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CRM Integration For Nonprofits

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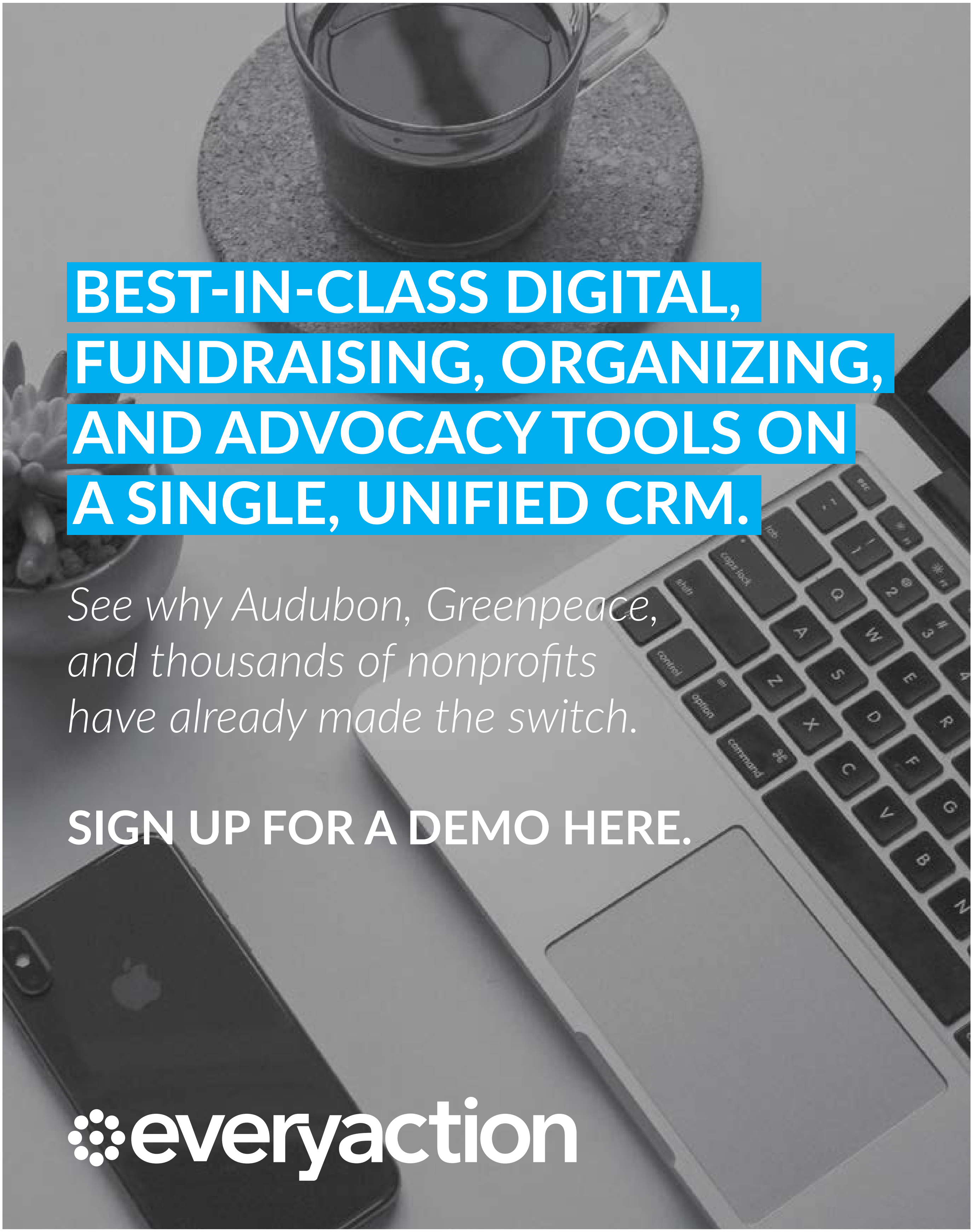
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INTRODUCTION

A full picture of your constituents—including donors, volunteers, and the people you serve—can make your organization more efficient and more effective. Technically speaking, Constituent Relationship Management (CRM) software is any software that collects information about a constituency.

Typically, people use the term to refer to purpose-built enterprise systems, such as Salesforce or CiviCRM, designed to help you track the actions of individual constituents. But it can also be something as simple as a Google Sheet or Excel spreadsheet, or any number of mid-level software packages that fall somewhere in between.

What is CRM?

For nonprofit organizations, the idea of CRM is more than a single piece of software—it refers to the entire suite of tools and processes you use to interact with your constituents and track those interactions.

Imagine it's early January. Fundraising for your annual campaign is over, and it's time to report on results. You've spent the last two days merging a dozen spreadsheets from four different donation tools, your email blast software, and your direct marketing vendor to present to your board. One of your board members is going to ask if your email campaigns influence offline donations—she asks every year—and your boss wants you to look at all the donor data to create four major "donor profiles" to optimize holiday giving next year. Meanwhile, your national conference is in a few months. New subscribers to your email newsletter get a discount, and new donors get an even bigger one, but even with all these systems, you still don't know who is a new donor.

Or maybe your own example involves program participants, your network of volunteers, the people who attend your events, or chapter alumni around the country.

CRM is more than a single piece of software—it refers to the entire suite of tools and processes you use to interact with your constituents and track those interactions.

If your organization interacts with people, you know how important it is—and how difficult it can be—to keep track of those relationships so that you can analyze them in meaningful ways.

Whether your goal is to get high-level insights on how your constituents think or to create strategies to target different kinds of constituents, after trying to keep tabs on so much information across so many different systems, you're grateful just to have data that's mostly error-free.

This is where the rubber meets the road for your CRM software.

Your CRM should be the go-to place for members of your staff when it comes to reporting on constituent activity and needs. You may have similar data in other places, but you should work actively to make sure that your CRM is integrated, accurate, and up-to-date for your most important reporting activities.

What is CRM Integration?

Despite all that, as a single piece of software, a CRM system may not be the silver bullet that meets all of your constituent relationship needs. It can track contact info and outreach history and run reports, but is it the best email blast software? Can it make stunning, easy-converting donation forms?

