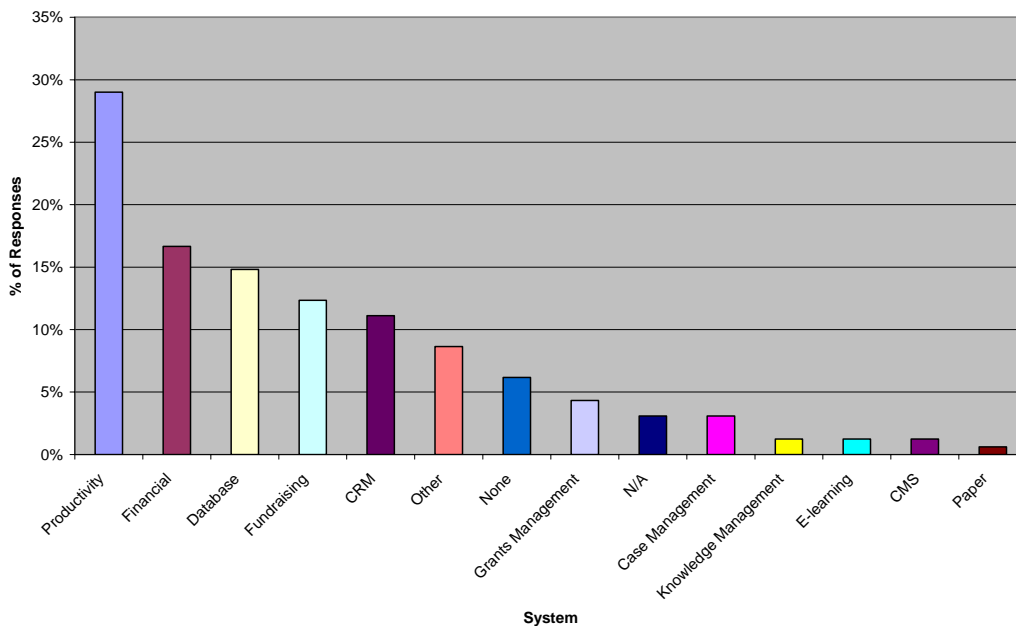
- “Get rid of duplication of data, increase productivity, increase accuracy and flexibility of information – bring our environment into compliance with today’s standards”
- Data integration means “the meaningful use of data for the growth of the organization, the assessment of our effectiveness, and realization of the need for our services.”

In an inventory of systems and tools (software) used by nonprofits, virtually all respondents (97%) reported using productivity tools like Microsoft Word, Excel, or PowerPoint. Almost three quarters (71%) reported using accounting/business applications such as QuickBooks or Clicktime, while less than half (41%) reported using fundraising or donor management software (e.g., eTapestry or Raiser’s Edge). The responses suggest that nearly a third of respondents (29%) are using productivity tools or some other mechanism (perhaps fundraising or another system, or paper) for managing financial information, which can expose the organization to risks ranging from data and businesses losses to legal liability, and damage to reputation (Heiser and Buytendijk, 2005). Additionally, over half of respondents (59%) either receive no direct support from individuals, or are using mechanisms other than fundraising/donor management software to track their fundraising and donor efforts.

While productivity tools dominate the software use inventory, they are less dominant in reports of core systems in use in nonprofits. Productivity tools account for core systems in 29% of respondents, while financial and fundraising systems account for 17% and 12%, respectively.

Interestingly, in response to the question “Of the systems you just indicated, which one is your “core” system - the one that holds your organization's most essential data?” several organizations (19%) either responded that there was no single system that held the organization’s most essential data, or provided more than one response, reflecting the fragmentation of core data in those organizations.

FIGURE 1. CORE SYSTEMS OF RESPONDENT ORGANIZATIONS



Overall, respondents felt that information was at least somewhat linked between different systems, though very little information is fully linked. While only 17% of respondents reported that their financial information is fully linked between systems, 35% said it was somewhat linked. While even fewer respondents said that information about people and programs was fully linked between systems (12%, and 7%, respectively), nearly half of respondents said that information about people and programs was somewhat linked between systems (45% and 44%, respectively).

Financial information appears to be more fully integrated in nonprofits than other types of information, which may suggest that the tools for managing financial information are more mature, or that processes have been developed by vendors to share information between financial systems. It may also be the case that a single system is used by many nonprofits for storing financial information, and that information is either manually keyed into that system, or that a bridge has been built to convey information to that system. The survey responses do not conclude whether information is moved in both directions (i.e., both in and out) of financial systems.

Things like audit trails may drive the integration efforts for financial information, but even that information is not at all linked in nearly half of the respondent organizations.

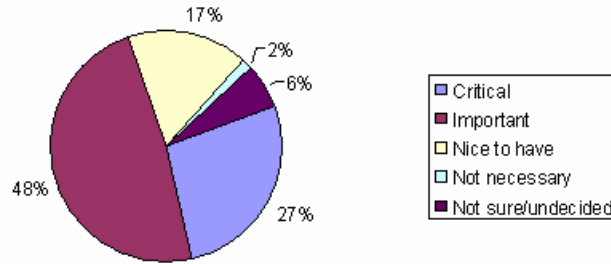
While the overall results suggest that there is still a lot of work to be done in integrating all types of information, information about people appears to be the most-integrated information, with 57% of respondents reporting that information about people is either fully or somewhat linked. Just over half of respondents also reported that financial information (52%) and information about programs and projects (51%) is either somewhat or fully linked, so the quantitative differences between the types of information linked are not statistically significant. Our qualitative research, however, suggests that information about people – donors, specifically – drives numerous integration undertakings in the sector.

TABLE 1. DEGREE OF LINKAGE BETWEEN DIFFERENT TYPES OF INFORMATION IN RESPONDENT ORGANIZATIONS

	Not at all linked	Somewhat linked	Fully linked	N/A
Information about people (staff, volunteers, members, donors, funders, etc.)	66 (37%)	79 (45%)	21 (12%)	11 (6%)
Information about programs, projects, campaigns and organizational performance	81 (46%)	77 (44%)	12 (7%)	7 (4%)
Financial information	77 (44%)	61 (35%)	29 (17%)	8 (5%)

One clear and consistent result from both our quantitative and qualitative research has been that data integration is seen as an increasingly important issue. In fact, 75% of respondents rated data integration as “critical” or “important” relative to other organizational priorities. We find this significant, and it suggests, along with the qualitative findings, that perhaps nonprofits see data integration as both an organizational priority in and of itself, and an initiative that supports other organizational priorities.

FIGURE 2. RELATIVE IMPORTANCE OF DATA INTEGRATION ISSUES IN RESPONDENT ORGANIZATIONS



Interestingly, respondents identifying their position within the organization as “management/associate” felt most strongly that data integration was critical relative to other priorities (35%), followed closely by “executive/senior management,” of which 30% identified data integration as “critical.” In fact, 88% of management/associate respondents reported that data integration was “critical” or “important,” as did 72% of executive/senior management respondents. Board members largely felt that it was “important” (47%), though 27% of board members were not sure or undecided, which could reflect a lack of understanding of data integration and what it means for the organization, or a lack of detailed knowledge of the organization’s priorities. We infer, however, from these results that people in decision-making positions in organizations view data integration as important or very important to their organization. We will return to the notion of leadership in a data integration effort later in the paper.

