Application House

SYSTEM INTEGRATION FOR NONPROFIT

WHITE PAPER

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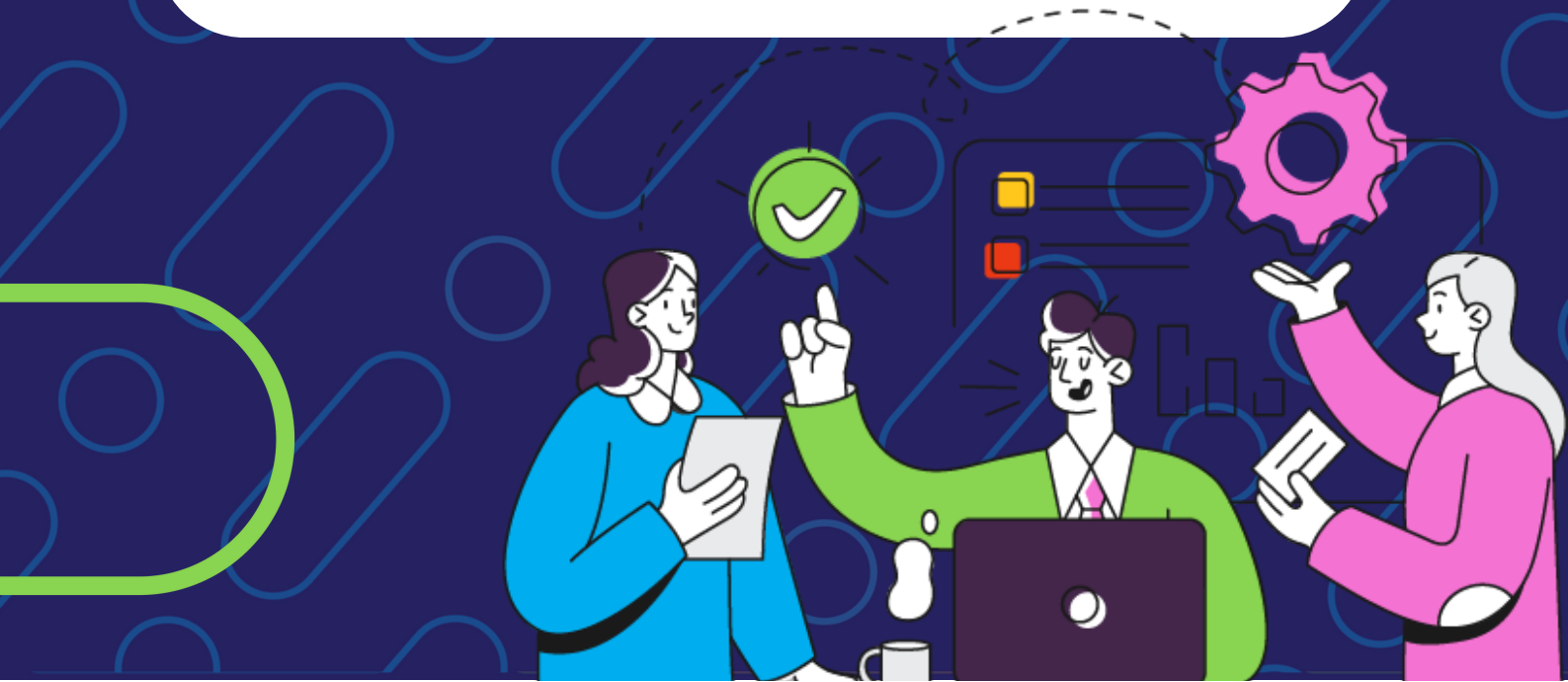

TABLE OF CONTENTS

1 PART 1

1.1 Multiple Disconnected Systems

Technology has modified the way of life: from the simple to the most complex aspects. And when its digital era came, more areas changed. Digital transformation reworked traditional ways into modern approaches to meet the growing market requirements. The world now has real-time message exchanges, at-home shopping, easy access to information, and paperless record-keeping using any devices connected to the internet. That's to name a few.