Organizations want to be able to choose the best tools for their own needs. So you might have a CRM and a separate email blast tool that excels at A/B testing and segmentation, or an online donation system, or a marketing automation system that can handle any number of messaging tasks. Using best-in-breed tools may serve your constituents well, but it can leave your organization with a fragmented constituent landscape that silos data across different departments using different systems.

Donor information sits in donation software. Email open rates exist in another. Volunteer information languishes in spreadsheets.

CRM integration is simply the process of using various technologies to "connect" multiple systems so that they can pass data back and forth. This can remedy the problem of silos, giving you and your staff a clearer, more holistic view of your organization and the people it serves. Rather than relying on a single piece of software and compromising capabilities in certain areas, integration lets you choose the tools you want.

Using best-in-breed tools can leave your organization with a fragmented constituent landscape that silos data across different departments.

In this report, we'll look at why you should integrate, the types of integrations available, and what's involved in implementing them. We'll show you how to map your project out to help non-tech savvy staff members understand the value. Finally, we'll look at what you can do to prepare for the project, and how to minimize the risk of failure.

Ready to get started?

WHY SHOULD YOU INTEGRATE?

Ideally, *all* your systems would connect, making your work easier and more efficient. But what are the implications of integration? And how do you decide if integrating particular systems with your CRM is right for your organization?

At the bare minimum, CRM integrations should help…

- … an organization work more efficiently and effectively.
- … take a burden off staff.
- … leadership and staff make better decisions more quickly.

A well-integrated CRM will make it easier to find the information you need to do your work. Depending on what type of organization you are, that might mean understanding where your members live to help you choose a location for a conference, determining when to ask a particular high-dollar donor for more, or identifying the topics most likely to fire up your base in the next election cycle. Embedded in each of those decisions are thousands of data points, which your CRM can track and report on in tandem with other systems.

CRM integrations should result in actions that can move your organization forward. Don't integrate systems just because you're afraid of falling behind another organization that implemented something shiny and new, or because a staff member in one of your programs wants a specific report (but won't tell you why or what she will do with the data), or because you think you might want it a few years down the road. Make sure your motives for integration are appropriate before embarking on a process that will put unnecessary demands on staff and resources.

Meet Pasha and Marta

Throughout this report, we'll use Pasha and Marta as examples to help explain key points. Let's start by introducing them: Pasha is a technology associate at a mid-sized nonprofit; Marta is a consultant working with him on data integration for his organization's CRM.

The mission of Pasha's organization is to provide legal help to those in need. It's headquartered in New York City, but has an advocacy office in Washington, D.C, and regional offices in Los Angeles and Chicago. Legal teams are made up of volunteers.

Pasha has been given the task of integrating all data so the organization can use its CRM more effectively. He hired Marta to help the integration run smoothly.

WHAT SHOULD YOU INTEGRATE?

Ask a few experts and you'll hear that integration is a simple concept. According to Sam Chenkin, Director of Consulting at Tech Impact, integration is the movement of data and the pushing of transactions from one system to another.

But implementing an integration—actually making those systems talk to one another—is anything but simple. Moving data across different systems is a complicated business that requires planning, and possibly some coding. This is when many nonprofits get timid, in Sam's experience.

Don't let that scare you away. Just like any project, you will need a budget. You'll also need to consider the resources and level of effort it will require, and decide whether your organization can meet them. And, like any project, you should involve all the stakeholders, prioritize needs, and manage expectations by raising them for some features and tempering them for others.

An integration is not a cure-all, but it should help. You may have a dream of a fully fleshed out, 360 degree view of constituents. If that's even possible, is the cost—not just in dollars, but time, energy, and potential frustration—worth it? Are there less-comprehensive integrations within reach that will accomplish some of the same goals?

Organizations keep constituent data in a lot of places. Integrating some of that data may be vital to the mission, while other data might be less important.

How do you decide which data is worth integrating? First, determine what tools will feed into the CRM and what tools will take information out of it. Consider each tool carefully, and for each, ask the following question:

"If we integrate this data, what will we do differently?"

The GDPR and You

In May, the European Union began enforcing the General Data Protection Regulation (GDPR), a fundamental shift in the way governments view an individuals' privacy and data usage. It requires active, informed consent for data collection, and gives the user rights over their data that you store.

It is difficult to say at this time what impact GDPR will have on U.S.-based nonprofits. But if you have a physical presence in the EU, target individuals within the EU, or maintain constituent records on EU citizens, talk with your lawyers, vendors, and IT team about steps to maintain GDPR compliance.

Your answers should sound something like these examples:

- If we integrate our CRM and email blast tool, we can segment our emails based on offline activity—this would let us tailor our emails to constituents more to their interest, increasing support.
- If we integrate our CRM and online donation management tool, we will get a better picture of all the ways individuals donate—this would let us optimize our messaging accordingly, increasing donations.
- If we integrate our CRM and available voter data, we will be able to identify our most ardent cheerleaders and activists—this would let us target them to participate in our lobby days.
- If we integrate our CRM with our financial management tool, it would free up finance staff to do more work on organizational strategy.
- If we integrate our CRM with our advocacy tool, junior staff could focus more on policy work instead of data entry.

In short, if your organization will not change a business process, you should not spend valuable resources integrating tools used in that process.

What systems should you consider integrating? The following is an incomplete list.

Apps

Some organizations create their own applications to help constituents—these mission-based applications gather data about constituents that a CRM may not easily see.

Advocacy

Advocacy data allows you to find your fiercest defenders and supporters of your cause.

Case and Client Management

Nonprofits that provide services directly to individuals may have a separate database that tracks those individuals and the services provided.

Content Management System

If constituents can log into your organization's website to access content, then your CMS contains constituent data.

Email and Marketing Automation Tools

Email remains the primary method to communicate with constituents—whether it's a monthly newsletter, fundraising asks, or information about upcoming board meetings, email tools are chock full of data.

Event Management (Virtual and Live)

Organizations host all kinds of events, both in-person and virtual, and events can have a fundraising bent or may be more educational. They may serve constituents, or an executive board—either way, event registration and management tools are full of important data.

Why Integrate?

In a meeting to talk about an integration plan, Pasha and Marta come to the conclusion that the organization faces two challenges: fundraising, and constituent crossover.

