# Full mock scenario – Packt Pioneer Auto

This scenario is part of the book *Becoming a Salesforce Certified Technical Architect*. The scenario, its proposed solution, artifacts, and several elements of the presentation pitch can be found in the book. You can get your copy from Amazon at `https://www.amazon.com/Becoming-Salesforce-Certified-Technical-Architect/dp/1800568754/ref=sr_1_1?crid=D5L23IKSKZ6M&dchild=1&keywords=becoming+a+salesforce+certified+technical+architect&qid=1624804105&sprefix=becoming+a+salesforce%2Caps%2C217&sr=8-1.`

## Timing

The following list contains the suggested timing for this scenario:

- **Preparation**: 180 minutes
- **Presentation**: 45 minutes
- **QA**: 45 minutes

You can increase or reduce the suggested timing to place yourself under looser or stricter exam conditions as required.

## The scenario

**Packt Pioneer Auto** (**PPA**) is a global car rental company that provides services to end customers in AMER, EMEA, and APAC. PPA operates in 50 major cities across 10 different countries, including Italy, Spain, France, Australia, Japan, the USA, and the UK. In each city, there is an average of 5,000 cars available for rental through PPA offices. Each city has an average of 10 offices.

PPA allows its customer to pre-book their car rental up to 3 months in advance. Historically, they used their call center to handle customer bookings, but they are looking to modernize their services. Customers can also walk into any of PPA's offices to rent an available car directly.

PPA has around 1 million registered users globally, with an average of 10 million car rentals every year.

PPA works with a network of partners to clean, repair, and maintain its fleet of cars. Each car is fitted with a modern GPS tracking device able to send the car's location periodically in addition to other sets of services such as detecting harsh braking and exceeding speed limits.

PPA's offices are staffed by sales and support teams responsible for managing customers and their relationship with partners. Currently, each country has a bespoke solution for tracking customer and rental information. These solutions are known to be bug-prone and difficult to maintain.

PPA recently decided to use Salesforce as the central CRM solution for unified customer, rental, and partner processes.

## Project overview

There are five types of employees who require access to the system:

- **Sales agents**: They are responsible for staffing the regional offices, help walk-in customers to register, and book a car rental. They are also accountable for inspecting returned cars for any damage and provide the final customer invoice.

- **Support agents**: They are responsible for supporting registered customers and resolve reported issues with the rental or the car. They also support car reservations via the call center. Support agents work from a single support office in each region (AMER, EMEA, and APAC).

- **Office technicians**: They ensure returned cars are fully functional; they inspect the vehicles in detail and provide maintenance reports to the office manager.

- **Office managers**: Each office has a manager responsible for running the businesses end to end, including managing the relationships with the partners.

- **Regional executive team**: They are responsible for analyzing the customer and rental data across the AMER, EMEA, and APAC regions.

There are two types of external system users:

- **Registered customers**, who need access to a whole new set of modern services.

- **Partners**, who should have access to the system to receive and update maintenance requests. Some partners are open to utilizing PPA's solution, while others expressed their interest in using their own systems and only integrating with PPA's solution.

PPA has the following landscape.

# Current landscape

PPA is currently using the following systems:

- **Regional ERPs**: Regional ERPs are used to manage the partner's accounting and payments. Each ERP is based on different technology, and they are hosted on-premises.

- **Global tracking system**: This is a cloud-based solution used to control car tracking devices remotely. The solution is very expensive to change or modify and has a limited capability to configure or extend any logic beyond its standard features.

- **Customer and rental management applications**: PPA has over five different applications used across the globe for customer and rental management. Historically, these systems had a lot of redundant and duplicate data. PPA is planning to replace them all with a new solution.

- **Violation databases**: PPA purchased a subscription-based service from a global provider specialized in collecting vehicle violation data. As part of this subscription, PPA gets access to a database containing all received violations/penalties/tickets for their cars in a particular region. PPA has access to three AWS-hosted Oracle databases across the AMER, EMEA, and APAC regions.