Not surprisingly, most very small organizations (annual budgets under \$50,000) did not rate data integration as critical or important relative to other organizational priorities. In fact, of organizations with under \$500,000 annual budgets, an average of only 15% ranked data integration as critical. This percentage starts to increase with budget size, then drops again for organizations with budgets between \$1 million and \$5 million dollars, though there is a corresponding increase in the percent of organizations in that budget size range listing data integration as important relative to other organizational priorities.

We found this surprising and looked for other potential correlations. All respondent organizations with budgets between \$3 and \$4.9 million had spent less than \$10,000 on data integration, which mirrored responses from organizations with budgets under \$100,000. The amount of money spent on data integration increases significantly with larger organizations, with 63% of organizations with budgets between \$5 and \$9.9 million spending over \$20,000 in the last 2 years, and 66% of organizations with budgets over \$10 million spending over \$20,000. While it is not at all surprising that larger organizations are spending more money on data integration, the relatively little amount of money spent and the relatively high importance placed on data integration seems anomalous among survey results. These results are perhaps due to the relatively small sample size of organizations with budgets between \$3 and \$4.9 million.

In terms of specific information sharing and data integration priorities, four types of integrations were of similar importance to respondents: upgrading existing systems (top or medium priority to 89% of respondents), enabling communication between systems or software applications (88%), implementing solutions so that existing systems can exchange data (87%), combining

data from different databases into a central database (86%). Converting paper-based systems into IT systems and purchasing new data management systems were listed as top or medium priority by 76% and 75% of respondents, respectively. This suggests that there is still a lot of information stored on paper in these organizations. The similar distribution of results across numerous different integration approaches may either suggest that organizations are undecided about how to approach their integration challenges, or that more than one integration solution is likely to be put into place to address these challenges.

Of the solutions rated as “top priority,” combining data from different databases into a single database led the pack, with 63%. Only 36% rated converting paper-based systems into IT systems as a top priority, suggesting, perhaps, that the information that still resides in paper-based systems used by the 53% of respondents is less mission-critical data.

Respondents placed a lower priority on acquiring new systems than on enhancing existing systems to deal with their data integration challenges. Nearly one-fifth (19%) of respondents rated “purchasing new data management systems” as a low priority as compared to 10% of respondents who rated combining data from different databases into a central database as a low priority, implementing solutions so that existing systems can exchange data (9%), upgrading existing systems (8%), and enabling communication between systems or software applications (7%).

TABLE 2. RANKING OF DATA INTEGRATION PRIORITIES BY RESPONDENT ORGANIZATIONS

	Top priority	Medium priority	Low priority	N/A
Converting paper-based systems to IT systems	64 (36%)	72 (40%)	24 (13%)	18 (10%)
Upgrading existing systems	89 (51%)	66 (38%)	14 (8%)	7 (4%)
Purchasing new data management systems	80 (46%)	50 (29%)	33 (19%)	12 (7%)
Combining data from different databases into a central database	112 (63%)	41 (23%)	17 (10%)	8 (4%)
Implementing solutions so that existing systems can exchange data	98 (56%)	54 (31%)	15 (9%)	8 (5%)
Enable communication between systems or software applications	100 (57%)	54 (31%)	13 (7%)	7 (4%)

When respondents were asked about specific experiences that made them interested in developing or adopting information sharing practices, the responses tended to fall into four general categories. For some survey respondents, the drive to integrate information stemmed from a need or desire to collaborate with others – other organizations, satellite offices, etc. For others, integrated information is core to their business operations or mission – in other words, the organization exists to share information. For others, integrated data provides a better understanding of their organization and constituents. For others still, it is a desire to avoid replication of data entry – some of the mistakes and other problems that can follow – that drives integration.

- Collaboration:
 - “Remote location of additional office space”
- Business operations/mission:
 - “Our mission is to make scientific data openly and freely available”
- Better understanding of organization and constituents:
 - “Just needed to be done to improve the organization’s performance and ability to provide quality services to our members.”

- Avoiding duplicate data entry and related problems:
 - “Lack of data integrity, cohesiveness, and negative donor relations due to lack of follow-up”

The last category of responses (avoiding duplicate data entry, trying to eliminate pain points caused by information that does not get updated) is a driver in the context of our proposed framework. It is either an internal (staff frustration) or external (unhappy donor) motivation to change. Other categories of response fall more into the opportunity moment part of the framework – a desire to better meet the organization’s mission or a desire to better understand the organization’s constituents. This, and other themes, will be explored below.

Emerging Trends

Our research in progress, based on the survey, interviews and a scan of the literature, yields a number of interesting themes.

Theme #1: The need/demand for integration is growing. Though not a pleasant memory in the history of nonprofit technology, the Open Philanthropy eXchange (OPX) was a non-profit data-exchange protocol developed in 2000 by a handful of vendors that provide serves to nonprofits, and serves as a useful baseline for the importance (or lack thereof) that nonprofit practitioners assigned to data integration at the time. The failure of OPX is widely attributed to being a vendor-led initiative that lacked buy-in from practitioners (foundations, in particular), who, arguably, did not feel the need for integration and therefore were not driven to explore solutions.

Skip ahead seven years. While a few years ago the email newsletter was just sent to a few people, today organizations send e-newsletters to tens of thousands of constituents and must deal with bounces and unsubscribes; if the task of exchanging data between a database with constituent lists and a mass email communications tool is not automated, the manual work to keep systems in synch is overwhelming.¹ Common scenarios like this are driving the demand for data and systems integration in the sector.

Theme #2: Data integration in the nonprofit sector is heavily focused on “people” data. To improve results in the development or advancement arm of organizations, organizations need to know more and have a more complete and accurate picture of their stakeholders – constituents, members, donors, funders and, to a lesser extent, staff and volunteers. The majority of interview respondents described integration initiatives centered around donor management and constituent relationship management, in other words, IT solutions that support fundraising activities. A recent article on integration approaches published by Idealware shares this focus (Quinn, 2007).

Another recent report authored by dotOrganize found that “[i]nadequate data management emerged as a major impediment to effective organizing. One of the areas hardest hit by this data disarray is contact management, or the tracking of people and relationships” (Dederich, 2006). For progressive organizations, which were the subject of this report, the management and integration of people data is a critical concern. Integration of program performance data is not a burning issue for nonprofit advocacy groups in particular.

There are fewer projects integrating and sharing information about program performance and organizational effectiveness, and its relation to people and financial data. Managing these three types of information (people, performance and financial) in order to present a unified view yields what is referred to as “business intelligence” in the for-profit sector.

Theme #3: Nonprofits are looking for ways to use constituent information they already have. According to a 2005 survey of companies, the highest spending priority for IT projects involved connecting previously isolated systems, presenting existing data in more accessible formats and “building new ways to distribute and analyze customer information they already have” (Spangler, 2005). While spending is not on par with the tens of millions invested in the business sector, trends in the nonprofit sector indicate a tremendous frustration as well as desire to make better use of data. In the dotOrganize report on the use of online technology by progressive organizations, nearly three-quarters (70%) of organizations rated the importance of data integration between their fundraising and online organizing tools in the top third on a scale of 1-10 (Dederich, 2006). Our survey results and trends noted by IT consultants to the nonprofit sector reinforce these findings. “Key nonprofit business needs – including content management, email marketing, donations processing and advocacy efforts – typically require an organization to integrate legacy systems with new tools to increase their overall effectiveness” (Herron, 2003).