The organization's fundraising efforts are not as sophisticated as they could be. The development team remains in its silo, sending its own stream of fundraising asks via direct mail and email, and often doesn't know the specifics about who they are sending them to or if they are asking for appropriate amounts.

What's more, the organization has different kinds of constituents, including donors, clients, volunteers, and activists. Pasha has a sense that there is a lot of crossover between groups—especially between donors and volunteers—but each constituent type has its own communications stream. From staff, he's heard different examples of how these two problems are affecting the organization, including the following:

- A volunteer was upset about getting five email donation asks and a direct mail ask the same week he had just put in several hours working on a case.
- A client who had managed to get back on his feet after the organization helped him out wanted to donate a large amount, but couldn't seem to get in touch with Development.
- The head of the advocacy program has been completely unwilling to share her constituent list with the development team because "advocates never donate," she says.

Any integration solution they implement will need to address these issues to make it worth going forward with.

Financial Software

You may keep constituent data in financial software if your organization engages in financial assistance programs, is a foundation, or distributes grants.

Fundraising and Development

Nonprofits may have one or more tools they use for fundraising online and offline. These can include general fundraising management software, online donation, peer-to-peer fundraising platforms, fundraising event platforms, and online auction platforms, just to name a few.

Learning Management System

If your organization offers training or certifications, it may have an LMS. Some organizations also use an LMS to help with volunteer training.

Shopping and eCommerce

Some organizations have physical or online stores that sell products and collect information about shoppers.

Social Media

Most organizations have a social media presence. Knowing who follows you where can help organizations reach broader audiences.

Third-Party Databases (e.g. Voter Information, Wealth Database)

These external sources provide information your organization might not otherwise have access to, including voter files, election contribution data, and wealth data.

Volunteer Management

Nonprofits depend on volunteers to get a lot of their work done, and knowing how they help the organization—and how often—is critical to keeping them engaged.

Website Analytics

Many organizations use a third-party analytics tool to track details about web traffic, such as the free version of Google Analytics or a premium tool like Adobe Analytics. In most cases, integration of web analytics into a CRM is not practical, but there are times when it may make sense.

WORKSHEET: WHAT KINDS OF DATA SHOULD YOU INTEGRATE?

List the name of each type of tool used by your organization that contains constituent data. Then, for each, list the motive for integration ("If we integrate this data, what will we do differently?"). Finally, based on those motivations, decide whether to explore integrating that particular system (Y/N).

PRIMARY CRM			
Tool/Software	**Name**	**What will we do differently?**	**Explore Integration?**
Apps			
Advocacy			
Case/Client Management			
CMS			
Email and Marketing Automation			
Event Management			
Financial Software			
Fundraising and Development			

PRIMARY CRM			
Tool/Software	**Name**	**What will we do differently?**	**Explore Integration?**
LMS			
Shopping and eCommerce			
Social Media			
Third-Party Database			
Volunteer Management			
Website Analytics			
Other ______			
Other ______			
Other ______			
Other ______			

Pasha Fills Out a Data Integration Worksheet

Pasha has interviewed stakeholders at his organization. Using the worksheet above, he will figure out what tools require integration.

PRIMARY CRM		
Tool/Software	**What Will We Do Differently?**	**Explore Integration?**
Email Tool	Every tool we have has an email address associated with each record. But this is the only way we email groups. And sign-ups through our website. Marketing would love it if we could get all email addresses into our CRM, and then output those in segments into the broadcast email tool.	Yes
Volunteer Management	Volunteers don't just volunteer. They are donors, board members, and sometimes prior clients. All members of senior leadership would like to see where the overlap happens so we can recruit in all directions.	Yes
Advocacy Software	I don't know if we care about individual advocacy actions. But we want those email addresses so we can message for fundraising.	Yes
Financial Software	Nothing. Accounting won't let us touch it.	No
Online Fundraising	See Volunteer Management - same thoughts/feelings. Targeted fundraising is a huge priority for the next fiscal year. Better data will help us target better.	Yes
CMS	Nothing.	No
Event Management	Development wants to know which donors go to Gala events. Though I'm not sure what they'd do with that information. Volunteer Management wants to be able to recruit volunteers for more events.	Yes
Social Media	Volunteer Management wants to find out if people in our CRM are lawyers. That way, we can recruit them to volunteer. They think LinkedIn would have that information.	Yes
Constituent-Service Database	See Volunteer Management - same thoughts/feelings	Yes
Website Analytics	Nothing. We have no personal information in Google Analytics	No
Board and Internal Email Lists	It would be nice to report on which board members are most engaged	Yes

YOU CAN'T HAVE IT ALL: KNOWING WHEN TO COMPROMISE

Chances are that your organization will not be able to integrate every data point you want. Integrations are not easy. Some may be so difficult that they're not worth the cost or effort, and others may be outright impossible—not all proprietary software is open for integration. In some of these cases, compromises may be necessary.

For example, if a particular database cannot send detailed transactional data into your CRM, it may be able to send simpler transaction data, which might be enough to meet your needs.

Before you get too "into the weeds" with spreadsheets and flow charts, it may help to start by creating a narrative for integration. The narrative should be written in plain language so that stakeholders have a sense of what you're trying to accomplish. A few bullet points with clear statements such as "We will make sure any new email address in the broadcast email tool gets added to the CRM so that we can create direct mail segments to increase fundraising opportunities" may make a lot more sense to your director of development than a series of complicated field mappings.

This is exactly what Sharon Conley, Director of Web-Based Technologies at the National Association of School Nurses, does whenever her organization takes on a new integration project. It gets to the heart of the business goals of an integration, she said, and more easily brings to light "pain points" of the current system.

“We Can’t Do It All.”

After looking at the list of desired integrations, Marta and Pasha agree they will have to prioritize. “We can’t do it all,” Marta says. She asks Pasha to list the goals integration will need to achieve for it to be considered successful.

