



# Greenhouse Recycling Corporation

## Technical Architect Scenario



## Project Overview

Greenhouse Recycling Corporation (GRC) is a provider of recycling and waste disposal services to industrial and medical customers. It has 150 offices and 300 disposal facilities in the US and Canada. Its mission is to preserve public health and safety by providing the best available recycling and disposal services, in full compliance with best practices and current regulations.

GRC has 200,000 industrial and medical customers, with growth expected to be about 5% per year for the next 5 years. Customers have an average of 2 locations per customer, with each location having an average of 2 waste pickups per week.

GRC has grown by acquisition and has remained largely paper-based, and as a result has severe gaps in system automation and integration. GRC plans to use Salesforce to create a more integrated system as well as to provide new digital services to its customers.

The following GRC employees will be using the new system:

1. 750 waste specialists who meet with customers, create “waste profiles” of the waste materials to be disposed, and provide face to face customer support when needed. These specialists work out of the 150 offices.
2. 500 support representatives, who pre-qualify prospective customers based on online applications, and handle post-sales customer support issues. These support representatives are in three service centers: two in the US and one in Canada.
3. 180 managers, including a location manager at each of the 150 locations, a regional manager at each of 15 regional offices, and another 15 at headquarters.
4. 5000 drivers who pick up waste from customer locations, record any compliance issues, and drop off the waste at a disposal facility.

GRC has identified the following types of external users who will also be using the system:

1. 200,000 primary customer contacts (one for each customer), who can submit applications for waste disposal service, request service, handle support issues, and administer other contacts at the customer.
2. 500,000 secondary customer contacts, who can request service, monitor pickup schedules, and submit support issues.



## Current Systems

Currently, GRC uses several systems to run their business:

1. A single custom public website which provides product information, phone numbers, and inquiry forms to prospective customers in both the US and Canadian markets. The website will remain in place and can be updated as needed to accommodate the new system.
2. An existing lead capture database (not Salesforce), currently only used to capture leads and inquiries from the public website. This system will be retired.
3. Four custom logistics systems, two for industrial waste (one in US and one in Canada), and two for medical waste (one in US and one in Canada). These systems are used for routing and scheduling trucks for customer pickup, and for monitoring the location of each truck. These systems will remain in place.
  - a. Currently these logistics applications are used directly by internal users to schedule and route waste pickup.
  - b. Trucks are specialized for either industrial or medical waste transport, so each truck communicates exclusively with only one of the logistics systems within either US or Canada.
  - c. The logistics systems provide a touch-screen device in the truck to guide the driver to each stop and track each pickup as it occurs.
  - d. Back-end API access is available for all four logistics systems.
  - e. The same customer may be in more than one of the logistics systems.
  - f. Single sign-on has been implemented for the logistics systems for internal users.
4. Two legacy ERP systems, one for the US and one for Canada, which currently manage sales activity, account setup, support, and billing.
  - a. GRC plans to decommission the sales and support functions of the ERP systems and replace them with Salesforce. Billing and other accounting functions will remain in the ERP system.
  - b. Due to differences in regulatory requirements for waste disposal, the ERP implementations in the US and Canada will remain separate.
  - c. API access is available for both ERP systems.



- d. Currently, a nightly batch integration pulls activity data from the logistics systems to the ERP systems for billing purposes.
  - e. The currently nightly integration also pushes account and location master data to the logistics systems.
  - f. Single sign-on has been implemented for the ERP systems for internal users.
5. A custom desktop tool used by the specialists to create “waste profiles” for customers as part of the current application process.
- a. The tool is used to create a PDF “waste profile” document, listing all the chemical, medical, or other components of waste that the customer needs to dispose of.
  - b. This waste profile is given an ID which is tracked in the logistics systems and ERP systems, but the profile itself is not available online.
  - c. A customer may have one or more waste profiles for a given location, depending on the nature of waste generated at each location.
  - d. The resulting PDF documents are printed and kept on file at the local office, but currently there is no established central repository of waste profiles for each customer.
  - e. The desktop “waste profile” tool will be replaced by the proposed system.
6. An enterprise-wide Windows Active Directory for management of internal GRC users across all systems.
- a. When GRC employees log into their internal network, they should be able to connect to Salesforce (including deep links) without having to log in again.