Theme #4: The most common reasons nonprofits pursue integration are pain and hampered productivity. While findings from the survey and interviews do indicate positive “pull” factors that entice organizations to gain better insight into their fundraising or program performance, consultants and vendors report that the negative “push” factors are the most common reasons they embark on an effort to integrate their systems. This is true for data that exists in different systems and does not interact without manual intervention, for example, GetActive for advocacy and e-commerce and Raiser’s Edge for backend fundraising and donor management. It is also true for common data that span across different systems, for example, when a contact that resides in a CRM system is updated without automatically propagating the update into the fundraising system.ⁱⁱ

Theme #5: There is no one-size-fits-all solution. This theme speaks to the diversity of integration solutions and their relative appropriateness depending on a nonprofit’s particular needs. But it also touches on trends noted in the consultant and expert interviews suggesting that nonprofits’ are moving away from buying all-in-one solutions and in response vendors are opening up their systems. For example, best-of-breed systems such as Convio and GetActive are already doing thisⁱⁱⁱ, and Kintera is looking to modify their software so that it is more open, more object-oriented or componentized. Increasingly, product developers are incorporating XML in one way or another^{iv} to allow integrators to knit together systems that don’t naturally talk to each other, for instance, by connecting in and out of Raiser’s Edge. A related phenomenon is an increased need for “snap-on, snap-off tools” that organizations can choose and are not too expensive^v such as online Application Service Providers (ASPs) like Salesforce.com (CRM), Democracy in Action (communication and advocacy tools) and Gmail (Dederich, 2006).

Theme #6: There is a tremendous emerging opportunity for vendors who specialize in data integration and product development within vibrant product ecosystems. It follows from

previous themes that with increasing demand for integration solutions in the nonprofit marketplace, vendors that help nonprofits integrate their data and connect their systems are poised to benefit. Companies like Beaconfire Consulting, Heller Consulting and Jacobson Consulting Applications, Inc. are thriving in this space. This trend is also true for vendors that specialize in product development within a software “ecosystem.” One nonprofit practitioner interviewed spoke of the changes he has observed just over the past two years. “Now an increasing number of consultants are helping clients integrate Salesforce with open source CMS, whereas previously one couldn’t find a vendor with expertise in both open source CMS and Salesforce development. This growing niche exists because of Salesforce’s outreach in the nonprofit sector.”^{vi}

Innovative Approaches in the Nonprofit Sector

The survey results indicated there is a high level of interest in this topic, demonstrated by nearly 50% (85) of the 181 respondents who answered a question gauging their interest in being the subject of continued research. This high level of interest was not anticipated and not feasible within the scope and time constraints of the current study, but is both a further testament to the increased awareness, interest and need for data integration solutions in the sector, and a fruitful area for further study.

A handful of innovative approaches to data integration and information sharing within and among nonprofit organizations are included below. These are illustrative examples only and by no means a comprehensive list of the variety of data integration efforts occurring in the sector. Despite the variety, each example is consistent with the framework described herein: certain pre-conditions (push/pull factors) must be present for an organization to take on a data integration effort, and certain other conditions (collaboration/leadership/ownership) help to make data integration solutions successful.

Example #1: La Leche League International – Innovation in... alignment of IT solution with organizational principles and user control over data sharing agreements between systems

ORGANIZATION DESCRIPTION: La Leche League International (LLLI) is an international organization providing information and support to breastfeeding mothers.

ORGANIZATION’S ANNUAL BUDGET: Between \$1 million - \$2.9 million

PUSH/PULL FACTORS: There was both a compelling business driver and an opportunity moment. The organization was facing a changing funding landscape, and a need to adapt how it was operating as an organization. At the same time, LLLI was reinventing itself as a more distributed organization so that the organizational structure would be more consistent with the organization’s mission and service model. As Joel Getzendanner explained, LLLI is moving from a mainframe model to an internet model – in other words, moving from a centralized organizational structure to a distributed network structure. LLLI therefore undertook an integration initiative to make its online interactions with its members and volunteers consistent with its new organizational structure.

INTEGRATION SOLUTION: LLLI spent almost six months trying to extract data from a legacy system that had been a good application for one thing but had been used for everything else in the organization, which had become problematic. Nearly 100,000 records were extracted from the

legacy system, and nearly half were duplicates. Most had some relevant piece of data, so records were merged. Trying to clean data to a reasonable level was getting impossible. LLLI's current integration efforts – bringing together Kintera, community tools, and other applications, using the i-names XRI standard to support single-sign-on authentication and transporting of data between applications, while ensuring user-level agreements about data – turn control over data to local participants to clean and then own that data. The “a-ha” moment was that data cleansing and integration could happen faster and more accurately by following the principles to which the system was designed – the organization's principles.

OWNERSHIP: The development of the technological solution was part of the development of the overall organizational strategy. A group of about 20 volunteers was involved worldwide in developing the principles. There was organizational leadership and direction in mandating a new IT solution for the organization; the development and implementation of the project has been owned by more people, and ownership will continue to grow as LLLI members and volunteers are educated about the new system and able to control how their data is used and shared.

COLLABORATION: LLLI's solution is fundamentally a collaborative model. By localizing data and providing end users with more control over how their information is used, LLLI is working in a distributed way with its constituents, and encouraging local collaboration among members and volunteers making use of the tools LLLI is providing. The organization's principles imply building consensus and accountability at a local level; members and volunteers in local communities work together. Increasingly, the tools provided by LLLI will support that local organizing and collaboration.

NOTEWORTHY: LLLI's unique approach to integrating its data reflects its distributed organizational structure – rather than centralized data, information is distributed with local control. LLLI is a mother-to-mother network – it strives to bring resources as close to the mother as possible. As such, turning over control of computer systems (how and when users interact, decisions about what user information is shared with which applications and when) is consistent with the organization's principles. LLLI is about agreements among mothers; the computer system is about agreements among applications, but under control of the mothers who are members and volunteers, reflecting organization as a whole. This approach allows members and volunteers to act and interact more naturally – as they would offline. Part of what is noteworthy in this approach is that offline interactions and structures are determining how online interactions and structures should occur.

URL: <http://www.lalecheleague.org/>

SOURCE: Interview with Joel Getzendanner

Example #2: Susan G. Komen for the Cure – Innovation in...creating a web services layer

ORGANIZATION DESCRIPTION: Susan G. Komen for the Cure (formerly the Susan G. Komen Breast Cancer Foundation) is the world's largest and most progressive grassroots network of breast cancer survivors and activists dedicated to curing breast cancer through advancing research and ensuring quality care for all.

ORGANIZATION'S ANNUAL BUDGET: Over \$10 million

PUSH/PULL FACTORS: The primary driver for Komen's integration was to integrate its online constituent data in response to customer frustration and feedback. Its goal was to simplify the customer experience by using the same user IDs and passwords across all the different pieces of its web features, from engaging in advocacy to changing account information. In addition,

Komen staff were not able to analyze online activity and transactions, such as shopping, advocacy, or email subscriptions. These costs associated with fragmented web applications forced the organization to decide whether to put all its systems on one platform or create inter-system communications. Komen also has a legacy backend donor database system that is not connected to its web assets.