- **Global car rental calculator**: PPA has developed an in-house application to calculate car rental costs based on multiple factors such as location, start and end dates, car model, car specs, and many more. The application has a built-in REST API and is hosted on AWS.

- **PPA uses LDAP to authenticate all its employees**: PPA would like to keep using LDAP for the foreseeable future.

PPA shared the following business process requirements.

# Business process requirements

The following subsections explain the business processes that PPA expects to have in their new system.

## Customer registration

PPA requires specific information to be captured for all its customers regardless of the channel used to rent the car. The new system must support the following processes:

- Customers should be able to self-register using an online portal and a mobile application.

- Sales agents can also register new customers who walk into a PPA office.

- The following information must be captured while registering a customer:

  a. Full customer name

  b. Email address

  c. Mobile number

  d. Preferred language

  e. Driving license number

- The customer must also accept PPA's privacy terms and conditions. The customer can optionally opt-in to receive marketing materials via email, phone, or mail.

- The driving license validity must be checked in real time using the national driver and vehicle licensing agency services.

PPA shared the following requirements for the reservation process.

## Car reservation

Customers should be able to reserve cars up to 3 months in advance using either the online services (portal and mobile application) or by calling the national customer services number. The online process should use the following steps:

1. The customer should be able to enter the pickup location (city), as well as the start and end dates. The system should show a list of cars available at that location and point of time.

2. The system should calculate and display the price for renting each car. The price could differ by date and the total number of reserved days. PPA has a pricing policy that reduces the daily cost if the customer is reserving the car for more extended periods.

3. Customers should select the desired car and proceed to online payment. The solution should support PayPal as well as all major credit cards.

4.  Once the payment is collected, the transaction is considered complete. An email confirmation should be sent to the customer with a specific activation code. The car should immediately become unavailable for the reserved date.

The reservation process is very similar when using the call center, with slight differences:

1.  The support agent should be able to search for available cars in a particular location (city) using the start and end dates.

2.  The support agent can then verbally inform the customer of the available cars and the associated price. The price calculation rules are consistent across all channels.

3.  Once the customer confirms the car selection, the agent should capture the customer's payment details and confirm the reservation.

4.  Once the payment is collected, the transaction is considered complete. An email confirmation should be sent to the customer with a specific activation code. The car should immediately become unavailable for the reserved date.

PPA shared the following requirements for the car check-in process.

## Car check-in

PPA wants to automate its processes as much as possible. The check-in process should look like the following:

*   Each office has multiple tablets with a particular application to allow customers to *check in* using the activation code they received during reservation. Once the code is entered, the application should validate the code, booking location, and date. If the validation is successful, a confirmation message will be displayed on the screen, and the reservation record is updated to indicate the customer has checked in for collection. All tablets are connected to the internet.

*   Once the customer checks in, a sales agent can hand over the car keys and update the reservation status to indicate that they collected the keys.

PPA shared the following requirements for the car check-out process.

## Car check-out

The check-out process should look like the following:

- When the customer returns the car, the sales agent should collect the keys and quickly inspect the vehicle. The sales agent should enter any notes related to changes in the car's condition, such as dents or scratches. If major damage is detected, the office technicians should be informed and asked to investigate the car's condition further.

- This information should be sent to the ERP, which generates a customer invoice after 72 hours.

- Once an invoice is generated, a notification is sent to the client with the invoice amount and instructions to settle any remaining balance.

- The sales agent updates the reservation status to closed once the inspection is complete.

PPA shared the following requirements for the car status update.

## Car status update and penalty settlement

As mentioned before, all cars are fitted with a GPS tracking device. The following details describe the car status update and penalty settlement process:

- All tracking devices can communicate over 4G and 3G. They send the car location every 30 seconds. For security reasons, this continues to happen even if the car is turned off.

- PPA would like to gather the information that describes the behavior of drivers, including going over speed limits and harsh braking. That should all be analyzed in order for PPA to calculate driving patterns during specific dates and times of the year.

- PPA would like to use GPS tracking devices to detect possible vehicle theft. If the device is reporting a change in the car location while the car is turned off, this could be a possible theft incident that the support team should be notified about in no more than 15 minutes.

