

DAT Load Tenders

Analysis

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 10/02/2014 | 1.0 | Created | Jim Heary |
| 10/03/2014 | 2.0 | Revised | Jim Heary |
| 10/16/2014 | 3.0 | Revised per new requirements | Jim Heary |
|  |  |  |  |

Table of Contents

Introduction 3

Overview 3

Scope 3

Business Activities 4

Overview 4

Find Valid Load 5

Get Pending Quote 6

Book Load 7

System Analysis 8

Overview 8

Actors 8

Use Cases 8

Create Quote 9

Log Quote 9

Approve Quote 10

Tender Quote 10

Book Quote 10

Cancel Quote 11

View Load Tender 11

Change Ownership 11

Notify Dispatch 11

Business Rules 11

Non-functional Requirements 11

Presentation 11

Performance 11

Security 11

Availability 12

Concurrency 12

Interoperability 12

Reports 12

Key Abstractions 13

States 14

# Introduction

## Overview

Argix Logistics would like to use the DAT Solutions Load Board to find freight for their existing PSP System. It has been decided that one or more Sales Rep’s would utilize the DAT Boards to search for loads that would fit within the freight and shipping constraints of the PSP System. When found, these loads would be entered into the PSP System by the Sales Rep. The following lists new requirements and features:

* SalesRep: can be an Argix salesman, a terminal manager, or a terminal dispatcher; one or more Sales Rep’s will create shipments for new and existing PSP clients; it’s ok for each Sales Rep to see the same list of *all* PSP clients; new clients will follow the existing PSP approval process.
* PSP Quotes: a SalesRep would like to get a PSP quote by city/state if possible (otherwise they can search the Internet for a zip); the quote should be discounted 20% from the baseline rates with no client specified; they need to override the PSP quote when creating a new PSP shipment (i.e. adjust the pallet rate from the negotiated total charge).
* Same day pickup: need same day pickup subjected to the rules of each terminal regarding route cutoff times, which can vary by county (i.e. 10AM – 2PM), and available load space on the vehicle. A same day pickup will require an accessorial charge in PSP, and Dispatch will require a notification to confirm with the driver (in some cases, Dispatch approval may be required *before* accepting the load).
* No touch freight: would like to provide no touch shipping, but need to determine operational and billing procedures.

Context

The following diagram provides context for the system under discussion. This high-level view helps us to understand the people (i.e. <<roles>>), hardware (i.e. <<devices>>), and external systems (i.e. <<systems>>) that are involved, and how they are related to each other. The activities shown between the entities will be explored by the business activities in the next section.



## Scope

Solution Boundary

The scope of this effort is limited to enabling one or more Sales Rep’s to book DAT loads into the PSP System with a negotiated quote and possible same day pickup. Pickups are limited to the Ridgefield terminal and deliveries are to all Argix terminals and agents (i.e. national).

Constraints

1. An initial solution needs to be in place as soon as possible.
2. The solution will utilize the PSP System; changes will be required.

## Business Activities

The following diagrams show the business activities involved. Business activities are modeled using activity diagrams. Activity diagrams show a series of activities, the actors responsible for each activity, and the information consumed and created during the process. These diagrams use the language of the business and describe the problems that a software solution should address.

Overview

The following activity diagram shows an overview of the business process for booking a load from the DAT Load Board into the PSP System. The process includes three main activities: Find Valid Load, Get Pending Quote, and Book Load.

Find Valid Load involves a subset of activities to find a load on the DAT Solutions Load board that meets the constraints of the PSP System and has a broker that meets the constraints of an Argix client. This activity is decomposed in the business activity Find Valid Load. Get Pending Quote involves a subset of activities that result in a quote that has been agreed to by the Broker of the load determined in the prior activity. This activity is decomposed in the business activity Get Pending Quote. Book Load involves a subset of activities to book the load quoted in the previous activity into the PSP System. This activity is decomposed in the business activity Book Load.