As the world changes, people will want more convenience in more things done digitally. This demand made the market even more competitive, which prompted businesses to cope quickly with the trend. As a result, there are several digital tools for either one whole business function or for just one task within a specific business function. For instance, HR could be using Excel for employee records and then manually inputting into a payroll system that is only accessible on one computer.

At the height of the demand, having multiple systems or tools seemed the best way to level out the market demand for more digitalized experiences. To some degree, it did. These tools simplified some tasks and made a part of some workflows easier. Remember how hard it was to go through piles of paperwork for one piece of information? Or the manual expense computation? However, these multiple systems are disconnected. Its disconnectivity, however, makes for another set of challenges that hinders the overall success of an organization.

1.2 Multiple Disconnected Systems in the Nonprofit Scene

Existing under the wing of state law, Nonprofits serve many purposes besides making a profit. They—a group of people, a community, or an organization—are often the unsung heroes pursuing a mission of bettering the world despite the odds. They operate with tight budgets and limited resources while managing the impacts of political weather and global events.

The historic struggle of this industry with budget and resources made it among the last ones to take on technology, even more so digital tools. While it took longer than most, nonprofits have recognized that it is necessary to employ technology to stay relevant. Like other industries, they were quick to onboard systems that addressed their needs respectively. And just like with businesses, the disengaged systems are causing a rift in what should otherwise be smooth-running operations.

1.3 Here's how detached systems mainly affect Nonprofits:

1.3.1 Cost.

Each system costs differently and comes with other fees for its license, maintenance, and support. Upgrading these systems will also vary, especially for legacy systems that already have higher maintenance or support costs. On top of everything mentioned, there's the training fee for existing and new employees.

1.3.2 Workflow.

Because each system only corresponds to a single function or just a few tasks, gaps develop in processes. In a department, not every employee can access varying systems or programs running on unconnected devices. It makes collaborative workflow virtually impossible and creates inaccuracies and redundancies. And because departments aren't also connected, miscommunication and information block-outs likely happen, which causes delays. These delays translate into wasted time and resources and unnecessary expenses.

1.3.3 Data.

Passive data is long gone. It's now every organization's goal to get the most value from their data, yet 76% of Nonprofits are behind on their data strategy. The data-driven concept is still a top priority, but the growing amount of data from different sources is challenging. It's become even more difficult with the global crisis in 2020, which had organizations take in many digital tools. It produced a lot of data silos with compromised integrity. In particular, data:

- is incomplete;
- have duplicates;
- is outdated; and
- stagnant

1.4 How can an organization then bring its systems together?

System Integration is the answer to that. In this process, an organization can connect multiple systems within a function and across departments to create cross-departmental collaboration, which makes more efficient and effective operations.

2. PART 2

2.1 The Solution: System Integration

System Integration, in simple terms, is the process of bringing together multiple systems by building connections between these systems. Often, it means building customized architecture of applications to merge new or prevailing components like hardware and software.

For example, an organization is looking to integrate a database with a payroll system. The connection they will need could be inbound, outbound, or bi-directional. The integration could also involve linking to another database, enabling sharing of data between systems, or continuing a business process automation from one system to another.

Now, integration isn't always a middleman. It can be done on only one side or one system using an integration module. Each system has its language, which is how it comprehends commands and interacts with output. The integration module translates the language of one system for the other.

2.2 Types of Integration

System Integration is divided into the following types:

2.2.1 Enterprise Application Integration (EAI)
It is a service-based process that communicates with various services and collects data before taking the next steps as established in a workflow.

2.2.2 Data Integration (DI)
This integration brings all data from multiple points into a single central venue.

2.2.3 Electronic Document Integration/Interchange (EDI)
This integration automates paper-based exchanges of documents, thus saving time and removing costs and errors.

2.3 The Process

Depending on the use and requirements, integration has different methods. The one considered the quickest yet riskiest is vertical integration, which brings disparate systems under a single functioning unit through silos made based on their functionalities. As the name suggests, it works upward and is expedited by some vendors, partners, and developers.