INTEGRATION SOLUTION: Komen was in the process of rebuilding its backend contact database and replacing its backend donor database, and knew it could not integrate everything right away. Komen consulted with Beaconfire, who recommended a comprehensive multi-way data integration strategy. In order to avoid one-to-one linkages, the solution involved creation of an “integration layer” into which they asked their vendors, Convio and GetActive, to configure integration points using a web service API that provided common integration specifications. Changes made to specific constituent data in one system would be sent to the integration layer, which would in turn push the changes to the central database and out to all the other relevant systems. The resulting solution consisted of a set of integrated tools handling advocacy, fundraising, membership and events and an integration layer that allows them to manage all integration points from one area.

OWNERSHIP: Komen invested in the development of its own integration capacity, through funding application development internally, hiring Beaconfire to analyze the best approach for organizing and exchanging its constituent data, and by paying the vendors for its fundraising and advocacy systems to configure their systems to integrate with the web services layer. Komen also took ownership of the solution in another way, by developing the specifications for the taxonomy needed to classify names and concepts that describe the data so that it can be translated across systems. As a result of this investment, Komen controls its own integration layer and the taxonomy that underpins it.

COLLABORATION: Komen is an example of a multi-million dollar nonprofit organization that worked with multiple vendors and consultants, and invested in the processes and tools, to create a generic enough solution that could be re-used for other web services integrations. Jeff Herron describes this case as “emblematic because the client said, get two vendors to create something useful for me and for the sector – creation of web services layer.”

NOTEWORTHY: Two things are noteworthy about this case. First, there was a significant nonprofit client calling the shots and that had the means and the will to “corral the cats”^{vii} (the technology providers). As Beaconfire pointed out, most nonprofits don’t have the will or the means. Second, the end result was a solution that gave Komen ownership over the integration solution, and therefore control over what products and systems it chooses to plug into and benefit from it; it’s not captive to any one product or provider. Moreover, this solution could be thought of as an investment in building the field since both GetActive and Convio now have a web services integration layer.

URL: <http://www.komen.org/>

SOURCE: Beaconfire Consulting interview; a fuller description of this example can be found at: http://www.beaconfire.com/clients/stories/technology/susan_g_komen_foundation.php

Example #3: Planned Parenthood Foundation of America – Innovation in... modified data warehouse solution

ORGANIZATION DESCRIPTION: Planned Parenthood Federation of America (PPFA) is a national network of health centers dedicated to sexual and reproductive health care advocacy and

services. It has over 860 centers, and serves nearly five million people per year. In addition to the centers, PPFA has more than 120 local affiliates and 50 state public affairs offices.

ORGANIZATION'S ANNUAL BUDGET: Over \$10 million

PUSH/PULL FACTORS: Advocacy is a large part of PPFA's mission and activities. As such, good data is critical to the success of the organization. PPFA had a compelling business driver in having difficulty making sense of multiple data streams. It also faced an opportunity moment in trying to organize a big advocacy push before a large march on DC. PPFA wanted to make over a million records easily accessible for its geographically distributed affiliates.

INTEGRATION SOLUTION: In 1999, PPFA set out to create a grassroots base of over 1 million people to engage in electronic activism. The online outreach tool PPFA was using had some limiting factors – it used email addresses as a unique ID, which made consolidation and tracking of changes difficult. PPFA was also using Convio at headquarters for fundraising. Rather than merging information into one system or the other, or creating a bridge between the two, PPFA developed a modified data warehouse allowing PPFA to pull names and data from multiple sources (NCOA, voter files, census block data, PPFA's own email and phone lists) into a centralized location, then serve up that data to PPFA organizers for email and telephone outreach. Under the guidance of Beaconfire, the data warehouse solution was developed to apply business rules for processes including record matching and data survivorship. The result is a unified de-duped list of over 2.7 million names that allows for easy data use by PPFA's geographically-distributed affiliates.

OWNERSHIP: PPFA's public policy office recognized the need for better, more unified data. PPFA worked to get user buy-in during the development and implementation phases.

COLLABORATION: In addition to internal collaboration, this integration solution required extensive work with a data warehouse provider, as well as consultants to guide both the product selection and implementation processes, as well as some of the technical integrations between tools.

NOTEWORTHY: Data warehouses appear to be unusual solutions for nonprofit organizations, though they are more common for corporations.

URL: www.plannedparenthood.org

SOURCE: Beaconfire Consulting interview; "Getting it All in One Place: Data Integration Strategies" Panel Presentation at the NTEN Regional Conference in Washington, DC on October 11, 2005; Beaconfire Consulting, Client Success Story: "Planned Parenthood Federation of America: Data Warehouse."

http://www.beaconfire.com/clients/stories/softwareeval/planned_parenthood_federation_of_america_2.php

Example #4: Nebraska 211 Initiative – Innovation in...State-wide taxonomy and data standards for the I&R field

ORGANIZATION DESCRIPTION: The Nebraska Statewide I&R implementation ("Nebraska 211 initiative"), which involved the creation of a 2-1-1 information system that developed a state-wide Information & Referral (I&R) database. The system enables individuals to search the entire state for social services programs, and is also used by 211 operators when making referrals.

BUDGET: \$1.25 million (total cost of the initiative)

PUSH/PULL FACTORS: The initiative was funded through a 2003 TOP (Technology Opportunities Program) grant from the U.S. Department of Commerce - National Telecommunication and Information Administration. The federal contribution to the total project cost was \$600,000 over

three years. Since 2004, the TOP program stopped issuing new grant funds, which shows that this was an opportunity window that is now closed.

INTEGRATION SOLUTION: Augustine “Tino” Paz of the United Way of America, who described himself as an “engaged stakeholder” in the Nebraska 211 initiative, emphasized the potential for field-level learning in the area of developing a taxonomy and data standards for the I&R field. Developing the taxonomy was a much longer process that has part of its roots in an earlier classification system from the United Way of America and has evolved over 30 years. The official AIRS/211 INFO Line Taxonomy of Human Services was authorized for use in the Nebraska 211 initiative. Having an established taxonomy for human services enabled the creation of an XML standard for providing resources and referrals. However, the initiative did not involve aggregation and sharing of client and intake information about people who called or used the database in search of assistance.

OWNERSHIP: The University of Nebraska Public Policy Center took ownership of the project, and with its grant funding worked with subcontractors and partners such as AIRS. But the owner and steward of the project funds were clearly located with the University of Nebraska, which helped to manage interactions among the various players as well as the competition among vendors.

COLLABORATION: The statewide database integrated existing databases of multiple state entities, including Lincoln-Lancaster County Health Department, United Way of the Midlands, Nebraska Resource Referral System, and Health & Human Service for the Nebraska Panhandle. The strong components of collaboration and coordination in this initiative were critical factors to its success. The project enjoyed strong support from Alliance for Information & Referral Systems (AIRS), and fostered strong field engagement and support from practitioners who were respected and listened to just the same as the experts.

NOTEWORTHY: Mr. Paz describes this initiative as the most well-funded, rigorous and groundbreaking, academic research initiative with practical applications that he has seen. It is noteworthy for establishing data standards for a vertical field – I&R for human services – within the sector. But Mr. Paz feels that there has been a lack of broader field-level learning from this initiative.

URL: <http://www.ne211.nebraska.edu/index.htm>, <http://www.211taxonomy.org/>

SOURCE: Augustine “Tino” Paz interview

Example #5: The Aidmatrix Foundation Inc. – Innovation in...large-scale, cross-sector data integration and information sharing.

