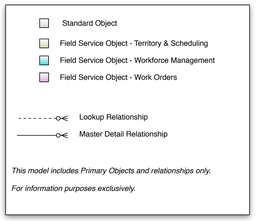
SALESFORCE FIELD SERVICE LIGHTNING - OBJECT MODEL - V1.0 - MARK CANE - 2019-03-10



Work Order Management:
Work Types - Template that auto-populates fields on Work Orders; Duration, required skill, minimum crew size etc.

Setup - Work Types:
Work Types - fields inherited by Work Orders and Work Order Line Items:
Duration, Duration Type, Required skills (Skill Requirements Related List), Required products (Products Required), Linked articles (Articles Related List).

Work Types - fields inherited by Service Appointments: Duration, Duration Type

Add a work type to an existing work order, the work order inherits the skill requirements and required products if the work order didn't yet have any. Updating a work type doesn't affect existing work orders.
Work order line items don't inherit their parent work order's skill requirements or required products.
Auto-Create Service Appointment; a service appointment is created (Default: Due Date is 7 days after the created date) when the work type is applied to a work order or work order line item. A service appointment isn't created if the work order or work order line item already has an appointment.
Knowledge Articles; When you attach a knowledge article to a work type, the article shows up on work orders and work order line items that use the work type. The latest article version is inherited.

Setup - Skills:
Add Skills (ignore User and Profile assignments - relate to Live Agent only)
Assign to Service Resources along with Start/End date and Skill level (0 - 99.99)
Skill example; Electrician Grade II Certification

Setup - Work Orders:
Configure Object Access, FLS and CustomTab permissions.
Page layout Fields.
Page layout Related Lists (Work Order):
- Child Work Orders: The work order's child work orders
- Object Milestones: Milestones on the work order (available only if entitlement management is set up)
- Products Consumed: Products used during the completion of the work order
- Product Requests: Products requested for the work order
- Product Request Line Items: Line items on product requests
- Products Required: Products needed to complete the work order
- Resource Preferences: Preferred, required, or excluded service resources on the work order
- Service Appointments: Appointments indicating when the work is scheduled
- Service Reports: Reports summarizing the work for customers
- Skill Requirements: Skills needed to complete the work order
- Time Sheet Entries: Schedule of technicians' time spent on the work order
- Work Order Line Items: Subtasks or steps on the work order

Configure Status picklist values; New,In Progress,On Hold, Completed,Cannot Complete,Closed,Canceled
Custom Status values must be mapped to a Status Category (list as above)

Add Work Orders related list to Account, Asset, Case, Entitlement .. Page Layouts

Setup - Knowledge :
Add Articles related list to Work Order and Work Order Line Item Page Layouts
Lightning: Add Knowledge Component to Work Order and Work Order Line Item Page Layouts. No suggested articles.
Console: Add the Knowledge One widget to the console sidebar - Layout editor. Suggested articles.
Quick actions and global actions aren't supported for linked articles.

Setup - Path: for Work Order, Work Order Line Item and Service Appointment Status.

Manage - Work Orders :
Track the work your team performs on customer products.

Create Work Order:
From the Work Orders tab or Related List click New.
Optionally select a Work Type (template)
Enter Address
Optionally select a Pricebook (allows WLI to be linked to a PriceBookEntry)
Enter tax amount (if pricing is being tracked)
Add child records via related lists (see above)

Add Service Resource Preferences:
Preferred or Excluded.
Work orders inherit their account's resource preferences
Scheduling: Required Resources and Excluded Resources work rules, which are included in the Customer First scheduling policy.
The Resource Priority service objective measures an appointment's adherence to resource preferences of the Preferred type.
Outside of the Field Service Lightning managed package, resource preferences serve as a suggestion rather than a requirement.

Add Required Skills:
Scheduling; enforce skill requirements via the Match Skills work rule.
Outside of the Field Service Lightning managed package, required skills serve as a suggestion rather than a requirement.

Attach Articles:
Salesforce Classic: In the Articles related list on a record, click Find Article to search for an article, and then attach it.
Salesforce Classic console: To attach articles to work types, use the Articles related list on the work type. To attach articles to work orders or work order line items, use the Knowledge One widget or the Articles related list.
Lightning Experience and the Lightning Experience console: In the Knowledge component on a record, search for the article and then attach it.

