

# Operational Concept Description (OCD)

## LADOT Scanning

### Team # 8

#### Team Members & Roles:

Name	Primary Role	Secondary Role
Aditya Kumar	Feasibility Analyst	Project Manager
Anirudh Govil	Project Manager	Life Cycle Planner
Corey Painter	IIV&V	Shaper
Jeffrey Colvin	Prototyper	Systems and software architect
Niraj Brahmkhatri	Operational Concept Engineer	Requirements Engineer
Nisheeth Joshi	Systems and Software Architect	Life Cycle Planner

# Version History

Date	Author	Version	Changes made	Rationale
09/26/11	Niraj Brahmkhatri	1.0	<ul style="list-style-type: none"> <li>Original Template v 1.0</li> </ul>	<ul style="list-style-type: none"> <li>Initial draft v1.0</li> </ul>
10/03/11	Nisheeth Joshi	1.1	<ul style="list-style-type: none"> <li>Original Template v 1.0</li> </ul>	<ul style="list-style-type: none"> <li>Initial draft v1.0</li> </ul>
10/03/11	Niraj Brahmkhatri	1.2	<ul style="list-style-type: none"> <li>Original Template v 1.0</li> </ul>	<ul style="list-style-type: none"> <li>Initial draft v1.0</li> </ul>
10/06/11	Niraj Brahmkhatri	2.0	<ul style="list-style-type: none"> <li>Completed section 3 of OCD</li> </ul>	<ul style="list-style-type: none"> <li>Updated after WinWin negotiations</li> </ul>
10/06/11	Nisheeth Joshi	2.1	<ul style="list-style-type: none"> <li>Completed section 3 of OCD</li> </ul>	<ul style="list-style-type: none"> <li>Updated primary and secondary role</li> </ul>
10/10/11	Niraj Brahmkhatri	2.2	<ul style="list-style-type: none"> <li>Completed section 3.3</li> </ul>	<ul style="list-style-type: none"> <li>Business work flow diagram and ER diagram added</li> <li>Benefits analysis diagram updated</li> </ul>
10/14/11	Niraj Brahmkhatri	2.3	<ul style="list-style-type: none"> <li>Completed sections 3.1.3 &amp; 3.3.2</li> </ul>	<ul style="list-style-type: none"> <li>Business work flow diagrams have been done using RSM tool</li> </ul>
10/17/11	Niraj Brahmkhatri	2.4	<ul style="list-style-type: none"> <li>Section 3.3.2</li> </ul>	<ul style="list-style-type: none"> <li>System maintainer is no more a part of the new system</li> </ul>
10/19/11	Niraj Brahmkhatri	2.5	<ul style="list-style-type: none"> <li>Sections 2.4 , 2.5 and 3.3.2</li> </ul>	<ul style="list-style-type: none"> <li>Business workflow diagram, benefits-chain diagram and system boundary diagram have been updated</li> </ul>
10/23/11	NB	2.6	<ul style="list-style-type: none"> <li>Sections 2.4, 2.5, 3.2 and 3.3</li> </ul>	<ul style="list-style-type: none"> <li>Updated after the ARB session</li> </ul>
10/31/11	NB	3.0	<ul style="list-style-type: none"> <li>Sections 2.3 &amp; 3.2.1</li> </ul>	<ul style="list-style-type: none"> <li>Generating a FLAT file in DTIME format is no more a requirement</li> </ul>
11/07/11	NB	3.1	<ul style="list-style-type: none"> <li>Sections 2.4, 3.2 and 3.3</li> </ul>	<ul style="list-style-type: none"> <li>Updated after getting feedback from the IV&amp;V</li> </ul>
11/20/11	NB	4.0	<ul style="list-style-type: none"> <li>Section 3.2</li> </ul>	<ul style="list-style-type: none"> <li>Capability requirements have changed a little after CCD</li> </ul>
11/28/11	NB	4.1	<ul style="list-style-type: none"> <li>Section 1.2 and 3.3.1</li> </ul>	<ul style="list-style-type: none"> <li>Updated after getting feedback from the IV&amp;V</li> </ul>
12/01/11	NB	4.2	<ul style="list-style-type: none"> <li>Section 2.1</li> </ul>	<ul style="list-style-type: none"> <li>Employees of the payroll dept are not success-critical stakeholders anymore</li> </ul>
12/05/11	NB	4.3	<ul style="list-style-type: none"> <li>Section 2.1</li> </ul>	<ul style="list-style-type: none"> <li>Maintainer has been added as a success-critical stakeholder</li> </ul>

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# **1. Introduction**

## **1.1 Purpose of the OCD**

This document provides, in detail, the shared visions and goals of the stakeholders of the Timesheet Scanning System for the Los Angeles Department of Transportation (LADOT). The success-critical stakeholders of the project are the client – Mr. Richard Harada and the users including LADOT & LA City employees.