ORGANIZATION DESCRIPTION: Founded in 2000 (and achieved nonprofit status in 2004), the Aidmatrix Foundation (Aidmatrix) is a Dallas-based international nonprofit whose mission is centered around information sharing in humanitarian aid: they “bring help and hope to people who are suffering as a result of poverty or disaster by mobilizing The Right Aid to the Right People at the Right Time™.”

ORGANIZATION’S ANNUAL BUDGET: Over \$10 million

PUSH/PULL FACTORS: Information sharing is core to Aidmatrix’s mission: “We live in a world of plenty. At the same time, so many struggle with basic necessities of life. It is an information integration problem. Supply and demand don’t match. A strong running economy assumes perfect information and perfect visibility to make supply and demand match.” A tremendous opportunity moment made it possible for Aidmatrix to make the idea operational: the donation of i2 Technologies’ original supply chain software from which today’s Aidmatrix solutions

evolved. The original software has been used commercially to create over \$30 billion of value for its users. The birth of Aidmatrix was a time where electronic marketplaces were becoming very prevalent. There was considerable financial and intellectual investment into the fundamental problem of facilitating surplus exchanges in industries such as auto and oil. Aidmatrix was able to free ride on business and society's investment and make industry solutions specific to nonprofit work – a huge opportunity moment.

INTEGRATION SOLUTION: Through customization of the donated i2 software, Aidmatrix allows nonprofit humanitarian aid organizations to distribute food, clothing, building, medical and educational supplies to people in need through efficient inventory management and distribution techniques previously used almost exclusively by for-profit companies. The organization has built integrations to work with key manufacturers and distributors of food that connect directly to inventory control and ERP systems into the humanitarian aid chain; they have reduced inefficiencies of manual systems, by allowing members at local food banks, food pantries, drug rehabilitation centers, child care facilities and other agencies to see real time what inventory is available.

In addition, Aidmatrix is helping to form a group with World Economic Forum's Disaster Resource Network, Global Hand in Hong Kong, Intel and Mercy Corps. Together these organizations are leading the Global Commons Alliance, a loose affiliation of organizations in the disaster relief space that is intended to "connect the connectors." The Alliance is developing standard open source protocols for how to exchange information around in kind donations. Called P4, Public/Private Partnership Protocol, the protocols will help to enhance connectivity between systems and to facilitate the process of developing online, localized solutions that "match" volunteers, housing needs, material resources, freight requirements, or even missing persons. They are also adopting the XML based RosettaNet standards, heavily used by the electronics manufacturing industry with a governing body that has established processes and governance needed to have globally viable and adoptable in-kind donations expertise. As a product-based standard, it is a good starting point.

OWNERSHIP: Aidmatrix views information sharing as a form of ownership when you can make the system look the way users want it to work. For example, when free clinics started using the system for donations management, Aidmatrix began working with organizations on advanced usage, such as collaborative buying, food bank to food bank auctioning, and reverse auctions. Michael Ross spoke of the network effect of information being visible. As organizations use the systems more frequently, they build up the muscle and come up with creative new uses, for example, a strategic buying program and cross integrating food systems with medical systems. More collaboration and whole treatment of people in need within the disaster system empowers people to cross integrate supply chains of giving, and the benefits increase exponentially.

COLLABORATION: Aidmatrix attributes its success to partnerships with visionary organizations in the corporate and nonprofit sectors who could see how technology would work to realize benefits for the whole community and were willing to work with them and invest the time to make it happen. Its three flagship partners are National Association of Free Clinics (NAFC), America's Second Harvest – The Nation's Food Bank Network, the nation's largest domestic hunger relief organization, and Adventist Community Services/Disaster Division that provides many disaster relief services, including relief warehouse management, for many relief agencies, state governments and FEMA. Aidmatrix also works with a number of corporate partners such as Accenture.

NOTEWORTHY: Aidmatrix is a remarkable data integration example on several levels. One is the uncommon and large-scale cross-sector partnerships in integrating systems and sharing information from corporate donors to nonprofit recipient agencies. Another is that it leverages and customizes technology and software designed for industry to the nonprofit sector. These supply chain systems hold a much wider variety of data types, including product and transaction information, than most systems in nonprofits that work with data about people, finances and performance. Also worth noting is Aidmatrix's efforts in adopting and applying industry standards for data and technology to the aid and disaster relief community. The organization's preference to leverage solutions from industry and the corporate sector is admirable, though not as feasible for small, individual nonprofit organizations unless they partner with a behemoth such as Aidmatrix.

URL: <http://aidmatrix.org>

SOURCE: Keith R. Thode and Michael Ross interview

Example #6: Management Leadership for Tomorrow – Innovation in... use of open APIs to custom integrate best of breed applications

ORGANIZATION DESCRIPTION: Management Leadership for Tomorrow (MLT) is a national nonprofit organization that is developing the next generation of business leaders by preparing high-potential minorities for success at top tier companies and elite business schools.

ORGANIZATION'S ANNUAL BUDGET: Between \$1 million - \$2.9 million

PUSH/PULL FACTORS: When Eric Santiago joined the organization as Director of IT and Business Systems about two years ago, the organization had no legacy systems to speak of; everything in the organization was on spreadsheets. He was hired to evaluate the information needs and data storage strategies needed to achieve a centralized location for all their data. The organization wanted a system that would be scalable going forward. In addition to the unique internal opportunity of being able to select a system without having to deal with legacy systems, the organization saw several external opportunities in the market for nonprofit software. As a nonprofit, MLT was eligible to obtain a blend of discounted and donated Salesforce licenses. Mr. Santiago looked at several all-in-one products but ultimately selected Salesforce because of the discounted price – which he points out, is not available from the companies that are targeting the nonprofit market – and its open API. There are a number of third parties making products compliant with Salesforce that MLT planned to integrate into Salesforce, such as email marketing and survey tools. While products like Kintera and GetActive are willing to do some customization, whether requests are included in product releases depends on a) how many other customers also want that change, and b) how big of a customer you are. He describes Salesforce as a market leader setting standards: it is a hybrid between a purely customized and off-the-shelf solution, where one can go to a third party ecosystem to choose best-of-breed products that comply with the Salesforce standard. Furthermore, Salesforce encourages partners to match its donation program, allowing non-profits to build integrated solutions through third party products at a discounted cost.

INTEGRATION SOLUTION: MLT is an example of a Salesforce integration that uses open APIs to custom integrate several best-of-breed applications. Over the past year, the organization implemented a platform centered around Salesforce.com which integrated the contact management system with an custom-built online portal and a third-party email marketing system.

They are also working on integrating Paypal donations, Drupal CMS, and Quickbooks accounting software with Salesforce.

OWNERSHIP: Mr. Santiago rates data integration as “critical” relative to other organizational priorities, and this is reflected in the IT budget. MLT devotes approximately 8 percent of its \$2.9 million annual budget towards IT.^{xxiv} The organizational culture is also inclined to embrace new technology systems. As a very young organization, the staff is more open to encouraging and fostering the sharing of information. Though, Mr. Santiago also notes that staff members have varying comfort levels with technology; ranging from excited to try new tools to overwhelmed by the pace of change. Now the organization is devoting more resources to staff training around user adoption and education.