Pricing:
Work Order fields: Discount*, Sub-total*, Total Price*, Grand Total*, Price Book, Tax (* calculated from WLI)
Work Order Line Item fields: Discount, Sub-total*, Total Price*, List Price*, Product, Unit Price* (copied from Product)

Example; Work Order "Widget Machine Installation", Products "Widget Machine" "Site Assessment" "Installation"

Manage - Maintenance Plans :
Preventative maintenance plans for specific customer assets.
Maintenance plans offer a quick way to automate the creation of work orders for periodic maintenance visits.

Create Maintenance Plan:
From the Maintenance Plans tab or Related List click New.
Enter Start/End Date
Optionally select a Work Type (template) - inherits duration, required skills and products, and linked articles.
Select Account and Contact.
Select Service Contract.
Select Location.
Enter Generation Timeframe (3) and Generation Timeframe Type (Months) - timeframe for which Work Orders are generated.
Enter first Work Order date (set as Work Order Suggested Maintenance date)
Select Auto-generate work orders (otherwise Generate Work Orders button on the maintenance plan layout).
Select a Work Order Generation Method: one work order for each asset or one parent work order with a work order line item for each asset.
If work order generation method is One work order line item per asset, select a Service Appointment Generation Method: one service appointment for the parent work order or one service appointment for each work order line item.
Enter title and description
Save and add covered Maintenance Assets via the Assets related list.

Service Resource Management:
Service resources are Users or Groups (service crews) that perform field service work. Service Resources are assigned Service Appointments.

Setup - Service Resources
From the Service Resources tab click New (or Resource Definition page in Guided Setup)
Enter User, or Service Crew
Set as Active
Specify type; Technician, Dispatcher, or Crew
Dispatcher requires [Field Service Dispatcher] permission set license and can't be capacity based, included in schedule optimisation or added to crews.
Select Capacity-Based if the resource is limited (hours or appointments). Define the via Capacities related list.
Select Include in Scheduling Optimization to assign service appointments during optimization.
[Field Service Scheduling] permission set license required.

Add Capacity:
Service Resource - Capacities Related List - New Resource Capacity
Start & End Dates (can't overlap across across capacity records for the same Service Resource)
Time Period (e.g. Months)
Hours per Time Period (e.g. 80)
or, Work Items per Time Period

Add Efficiency (Managed Package feature):
From 0.1 to 10. 1 = average efficiency.
Schedule Optimisation : Duration / Efficiency = Actual time to perform an appointment
Create a Resource Priority service objective based on the Service Resource Efficiency field to prefer more efficient Service Resources.

Assign Manually to Service Appointments via the Assigned Resources related list.

Typically the following Permission Sets are assigned to Field Engineers.
Field Service Scheduling (include in schedule)
Field Service Mobile (access to the Field Service Lightning Mobile App)

Setup - Service Crews
A Service Crew is a group of Service Resources whose combined skills and experience make them a good fit to work together on Service Appointments.

Service Crew and Service Resource to represent the crew is required.
A Service Resource can be a member of multiple crews as long as the membership dates don't overlap.
Assignment notifications are sent only to Service Resources that are assigned individually.
Crew leaders can edit assigned appointments and their parent records, while members can only view them.
Crew geolocation is based on the leader's location.

Limit Access to Field Service Records:
Set OWD to private (Work Order, Work Order Line Items and Service Appointments)
Field Service Settings;
Share dispatched service appointments with their assigned resources?
Share service appointments' parent work orders with their assigned resources?
Let service crew members edit their service appointments?
User Territory sharing job - run daily to manage Service Territory Member record access (backwards time horizon).

Manage - Service Resources

Timesheets:
Timesheet is made up of time sheet entries, which track specific tasks, travel time, and break time.

Timesheets tab - create New
Select Service Resource
Enter Start & End Date
Add Timesheet Entries via Related List.

Absences:
Define when a service resource is unavailable to work - respected by Schedule Optimisation.

Service Resource layout - Absences Related List - Select Non Availability Record Type.
Gantt labels are a managed package feature.

Daily Travel Routine:
Scheduling optimizer uses street-level routing to schedule a Service Resource's day.
The Field Service Lightning Mobile App's geocoding feature tracks the actual route taken.
Both the planned and actual routes together are visible on the resource map view.