## **1.2 Status of the OCD**

The project is currently in the version number 4.3 of Development phase. We have redefined the scope of the project after client meetings, winwin negotiations, ARB session and CCD.

## 2. Shared Vision

### 2.1 Success-Critical Stakeholders

Table 1: Success-Critical Stakeholders

Stakeholder	Authorized Representatives	Organization	Relation to Benefits Chain
Client	Mr. Richard Harada	Los Angeles Department of Transportation(LADOT)	<ul style="list-style-type: none"> <li>- Fiscal systems specialist</li> <li>- Responsible for analyzing and sanctioning proposals for a new scanning system.</li> <li>- Provide technical training to the prospective users.</li> </ul>
Field Workers	A crew of ~120 people	Los Angeles Department of Transportation(LADOT)	<ul style="list-style-type: none"> <li>- Do signal maintenance in the field daily.</li> <li>- Fill up their time sheets on a regular basis.</li> </ul>
Supervisors	Employees of LADOT who supervise the activities of field workers	Los Angeles Department of Transportation(LADOT)	<ul style="list-style-type: none"> <li>- Delegate different tasks to field workers</li> <li>- Supervise the progress of work done by field workers</li> </ul>
Maintainer	Mr. Mony Patel	Los Angeles Department of Transportation(LADOT)	<ul style="list-style-type: none"> <li>- Make sure that the truck system is installed on all the trucks</li> </ul>
Developers and IV&V	Niraj Brahmkhatri, Aditya Kumar, Nisheeth Joshi, Jeffrey Colvin, Anirudh Govil and Corey Painter	University of Southern California(USC)	<ul style="list-style-type: none"> <li>- Manage and develop a new scanning system for the client</li> <li>- Verify the system's design and functionality</li> <li>- Moderates discussion between the client and the development team</li> </ul>

## **2.2 System Capability Description**

The LADOT requires a truck system that will enable the employees of LADOT to electronically store the maintenance data of field workers who daily perform tasks related to traffic signal maintenance. As the LADOT requirements are specific, it is difficult to obtain a new readymade system that will meet their needs and hence, there is no competitor for the system.