The next method is horizontal integration, or the Enterprise Service Bus (ESB), which comprises a set of rules for connecting applications over a bus-like infrastructure. Fundamentally, this process involves putting a 'communication bus' between the applications or systems and enabling each to talk to the bus.

Now Point-to-Point integration makes use of custom code to link two applications together. This method uses several technologies to write the code, meaning a team can create a network of point-to-point integrations using multiple coding languages.

2.4 The Advantages: Why opt for System Integration?

The definition of integration is its very purpose. By bringing together various unrelated systems, integration essentially creates a single system that simplifies processes across different departments of an organization.

The integrated systems reduce IT expenses and save time and budget. But perhaps the top benefit of this process centers on data. It offers the following:

streamlined collection of data;

better data accessibility;

remove manual data entry;

one data storage on a single, centralized system

A smoother information flow increases productivity while removing any downtime or backlogs. This results in higher-quality operations.

2.5 What about the challenges of the process?

System integration also improves the experience for both customers and employees. For Nonprofits, it offers an efficient experience for their stakeholders and clients, increasing retention. But there are blockers to the success of this process for both IT professionals and non-technical people. While the concept isn't necessarily complex, several instances make this process more challenging for nonprofits.

According to our report, 69% of IT leaders say that lack of integration is causing disconnected customer experiences at their company. With this in mind, it’s easy to see why system integration is becoming a focal point. But that doesn’t mean there aren’t still obstacles to overcome.

2.5.1 Cost

System Integration remains a top priority for a majority of IT leaders. However, 71% of these leaders find it too long and expensive, especially integrating many different systems.

2.5.2 Integration Landscape

The competitive market today makes change inevitable, so it's a must for technology to evolve. However, many integration projects don't consider this. Most projects are designed based on the present state of the systems: some involve applications in the beta stage, making the initial integration design obsolete as it can't keep pace with the development.

2.5.3 Lack of Skilled People

Having an expert is as important as the integration technology used. Many companies, however, can't find or retain people with the right skill set for their integration projects.

2.5.4 Legacy System Integration

Although outdated, Legacy IT systems still serve some essential purposes that some businesses and organizations don’t even consider switching to modern ones. These systems often have no clear interfaces and have been programmed with old coding languages, making it difficult to connect to these systems.

2.6 Is system integration possible for Nonprofits?

Nonprofits know integration is now a requirement and not just an option to consider during free time. Nevertheless, barriers exist predominantly due to the nature of the industry. Below are three of the main challenges.

2.6.1 Budget

Over the years, nonprofits have had many budget cuts that have impacted their operations. The limit on their funds continues to this day. And as demand for their services grows, they are met with the necessity to invest in new infrastructures that will help them cater to that demand.

2.6.2 The Climate

How the world is, not just the political status, affects the operations of nonprofits. While the 2020 Covid-19 pandemic highlighted the industry's significance to social well-being, it has also put nonprofits in a tight spot. They had to continue to save lives, teach children, and deliver some resources: all while they battle with called-off fundraisers and programs and a cutback in funding.

2.6.3 Digital Expertise

Bigger organizations now have a team dedicated to their IT requirements, but historically nonprofits didn't have people to manage the technical pieces of stuff. However, having the right people is pivotal to the success of technological adoption, and much more integration. An expert onboard means guidance up to the management level to produce well-informed decisions.

2.7 Preparatory Steps for a Successful Integration Project

Integration has a high possibility of failing in both complex and simple projects. A 2012 report from McKinsey-Oxford stated that even some large projects failed to the extent of endangering their organizations. So how do we get through these obstacles and achieve success in system integration?

Here are some steps to take:

2.7.1 Create a plan

The mistakes of yesterday are preventable when one prepares. The first step to an integration project is to identify the reason. Why do the systems need to be integrated? How will these integrated systems be used? From there, one can create a comprehensive plan that considers every angle possible. It should include information on the different users, requirements, technologies, and results desired.

2.7.2 Choose the best hand to help

For the project to go in the right direction, the right expertise should guide the process. One of the preliminary steps to this project should be consulting an integration expert who can ask the right questions. An expert can point out aspects of the project that may not be feasible and provide insights from a technical perspective.

