

Laptop to Schools

Technical Architect Program

Official Practice Scenario





Project Overview

Laptops to Schools (L2S) is a non-profit company that receives donated laptops from corporations and allocates them to over 2,000 schools around the world or sells them to 3rd party recycling companies. L2S has 50 offices across the United States and Europe that are organized into 12 country-based regions.

L2S also operates two shipping and receiving hubs located in Denver and Paris. Donated laptops are shipped to one of these hubs and evaluated and cleaned before being allocated to schools or sent for recycling. L2S receives donations from approximately 5,000 corporations. On average, each corporation donates 300 laptops each month.

L2S is experiencing very rapid growth and is looking for a more automated solution that is easy to maintain and will allow them to scale in the future.

There are four types of L2S employees who will be using the system:

1. **L2S Donation Coordinators** (DCs) work in regional offices and manage the laptop donations. They work with corporations to validate donations and arrange shipping of donated laptops.
2. **L2S IT Specialists** work at the shipping and receiving hubs and are responsible for documenting laptop details. There is also an **L2S Security Team** who works on laptops that contain PII data.
3. **L2S Allocation Coordinators** (ACs) work in regional offices and are organized into two groups: those that manage the allocation of laptops to schools (**School ACs**), and those that manage the allocation of laptops to recycling companies (**Recycling ACs**).
4. **L2S Managers** oversee DCs and ACs for a specific region.

L2S would also like to give access to Volunteers who set up the laptops at the schools, and Virtual Experts who help to support schools and students by resolving software-related issues.



Current Systems

L2S employees currently access the following disconnected systems: an inventory system, a shipping fulfillment system, and a cloud storage system.

The **inventory system** stores a record of all laptops that are donated to L2S, including the serial number, model number, value of the laptop, and the final destination (either schools or 3rd party recycling companies). The inventory system is currently the system of record for all schools and 3rd party recycling companies. L2S employees access this system through the Web using system-specific login credentials. 3rd party recycling companies also access the system to update the amount they paid for laptops purchased from L2S.

1. The following problems have been identified with the **inventory system**:
 - 1.1. Schools and 3rd party recycling companies appear more than once.
 - 1.2. L2S Donation Coordinators (DCs) run a manual batch import from a CSV file containing a list of laptops donated from a corporation and the file format is not consistent.
 - 1.3. L2S Allocation Coordinators (ACs) manually update the inventory system with allocation details and may select the incorrect school or 3rd party recycling company.
2. L2S is required to keep the inventory system in place for government audits, but requires that:
 - 2.1. Salesforce be the system of record for schools and 3rd party recycling companies.
 - 2.2. All updates to the inventory system should happen automatically.

The **shipping fulfillment system** is accessed through a Web browser and stores shipping details for donated laptops received from corporations and laptops that are shipped to schools or 3rd party recyclers.

The **cloud storage system** contains training videos and the software applications for the laptops. The system is provided to L2S free of charge and is also used for storing company process manuals.

Business Process Requirements

L2S would like the new system to include the following processes and capabilities. Many of these processes are currently manual, introduce errors in the data, and prevent L2S from being able to scale. L2S would like to automate all processes in the new system and improve the user experience.

Laptop Applications and Donation Intake

1. When schools apply for laptops, they currently download a PDF Laptop Application form and fill in the school's name, address, number of laptops, number of students, types of classes, and required software. They then scan and submit the form via email and attach supporting documentation.
2. Corporations initiate the laptop donation process by sending a donation batch CSV file to L2S.
 - 2.1. The CSV file lists the laptops in the donation batch and is grouped by PC or MAC, and then is further broken out by model number and operating system. The file also includes serial numbers for each laptop in the batch.
 - 2.2. L2S Donation Coordinators (DCs) then save the CSV file, run a manual import process on the inventory system, and then manually create a shipping record in the shipping fulfillment system so the corporation can ship the donated laptops to one of the hubs.
 - 2.3. They then send an email to the corporation with the shipping details.
3. Some of the larger corporations have asset management systems that store attributes for laptops. L2S would like to give these corporations the ability to send these details to the inventory system when laptops are due for end-of-life and ready to be donated.
4. When the laptops arrive at the shipping and receiving hubs, L2S IT Specialists begin the intake process by checking the laptops for personally identifiable information (PII).
 - 4.1. If any of the laptops contain PII, the L2S IT Specialists should flag the record and the L2S Security Team should be notified immediately via email with a link to the laptop record.
 - 4.2. The L2S Security Team then reviews the PII files and sends an email to the corporation that includes the donation batch, laptop serial number, filename, and type of PII that the file contains. The communication should notify the corporation that they can either request the hard drive be shipped back to them, or confirm that the files can be deleted.
 - 4.3. If the corporation does not respond within 5 days, the L2S Security team user who is assigned to the laptop should be notified that they have 24 hours to delete the files.
 - 4.4. When the L2S Security Team user deletes the files, they remove the PII flag and the record should be reassigned back to the previous IT Specialist.
 - 4.5. If the PII flag is not removed within 24 hours, then the record should be assigned to the Security Team users' manager.