Service Resource Calendar:
Calendar tab on the Service Resource layout.
Resource Absences can be colour-coded via the Gantt Color field (6-digit hex code).

Manage - Service Crews
Service Appointments assigned to a crew have all active crew members added as assigned service resources, if the appointment date changes the assignment is re-evaluated if the crew changes it is not.

Crew management tab

Assets & Inventory:
Track and manage the storage, request, transfer, and consumption of every item in your inventory, and ensure that your mobile workforce has the right parts in stock to do their job.

Locations are places where inventory is stored.
Product Items represent Products in your Inventory stored at a Location.
Products Required are Products needed to complete a Work Order (or Work Order Line Item).
Products Consumed are Product Items that were used to complete a work order
Product Item Transactions describe actions for a Product Item; replenished, consumed, or adjusted (auto-generated).
Product Requests & Product Request line items are orders for Products created when stock is running low.
Product Transfers track the transfer of Product Items between Inventory Locations.
Return orders & Return order line items track the return or repair of products.
Shipments represent the shipment of Product Items between Locations.

Setup - Inventory Locations
Locations tab - create New
Specify Type; Warehouse, Site, Van, Plant.
Select Inventory Location; required to associate the location with Product Items.

Setup - Product Items
Product items represent the inventory (Products at Locations).
Product Items can represent an actual item with a Serial Number or a Quantity of a given Product.

Product Items tab - click New
Select Product
Select Location (Inventory Locations only)
Enter Quantity on Hand
Enter Serial Number (If Quantity on Hand is 1)
Save –
Product Item Transactions related list now shows a Replenished Transaction.

Setup - Product Requests
Product Requests tab or Related List on Work Order and Work Order Line Item - Click New
Specify Work Order or Work Order Line Item
Add Destination Location
Add Need by Date
Status; draft, submitted, received.

Setup - Product Transfers
Product Transfers tab or the Product Transfers related list on Product Request, Product Request Line Item, Product Item, Location, or Shipment, click New.
Source Product Item (required to update stock level at source)
Specify Product Name if transfer is from outside the Inventory i.e. from Supplier/Distributor.
Specify Destination Location
Enter Pickup Date
Once the products are received set the Received By, Quantity Received fields and set Status = Received.

Setup - Products Consumed
Products Consumed tab or Related List on Work Order and Work Order Line Item - Click New
Specify Product
Enter Quantity

Setup - Return Orders
Return Orders tab - click New
Specify Account/Contact
Enter associated Product Request
Enter Returned By
Enter Source and Destination Location
Add Return Order Line Items for each Product being returned.
For each Product:
Processing Plan: Repair, Discard, Salvage, Restock
Repayment method: Replace, Refund, Credit, Return

Manage - Inventory:
Track Required Inventory: Add Products Required (and quantity) to Work Types, Work Orders and Work Order Line Items.

Product Requests:
Mobile workers create when they find defective parts in their vehicles or their stock has run out.
Dispatchers or Service Managers create on behalf of their technicians if they see their stock getting low.
Schedulers create when they schedule Work Orders that require parts not normally found in a technician's vehicle stock.

Product Transfers:
Product transfers track the movement of inventory between Locations, the inventory numbers update automatically.

Shipments:
Create shipments and link them to Product Transfers. Shipments contain information about the Products on board, the shipping carrier, and the expected delivery date. While shipments are an optional part of inventory management, they make it easier to stay informed about the coming and going of parts in your inventory.

Products Consumed:
Adding Product Consumed records ensures that inventory stock levels are correctly adjusted.

Track Customer Returns:
Return Orders track customer returns, customer repairs, or the return of inventory from a technician's van stock to a warehouse or supplier.

Service Reports:

A Service Report (PDF) summarises a Work Order or Service Appointment and can emailed and signed by customers.

Setup - Service Report Templates
Templates can be assigned to a Work Type, Work Order or Work Order Line Item
Service Reports will use the assigned template; if none exists then a list of active templates is displayed.
A template has 4 sub-templates which are used depending on the record the Service Report is generated from:
Service Appointment for Work Order, Service Appointment for Work Order Line Item, Work Order, Work Order Line Item.
Signature blocks can be added to the template (20 maximum), each must have a distinct type (1000 types maximum=).
Images can be added to the header, footer, and body of a Service Report Template.