2.7.3 Have the right tools

There are integration tools that can offer seamless functionality within businesses. With the help of an expert, one can find a tool that supports communication between all data types and the more complex projects.

2.8 Technologies Used for Integration

Here are some of the technologies that over 100 IT leaders from the world use:

2.8.1 In-house development

Some nonprofits with a more flexible budget can put together an internal team that can build a highly customized solution to fit exactly what they need.

2.8.2 API Management Platform

This is a tool to access, allocate, manage, and analyze APIs. It creates a centralized control of API integrations while meeting the standards of high performance and security.

2.8.3 P2P Solutions

Point-to-Point solutions connect two or more systems but are isolated from those systems only. It communicates with another system in a one-on-one relationship. For example, a record management system needs a connection to a payroll system and a sales application. The database will have two separate integrations—one for the payroll and another for the sales.

2.8.4 Customer Relationship Management

CRM has become essential in the digital age. It streamlines processes, stores customer data, and offers a single view of the customer. It has become the top choice even for organizations.

3 PART 3

3.1 Salesforce for Nonprofits

Over 150,000 big and small companies have been scaling their business with Salesforce, the world's top CRM choice. Its integrated CRM platform—Customer 360—has a portfolio of connected apps that have been bringing marketing, sales, commerce, service, and IT teams together. At first, Salesforce appeared to be something only for-profits could benefit from, but it now stands to be a powerful tool for nonprofits.

It took a while, but digital transformation is progressively taking over the nonprofit sector. Salesforce reports 36% of survey respondents say they are investing in new technologies like analytics, artificial intelligence (AI), and automation. It's evident that organizations are turning towards cloud-based technology to address existing and future challenges.

For nonprofits, Salesforce offers Nonprofit Cloud, a CRM with a pre-packaged set of tools that help unite teams. Through one platform, nonprofits have a single look at how other participants—like donors and partners—engage with their organizations. It also helps organize and remove data silos across operations, including fundraising, programs, and marketing.

For data needs, Salesforce has Insights Platform Data Integrity that dedupes, cleanses, and updates data. It improves the accuracy of the reports deduced from these data, which produces the right insights that organizations need to improve areas like fundraising and online campaigns.

A big part of the operations of nonprofits is engagement. Salesforce offers some products for this. There’s Marketing Cloud Engagement for Nonprofits, Marketing Cloud Account Engagement, and Marketing Cloud Intelligence. The goal of each of the products is to grow a nonprofit’s community and solidify relationships. These Salesforce products also make it easier for organizations to connect with more people on various channels, including email.

3.2 What would Salesforce mean for nonprofits?

Salesforce has a lot of solutions that help nonprofits increase their efficiency and effectiveness. By improving some activities, employees can do more of the priority work and center more focus on pursuing their mission. Among others, Salesforce can:

scale donor programs by allowing donors to use channels that they're most comfortable with, integrating other methods;

streamline major giving programs where moves management process is standardized and automated;

promote digital fundraising and increase donor conversion rate, and;

simplify the grant-seeking process.

3.3 How does System Integration work with Salesforce?

The concept of Salesforce integration is essentially simple, but it is a process that involves a lot of elements. It includes the source and target systems. Then there are the types of integration; process, data, or virtual. Process integration involves the integration of two or more applications for a business process to complete its task. Data Integration, on the other hand, is essentially the process of bringing together data from disparate sources. Lastly, virtual integration addresses the need to interact with data from an external system.

3.3.1 Integration Capabilities Offered by Salesforce

1. SOAP API
2. REST API
3. BULK API
4. Streaming API
5. Platform Events
6. Change Data Capture
7. Outbound Message
8. Callouts
9. Salesforce Connect
10. Heroku Connect

3.3.2 Integration Patterns

- Remote Call In
- Remote Process Invocation-Request and Reply
- Remote Process Invocation-Fire and Forget
- Batch Data Synchronization
- UI Update based on data changes
- Publish/Subscribe

3.3.3 Architecture

The next element to integration is its architecture, and there are three.