5. L2S IT Specialists complete the donation intake process by adding detail to the laptop records that includes the manufacture date, processor type, amount of memory, and hard drive capacity.
 - 5.1. L2S IT Specialists use these details to designate the laptop for either schools or recycling.
 - 5.2. Laptops that are designated for schools are assigned a monetary value using a standard government estimating website that exposes a web service.
 - 5.3. The designations and the monetary value of laptops designated for schools should be updated in the inventory system in real time.
 - 5.4. Laptop records should then be assigned to School ACs or Recycling ACs in the region based on the volume of records currently assigned to them.

Laptop Allocation and Shipping

1. A significant percentage of L2S's operating income is generated by selling laptops to 3rd party recycling companies. L2S does not currently have a reliable method for determining which 3rd party recycling companies pay the most for specific laptop models.
 - 1.1. Recycling ACs would like to be able to see the average dollar amount that 3rd party recycling companies have historically paid for specific laptop models.
 - 1.2. L2S would also like to give 3rd party recycling companies access to populate a table with data that can be used to determine the rates that they will pay for recycled laptops.
 - 1.3. The Recycling AC would like to see the top three recommended 3rd party recycling companies based on this data.
 - 1.4. When they select a recycling company for laptops designated for recycling, the inventory system should be updated.
2. School ACs currently review the applications for laptops in their region and run a search in the inventory system to see which schools have not received laptops in the past 12 months.
3. L2S would like to optimize the allocation of available laptops to schools by matching the requirements from the school application (types of classes and software requested) with the characteristics of laptops that are designated for schools (processor and hard drive capacity.)
 - 3.1. If a school has received more than 500 total laptops in the current school year, then the school ACs manager must approve the allocation.

4. School ACs then assign a volunteer to set up the laptops at the school and install software.
 - 4.1. L2S would like to track the skills of each volunteer as well as their performance on previous set up assignments based on feedback from schools.
5. When the allocation to the school is finalized, L2S would like to automate the following steps:
 - 5.1. Update the inventory system and automatically create a shipping record.
 - 5.2. The school and the assigned volunteer should receive a school allocation letter in their local language that includes the laptop delivery date, the corporations who donated the laptops, the total laptop value in their local currency, and contact information for the volunteer assigned to them.
6. When all laptops in a donation batch are allocated to a school or sent for recycling, the corporation should receive a tax donation letter that shows the total value of all laptops in both USD and the corporation's local currency.

Laptop Setup and Support Process

1. When shipped laptops arrive at the school, the school should electronically sign a receipt.
 - 1.1. Volunteers should then be notified to schedule a visit to the school to set up the laptops.
2. Volunteers visit the school and are required to check in on their mobile device when they arrive.
 - 2.1. They begin the laptop setup process by downloading software from the cloud storage system to each laptop. L2S has 20 software applications that they provide for schools.
 - 2.2. When each software application is installed, volunteers are required to track the software name, license ID, and the license expiration date. Each laptop typically has 5 software applications installed.
 - 2.3. Volunteers need to be able to collaborate with other volunteers regarding set up issues with the laptops.
3. Schools who receive laptops would like to be able to record a thank you video on their mobile device and share it with the company(s) who donated the laptops.

L2S has enlisted the help of 1,000 virtual experts to troubleshoot software issues. L2S would like to provide a forum where students can ask questions and receive responses from other students or virtual experts and chat in real-time with an expert in the region with the correct skillset based on the details in the question



Data Model and Migration Requirements

1. The new system should be the system of record for schools and 3rd party recycling companies.
2. Other data should be imported into the system as needed to support requirements.

Accessibility/Visibility Requirements

1. Corporations cannot see each other's records.
2. Only designated contacts at corporations can see tax donation amounts for the laptops donated by their corporation.
3. Only users on the L2S security team and their managers can see and update laptop records for laptops containing PII.
4. Only DCs can modify the laptop rates on behalf of the 3rd party recyclers.
5. L2S Donation Coordinators (DCs) should only see laptop donations for their region.
6. The corporation tax ID and the tax donation letter document should only be visible to DCs assigned to the corporation.
7. Only Recycling ACs should see the amount that 3rd party recycling companies pay for laptops.
8. Schools should be able to see all laptops allocated to them but should not see other schools' allocations.
9. Volunteers should see school details, laptop serial numbers, and shipping information only when they are assigned to set up laptops.
10. Internal users would like to access the new system through their corporate intranet and should be able to sign in seamlessly.
11. L2S uses active directory and internal users should be automatically provisioned and de- provisioned.
12. Volunteers and schools will use FB or Twitter credentials to sign into all systems that they access.



Reporting Requirements

1. L2S would like to build a dashboard for corporations that shows the top 10 corporations who donated the most laptops by region.
2. Schools should be able to see the following reports:
 - 2.1. A history of all laptops that have been donated to the school including the allocations received, the date the laptops were delivered, the number of laptops delivered, the volunteer who set up the laptops, and the monetary value of the laptops.
 - 2.2. List of software and license expiration dates for all laptops allocated to the school.
3. L2S would like to see a trend report showing the number and monetary value of laptops donated by the top 10 corporations by quarter over the past 5 years.