Notice that any information flowing from the DAT System to the PSP System is handled by the Sales Rep (i.e. there is no system interoperability). Also, two new pieces of information need to be captured during this process: the pending quote, and the charges that override the standard PSP quote for a shipment.



Find Valid Load

The following activity diagram shows the activities involved to find a load on the DAT Solutions Load board that meets the constraints of the PSP System and has a broker that meets the constraints of an Argix client. This activity is performed by a Sales Rep, but could very well be done by a terminal manager or a terminal dispatcher.

The Sales Rep searches the DAT Load Board for possible loads. Each load is vetted regarding origin (i.e. Ridgefield), destination (i.e. National), freight type (i.e. pallets < 1500lbs), delivery means (i.e. 1+ day transit), etc. Once an acceptable load is found, the broker is vetted (i.e. credit rating > 90%, etc.) if he is not an existing PSP client. If the load requires a same day pickup, then the Sales Rep must validate the availability of a vehicle for the pickup. This can be as simple as conforming to a single cutoff time for the pickup terminal (i.e. 11AM), a set of cutoff times for the pickup terminal (i.e. partitioned by the counties), or by obtaining prior approval from the dispatcher in the pickup terminal who would verify vehicle location and available space.

Notice that this activity does not involve any new or existing Argix software systems.



Get Pending Quote

The following activity diagram shows the activities involved that result in a quote that has been agreed to by the Broker of the load determined in the prior activity Find Valid Load. This activity is performed by a Sales Rep, but could very well be done by a terminal manager or a terminal dispatcher.

The Sales Rep requests a quote from the PSP System for the load found in activity Find Valid Load. The load only specifies city and state (i.e. no zip code); so either the Sales Rep finds the correct zip codes on the Internet, or the PSP System is modified to determine the quote from the specified city and state. The quote has a 20% discount from the standard rates and shall include an accessorial charge for same day pickup if applicable. The Sales Rep contacts the Broker and negotiates a price; the price cannot go below the initial quote. If the Broker approves the quote, then the Sales Rep requests any required paperwork from the Broker. Finally, the Sales Rep updates and saves (i.e. printout, spreadsheet, screen shot, etc.) the pending quote for later reference when booking the load into the PSP System.



Book Load

The following activity diagram shows the activities involved that book the load quoted in the activity Get Pending Quote into the PSP System. This activity is performed by a Sales Rep, but could very well be done by a terminal manager or a terminal dispatcher.

If the load is for a new client, then the Sales Rep creates a new client in the PSP System. The new client is processed according to the existing PSP approval process which involves approval by the Finance department. The Sales Rep requests additional information from the Broker (i.e. 1099, etc.) to assist in the approval process. The Sales Rep then waits on the load paperwork (i.e. load tender, BOL) from the Broker before proceeding. Once the paperwork is available, and the client is approved (if applicable), then the Sales Rep finds the original pending quote and proceeds to create a PSP shipment. After the new PSP shipment information has been entered the Sales Rep overrides the total charges with the value from the pending quote. The change to the total charge is balanced by a change to the pallet rate (i.e. FSC/accessorial/insurance charges are unchanged). The PSP System creates the shipment and *additionally* retains the override charges required for correct billing. Finally, if the load is a same day pickup, then the PSP System notifies Dispatch of the new pickup.



# System Analysis

## Overview

The purpose of defining system behavior is to discover, capture, and analyze the requirements of the system under discussion. This is achieved by describing the requirements (i.e. the conditions or capabilities to which the system must conform) well enough so that an agreement can be reached between the business users and the system developers on what the system should and should not do. It begins by modeling the business processes with a series of activity diagrams. These diagrams drive discovery of the users of the system (i.e. Actors), the system functionality (i.e. Use Cases), and the vocabulary of the system (i.e. Key Abstractions). From these artifacts, an analysis model is created that drives system design and development.

