

ELECTRA CAR TEST DRIVE BOOKING AGENT

Functional Specification Document

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Electra Car Test Drive Booking AI Agent

Document Type	Functional Specification
Project Name	Electra Car Test Drive Booking Agent
Platform	Salesforce Automotive cloud + Agentforce (Service Agent)
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1. Executive Summary

The Electra Car Test Drive Booking Agent is an autonomous AI agent designed using the Salesforce Agentforce platform, featuring Automotive Cloud objects and an interactive portal for displaying vehicles. It delivers end-to-end, conversational management of test drive bookings for Electra Automotive Group, enabling customers to book, modify, cancel, explore vehicles, and escalate to human support — all through a natural language chat interface.

The agent operates through the Web, WhatsApp, integrating natively with Salesforce CRM, Apex backend services, and an Omnichannel routing engine. Its architecture uses a multi-subagent routing model, where a central Agent Router delegates user intents to specialized subagents, each owning a distinct part of the customer journey.

Agent Name: Electra Car Test Drive Booking Agent (22 version Active)

Website to load web agent: Electra cars (<https://orgfarm-6742659fff.my.site.com/electracars/>)

Electra cars WhatsApp number: 7780507042

When a customer visits the Electra Cars website, they can access the chat icon in the bottom right corner to start interacting with an agent. Similarly, when a customer messages the provided WhatsApp number, the agent initiates the conversation.

Attribute	Value
Agent Developer Name	Electra_Car_Test_Drive_Booking_Agent
Agent Active version	Version 22
Agent Template	SvcCopilotTmp!__AgentforceServiceAgent
Default Agent User	electra_test_drive_booking_agent@...ext
Platform	Salesforce Agentforce
Default Locale	en_US (en_GB additional)
Outbound Route Type	OmniChannelFlow
Outbound Route	flow://Test_Drive_Route_to_Queue

Key Outcome

Customers receive a seamless, automated test drive booking experience with zero manual intervention for standard journeys, while complex cases are intelligently escalated to live agents.

2. Project Overview

2.1 Business Objective

Electra Automotive Group requires a scalable, intelligent self-service solution that:

- Removes friction from the test drive booking journey.
- Reduces inbound agent workload for routine booking management tasks.
- Delivers personalized, context-aware interactions across digital channels.
- Integrates with existing Salesforce CRM infrastructure without additional manual data entry.

2.2 Scope

The agent covers the following functional areas in Web & WhatsApp

Functional Area	Description
Test Drive Booking	End-to-end booking of new test drives with duplicate detection
Booking Modification	Reschedule, cancel, or check status of existing bookings
Vehicle Change	Change the vehicle assigned to an existing test drive booking
Vehicle Exploration	Browse, search, compare, and get specs for vehicles and showrooms
Human Escalation	Route conversations to live agents via OmniChannel queue
Out of Scope	Payment processing, post-purchase support, warranty or service requests

2.3 Target Users

- Prospective and existing Electra customers engaging via web chat or WhatsApp.
- Electra dealership staff (as recipients of escalated conversations)

3. System Architecture

3.1 Multi-Subagent Design

The agent employs hub-and-spoke architecture. The Agent Router acts as the central hub, evaluating session state variables and user intent to route each turn to the appropriate subagent. Subagents are isolated reasoning units, each with their own action libraries and step-by-step flow control.

Component	Role
Agent Router	Classifies user intent and dispatches to the correct subagent. Enforces anti-regression guards during active flows.
Book_Test_Drive	Collects user details, checks for duplicates, gathers booking preferences, and confirms/creates the booking.
Modify_Booking	Handles reschedule, cancel, and status-check flows for existing bookings.
Change_Vehicle_for_Test_Drive	Allows customers to swap the vehicle on an existing booking while optionally rescheduling.
Explore_Vehicles	Provides vehicle catalog browsing, specification display, and showroom availability lookup.
Escalation	Transfers the conversation to a live human agent via OmniChannel routing.

3.2 Session State Management

All subagents share a common set of mutable session variables. These variables function as the agent's working memory, helping to maintain context throughout multiple exchanges and avoid losing track of information.