- Point-to-Point integration, which, as previously discussed, is the 1-1 communication between two systems.
- The Hub-and-spoke integration, on the other hand, provides a central hub system where systems can communicate. T
- he Enterprise Service Bus (ESB) is said to be an upgrade of the previous architecture, with the integration engine used for building connections between systems as the only difference.

Integration also sets its timing and direction. For its timing, it's either synchronous or asynchronous, which both refer to a system calling another system. The difference is synchronous requires a response to continue the process while asynchronous does not. For direction, integration can be outbound, inbound, or bi-directional.

Salesforce offers many integration capabilities. The easiest way is to go through the Salesforce AppExchange, a marketplace where solutions created by Salesforce partners exist. It includes ready-to-install solutions to more easily integrate a system into Salesforce.

If there's no available solution in the marketplace, a Salesforce Partner can build the app. A partner, maybe a Salesforce Admin, can use no-code tools or out-of-the-box solutions like MuleSoft Composer. These solutions are features that Salesforce included in whatever package availed. It allows one to develop an application with a few clicks.

Salesforce also has mixed-build integration that requires code, but only with low or no-code management. For data, there's Change Data Capture that recreates data without custom code while keeping external systems synced when data in Salesforce changes. Another data tool is Salesforce Connect which makes it possible to create and manipulate data in external systems using Salesforce with no importation needed.

Salesforce developers also have tools to build, debug, and test applications in Salesforce.org, which is one's own Salesforce system. Part of this toolbox is the broad Salesforce APIs landscape. Salesforce takes an API-first approach when building features in the platform, meaning the User Interface (UI) comes after and on top of it, which ensures that behavior is the same.

The most common APIs used are Rest API, SOAP, API, Bulk API, and Streaming API. With the first two as the most widely used, all four APIs make up the Salesforce Data APIs, whose purpose is to make data manipulation more flexible.

3.4 How can nonprofits best proceed with Salesforce Integration?

Because nonprofits dabble in different expertise, they do not have the adequate knowledge and skills for correctly running an integration project. It puts more areas of operations at risk, and the additional repair will cost more. So, it's best to leave this matter to the ones who know it well. Salesforce Consulting Partners are the experts one needs to onboard the project. They ask the right questions, have the right insights, and know which aspects are practical. They ensure a project is heading in the right direction and has the right insights guiding its process.

To find the best Salesforce Consulting Partner, check here some of the criteria to cross out.

4. PART 4

4.1 The best Nonprofit partner: Application House Limited

Standing proud with a multidiscipline knowledge in IT, Application House Limited is a 360° solution provider with a Salesforce badge. They offer comprehensive Salesforce services and solutions to address some challenges or assist with its implementation. From planning to support, they're here to guide nonprofits at every step of the way.

4.1.1 Expert Consultation

As a one-stop shop, we have the expertise nonprofits need to make the right technological decision. Whether an organization is looking for a project management tool or a payment app, we're here to guide an organization at every stage.

4.1.2 Support

We can take all the IT-related loads so nonprofits can focus on what matters. Maybe an organization needs to upgrade a system or is looking to build a new feature. We have proficient members to help accomplish such projects. No unnecessary burden should fall on an organization working to save the world.

4.1.3 Cost

Our goal is to help nonprofits achieve their goal. We work with the budget that works best for our client. As nonprofits continue to serve the world, the initial stage of our possible project will be pro bono.

4.2 Application House on System Integration

Application House is a team with over ten years of combined experience. They are experts who got the industry in and out. The architects and developers of the team have vast experience with system integration for companies from different fields.