## Actors

An actor specifies a role played by a user or any other system that interacts with the system under discussion. Actors influence UI design and security concerns. The list below provides definitions for the actors surrounding the DAT Load Tenders aspect of the PSP system.

* Pallet Shipment- the system under discussion.
* SalesRep- creator and initial owner of a LoadTenderQuote; responsible for approving/tendering/booking quotes that he owns.
* SaleRepAdmin- can change ownership of LoadTenderQuotes (i.e. assign a quote to another SalesRep).
* DAT Load Boards- online load board that is the source of LoadTenderQuotes.
* Broker- the broker of an online load tender; if we do business with him he becomes a PSPClient.
* Dispatch- Argix Logistics Dispatch department.
* Dispatch Supervisor- receives notifications about same day PSP shipments and notifies the Driver of the pickup.
* Driver- receives notifications from the Dispatch Supervisor to pickup a same day shipment.

## Use Cases

A Use Case is a list of steps, typically defining interactions between a role (i.e. Actor) and a system to achieve a goal. The actor can be a human or an external system. Use Cases describe the functional view of the system under discussion as a set of business transactions. Use Cases influence UI design, domain models, application service interfaces, and define business transactions. The following Use Case diagram shows some, if not all, of the actors and use cases involved in this analysis.



Create Quote

A SalesRep needs to create a quote for a Load Tender from the DAT Load Boards.

***Pre-Conditions:*** None.

Flow of Events:

Basic Path

* The user enters a shipping date; shipping date can be for the current date or up to 30 days in advance.
* The user enters an origin city and state; the system returns the zip code or a message stating that the origin is not a serviceable pickup location.
* The user enters a destination city and state; the system returns one or more zip codes or a message stating that the destination is not a serviceable delivery location.
* The user may also indicate accessorial charges including Inside Pickup/Delivery, Insurance, Pickup/Delivery Appointment, and Lift gate. If the pickup is for the current day then the system displays an accessorial for same day pickup.
* The user submits the request.
* The system creates a quote containing total pallets, total weight, pallet rate, FSC, accessorial charges, TSC, and total charge. The pallet charge will be discounted by 20% from the base pallet rate.

Post-Conditions: None.

Log Quote

A SalesRep needs to log a new quote for a Load Tender from the DAT Load Boards.

***Pre-Conditions:*** A quote has been created.

Flow of Events:

Basic Path

* The user selects to log a new quote.
* The system requests additional information including a description, Broker name, Contact name/phone/email, and comments.
* The system saves the quote and includes an owner (i.e. the SalesRep), a Log date, and LoggedBy (i.e. the SalesRep).
* The system updates the user’s view of his “owned” quotes.

Post-Conditions: The quote is saved to a Logged state.

Approve Quote

A SalesRep needs to approve a Logged quote with a Broker.

***Pre-Conditions:*** Quote is Logged.

Flow of Events:

Basic Path

* The user views a list of quotes that he “owns”.
* The user selects the quote that he will use to negotiate a price with the Broker of the DAT load tender.
* During negotiation, the user can change the total charge for the quote.
* The system validates that the total charge is not lower than 20% below the base pallet charges, and updates the quote (i.e. PalletRate, FSC, TotalCharge).
* The system updates the user’s view of his “owned” quotes.

Post-Conditions: The quote is now Approved.

Tender Quote

A SalesRep needs to tender an Approved quote once he receives the load tender paperwork.

***Pre-Conditions:*** Quote is Approved; Load Tender document is received.

Flow of Events:

Basic Path

* The user views a list of quotes that he “owns”.
* The user selects the quote for which the load tender applies and selects to Tender it.
* The system presents an OpenFile dialog.
* The user selects the load tender from the File System.
* The system saves the load tender and updates the quote with an id for the document.
* The system updates the user’s view of his “owned” quotes.

Post-Conditions: The load tender document is saved and the quote is now Tendered.

Book Quote

A SalesRep needs to create a PSP shipment for a DAT Load Tender.