Manage - Service Reports
Click the Create Service Report button (Service Appointment, Work Order and Work Order Line item records).
Service Reports are translated to the language selected in the Service Report Language field on the associated Work Order. If that field is blank, the default language of the User generating the report is used.

Scheduling & Optimisation:

Setup - Appointment Lifecycle
Configure Status values and map to predefined lifecycle stages - configure Status transitions as required.

Setup - Appointment Booking Settings
Book Appointment Chatter Action (from Work Order or Work Order Line Item)
Managed Package feature
Field Service Settings - Global Actions - Appointment Booking tab
Fields:
Default Scheduling Policy - e.g. Customer First (preferred resource, schedule asap, minimise resource travel time)
The scheduling policy generates a list of timeslots (arrival windows).
Default Operating Hours
Ideal Grading Threshold - grade level where Ideal flag shown
Recommended Grading Threshold – grade level where Recommended flag shown
Minimum Grade - grade level below which appointments are not shown
Note, grade is calculated score of adherence to the scheduling policy service objectives.

Setup - Appointment Booking Timezones
Booking process shows each user's appointment details in their own timezone.

Service Appointments inherit from Work Order or Work Order Line Item parent, which should link to a specific Service Territory and timezone.
A unique Service Territory can be added to a Service Appointment directly.

When the Book Appointment action is used, Field Service Lightning doesn't consider the time zone defined on the arrival windows Operating Hours record. Instead, it uses the time zone of the Service Appointment's Service Territory's Operating Hours. This way, when a customer selects a time slot, the appointment is scheduled according to the customer's time zone.

Reserve Time Slots for Designated Work
An Operating Hours time slot can be reserved for a specific type of work as determined by any checkbox field on Service Appointment. Time Slots Editor > Context Menu > Designate Work > Emergency / Critical ...

Enable Street-Level Routing
Service Appointment travel time is a key Field Service KPI. Accurate route planning is critical to efficiency.
Field Service Settings>Scheduling>Routing> Enable Street Level Routing
SLR is most accurate and considers transport routes, roadspeed and expected travel speed based on road type.
Aerial routing shortest distance based on a straight line route.

Enable Multiday Appointments
Field Service Settings tab>Scheduling>General Logic> Multi-day service appointment = Is MultiDay
Add the Is MultiDay field to the Service Appointment layout.
Add the [FSL.MDT View] permission to the FSL Dispatcher permission set.

MultiDay appointments can't span more than 8 weeks.

Activate Schedule Optimisation
Field Service Admin>Optimisation>Activation>Create Optimisation Profile
A dedicated user is required (this consumes a user license) - e.g. FSL.0004K000000DandDAC@optimization.com
The User Profile [FSL Optimisation] is created and assigned.

Manage - Service Appointments
Service Appointments represent field service visits to Customers. Work orders describe the work to be performed, Service appointments provide the scheduling and assignment details.

Service Appointments tab or the Service Appointments related list on a record, create a Service Appointment.
Auto-generated if the Work Order or Work Order Line Item is set to "Auto-Create Service Appointment".
Add General Information
Add Scheduled Times (auto-populated when the Appointment is scheduled by Scheduling Optimisation).
Add Arrival Window
Add Assigned Resources
On Completion Technicians/Engineers should complete the Actual Times section.

Schedule Service Appointments:
Book Appointments / Candidates Chatter Actions (Add Global Actions to Global Publisher layout). Can be used by Customers if exposed via Community. Candidates shows available Service Resources, then time slots.
Dispatcher Console: Drag Service Appointment onto the Gantt – or by mass schedule action.
Emergency Appointments; Emergency Global Action - real time map view for nearest Service Resources.
Appointment status can be updated.

Related Service Appointments:
Represent sequencing interdependencies (or Chains) for complex work.
Add via the Appointment Dependencies related list on the Service Appointment detail page.
Dependency types; Same Start, Start after Finish, Start after Finish and Same Day.
Specify whether "Service Appointments Require Same Resource?".

Fix Scheduling Overlaps:
Field Service Settings tab>Scheduling>Dynamic Gantt>Fix Overlaps
Automatically fix
Schedule to original resource only, Schedule to all resources
Default behaviour when unable to find a valid schedule for a Service Appointment

Group Nearby Appointments:
Action on Service Appointment;unschedules appointments that were scheduled later the same day and replaces with appointments that are closer in location.