Application House Salesforce Architect SPOTLIGHT	Application House Salesforce Certified Senior Developer	Application House Salesforce Developer
Technical skills include: Java 1.5,1.6 J2EE 5.0(Java EE) .NET, C#, VB.NET ASP.NET Web form XML, XSD, XPath Visual Studio, Microsoft SQL Server Management Studio, QlikView and Tableau Desktop BI Tools MySQL, MS Access, Microsoft SQL Server Salesforce - Visualforce, Apex, Web Services API, Force.com IDE, Data loader, Bulk API, Metadata API, SOQL, SAQL Salesforce Certifications	Technical skills include: Salesforce Development HTML/CSS JavaScript Integration Sales Cloud Service Cloud 6 Salesforce Certifications	Technical skills include: LATEX Matlab JavaScript Salesforce (Apex, Visualforce, SOQL, Lightning) Salesforce Certifications
BP (The British Petroleum Company plc) **Role**: Salesforce Tech Lead/Scrum Master **Project**: Lead Salesforce Developer team for Salesforce technical development making sure to stay focused on product road map. Manage scrum team encompass BP, Product owner, Tester, Developer to deliver that is committed to sprint.	**Deloitte Consulting Philippines Delivery Center, Inc.** (April 2021 - Present) **Role**: Salesforce Consultant **Project**: Lead Developer of Salesforce Implementation for a German automotive company **Responsibilities**: Configures & Develops in Salesforce as per requirement; prepares technical solutions	**Accenture, Inc.** (March 2017 - March 2021) **Role**: Software Engineering Team Lead **Project**: Offshore Team Lead & Salesforce Developer for Standard Bank Group **Responsibilities**: Managed the offshore Salesforce team; Designed and developed solutions in Salesforce.
Salesforce (Jul 2021 to Jul 2022) **Role: Salesforce Technical Architect** **Project: Work with developers to guide them to develop the business services layer, and Data access layer making sure to follow software engineering principles.**	**Accenture** (March 2017 - March 2020) **Role**: Application Development Senior Analyst **Project**: Salesforce Customization and Apttus-related configurations **Responsibilities**: Implemented dynamic bundle structures, complex pricing and multi-level Apttus approvals.	

4.3 Case Study – Integration Project

4.3.1 The Client

Our client is an organization in the nonprofit education sector that is offering various programs to first-generation students from low-income communities. These programs aim to help them to get into and through university and then land a job.

4.3.2 The Project

The client wanted to connect to students through their mobiles for one of their programs. They decided to use the engagement platform, Mainstay, which gave them a chatbot that automatically responds to students but also allows students to request actual advisors. Now, the client wanted to integrate this into Salesforce and get the following:

Bring the interactions from Mainstay into Salesforce

Remove manual export and upload of data from Salesforce to Mainstay

4.3.3 Application House's Process

Initially, the client decided to proceed with writing Rest API to manually integrate Mainstay into their Salesforce. Before proceeding to such, Application House first guided the client in exploring other solutions, one more efficient.

Application House coordinated with Mainstay to find the ready integration solution, Mainstay Sync for Salesforce, in Salesforce AppExchange. With a click, the integration solution allowed to:

Generate new records in Salesforce for the contacts in Mainstay and vice-versa;

One- or two-direction sync to update data in one or both systems for any changes;

View Mainstay conversations & campaign history within the Salesforce Contact record page

4.3.4 The Conflict

There was a problem when integrating with the Contact & Custom Object because the limit of the field has been reached. For data to flow from Mainstay into the Custom Object, twenty fields were needed.

4.3.5 The Solution

Application House and the client had an extensive discussion about how to move forward. Using a Junction Object was the initial solution presented, and it's supposed to go like this:

Junction Object will be connected to the Contact and the Custom Object;

Then the data from the Junction Object will be copied to the Contact & Custom Object;

The Junction Object then syncs with Mainstay, and the data from Mainstay flows to the Junction Object.

Application House's Architect explained that using a Junction Object requires a lot of system resources, which is unnecessary. He reinforces that the right way is to integrate the Custom Object with Mainstay rather than the Junction Object and to do so, they need to delete some unused fields.

The client agreed with the solution Application House presented, so they proceeded to delete twenty fields, allowing the integration of the Custom Object with Mainstay.

4.3.6 The Results

The client's advisors can focus more on the students, as the integration:

Brought the conversations from Mainstay into the Salesforce Program Record Page, with a hyperlink in the student record view that allows to open the conversation exchanges in a new tab and send a reply;

Allowed to automatically generate a contact in Mainstay for a student whose record was added in Salesforce;

Generated a process for the intake & recruitment of applications for their program; and,

Built a new UI for the program, giving a unified view of all details necessary to engage with students.