Most Important Goals for Integration

1. The CRM must have the most up-to-date set of contact information that appears in any of our systems. There should never be a contact in any of our software that does not exist in the CRM, and contact information should be consistent.
2. Every record in the CRM must have a constituent category: Client, Donor, Volunteer, Advocate, Employee, Gala Attendee, Board Member. One person can fit into multiple categories. With this information, we can see where there is overlap among our constituents and recruit accordingly.
3. We need accurate donor information in the CRM and in our fundraising software. We want to be more thoughtful when we contact constituents who give. We also want to make sure our ask amounts are appropriate.
4. We need to be able to categorize our volunteers into very active, involved, or inactive. We want to recruit inactive/low-level volunteers into donors.

Looking at his list, Marta identifies the following steps that will be necessary to achieve those goals:

- Synchronization of contact information between the CRM and the broadcast email, volunteer management system, advocacy software, fundraising software, and custom Constituent Service Database.
- Tagging of all constituents in the CRM with relevant activities: Volunteered, Signed a Petition, Donated, Received Services From Us, Attended a Gala.
- Gathering of more detailed data from the appropriate database and integrating it into the CRM:
    - Hours of volunteer time over in the past 12 months
    - Online donations over the past 24 months
    - Gala Ticket Purchases over the past 36 months

This information will help the staff better understand the organization’s constituency and make sure it is communicating with it appropriately, which makes it a high priority. For now, at least, the organization will compromise by foregoing a few of the initial goals it hoped to achieve through integration, including information from social media, information about non-gala events, and detailed information about advocacy actions, board activity, or constituent services.

PREPARING FOR INTEGRATION

Once you know what tools to integrate, it's time to prepare the project. There is still work to do before any code hits the server, and strategic thinking now will save you time, money, and problems down the road.

Consultant or DIY?

If an integration is simple, your organization may be able to do it without outside help. But for bigger projects, or organizations lacking the internal expertise, hiring a consultant is a safer bet.

Is there someone on your team with the knowledge (and time) to create a data flow chart, data dictionary, and field mapping for the integration? Will your business rules for moving the data be simple? If the answer to either of these is "no," a consultant can bring in technical expertise as well as an outside perspective and save you time and aggravation.

Look for a consultant with relevant experience. To find a qualified consultant, check discussion boards like NTEN Discuss (*https://community.nten.org/communities*), ask your state nonprofit association, get referrals from other organizations, or browse the sponsored ads in the back of this report.

Who Should be Involved?

The right people need to be in the room for planning conversations, even if that's only virtually. Who are the right people? Start with everyone whose data is going to be affected or used, and narrow the list from there to make sure all relevant groups are represented.

Some of these people may be non-technical—make sure you can explain, in plain language, what you are doing, why you are doing it, and what the results will mean for them and their work. You can involve people at different levels, getting input/feedback from some without giving them project responsibility.

Offices in the Field? Affiliates? Chapters? Ask Yourself Who Owns What...

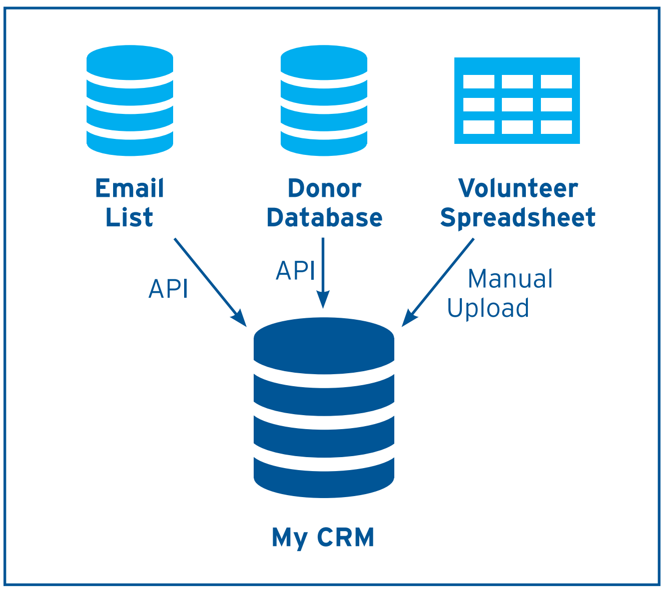
For nonprofits that have chapter and field offices, some data will be top down—an organization has data it distributes to the field—and some will be bottom-up, collected by field offices and given to a national office. If you need to pull in members in the field, think about how changes and demands may affect them. It is also important to consider an organization's legal structure. If a field office is independently owned and operated, they may have no obligation to help with the integration—all you may be able to do is ask nicely. In this case, it is especially important to demonstrate the benefit of the data integration.

CHARTING INTEGRATION

Once your integration is moving forward with everyone on board, you are going to need to create some documents that make all the technical requirements clear. When you created a narrative, you were telling the story of the integration and why you are doing it—now it's time to look at the details of how.

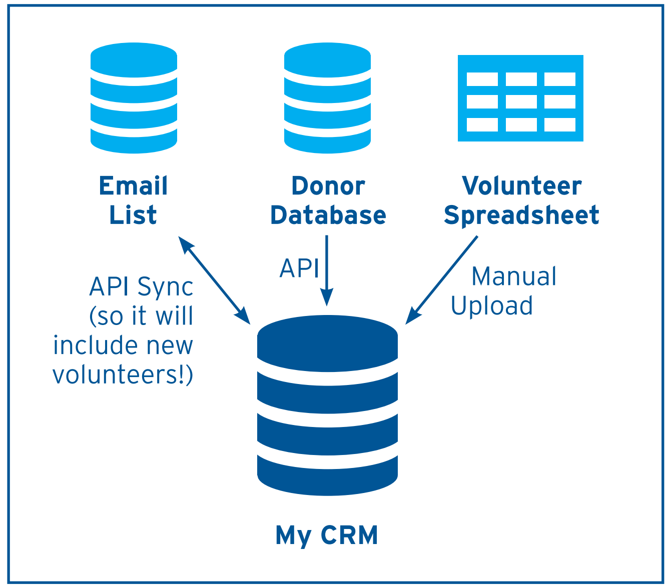
Data Flow Charts

How will your data flow? A data flow chart can help map out which way the data moves. Databases are typically represented by a cylinder shape, and arrows are used to show direction, as in the following example:



This data flow chart shows a very simple, *unidirectional* CRM integration. Data goes from the third-party tools into the CRM, but never leaves the CRM to go into the other tools. For example, when a volunteer signs up, her information is sent from the volunteer spreadsheet to the CRM. Let's say you want to put that new volunteer on an email list. To do so, you would need to push data from the CRM into the email list—this would be a *bidirectional* integration. New data from the email list software goes into the CRM, and when appropriate, new information in the CRM goes out to the email list software.