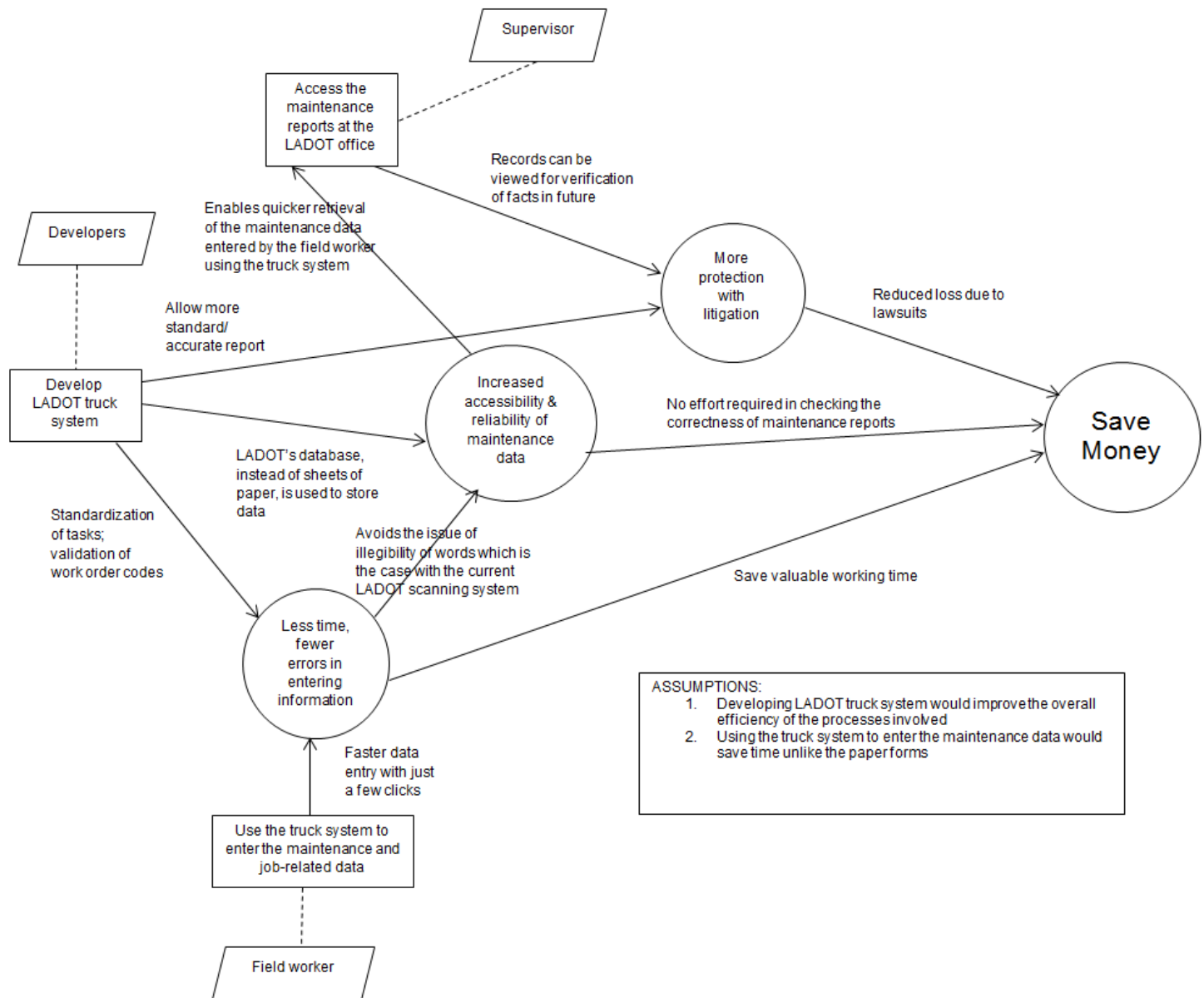
## **2.3 Expected Benefits**

- The new system will help LADOT employees eliminate a lot of paper work involved in storing maintenance data.
- Standardization of tasks and validation of work order codes would lead to less time & fewer errors in entering the maintenance information.