4.3.7 What else is there with the project?
Currently, the collaboration with the client continues as we work on some updates on the newly built UI and assist them in setting up a process for reviewing new applications for the program.

4.4 How Integration Project Implemented - SCRUM Software Development

Application House understands the uniqueness of every client, so no requirement is ever the same. Using the scrum methodology, the team designs the project to what the client needs. Here's how Application House used the SCRUM method on the project with our client.

The Application House team consisted of a Product Owner, a Salesforce Architect, a Salesforce Developer, a Salesforce Business Analyst, and a Business User and Business Analyst to do Salesforce Testing. The Salesforce Business Analyst created tickets to Jira backlogs.

4.4.1 Discovery
The first step is exploration, where the team touches base with the client to understand their needs. Some already have a general idea of what they want to happen or what they want to get. For others who are unsure, the team asks a couple of exploratory questions:

Who are the users? How many?

What would be the use case?

What functions do they want?

What data are they going to bring in?

The initial action was daily discovery workshops to understand the requirements and onboard the team by giving information about the use case and business process.

4.4.2 Analysis

The answers to these questions make up the user stories, which the team brings to the next step: analysis. The Application House team determines if the project is feasible. If things need clarification or some aspects are not possible, the team communicates this to the client and decides how to get from there. Once everything is ready, the team moves to sprint planning.

4.4.3 Planning

In sprint planning, the team discusses which of the requirements are the top priorities and brings in some other ideas. These priorities go into the sprint backlog and are what the team works on in the sprint, which runs for two weeks. During the sprint, the team members meet for updates on what parts are complete, currently worked on, and if there are blockers. By the end of the sprint, the team reviews the outcome and determines if the results match what the client wants. The team also identifies the areas needing improvement and plans the priorities for the next sprint.

The sprint planning is done with the Product Owner to prioritize tickets from the backlog to take in the sprint, which will run for two weeks. At the end of the sprint, a product demo is done with the key users to gather their feedback then all developments are deployed to production.

4.4.4 Development

The team works on the project sprint by sprint, making progress in small increments. So the sprint cycle continues until the outcome of one of the sprints reaches the client's requirements. Every progress made is communicated to the client to get their input and incorporate such along the way. Once the intended result is on hand, the team demos how the results will work for its users and use cases.

The progress and feedback gathered at the end of the sprint are concluded as tickets or incorporated into existing tickets in the backlog accordingly if there are any. Another sprint planning occurs where priority tickets are brought in from the backlog and worked on in the new two-week sprint.

4.4.5 Implementation

Now the project is at the implementation stage. Beyond that, the team also provides post-implementation services to ensure that the project results work as intended. The Application House team can then address any issue or possible error immediately.

The cycle of sprint planning, two-week sprint, end-sprint demo, and feedback gathering happens several times until the team reached the desired result. Once achieved, the team conducted one last demo of the final project product with all the users involved before deploying it to production.

4.5 Application House - Your one-stop Salesforce solution

Application House Limited is an established Salesforce Partner whose top priorities are quality and value for its clients. They create solutions that are right to the client's needs. Check some of their works on Salesforce AppExchange. They continuously strive to provide the best services for a wide range of industries, with nonprofits as the main ones. As a Salesforce Consulting Partner, here are some of the values they offer:

- Increase operational efficiency
- effective management
- customization
- accurate reporting
- cost-effective

Application House Limited knows no limits when it comes to the IT requirements of its clients. Their mission is to give nonprofits what they want and need. And they have the IT expertise to make any vision a reality for:

- Greenfield project development
- Technical Debt and Maintenance
- Managed service or support service
- Data Migration
- BAU development
- System Integration
- Ad hoc short-period support to fill the emergency gaps

The above are just some of the capabilities of Application House. And as mentioned, they know that every organization has distinct needs and situations so a one-size-fits-all solution isn't an option.

To know more, schedule a talk with them now through sales@applicationhouse.com or check out Application House on LinkedIn.