COLLABORATION: After implementing Salesforce as their core system, all the departments in the organization are using the system. The development team is using it to get statistics from the program departments without the need for intermediaries. This avoids taking program managers away from their work and increases their insight into communications. The volunteer manager and alumni managers are allowed to run metrics and really measure performance by quantifying their data and measuring growth and impact on participants. There is not only synergy between the development team and program teams, but also between programs. Previously, each of the three different programs – focused on high school, college and young professionals respectively – represented information silos within the organization. Now they can take participants and work with them from a young age to mid-career, tracking participants as they move from one relationship to another, and managing the participants’ relationship with MLT. The organization’s more unified view of their fundraising, constituent, and performance data has allowed them to collaborate more effectively internally as well as build their external relationships and network.

NOTEWORTHY: This example illustrates some of the possibilities available when product developers build open APIs that become more mature with increased market penetration. It feeds the imagination about similar possibilities in the open source space where product and API maturity is more likely to be achieved through network effects. Just as noteworthy are the unique conditions and preconditions that inform the context for MLT’s integration initiatives.

URL: <http://www.ml4t.org>

SOURCE: Eric Santiago interview

Finally, it is noteworthy that most of these examples represent organizations with budgets between \$1 million and \$2.9 million or over \$10 million. Few of the examples we came across illustrate innovative approaches within smaller nonprofits, although the survey results offer an opportunity for further research to gain a better representation of data integration efforts happening in the sector, and of the correlation between budget size and capacity to undertake data integration efforts. In addition, several organizations that are involved in data integration initiatives were contacted for this study, but did not respond to our request for an interview. Nevertheless, we recommend continued contact with those groups to ascertain their potential interest in this research and learn from their work.

Discussion

Best Practices/Success Factors

In addition to themes and emerging trends in data integration approaches in the nonprofit sector, a number of best practices for data integration to be successful were observed. For the most part, these practices can be equated with good, standard project management and change management practices that complement the framework components.

Best Practice A: Communication is critical to the success of an integration effort. A number of nonprofit practitioners emphasized the importance of communication in one way or another. One person spoke of the need to communicate the overarching purpose of an integration initiative, noting that owners and stakeholders must have an “awareness, and a deliberate element of transparency and intent about what they are trying to do, and let that drive how they are using technology. It is easy to lose sight of the purpose of integration.”^{viii} Another practitioner echoed this theme, stating that a core success factor requires “communication about why we were doing it and what the benefits would be. You have to be overly communicative about it for people to understand the benefits and what’s going to result.”^{ix} Yet another practitioner stressed that one of their biggest challenges during the organization’s integration initiative was communication within the organization, resulting in symptoms of anxiety, fears and push back from organizational members with differing expectations about what the outcomes should be.^x

Best Practice B: Triple the estimated timeframe for an integration effort—at least—and build in the time and resource requirements when scheduling and planning for an integration effort. Several wishes that emerged from interviews with practitioners expressed the desire to make the process of integrating information move faster.^{xi} One organization reported spending almost six months trying to extract data from their legacy system. Another respondent acknowledged not fully understanding the resources and staff time that would be required to integrate data systems, and the need for building that into planning and scheduling the integration effort. The upshot is that data integration is still as much an art as a science, and that may not change anytime soon as systems continue to become more complex.

Best Practice C: Seek appropriate and affordable solutions for your organization’s circumstances while keeping in mind long-term costs and benefits. Nonprofits must always be cautious and sensitive to significant capital outlays that technology projects often require. One practitioner spoke of the need for more affordable solutions, and looked to the maturing of open source software as one remedy.^{xii} Another organization commented that the only way they were able to fund their integration initiative was because it was underwritten by a restricted funding source. Had the funds come out of general operating, they would not have been able to complete the project – those funds would have been redirected to get the organization on stable financial footing.^{xiii} Since there are very few private funding sources for field-level technology infrastructure projects, this example likely represents an exception rather than a trend. For nonprofits thinking about integrating their data and systems, the bottom line comes down to a cost-benefit analysis with imperfect information about both the costs and the benefits. Nevertheless, it is an important exercise that can help guide an organization’s thinking.

Best Practice D: Pay as much attention to organizational and cultural issues as to technology issues. Integration solutions address in part technology issues and in part human organizational issues.^{xiv} Stakeholder groups must be able to adapt to changes that come along. In addition, the project stands a better chance for success if management is committed to the idea and there is a clear directive from the top of the organization.^{xv}

Observations and Challenges

While the above trends indicate that the nonprofit sector is increasingly embracing and embarking on data integration efforts, the sector still faces considerable challenges that present cause for concern about how these trends play out in the years ahead.

Observation #1: There is a tendency to focus on the “how” rather than the “why” of integration. The buzz surrounding discussion and debate about data standards and open APIs risks supporting a tendency observed towards focusing on the “how” of data integration rather than the “why.” Research suggests that the “why” should drive the “how,” not the other way around. Some product developers, technology providers, IT consultants, and others in the sector have a clear stake in a certain solution. One practitioner observed and cautioned against jumping to the “how”: “Create demand for the initiative first by communicating the benefits from the perspectives of key decision-makers and essential project sponsors. That is, avoid focusing excessively on the technical aspects of the Standard initiative (whatever it may be) when engaging Organizational Leaders” (Paz, 2006).

For example, open source developers favor open source solutions and eschew the idea of products positioned to corner the nonprofit market. They view this type of solution as imposing de facto standards similar to the Microsoft standard for personal computing. Open APIs, while not a new concept in the business sector, are currently seen by some product developers and technology consultants as the wave of the future for connecting data between systems.^{xvi}

One consulting firm, for example, argues that nonprofits should adopt software targeted for broader markets and then use APIs to extend functionality and customize “customize the 10% of specific needs that nonprofits have” (Stahl, 2006). It would be helpful (and reassuring to nonprofits) to have data to support the statement that incremental customization only amounts to ten percent of the application cost. Even so, for small nonprofits the base cost of an application and the investment in custom development may make this a prohibitive solution.

Two camps – all-in-one versus best-of-breed – can be seen in the nonprofit technology community. And there are success stories within both camps.

But more important than a universal solution is gaining a true understanding of the organization’s need to integrate and their desire to integrate, as well as knowing the people and groups that are willing to work together to integrate, and that are willing and able to lead and own the integration effort. These factors should guide decisions around appropriate solutions, not the other way around.

Observation #2: There is currently no incentive to build standards for data integration. Many competing vendors do not see it as in their interest to integrate because there is no

economic return to adhering to a general standard. A related theme is that some vendors do not see an incentive in collaboration. One nonprofit practitioner wished for “vendors that are accustomed to working with other vendors – not adversarial – not an add-on, part of a product that it’s made to work with other products; [I would like the] ability to work in a multi-vendor environment.”^{xvii} Some in the open source community take exception to this sentiment because their products improve through increased collaboration and network effects.^{xviii} A few exceptions aside, by and large the nonprofit sector lacks formal bodies with a process and structure for promoting and supporting standardization of data. Even if such bodies were more common in the sector, it is plausible that the entry barriers would be too high for small nonprofits and small IT consulting firms and open source development shops to join and benefit, unless the governance were structured to support participation by small organizations. For example, one of the oldest associations that stewards standards development in the commercial sector, the Institute of Electrical and Electronics Engineers, Inc. (IEEE), has established principles that “allow for equity and fair play so no one interest category dominates the process” (IEEE, 2004). Can these models be leveraged to reach the long tail?