Fill Schedule Gaps:
Fill-In Schedule feature creates list of Service Appointments with optimal schedule.

Manage - Schedule Optimisation
Optimised schedule based on priorities and constraints.
Increased scheduled hours, reduced travel time, increased scheduled appointments.
Global Optimisation; multiple Service Territories, range of days - manual or daily batch.
Resource Optimisation; individual Service Resource.

Scheduling Policy; grouping of rules and objectives to guide the optimisation process.

Customer First - Customer Preferred Resource, Earliest Time Slot, Travel Time Minimisation.
High Intensity - Service Resource Productivity.
Soft Boundaries - As Customer First + Service Resources can be shared across Service Territories.
Emergency - used with Emergency Chatter action.

Work Rule; refinement rule i.e. criteria applied to candidate resources e.g. Match Skill rule.

Excluded Resources - Work Order Excluded Resources enforced.
Match Boolean - Checkbox field on Service Resource.
Match Fields - Match Service Appointment fields to Service Resource (requirements based on custom fields).
Match Skills - Enforce skill level requirements.
Match Territory - Primary or Relocation service territory members.
Match Time Rule - Limits the scheduling timeframe based on the Service Appointment date/time properties.
Maximum Travel from Home - Maximum distance or travel time permitted.
Required Resources - Required Resource Preferences enforced (Work Order or Account).
Service Appointment Visiting Hours - Customer Operating Hours enforced.
Service Resource Availability - Required to enforce Resource Absences (required for all Scheduling Policies).
TimeSlot Designated Work - Enforces TimeSlot designated work.
Working Territories - Primary or Secondary service territory members.

Service Objective; weighted goals used for prioritisation - each Service Appointment Assignment has a score for each Service Objective.
Highest scoring Assignments are preferred.

Priority – Added to all Scheduling Policies - Promotes higher-priority Service Appointments.
ASAP - Ability schedule the appointment at the earliest time. Soonest = 100, Latest = 0.
Minimise Overtime - Compares overtime hours versus appointment duration.
Minimise Travel - travel time = 120 score is 0, 60 = 50 (Salesforce can customise the range).
Preferred Resource - 100 if a Preferred Resource is assigned, otherwise 0.
Resource Priority – Service Resource Priority field; lower the score the higher the objective score.
Skill Level – Adherence to skill requirement Least Qualified versus Most Qualified. Average taken over multiple skills.

Relevance Group; sub-grouping applied to Service Resources and Service Appointments; rules and objectives are then selectively applied to relevance groups (contractors versus employees etc.).
Service Territory Members or Service Appointment groupings.

Dispatcher Console
Service Appointment List plus Gantt and Map views for Scheduling - Dispatcher role.

Customise Display - Dispatcher Console
Use the Gantt Display Date field on Service Appointment (with Lighting Process to populate) to ensure the correct appointments display.

Field Sets - Service Appointment (not all listed) :
Service Appointment List Columns - up to 6 fields.
Service Appointment Expanded - mini drop down layout
Service Lightbox (Address and Time) - dialog layout on double-click / Edit button
Service Capacity Columns

Field Sets - Service Resource (not all listed) :
Resource Lightbox
Resource Gantt Filter
Emergency Fields

Custom Actions
Field Service Admin app>Field Service Settings tab>Dispatcher Console UI > Custom Actions

Call Apex Class (that for example - reassigns all selected service appointments to a different service resource)
Interfaces; CustomGanttServiceResourceAction, CustomGanttServiceAppointmentAction,