Variable	Purpose
active_subagent	Locks the current subagent to prevent mid-flow reclassification
flow_step	Tracks the step number within a multi-step subagent flow
vehicleId	Stores the Salesforce ID of the user-selected vehicle
Booking_Id	Stores the test drive booking reference for retrieval

isVerified / is_Document_Signed	Tracks authentication and DocuSign completion flags
Current_Date	Holds today's date for relative date normalization
Email / PhoneNumber / firstName / lastName	User identity fields collected during the booking flow

4. Functional Flows

4.1 Book a Test Drive

This is the primary user journey. The flow consists of four distinct steps, each managed by the flow_step variable.

Step 0 — Identity Collection

- Agent requests: First Name, Last Name, Phone (10-digit), and Email
- Phone is validated for 10-digit format; re-prompt issued if invalid
- On completion, flow advances to Step 1

Step 1 — Duplicate Detection

- The Check_Duplicate_Test_Drive action queries existing active bookings by email and phone
- If duplicates exist agent displays existing booking details (vehicle, dealership, date, time) and presents three choices: Proceed anyway, Manage existing booking, or Cancel
- If no duplicates: flow advances automatically to Step 2

Step 2 — Slot Filling

Agent collects the following in a natural, multi-turn conversation:

- Vehicle Model: User selects via Explore_Vehicles subagent; vehicleId is stored via Get_Showroom_Vehicles
- Preferred Date: Must be at least one day in the future; relative dates (e.g., 'tomorrow') are normalized to YYYY-MM-DD using Get_Today_Date
- Time Slot: Mapped to one of three values — Morning (9-12), Afternoon (12-5), or Evening (5-7). Times outside 9AM–7PM are rejected with a re-prompt
- Preferred Channel: Email, WhatsApp, or SMS
- Zip Code: 5 or 6-digit code used to resolve nearest dealership via Assign_Dealership_by_Zip_Code

Step 3 — Confirmation & Booking

- Agent presents a full summary of all collected details

- User may request inline edits to any field (vehicle, date, time, contact method, phone, email, notes) without leaving this step
- On explicit confirmation, `Electra_Create_Test_Drive_Booking` is invoked
- Booking confirmation details are displayed and session state is reset

4.2 Modify Booking

Handles reschedule, cancellation, and status enquiries for existing bookings.

Identification

- Primary: User provides Booking ID — record is fetched via `Electra_Car_Get_Existing_Test_Drive`
- Fallback: User provides Email + Phone — system fetches and lists all matching bookings; user selects one

Intent Routing

- Check Status: Agent presents current booking details and offers to cancel or reschedule
- Cancel: Agent collects cancellation reason, then evaluates:
 - Scheduling conflict: Agent suggests rescheduling instead
 - Location/zip code change: Agent cancels current booking and transitions to `Book_Test_Drive` with identity pre-populated
 - Other reasons: Agent confirms then executes `Electra_Car_Cancel_Test_Drive`
- Reschedule: Agent collects new date, time, and reason; date is normalized via `Get_Today_Date`

Slot Availability Check

- `Is_Booking_Slots_Available` is invoked with the new date and time slot
- If `BookedAppointmentCount` \geq 3: slot is full; agent requests alternative date/time
- If `BookedAppointmentCount` $<$ 3: agent presents summary and requests confirmation
- On confirmation: `Electra_Car_Update_Test_Drive` is executed and results displayed

4.3 Change Vehicle for Test Drive

Allows a customer to swap the vehicle on an existing booking. The flow mirrors `Modify_Booking`'s identification process, then:

- Fetches available showroom vehicles for the booking's zip code via `Get_Showroom_vehicles`
- User selects a new vehicle; agent confirms whether to retain existing date/time or reschedule
- If rescheduling: date and time are collected, normalized, and slot availability is verified

- On confirmation: `Electra_Car_Update_Test_Drive` is called with the new vehicle and (optionally) new date/time

4.4 Explore Vehicles

A vehicle discovery subagent with five interaction paths:

Path	Trigger	Action
A — Browse	Broad queries (e.g., 'show all')	<code>Get_Showroom_Vehicles</code> or <code>Search_Vehicle_Catalog</code>
B — Deep Detail	User selects a specific model	<code>Display_Vehicle_Details</code> ; <code>vehicleId</code> is stored
C — Compare	Usernames two vehicles	<code>Get_Vehicle_Details</code> called for each; side-by-side display
D — Book	User confirms vehicle + showroom	<code>vehicleId</code> validated; transition to <code>Book_Test_Drive</code>
E — Exit	User cancels or exits	<code>reset_active_subagent</code> called to clear state

Critical Booking Pre-condition

The agent will NOT transition to booking unless (1) the user has explicitly confirmed their vehicle choice AND (2) `vehicleId` contains the ID of that specific confirmed vehicle. This prevents accidental bookings for the wrong vehicle.