Observation #3: Sometimes integration is a desire that isn’t necessarily appropriate. Some of the consultants and experts cautioned that nonprofits seek integration because they see others using something, and they want to do it.^{xix} One consultant, Steve Birnbaum, Chief Operating Officer of JCA, offered a threshold when it might be worthwhile for an organization to consider integration: “Until they give a gift, don’t bring it into the backend.” As nonprofits become more aware of the options available to them, they too should explore their reasons for wanting to integrate, the perceived benefits, the full costs and the alternatives, and the short-term versus long-term trade-offs.

Observation #4: Nonprofit practitioners and IT consultants alike ponder the cost barriers that prevent many nonprofits from realizing the benefits of integration. Consultants are clearly concerned with the gap between nonprofit organizations’ need for integration and their ability to pay for it:

- “It’s like pulling teeth to get people to really invest.”^{xx}
- “Contracting with Beaconfire is tens of thousands of dollars; many organizations don’t have the resources to do this.”^{xxi}
- “How do you get nonprofits to invest in software? Maybe large software companies can start to allocate some of their funds to this. Most nonprofits don’t have the luxury of spending the money to do this.”^{xxii}

Several nonprofit practitioners who were interviewed share the same concern.^{xxiii} While the open source community promises low cost integration solutions, the ability to freely access, modify and redistribute source code does not necessarily translate into a low total cost of ownership for an organization’s IT systems. This issue still remains open to speculation.

Approaches in Other Sectors

With a sense of the trends, challenges and opportunities for data integration in the nonprofit sector, it is instructive to take a peek at how other sectors deal with these same issues.

One thing that is immediately obvious is the use of slightly different terms for basically the same idea that our working definition of data integration is intended to convey. Some other terms used for a very similar if not the same concept include:

- information sharing (Whatis.com, 2001),
- master data management (MDM) (Padilla, 2006), and
- enterprise information management (EIM) (Newman, 2005).

As discussed earlier, literature in the for-profit sector defines these terms similarly. These concepts also share a main theme that we have highlighted about data integration in the nonprofit sector – that the inherent challenges in information sharing, (or MDM or EIM) are not about technology but rather the “challenge is identifying *what* data is being collected, *why* it is being collected, *who* is doing the collecting, *where* it is being stored, and most important, who owns it and what barriers are in place to prevent the data from being shared” (Padilla, 2005). Many of the “critical factors for success” recommended for dealing with MDM efforts include the same takeaways we discuss here:

- Realize that MDM is not a technology-driven effort;
- Have support from top management;
- The devil is in the details when stakeholders push back on sharing data;
- Be creative and keep an open mind;
- Never stop touting the benefits of shared/consolidated data (Padilla, 2005).

Several models for data integration from the corporate sector make a strong case that data integration and attempts to connect and share different types and instances of information between and across systems to provide a unified view to an organization cannot be achieved with technology alone. Rather, they require “a holistic approach that balances technology choices with equally important organizational, governance, process and architecture dimensions to ensure an enterprisewide impact” (Newman, 2005).

While models borrowed from the corporate sector can sometimes be overkill or irrelevant when applied to the nonprofit sector, some models, like MDM, offer useful guiding question. The nonprofit sector can also look to industry and government for processes and structures that serve to guide and manage technology as well as organizational and governance issues involved in data integration initiatives.

One paradigm is the Technology Information Sharing and Analysis Center. It is a pre- 9/11, private sector led collaboration of industry leaders to “share each organization’s information about security attacks and vulnerabilities among all the members” (Whatis.com, 2001). It was started as a response to Clinton’s Presidential Decision Directive in 1998 “appealing to US industry leaders to form information sharing and analysis groups to protect the nation’s critical infrastructures against attacks, and establishing that purpose as a national security policy” (Whatis.com, 2001). It is modeled after the Financial Services Information Sharing and Analysis Center that formed in 1999. These “information sharing and analysis” centers are noteworthy for their vertical focus on a specific industry and its corresponding information taxonomy. Such a focus could be beneficial to the nonprofit sector.

A second paradigm that is also led by the private sector consists of professional associations and

consortia. The following is an illustrative list of global, cross-sector, membership consortiums that drive, shape and guide the development, convergence and adoption of IT standards:

- **The Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA):** As mentioned earlier, this group has been at this the longest. The IEEE is the world's leading professional association for the advancement of technology. Through an open, consensus-based process IEEE develops standards in both traditional and emerging fields, particularly telecommunications, information technology and power generation. IEEE standards facilitate early compliance and anticipate market requirements by providing members the opportunity to network with industry peers and broaden their understanding of their industry and technology, and to gain familiarity with the content of standards in which they are involved.^{xxiv} The IEEE's lesson for the nonprofit sector is, it's all about governance, stupid;
- **OASIS:** The Organization for the Advancement of Structured Information Standards is a not-for-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium produces more Web services standards than any other organization along with standards for security, e-business, and standardization efforts in the public sector and for application-specific markets;^{xxv}
- **Open Group:** The Open Group is a vendor- and technology-neutral consortium, whose vision of Boundaryless Information Flow™ is to enable access to integrated information within and between enterprises based on open standards and global interoperability.^{xxvi} Open Group works with customers, suppliers, consortia and other standards bodies in government and multinational companies;
- **IMS Global Learning Consortium:** In service to the community of organizations and individuals enhancing learning worldwide, IMS/GLC is a global, nonprofit, member organization that provides leadership in shaping and growing the learning industry through community development of standards, promotion of high impact innovation, and research into best practices;^{xxvii}
- **Association Data Standards Consortium:** Founded in 2003 by 19 association professionals, ADSC is charged with identifying and developing data standards that facilitate seamless, efficient electronic data exchange and integration among the software applications used by associations. Once the founding core team agreed on the mission and guiding principles, membership was opened to the public and relevant vendors were encouraged to participate.^{xxviii} A user committee looking at associations' needs has grown up around this initiative, and there is some overlap with the needs of nonmember-based nonprofit and philanthropic organizations (Peeler, Bagnell Stuart, and Goldstein, 2006).

A defining characteristic of these consortia is that although they are typically cross-sector, they develop standards that are either industry-specific or customized for specific business functions. This begs the question whether establishing field-specific (e.g. health care, education, arts) standards bodies within the nonprofit sector is a more feasible approach to developing data standards within the sector, similar to the ASCD for nonprofit associations (described above) or the Global Commons Alliance for disaster relief agencies (described above in the Aidmatrix case study).

Among the takeaways from some initiatives in the corporate sector are the following:

- the most appropriate approach to data integration must be determined in light of the needs of the business or organization;
- addressing data integration challenges is important: if disparate and duplicate data sits in different systems and isn't cleaned and properly coordinated, it will compromise an organization's ability to implement cutting edge technologies such as SOA and other technology and business processes and practices that manage and use critical information (Morris and Olofson, 2006). In other words, garbage in, garbage out;
- regardless of the specific approach to data integration, in an incremental or "one step at a time" approach helps promote success and provide mechanisms to measure progress and make continuous improvements (Morris and Olofson, 2006).

While not exhaustive, the preceding illustrative examples of both intra-organization and intra-sector integration initiatives and approaches from the private sector and membership-based standards bodies offer two key take home points:

- Organizations should take an industry- (read: field-) specific approach to data standards, and
- Organizations should heed the imperative for information governance.

The for-profit sector offers an evolutionary pathway of new technologies and approaches that can inform data integration and information sharing efforts in the non-profit sector. This is not to say that nonprofit agencies and organizations should or will follow in the exact footsteps of industry. But observing that our sector is a couple generations behind what's happening in industry and high tech (Geilhufe, 2005) offers important lessons that can be considered in light of the nonprofit sector's unique characteristics: fiscal stress, increased competition, rapidly changing technology, and new accountability expectations. This difficult set of challenges has "significantly expanded the pressures under which these organizations must work, and this has affected the public support these organizations enjoy and their ability to attract and hold staff" (Salamon, 2002).