Another example of bidirectional integration involves *synchronization*. Synchronization is when a change is made to a record in one system, it changes in the other, and vice versa. In this example, changes made to contact records in the email list or CRM are updated in the other system through synchronization to ensure that all records are accurate and up to date.



Pasha Charts His Data Flow

Here is what Pasha knows:

- Any new contacts that appear in auxiliary tools must go into the CRM. Every tool will need at least a unidirectional push of contact information into the CRM.
- He needs a complete synchronization of donation amounts between the fundraising system and the CRM. When doing fundraising, offline or online, the tools need to know who donated what.
- He needs an additional unidirectional push from the volunteer database to also include the number of volunteer hours.

Data Exchange Tools

How is the data going to flow? There are four main ways to do integration.

Application Programming Interface (API)

When integrating data from one tool into a CRM, chances are you will be using an API. APIs consist of routines and protocols that allow for sharing and displaying data. As a simple example, if you have ever embedded a Twitter Feed on your website, you have used the Twitter API. Once the realm of complex software interactions, APIs are now commonplace. Most online software applications have some sort of API that allow you to share and display data.

But not every API can do everything you need it to do, warns digital consultant Jo Miles. Verify what the vendor's sales team tells you when considering a new system—ask to talk to an engineer to make sure the API does precisely what you need it to do. Don't assume that just because a tool has an API that it has the functionality you need. Some only receive data, others only send it, and some may only give you access to a limited set of data. For data integrations, you want an API that can send and receive all relevant data points.

Though APIs can be complicated for non-technical people, here's what you need to know about them when planning your integration: You will need to get all of your API "credentials" ready well in advance of implementation.

Credentials may be login information or an API Key that you need to get from the vendors. Chris Harmoney, Senior Back-End Developer for Cornershop Creative, notes that one of the most frequent cause of delays in integration projects is not having API credentials at the ready. You may need to make requests from vendors, and it can take days—or even weeks—to get set up.

Manual Uploads

The simplest integration tool is not an API but a human being pressing a few buttons. Some software can export data as .TXT or .CSV (Comma Separated Variable) downloads. If your CRM can accept uploads in these formats, you may be able to upload data manually, though sometimes you need to first "massage" the data into the right format.

CSV uploads can be problematic when you have complicated business rules. For example, if your organization hosts multi-day conferences and your event management software formats the conference dates as "September 1, 2018-September 4, 2018," you may need to adjust if your CRM does not accept multi-day events. You might have a "start date" and "end date" field, or make a separate entry for each date a person attends—to do so, you'll need to reformat the data in the .CSV file before you upload it. This extra step can be an extra point of failure during an integration.

However, if the field in your database matches the format of the field in your CRM—in technical terms, this is referred to as your "push" being "1:1"—manual uploads may be sufficient.

Automation Tools

There are several third-party tools that can perform simple CRM integrations. The two most popular automation tools are IFTTT (If This, Then That), and Zapier. IFTTT is free. Zapier has tiers of service, including a free tier, but the more transactions you need to conduct, the more likely you will need a paid tier. Both have strong features, but Zapier definitely has more of a business-focused bent.

Because automation tools take advantage of the APIs services already provide, they work best for unidirectional data pushes. For example, if you use MailChimp as your broadcast email tool, you can set up a simple automation that pushes data from the new newsletter subscribers into your CRM. But it may be a more complicated process to push data about a new entry in your CRM to MailChimp. As with manual uploads, these automation tools also do not work well with complicated business rules.

Ready-Made Tools

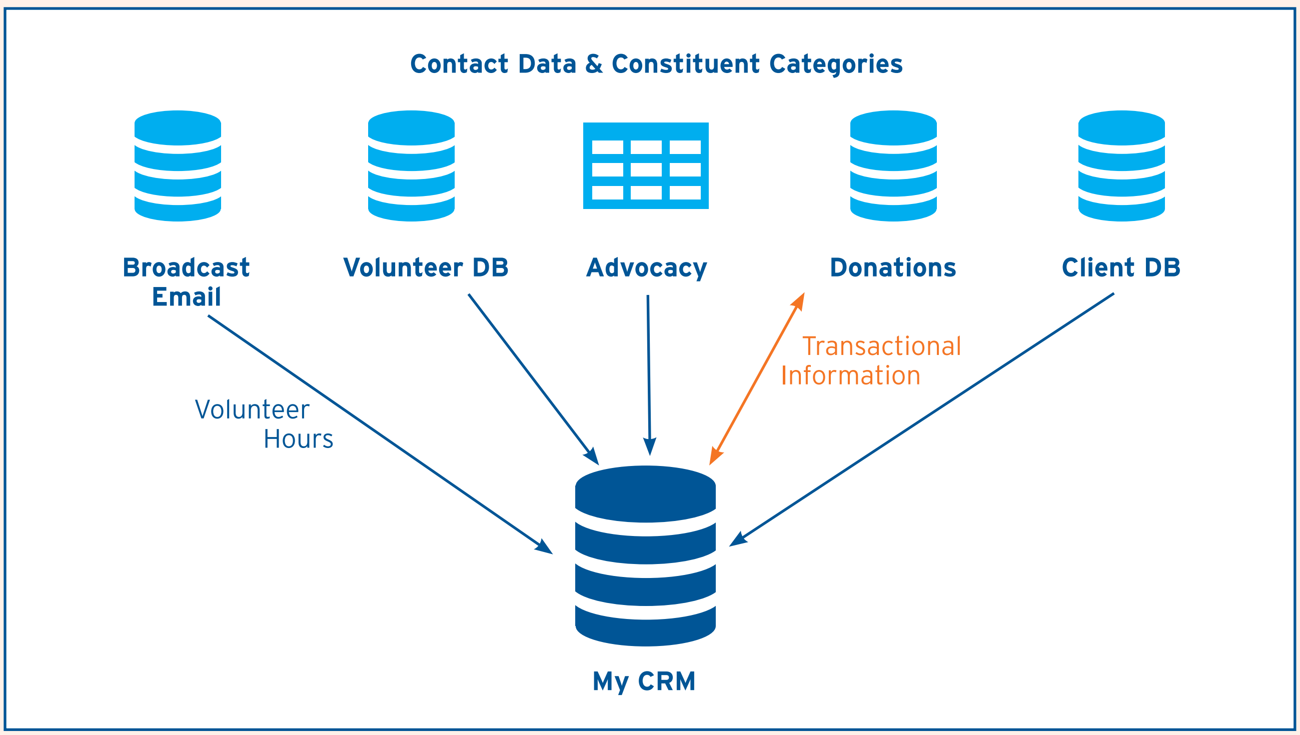
There are certain "ready-made" integration tools that fall somewhere in between the sophistication of automation tools and the complexity of hiring consultants to configure an API. Tools like Frakture and Supermetrics work with clients to set up more custom automations.