4.5 Escalation

When a user requests a human agent or expresses extreme frustration, the Agent Router transitions to the Escalation subagent. When the `escalate_to_human` utility action is triggered, the conversation is directed to the `Test_Drive_Route_to_Queue` OmniChannel flow, and automated responses are discontinued.

5. Business Rules

#	Rule	Detail
BR-01	Phone Validation	Phone number must be exactly 10 digits. Agent re-prompts on failure.
BR-02	Future Date Requirement	Test drive date must be at least one calendar day after today. Today and past dates are rejected.
BR-03	Time Slot Boundaries	Bookings only accepted between 9:00 AM and 7:00 PM. Requests outside this window are rejected with business hours guidance.
BR-04	Slot Capacity	Maximum 3 bookings per time slot per day per dealership. At capacity, user must choose an alternative.
BR-05	Duplicate Detection	Existing active bookings under the same email or phone are surfaced before a new booking is created. User must explicitly choose to proceed.
BR-06	VehicleId Guard	Transition to booking from Explore Vehicles requires vehicleId to be set to the confirmed vehicle's Salesforce ID.
BR-07	Preferred Channel Options	Only Email, WhatsApp, or SMS are accepted as confirmation channels.
BR-08	Anti-Regression in Step 3	Date/time change requests during Step 3 of booking are handled inline. No transition to Modify_Booking is triggered.
BR-09	Location Change Cancellation	When a user cancels due to a location/zip code change, a new booking flow is initiated with identity details pre-populated.

6. Date & Time Normalization

A consistent date and time normalization process is applied across all subagents that accept date/time input from users. The agent must never ask the user to provide dates in a specific format.

6.1 Date Normalization

- The Get_Today_Date action retrieves the current system date (stored in Current_Date)
- Relative phrases such as 'tomorrow', 'next Monday', 'coming Thursday', 'April 30' are automatically converted to absolute YYYY-MM-DD format
- Normalization is performed silently — the user is never asked to convert dates

6.2 Time Slot Mapping

User Input	Time Range	Mapped Slot Value
'Morning' or a time 9AM–11:59AM	9:00 AM – 11:59 AM	Morning (9-12)
'Afternoon' or a time 12PM–4:59PM	12:00 PM – 4:59 PM	Afternoon (12-5)
'Evening' or a time 5PM–7PM	5:00 PM – 7:00 PM	Evening (5-7)
Any time outside 9AM–7PM	—	Rejected; re-prompt issued

7. Channel & Notifications

7.1 Inbound Channels

- Web chat and Whatsapp messaging via Salesforce Messaging Session
- Inbound email (emailCaseId, endUserEmail, and endUserId variables are populated for email-initiated sessions)

7.2 Outbound Confirmation Channels

- Email — digital confirmation sent to the user's email address
- WhatsApp — confirmation delivered via WhatsApp messaging

7.3 Escalation Routing

Conversations requiring human intervention are routed via the Test_Drive_Route_to_Queue OmniChannel Flow. The escalation message presented to the user before transfer is:

Escalation Message

"One moment, I'm transferring our conversation to get you more help."

8. User Experience Guidelines

8.1 Conversation Design Principles

- Progressive disclosure: Do not ask for all information at once; use natural multi-turn conversation
- Silent processing: Date normalization, time mapping, and ID resolution are performed without narrating the process to the user
- Inline editing: Users may correct any booking detail during the confirmation step without restarting the flow
- Graceful re-prompting: Validation failures (invalid phone, past date, full slot) result in a helpful explanation and a re-prompt, never an error code

8.2 Multi-Language Support

The agent's primary locale is English (US), with English (UK) also available as an alternative setting. The adaptive_response_allowed flag enables contextual language adaptation within these locales.

8.3 Welcome Message

Welcome Message

"Welcome! I can help you book a test drive of cars today. Just let me know which vehicle you're interested in, and we will get you on the schedule."

9.Improvements

1. The DocuSign integration is not working as expected at the moment, and will be resolved if time permits.
2. Use the geolocation API to provide accurate dealer search results.
3. Implement SMS integration for customer validation via OTP.

10.Git Hub URL

<https://github.com/bhoomi3005/AgentForce-Hackathon>