## Business Process Requirements

GRC would like to automate and streamline the following business processes in the new system:

1. Sales and Profile Setup
  - a. Prospective customers will submit an information request on the website, providing basic contact, location, and disposal needs in the process. Once collected, this information will create a prospective customer record in the system, and notify an available support representative in one of the three support centers (based on availability and geography). The support representative will contact the prospective customer and confirm the information.



1. Alternatively, prospective customers can place an initial call to phone numbers provided on the public website, in which case they will be directed to an available support representative in one of the three support centers based on the customer's geography and any customer history available.
  2. Other channels such as customer-initiated chat should be supported, and routed using any available data as appropriate.
- b. Approximately 1,000 prospective customers per month are added to the system through one of these channels.
  - c. The support representative pre-qualifies the prospective customer in Salesforce using a short custom questionnaire, collecting information such as the potential waste type(s), number of locations, and geography, after which the support representative creates an account for the customer in Salesforce so that the customer can complete their full application.
  - d. A waste specialist is automatically assigned to the customer at this point, based on information collected by the support representative.
  - e. After account creation, updates to certain account-level information must be made in the appropriate ERP system. The ERP system is considered the system of record for those data attributes, so those attributes are locked in Salesforce for all users and must be updated in the ERP system.
  - f. Once the customer logs into Salesforce via desktop or mobile device, they can update their application, manage the locations associated with their account, and create one or more waste profiles for each of their locations.
    1. As part of waste profile creation, forms must be highly interactive, and built-in rules must confirm that the waste stream can be disposed of safely and according to federal, state, and local requirements.
    2. The customer submits the waste profile application for review by the waste specialist.
    3. The review process for a new waste profile requires a system specialist to visit the customer's location(s) to confirm the nature of the waste to be disposed.
    4. The specialist can take pictures and/or videos of the waste with their mobile device, and associate them with the customer's application in Salesforce. Geo-location information should also be captured.



5. Once reviewed, the specialist can generate a complete contract including account, location, waste profile data, and all terms and conditions.
  6. Upon contract creation, the associated waste profile is locked in Salesforce and cannot be changed by any user.
  7. The customer can sign the contract on the specialist's mobile device. Alternatively, the customer can log into Salesforce at a later time and sign the contract online.
- g. Once a waste profile is established with GRC, the customer can associate additional locations with the existing waste profile, in which case the waste specialist is notified of the change.
- h. Customers should be able to use their Facebook, Twitter, or LinkedIn credentials to log into Salesforce and collaborate with GRC.

## 2. Pickup Scheduling

- a. Once a customer is established, and one or more waste profiles are approved for their locations, the customer can request pickup of their industrial or medical waste.
1. A customer cannot schedule pickup for a waste profile that has not been approved.
  2. Customers can schedule service either through the browser or using their mobile device.
  3. The customer signs onto the system and identifies their approved location and waste profile to schedule service for. If they are modifying an existing schedule, they can select it at this point.

The customer is provided with an interactive scheduling tool where they can select the preferred day(s) of week, time of day, and other scheduling parameters as appropriate.

Once the customer submits the requested schedule, a real-time integration with the appropriate logistics system will automatically add the request for routing and scheduling to the logistics system, and logistics system will return the confirmed schedule.

4. The confirmed schedule should be visible to the customer as the last step of the scheduling process.



5. If for any reason the schedule cannot be confirmed, the request will remain in an “unconfirmed” state, the customer will be notified via email, and a support representative will be tasked to follow up for resolution.
6. If the support representative does not follow up within a predetermined time, the follow up will be escalated to management via another task assignment.
7. If the logistics system needs to make changes to the schedule after it is established (for example, by adding it to a new route), the customer is notified by email, SMS, and/or a mobile notification depending on their notification preferences.