Checking in With Pasha

Now that Pasha understands the four major integration options, he writes out a to-do list and assigns these tasks to various team members.

- Does our CRM use the right kind of API for our bidirectional integration?
- Find a developer (ask Marta for recommendations) who can build a connector between our broadcast email and our CRM.
- Call our fundraising software account rep to open the API (it's the right kind, but it needs to be opened by support).
- Our advocacy tool does not have an API—talk to someone on the advocacy team about creating a process to manually load new constituents.
- Talk to IT about building an API for the volunteer database and custom Constituent Services database.

Then he can create a basic data flow.



CREATING A DATA DICTIONARY

A data dictionary is a set of information describing the contents, format, structure, and relationships of database fields. Have a data dictionary ready to go for your CRM and each tool you are integrating. (Your vendor may be able to provide one.)

Fields have formats like text, dates, numbers, integers—and those formats may have rules or validation requirements. There are various kinds of validation requirements, including the following:

- A field needs a certain type of format (like a date format, or a phone number).
- A field must be filled out in order for the record to be valid.
- A field must be filled out depending on the value of another field—for example, if you indicate that you live in the U.S., a state field may be required; if you indicate that you live in Canada, the province field may be required.
- A field must have a certain value—for example, records are created only for people older than a certain age.

Sometimes fields have relationships. For example, if someone enters a birth date it triggers values for other fields, such as "Age." When the user enters or changes their birth date, the field for age populates and/or changes. Note these relationships in your own data dictionary.

A data dictionary is typically a table or spreadsheet with the following fields:

- **Field Name:** The name of the field;
- **Data Type:** What kind of data is this (Text? Number? Currency?) While there are thousands of data types, most come from the SQL Data Types. These define what kind of value the database can hold. Common data types include Text, Integer, Date.
- **Data Format:** Using the data type, the format that a piece of data must have. For example, a Date may have a format of MM/DD/YYYY.
- **Field Size:** The available number of characters in this field. A date field with the format MM/DD/YYYY requires 10 characters, so the field size is 10.
- **Example:** An example entry for the field.
- **Validation:** Is this field required in order to have a valid entry? Must it have a value that falls within particular parameters?

Other fields may include the following:

- **Machine Name/Field ID:** If a field has a machine name different than the field name. Sometimes, it may be called Field ID. In some cases, a Field Name and Machine Name may be the same.
- **Bytes for Storage:** This limits how large the field can be, in bytes.
- **Description:** Plain text description of the field.

Pasha Writes His Data Dictionary

Pasha starts putting together the data dictionary for the CRM using common database field types (including VARCHAR, or variable character, for text; and BIT for a Boolean field, or single digit true/false) and expressions to validate entries, such as the one listed for email fields.

CRM Data Dictionary (Contact Info)

Field Name	Data Type	Data Format	Field Size	Example	Required	Validation
First Name	VARCHAR(50)		50	Jonathon	Y	
Last Name	VARCHAR(50)		50	Smith	Y	
Date Added	DATE	MM/DD/YYYY	10	5/1/2018	Y	Valid Date
Street Address 1	VARCHAR(50)		50	555 Cherry Lane	N	
Street Address 2	VARCHAR(50)		50	Apt 301	N	
City	VARCHAR(50)		50	New York	N	
State	VARCHAR(2)		2	NY	N	Valid U.S. State
Zip	VARCHAR(5)	#####	5	10001	N	Valid Five Digit Zip Code
* Email Primary	VARCHAR(60)	[a-z,0-9,_,-]%@[a-z,0-9,_,-]%.[a-z][a-z]%	60	jonathon.smith@gmail.com	Y	Valid Email Format
Email Secondary	VARCHAR(60)	[a-z,0-9,_,-]%@[a-z,0-9,_,-]%.[a-z][a-z]%	60	jonathon.smith@gmail.com	N	Valid Email Format
Home Phone	VARCHAR(12)	###-###-####	12	555-555-5555	N	Valid 10 digit phone number
Cell Phone	VARCHAR(12)	###-###-####	12	555-555-5555	N	Valid 10 digit phone number
Work Phone	VARCHAR(12)	###-###-####	12	555-555-5555	N	Valid 10 digit phone number
Other Phone	VARCHAR(12)	###-###-####	12	555-555-5555	N	Valid 10 digit phone number
Preferred Phone	VARCHAR(5)		5	Cell	N	If Any Phone number filled in, field is required
Is Donor	BIT		1	1	N	
Is Volunteer	BIT		1	1	N	
Is Client	BIT		1	1	N	
Is Advocate	BIT		1	1	N	
Is Gala Attendee	BIT		1	1	N	
Is Board Member	BIT		1	1	N	

"Dear Pasha,

Great work on the data dictionary. I have just a few concerns after reviewing it.

1. First Name and Last Name are required fields in your CRM. But when people sign up for your newsletter in your broadcast email system, you only ask for their email address. We'll need to deal with the differences in the two systems.
2. In your Client Services Database, all Zip codes are converted into Zip+4, and are not standard five-digit Zip codes.
3. Your fundraising system accepts donations from Canada. How do we account for the different formats of fields from Canada?