- Every day, the violation databases should be checked. If they contain a violation record for a PPA car on a given date, the system should look up the car driver's details on the given date and then transfer the penalty amount to the ERP to calculate a new invoice and send it to the customer.

PPA shared the following data migration requirements.

# Data migration requirements

Considering the previously shared information about the current landscape, PPA shared the following data migration requirements:

- PPA would like to migrate the data from all its current customer and rental management applications to the new system.

- PPA is aware that the current data contains many redundancies and duplicates and is looking for your guidance to deal with the situation and achieve high data quality in the target system.

- PPA has around 50 million rental records in each of its current rental management applications. Most of them are stored for historical purposes as PPA wants to keep rental records for at least 10 years. PPA would like to continue to allow its sales and support agents to access these records in the new system.

PPA shared the following accessibility requirements.

# Accessibility and security requirements

PPA is looking for guidance to design a secure solution; they shared the following requirements:

- Customer accounts should be visible to the office managers, sales, and service agents worldwide. However, technicians should only see customers for their specific country.

- Support incidents should be visible to support agents and their managers only.

- Only office technicians can update the car status to indicate that it is out of service and in need of repairs.

- Office technicians should not be able to view the customer's driving license number.

- Once a theft incident is detected, only the support agents trained for such types of incidents, their managers, and regional executives can view the incident's details.

- The regional executive team should have access to all regional data, including the driver's behavior, such as harsh braking.

- Office managers should be able to see the details of the partner accounts in their own country only.

- Partners should be able to log in to Salesforce using Salesforce-managed credentials only.

- Customers can self-register with the online portal and mobile application.

- Customers should also be able to log in to the online portal and the mobile application using their Facebook accounts.

- PPA employees who are logged in to the corporate network should be able to automatically log in to Salesforce without the need to provide their credentials again.

- PPA employees can log in to Salesforce from outside the corporate network using the LDAP credentials. However, if they log in from outside the network, they should provide a second-factor authentication, such as a text message received on their mobile phone.

PPA shared the following reporting requirements.

## Reporting requirements

PPA requested a rich set of reporting capabilities, including the following:

- The regional executive team would like a report that shows relations between the customers' driving behavior and particular times of the year across the past 10 years.

- The regional executive team would like a trending monthly report that shows the pickup and drop-off locations of each rental in order to determine the appropriate distribution of cars across their offices.

- Customers should be able to view a full history of their rental bookings, including bookings from the past 3 years.

- Customers should also be able to view their full trip history for each completed rental.

- Partners should be able to view a monthly report showing the repair jobs completed for PPA.

PPA shared the following project development requirements.

# Project development requirements

Considering the complexity of PPA's program, they have requested the following project development requirements:

- PPA is planning to have three different **service implementers** (**SIs**), delivering different functionalities across parallel projects. PPA would like to avoid conflicts across the teams, such as code overwriting or breaking each other's logic. PPA requires your help to define a way to manage the code base to avoid such conflicts and reduce the chances of breaking existing functionalities.

- Historically, SIs used to follow their own coding standards while dealing with other platforms. On many occasions, they introduced duplicate functionalities. PPA would like to understand how to control and avoid this situation in Salesforce and enable better code reuse.

- PPA has a new platform owner who joined from another company that also used Salesforce. She reported that on several occasions, bugs were fixed in UAT, but then showed up again in production. PPA would like to understand the likely cause of such an incident and how to avoid it in their program.

- PPA would like to release the solution to Italy first, then roll the same solution to other countries based on a pre-agreed schedule. Each country may have country-specific requirements that need to be defined and accommodated in the solution. PPA is looking for your support to determine the right development methodology and governance to achieve that.

PPA also shared the following other requirements.

# Other requirements

PPA would like to know the best practices to manage their customer consent collection. They shared the following requirements:

- PPA wants to ensure that data in development environments is always anonymized.

That concludes the hypothetical scenario. Ensure that you have gone through all the pages and requirements of your actual hypothetical scenario before proceeding further.