### 3. Pickup and Disposal

- a. Drivers follow a prescribed route to pick up waste from customers. Each route is dedicated to a specific type of waste (industrial or medical) and all waste for that route is taken to a specific disposal facility.
- b. While out on a route, a truck communicates with its logistics system every 60 seconds to report its current location on the route. Customers should have the ability to query the system via browser or mobile device for the location of the truck on a map, and be provided an ETA for their pickup.
- c. If there are any issues during the pickup, the driver will be able to use a company-provided mobile device to create a support issue, add supporting photos or videos, and collaborate with the customer and/or the waste specialist to resolve the issue.
- d. The logistics system has the ability to notify external systems upon the completion of the pickup, and upon completion of the route. Customers may elect to be notified whenever either or both of these events occur.
- e. The nightly integration between the logistics and ERP systems will continue its function to update customer billing in the ERP system for all pickups that have been completed the previous day.

## Data Migration Requirements

1. Customer leads from the existing lead database for the last 2 years should be migrated to Salesforce, except where they are also in the ERP system(s) as customers. Note that this lead information is the raw inquiry data entered by first-time prospective customers, and could contain existing customers or otherwise duplicate data.



2. All customer account and location data from the ERP system, including both active and inactive customers, needs to be replicated into Salesforce. This includes the account hierarchy as reflected in the ERP system.
3. All current schedule data from the four logistics systems needs to be replicated into Salesforce.
4. All current waste profile PDF documents need to be available online and accessible through Salesforce. The process of uploading these historical documents and linking them to the appropriate customer, location, and pickup records will be required as part of the migration.

## Visibility/Accessibility Requirements

1. Waste specialists should be able to view and edit all customer and installed-system data for their own customers.
2. Waste specialists should be able to view all customer and installed-system data for other specialists' customers within their local office, except for customer financial data.
3. All managers (local, regional, and HQ) should be able to view and edit all customer and service data within their respective areas (locations, regions, or global), including financial data.
4. Drivers should be able to view customer and pickup data for all customers on their routes, both past and present.
5. Primary customer contacts should be able to edit only their own customer, contact, location, and waste profile data.
6. There are certain customers with multiple customer accounts and locations set up in an account hierarchy. For these customers, primary customer contacts should be able to see all account, location, waste profile, scheduling, and subordinate data across all related accounts, and they should be able to schedule pickup services for these locations.
7. Support center representatives should be able to see all data within their geography only (US or Canada) except for customer financial data.

## Reporting Requirements

1. Support representatives, system specialists, and managers should be able to run reports on sales activity, schedules, and services provided for all customers they have access to.





2. Managers should be able to run ad-hoc trending reports showing the types of services provided and issues raised over various periods of time based on customer type, geography, business type, waste profile type, or responsible specialist.
3. All customer contacts should be able to run reports showing issues and their status for all issues they have access to.
4. Customer contacts should be able to run historical reports, both in summary and detail, of their waste pickup history and billing history (or combinations thereof), broken down by location and waste profile.
5. GRC would like a report that can be run live from the public website, showing the number of customers by type and the overall volume of service provided for the US and Canada.

## Project and Development Requirements

1. The solution needs to support English, Spanish, and French languages.
2. GRC has six separate teams (across the US, Canada, and India) responsible for the two ERP systems and the four logistics systems. The logistics teams in particular have operated with a great deal of autonomy and with no central guidance on technical standards.
3. While some source code is shared, all testing and deployment is currently manual. This has led to several incidents impacting the ability of the business to operate and meet regulatory requirements for systems that must be certified.
4. The Sales Management team at GRC would like to simultaneously release the completed solution to production for all regions in four months. However, IT would like to take a phased approach. The business is looking for guidance on the optimal plan, including on how to prioritize and track the work across the entire initiative.
5. GRC would like recommendations on how to manage the project to address project priorities, technical design issues, team management, and organizational issues that may arise.