Let me know if you want me to review the next draft...

-Marta"

FIELD MAPPINGS

Until now we've been looking at the structure and function of the data fields in each individual tool. Now we'll need to see how those fields join up when the tools try to communicate.

A field mapping is simply a chart showing how each field from one system matches up with fields from the other. The easiest way to do this is in a spreadsheet.

Sometimes, the fields have a simple 1:1 relationship, as in this example:

CRM Field Name	Email Tool Field Name
First Name	First_name
Last Name	Last_name
Date Added	Signup_date
Street Address 1	Street1
Street Address 2	Street2
City	City
State	State
Zip	Zip
Email Primary	Email

Other times, you may need to consider outliers or rules. One tool may have a field for First Name and Last Name, while the other just has a Name field.

CRM Field Name	Event Database
First Name	Name (all characters before first space)
Last Name	Name (all characters after first space)
Date Added	Ticket_purchase_date
Street Address 1	Street1
Street Address 2	Street2
City	City
State	State
Zip	Zip
Email Primary	Email

To resolve that, you need to develop a set of business rules for your integration designer to develop code around. In this case, the Name field in the event database will be split in order to go into the CRM to match the First Name and Last Name fields. The operation is not going to be perfect—consider the name "Mary Jane Smith." Following this logic, the first name will be "Mary," and the last name will be "Jane Smith."

The more rules you have, the more validation you will need. Make sure to note field validation requirements on both sides.

Pasha Starts His Field Mapping

Pasha does the field mapping for his Volunteer Database.

CRM			Volunteer Database		
Field Name	Required	Data Format	Field Name	Required	Data Format
First Name	Y		first_name	Y	
Last Name	Y		last_name	Y	
Date Added	Y	MM/DD/YYYY	signup_date	Y	YYYY/MM/DD
Street Address 1	N		street1	Y	
Street Address 2	N		street2	Y	
City	N		city	Y	
State	N		state	Y	
Zip	N	#####	zip	Y	#####
* Email Primary	Y	[a-z,0-9,_,-]%@ [a-z,0-9,_,-]%. [a-z][a-z]%	email1	Y	[a-z,0-9,_,-]%@ [a-z,0-9,_,-]%. [a-z][a-z]%
Home Phone	N	###-###-####	primary_phone	Y	###-###-####
Cell Phone	N	###-###-####	other_phone	N	###-###-####
Work Phone	N	###-###-####			
Other Phone	N	###-###-####			
Preferred Phone	N				
Is Donor	N				
Is Volunteer	N		No equivalent field, but if record exists, set to 1		
Is Client	N				
Is Advocate	N				
Is Gala Attendee	N				
Is Board Member	N				
Volunteer Hours	N		Sum of all hours_ volunteered transactions		

As with the data dictionary, Marta found a few sticking points she wanted resolved before they moved forward. It seems that integrating the volunteer database was going to be more complicated than they'd thought.

- **Date Added:** The database uses a different date format, and we'll need to make sure we reformat the date when it goes into the CRM.
- **Phone:** The phone fields don't match up. In the CRM, we have individual types of phone numbers, but the volunteer database asks for "primary" and "other" phone. Do we want to assume primary is home? And what is "other"? Which should we set as the preferred phone?
- **Volunteer Hours:** We're going to have to do a separate mapping for this. We'll have to figure out how to match the volunteer hours to the individual. If it's a new entry, that will be easy, but what about when we're merging records? What will be the primary key? How will we avoid duplicating hours?

RECORD MERGING

Up until this point, we've been discussing how to create new records in a CRM by importing them from another database. But what about existing CRM records—what happens if records for a constituent exist in both systems? How do you merge data in the records without creating duplicates?

A primary key is a field or series of fields that determines a record's uniqueness. In email software, a primary key might be the email address. It could also be an identifier, like an ID number. A primary key must be a required field—it can never be empty. When it is not a designated field (like an email address), it may be a numeric identifier. Many databases may make the first record "1" and increment the key from there.

If the primary key for a CRM also exists as a field in the data that's going to be merged, that is the best way to join those records and avoid duplication.

If you cannot use the primary key, you need to find another field or set of fields that both makes for a unique record in your CRM and matches up to the tool you are trying to integrate. For example:

- Email Address. If your tools and your CRM don't allow for duplicate email addresses, this can be a very useful field to join data on.
- Email Address + First Name + Last Name. If your tool allows duplicate email addresses but not duplicate individual records (to account for individuals sharing an email address), a combination of Email Address and Name is often a useful way to join data.
- First Name + Last Name + Zip. If you do not use email address in a tool, you may want to use a name combination plus Zip code. There is a risk of false positives in this data, so you will want to conduct Quality Assurance Testing (QA), which we describe in the next section.

The next step is to lay out some rules for how to handle records. If a CRM is missing a constituent's address information but the volunteer database has it, you can push that information—but what if the data is not in agreement, and the CRM and volunteer database have different addresses for a record? Rules tell the software which system "wins" in such scenarios, establishing conditions that need to exist to allow for the volunteer database to overwrite the CRM address data.

No matter how much you prepare, there are going to be "edge cases," or uncommon cases that no one has considered. Talk to stakeholders and attempt to put together a list of possible edge cases so you're prepared to address them when they occur. There is a good chance these edge cases will show up for the first time once you start processing the integration.

When they do, make sure…

1. …they are truly edge cases (with very few records affected), and not just a case you had not thought of previously.
2. …that their existence does not break the entire system. If a synchronization hits an edge case, does it stop working altogether, or can it skip over that record?

Pasha Makes the Rules

Pasha goes back through the volunteer database and sets the rules for merging.

CRM	Volunteer Database	Merge Info	
Field Name	Field Name	Is Merge Field	Merge Rules for Differ-ences
First Name	first_name	Y	
Last Name	last_name	Y	
Date Added	signup_date		If signup_date<Date Added, overwrite
Street Address 1	street1		If signup_date>Date Added, overwrite
Street Address 2	street2		If signup_date>Date Added, overwrite
City	city		If signup_date>Date Added, overwrite
State	state		If signup_date>Date Added, overwrite
Zip	zip		If signup_date>Date Added, overwrite
* Email Primary	email1	Y	
Email Secondary	email2		If signup_date>Date Added, overwrite

He decided to use First Name, Last Name, and Email as the merge fields to allow for families of volunteers that use the same email address. This will go a long way toward keeping records straight, but there may still be issues in the case of variations on names (e.g., Mary Ann, Maryann).