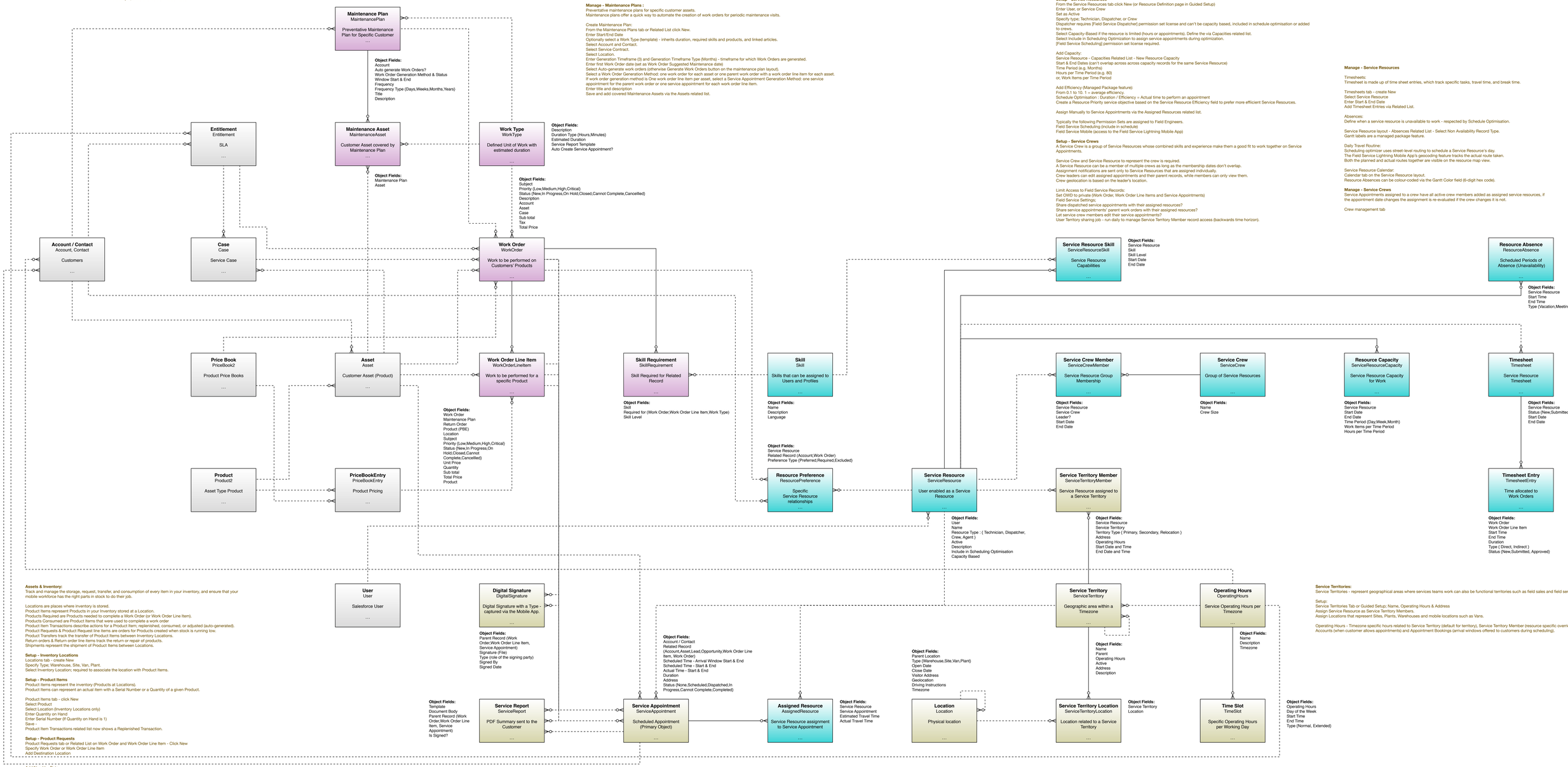
Open Visualforce page (that for example - update appointments based on adverse weather conditions)

Map Polygons
Configure polygons that can be drawn directly onto the map view.

Field Service Admin app>Field Service Settings tab>Service Appointment Life Cycle>Creation.
Select Base service appointment territories on polygons + Set the territory classification policy to Highest.

Mass actions can be taken on Service Appointments within a Polygon; Schedule, Unschedule, Dispatch, In Jeopardy.
Polygons can be imported from KML files.

Service Territories:
Service Territories - represent geographical areas where services teams work can also be functional territories such as field sales and field service.

Setup:
Service Territories Tab or Guided Setup; Name, Operating Hours & Address
Assign Service Resource as Service Territory Members.
Assign Locations that represent Sites, Plants, Warehouses and mobile locations such as Vans.

Operating Hours - Timezone specific hours related to Service Territory (default for territory), Service Territory Member (resource specific override), Accounts (when customer allows appointments) and Appointment Bookings (arrival windows offered to customers during scheduling).