Given this reality of fierce competition and scarce resources, a dynamic relationship between some of the themes noted above begins to emerge. Organizations must first become aware of the costs and benefits of data integration efforts, including the option of doing nothing about it. Once they gain an understanding of the importance of the issues, and its relevance to overall organizational goals and mission, organizations are better able to navigate the other conditions that impact integration efforts: collaboration and coordination with other people, units, groups, organizations and networks in identifying and developing solutions, and the critical role of leadership and ownership in determining the success or failure of integration efforts.

This idea appears to have universal application. In speaking about the need to improve data quality and synchronize performance management efforts across companies in order for a company-wide business intelligence initiative to succeed, one Gartner analyst noted that "[d]ata quality requires a certain level of sophistication within a company to even understand that it's a problem" (Kemp, 2006).

As inaccurate, duplicate, outdated and unconnected data create pain within organizations and push them to do something about the situation, and as opportunities pull organizations to adopt new tools such as online fundraising and online advocacy tools, we are seeing an increased need and demand for data integration among nonprofits, more so than we did during the days of OPX.

And as greater numbers of nonprofits address data integration issues, either internally or in collaboration with other groups and agencies, we see the other components of our framework emerge. An executive director makes it an organizational priority to link the data in their fundraising and accounting systems. An organization leverages cutting edge Internet technologies or the growing number of low-cost open source solutions for enhancing its core systems. An agency takes part in an initiative to share common data within its network, field or region. A large federated organization centralizes CRM systems to share donor and constituent information across its affiliates.

Organizations that succeed in data integration efforts achieve a new, unified view of information that they did not have before. This new insight can result in real results for nonprofits – from increasing staff productivity to informing their fundraising strategies. In short, they are able to become more effective in achieving their missions. The process by which these organizations learn to be more effective, which includes the application of information technologies to share information more effectively, has the potential to be transformational.

Further research might explore the dynamic relationship between outcomes for organizations that “get it” and choose to undertake data integration and information sharing initiatives. The findings from the current research do not allow us to draw any conclusions beyond the presence and nature of the framework components that, we propose, facilitate the uptake and determine the success of integration solutions. However, the current research begs the question, to what extent do organizations embarking on integration projects have or develop the characteristics of a “learning organization?” As defined by Peter Senge, learning organizations are “organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together (Senge 1990: 3)” (Smith, 2001) .

Conclusion

This research provides a snapshot of technology integration trends in the nonprofit sector’s fast changing landscape of IT solutions for information sharing.

We hypothesized that the framework for data integration consisting of compelling business drivers, opportunity moments, and collaboration/coordination would hold true in the broader nonprofit sector. For the most part, our research supported the idea that those conditions or preconditions must exist for successful data integration solutions to begin taking root. This conclusion appears to be as true for cross-organizational data integration initiatives as it is for intra-organization integration projects.

The collaboration component of the initial proposed framework related to cross-organizational and intra-sector initiatives. For the purposes of this research, and to better understand the dynamics of intra-organizational data integration, it was revised to apply more specifically to

intra-organizational collaboration and coordination, across people, geographic locations, departments, and, in some cases, silos. The research suggests that this component is a critical part of the framework for organizational data integration.

In addition to validating the three framework components, the research identified a new component that is distinct from the original three components, and is just as essential: ownership/leadership. For inter-organizational initiatives, ownership is the key, whereas for intra-organizational projects executive-level buy-in and leadership are key, as well as ownership of the project throughout the organization. These concepts can and should be considered from multiple perspectives, such as ownership and leadership at different levels of the organization. Ownership can also take on different meanings, including taking responsibility for a project or engendering buy-in to the value of – and one’s stakes in – an integration effort.

Our findings showed that these four components of the framework can take many different forms, and that the resulting technology solutions, as well as their uptake within and across organizations, are quite diverse. We see no indications in the current trends to suggest consolidation or consensus around any given solution or a one-size-fits all approach. Several consultants we interviewed held/concurred with this view. Given the diversity of current integration solutions in the sector and the potential for their continued use and adaptation, as well as the potential for innovation and growth of new ones, one reasonable conclusion is that the market for data integration will continue to diversify to meet the needs of the “long tail” of nonprofit consumers (Anderson, 2006).

Research suggests that integration efforts in the nonprofit sector are spurred by either a negative/“push” factor (e.g., donors are getting upset that we can’t find the right information), a positive/“pull” factor (e.g., we would like to better understand how we’re performing, and we can make better use of our data to do that), or a combination of the two. The collaboration and leadership/ownership components then follow, and play a key role in determining the success or failure of the integration initiative.

These elements suggest another way of looking at the framework:

- Compelling business driver: The need to integrate
- Opportunity moment: The desire to integrate
- Collaboration/coordination: The people and groups willing to work together to integrate
- Leadership/ownership: The people and groups willing and able to lead and own the integration effort

One thing that became clear is that this is an emerging and evolving area, both in terms of practice and research, and that more search is needed. In order to build upon understanding of trends that emerged from this research, and to promote awareness about the importance of this issue to improving the effectiveness and impact of civil society organizations in advancing their missions, perhaps this research can serve as an imperfect baseline for further study on this topic.

It is also clear that there is a lot of interest in this topic, an environmental factor that has changed since the time of OPX.

We propose the following research as elements in furthering the sector’s knowledge of the need for – and approaches to – data integration:

- More research is needed to establish a broader baseline
 - The survey conducted was informative, but needs to be expanded to a broader range of respondents to generate a sector-wide baseline;
- Tools and their uses by organizations
 - While the inventory of tools used by nonprofits yielded some interesting results, further research could explore how specific tools are being used by nonprofit organizations to better understand how information is being stored, used, and shared:
 - E.g., 97% of respondents use productivity tools like Word and Excel. What functions are those tools performing? Of the 29% not using an accounting tool, is Excel filling that gap? Are other tools used for accounting?
 - A related area of inquiry: what do nonprofits consider to be the core function of their systems and tools?
 - Are the tools used by nonprofits being used for the functions for which they were designed, or are they serving other functions?
- While there are clearly costs involved in implementing data integration solutions, there are also costs that result from data that is not integrated. Additional research could quantify the costs – in dollars and lost social impact – of not having integrated data;
- Some data suggests that certain types of arts organizations (e.g., museums) seem to have access to a system that provides more of an “all-in-one” solution that meets most needs than in other subsectors. Additional research could verify whether this is, in fact, the case, and what other subsectors – or the sector in general – might learn from the development of more comprehensive tools for specific niches;
- This round of research suggests that three or four of the framework components must be present for successful data integration initiatives. Further research could be conducted to further validate those findings, as well as ask the following questions: can a successful integration take place when only two of the components are present? Do additional components exist?
- Along similar lines, we propose that more in-depth case studies would be beneficial to advancing the sector’s knowledge of solutions and to starting to develop a set of best practices in approaching integration challenges;
- We posit that organizations engaging in data integration initiatives are taking steps towards becoming learning organizations. Further research could explore whether any nonprofits are currently “learning organizations” according to Senge’s definition, and what conditions and experiences were present in those organizations’ evolutions.

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