In general, he also decided to use the "latest entry takes the prize" approach to overwriting data, giving the most recent record priority. The exception is when the date added is earlier in the volunteer database than the CRM record, because then the organization has likely known the people for longer than it thought. (Another option would be to create a new field entirely to reflect those different values.)

QUALITY ASSURANCE TESTING (QA)

Quality Assurance Testing, or QA, is the set of procedures you use to ensure that all your software is working as planned. It involves the creation of a QA Test Plan, where you list out all the situations, actions, and scenarios you want to ensure will work.

In short, it's your chance to try to break the system before it can break on its own in the wild.

The most painful part of most migrations and integration projects is the QA period. It is during this time that the flaws in your work become apparent and issues and cases that you had not considered rear their ugly heads.

QA usually happens toward the end of a project. It can last for a few days, or maybe a few weeks. It is the phase everyone assumes you can rush through, because surely everything will be right—after all, you've spent months planning and mapping and charting and preparing for every possibility. Right?

You may be nearing the home stretch, but this is not the time to ease off the pedal.

QA takes real effort for a data transference project. No matter how many times you consider edge cases, QA will reveal more. Something will break—something always breaks. And you will have to re-engage the stakeholders that may have thought they were done with the project.

Any project plan for a data integration must include a robust QA process. It is as important, if not more so, than development.

When thinking about QA, you must...

- **Create a test plan.** This is a list of scenarios, environments, and combinations that you should test.
- **Automate testing, if possible.** There are great automated testing tools out there, but you may need an extra developer to set them up.
- **Assign a tester.** If you can't use automated testing, then someone should run the test plan. This person should not be someone who worked on implementing the integration—this might give inherent bias.
- **Put together a bug tracking plan.** When bugs are found, make sure there is a pathway to getting them fixed.

CONCLUSION: WHAT DOES SUCCESS LOOK LIKE?

For every organization, success will look different. How will you know if the project is successful? Here are a few signs that things are going well:

- You are not calling IT every few days over broken connections, bad API links, or downed servers.
- There are very few edge cases, and when they do pop up, they do not throw the whole system into disarray.
- Staff no longer needs to constantly run reports outside of the CRM and then merge them with CRM data in a spreadsheet.
- When program staff come to you with questions, you are able to use the CRM to answer them quickly and accurately.
- The field staff is grateful for the new reporting system. They are not upset that they have to do things "differently."

Six Months After Integration

The organization's integration was a success, thanks to all the preparation Pasha and his team did ahead of time—and Marta's sage guidance. In all, the project took about three months to complete.

Already the work is paying off. Because of the new data available to staff members, several successful campaigns have been run:

- Get volunteers who may not be able to give as much time as they would like to donate more;
- Get donors to attend the gala at a higher-priced ticket level;
- Stay in touch with and re-engage clients once they find themselves on more comfortable footing.

There was one big headache, though. Something broke when IT upgraded the Volunteer system, and it took about two weeks to get everything back in order. After that, Pasha ensured that IT would test any APIs and integrations before running an upgrade from now on.

Perhaps buoyed by the success of the integration, and what it's allowed it to do, the organization is already looking forward to its next integration project as part of a push to get more lawyers to volunteer. This project would revisit the idea of integrating some information from LinkedIn to see if the organization has any potential volunteers in its CRM, and working with a company to help identify volunteers from its massive database.

APPENDICES

APPENDIX A: GLOSSARY

Term	Definition
API	Application Programming Interface. A set of tools for building exchanges of information between applications.
CRM Software	Constituent Relationship Management. A software system that allows an organization to use data to look at business relationships with its customers.
Data Dictionary	Information about the contents, format, structure, and relationships of a database and its fields.
Data Transference	The process of using technology to transmit data from one place to another.
Deduping	The removal of duplicate entries from a database.
Edge Case	A situation that occurs only at the extremes. A deviation from what is typical.
Field Mapping	A tool that allows you to visualize the relationship between data that will transfer from one system to another.
Flow Chart	A diagram that shows the sequence of movement within a system.
GDPR	General Data Protection Regulation. A regulation of the European Union that went into enforcement on May 25, 2018. Among other things, it requires that organizations get active and informed consent from individuals in the EU in order to collect and process their personal information.
Synchronization of Data	A process where data flows in two directions between two systems. If information changes in one system, it is updated in the other, and vice versa.
Unidirectional	A process by which data flows only in one direction between two systems.
Web Services	A generic term for when data is transferred from one device to another. An API is a kind of web service.

APPENDIX B: ADDITIONAL RESOURCES

For more information you might find helpful when considering or planning an integration project, refer to the following resources:

SQL Data Types, *w3schools.com*

This list of data types will help you better understand the fields you might use when completing a data dictionary for your own project.

https://www.w3schools.com/sql/sql_datatypes.asp

Introduction to JSON, *w3schools.com*

This intro to Java Script Object Notation will help you understand the language used by some APIs.

https://www.w3schools.com/js/js_json_intro.asp

APPENDIX C: ABOUT THIS REPORT

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Marissa Goldsmith is a digital analytics specialist from Northern Virginia. She has been making websites for more than 20 years. She made her first website in Pico; most people viewed it in Lynx. Today, she works with nonprofits, government agencies, and small businesses, implementing digital data collection strategies, integrations, and helping them to use the data gleaned in a privacy-friendly way. When she's not elbow-deep in spreadsheets (and loving it!), her side-passion is accessibility.

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About Idealware

Idealware, a 501(c)(3) nonprofit, provides thoroughly researched, impartial, and accessible resources about software to help nonprofits and the philanthropic sector make smart software decisions. By synthesizing vast amounts of original research into credible and approachable information, Idealware helps organizations make the most of their time and financial resources. Visit www.idealware.org to learn more or view our hundreds of free articles, resources, and reports.

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APPENDIX C: ABOUT OUR SPONSORS

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