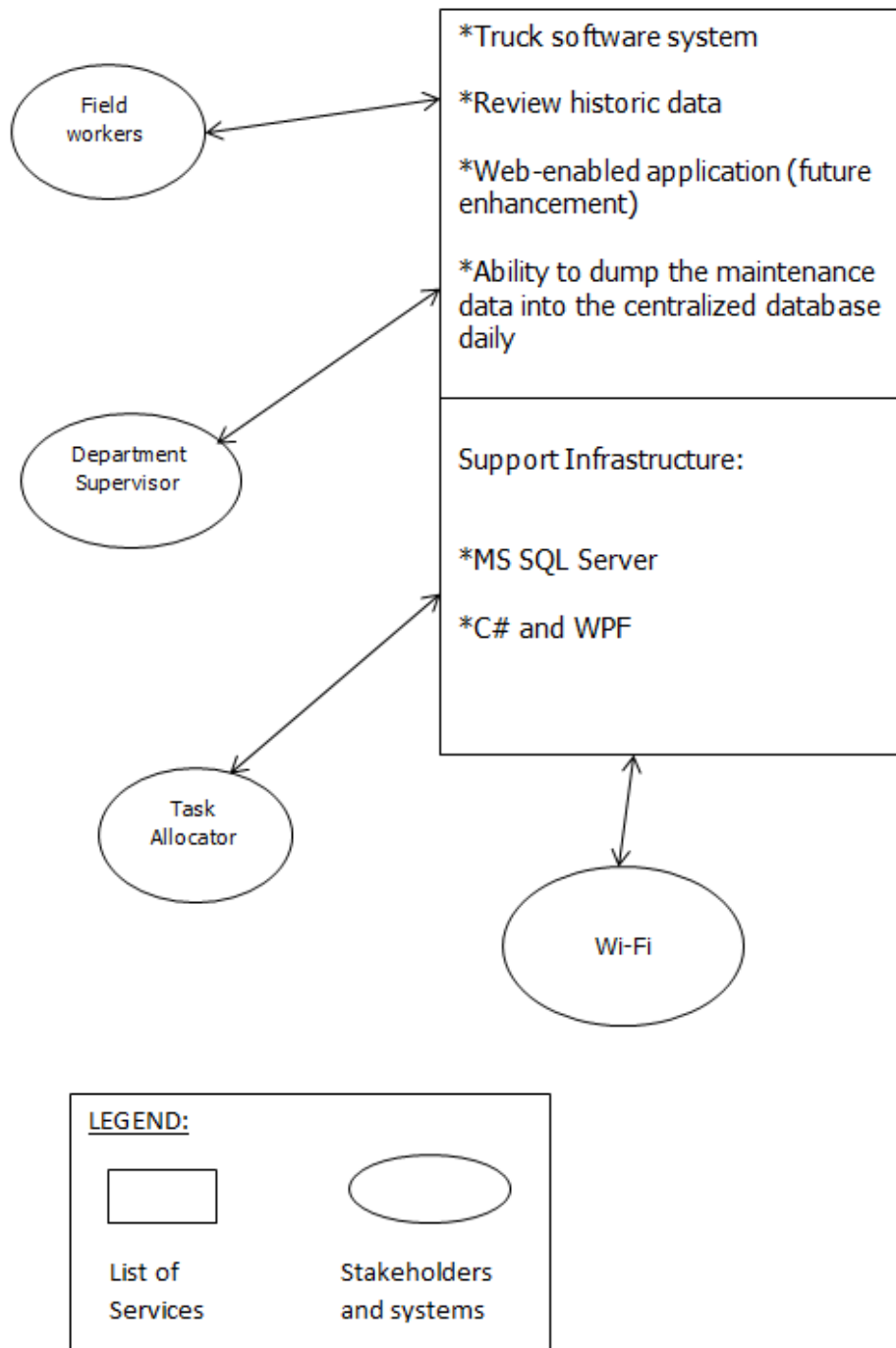
## 2.4 Benefits Chain

Figure 1: Benefits Chain Diagram



## 2.5 System Boundary and Environment

Figure 2: System Boundary and Environment Diagram



## 3. System Transformation

### 3.1 Information on Current System

#### 3.1.1 Infrastructure

The client uses the following software tools:

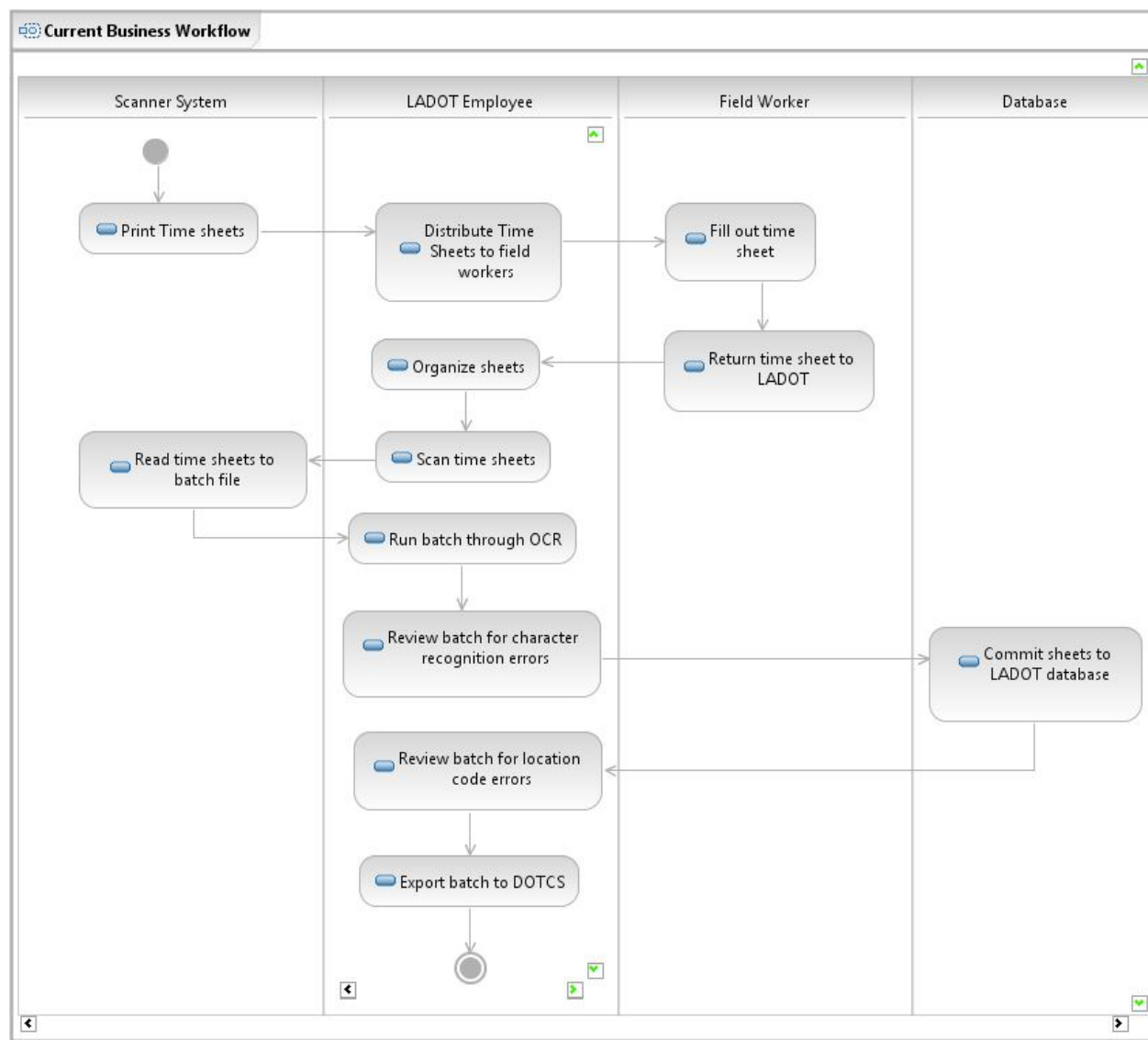
- **Database system:** Microsoft SQL Server 7.0
- **Scanning application:** Teleform by Cardiff
- **Operating Systems:** Windows 95/98/NT
- **Network:** Client has a company Intranet.
- **Hardware:** Desktops, scanner, CDs