***Pre-Conditions:*** The quote is Tendered.

Flow of Events:

Basic Path

* The user views a list of quotes that he “owns”.

Post-Conditions: The shipment is saved and the quote is now Booked.

Cancel Quote

A SalesRep needs to cancel a Pending quote. The user selects an existing quote that he “owns”. The user chooses to cancel the quote. The system cancels the quote.

View Load Tender

A SalesRep needs to view the load tender for a Tendered quote. The user selects an existing quote that he “owns”. The user chooses to view the load tender. The system displays the load tender.

Change Ownership

A SalesRepAdmin needs to change ownership of one or more LoadTenderQuotes. This can occur when a SalesRep needs his workload reduced or leaves the company.

Notify Dispatch

The System needs to notify Dispatch of a same day pickup. The system sends an email to a Dispatch Supervisor notifying him of the same day pickup.

## Business Rules

1. Quote- returned with an initial 20% discount off of the base pallet rate; this is the minimum charge that can be offered by an SalesRep to a Broker.
2. Same day shipments need to be dispatched such that Drivers can get paid through Driver Compensation.
3. The cutoff time for same day pickups is 10AM; this can be overridden by a SalesRepAdmin.
4. A LoadTenderQuote cannot be cancelled once the shipment is picked up (duh).

## Non-functional Requirements

Presentation

A rich Windows client for both the SalesRep and the SalesRepAdmin; this user interface will be part of the Pallet Shipment Administration client application.

Performance

Unspecified.

Security

Authentication

Argix employees will be authenticated by the Argix network domain.

Authorization

Application services will be made available per the rules of role-based authorization (i.e. SalesRep, SalesRepAdmin) using domain accounts.

Availability

Business hours of an OnLineSalesRep (i.e. 6AM – 10PM).

Concurrency

The system needs to support 1-25 simultaneous users. A LoadTenderQuote, having a single owner (i.e. OnLineSalesRep), will not be transacted concurrently.

Interoperability

As specified by the PSP System.

Reports

## Key Abstractions

The class diagram below shows the key abstractions involved in DAT Load Tenders. Key abstractions are the key concepts and abstractions that the system needs to handle. They are those things that, without which, you could not describe the system. Key abstractions drive design of the database schema and the domain model (if applicable).



* LoadTenderQuote- a PSPQuote for a DAT Load Tender plus additional information regarding the DAT Load Tender.
* LoadTender- an electronic document for the load tender; a LoadTenderQuote may or may not have a load tender.
* PSPShipment- a shipment in the PSP System; a LoadTenderQuote may or may not result in a shipment.
* OnLineSalesRep- the owner of a LoadTenderQuote.
* Broker- the broker for the DAT Load Tender; a Broker may or may not become a PSPClient.
* Contact- contact information for the DAT Load Tender.

## States

The state machine view describes the dynamic behavior of objects over time by modeling the lifecycles of objects of each class. Each object is treated as an isolated entity that communicates with the rest of the world by detecting events and responding to them. Events represent the kinds of changes that an object can detect. Anything that can affect an object can be characterized as an event.

LoadTenderQuote

A LoadTenderQuote is used to capture information regarding a PSPQuote for a DAT Load Tender. A LoadTenderQuote goes thru the following states:

* Logged- any quote can be logged to capture details about a specific DAT Load Tender.
* Approved- this is the state after a Broker agrees to the quote for the load tender; this state is defined by capturing the date and time of the Broker’s approval.
* Tendered- this is the state after a load tender is received and the electronic document is attached to the quote; this state is defined by a reference to an electronic image of a DAT Load Tender.
* Booked- this is the state after a PSPShipment has been created for a DAT Load Tender; this state is defined by a PSPShipment number assigned to the quote.
* Cancelled- a Pending quote can be cancelled after approval and even after tendering a load, but before the shipment is booked. It is most likely that it may be cancelled after booking, but this will depend upon the state of the PSPShipment (i.e. not picked up yet).