#### 3.1.2 Artifacts

Sr. No.	Artifact	Description
1.	Timesheets	Each employee has a separate timesheet, which lists the issue he's work on, number of hours spent on resolving the issue, and the location of the site of the issue.
2.	OCR scanner	It scans the timesheets of the employees line by line and character by character.
3.	TELEform by Cardiff	This is the software package for the scanner, which reads the timesheets for the employees, in case any characters are not identified, it shows suggestions and asks the user for an appropriate selection.
4.	Department of Transportation Cost System (DOTCS)	It creates an index on the location of the physical timesheet so they could be retrieved in case of litigation purposes and it also creates reports for billing purposes.
5.	MS SQL Server 7.0 database	All the details scanned from the timesheets of the employees are parsed into this database.
6.	DTIME	Payroll system used by all employees. Employees access it through network. For the few employees that use paper time cards, the scanner system is used to input the data into the system

### 3.1.3 Current Business Workflow

Figure 3: Current Global Business workflow



## 3.2 System Objectives, Constraints and Priorities

### 3.2.1 Capability Goals

**OC-1 Error Checking**

Error checking/Validation on the work order code must be done by the truck system

**OC-2 Log In**

The field worker signs in at the beginning of his work.

**OC-3 Log Out**

The field worker signs off after his work ends.

**OC-4 Export file**

Export file upon log out for reading in SQL database

**OC-5 View Reports**

Employees can review their reports by clicking the “View Report” button

### 3.2.2 Level of Service Goals

Level of Service Goals	Priority Level	Referred SSRD requirements

Table 3: Level of Service Goals

There are no service goals as of now

### 3.2.3 Organizational Goals

The Payroll Scanning project was brought to the City of Los Angeles for the crews that are doing signal maintenance in the field daily. Currently, their timesheets are hand written on preprinted forms. Hand written notes are written on the back of the times sheets that explain the problem and resolution. This is critical because this data is used to defend the CITY in court when there is an accident at an intersection and issues of maintenance become very important. A judgment against the CITY could potentially be in the millions of dollars.

This new system will replace the old software/hardware and provide a more efficient means of getting payroll data from the field crew into our centralized payroll system. The new system would be less labor intensive! The new system may use different technology for the field crews.

This system will provide these expected benefits in pursuit of these goals:

**OG-1:** Improve the process of reporting time and maintenance information by using a user-friendly laptop installed on trucks

**OG-2:** Allow supervisors to review the maintenance data after it's sent to the respective database

**OG-3:** Eliminate the amount of paper work in the new system.

### 3.2.4 Constraints

N/A

### 3.2.5 Relation to Current System

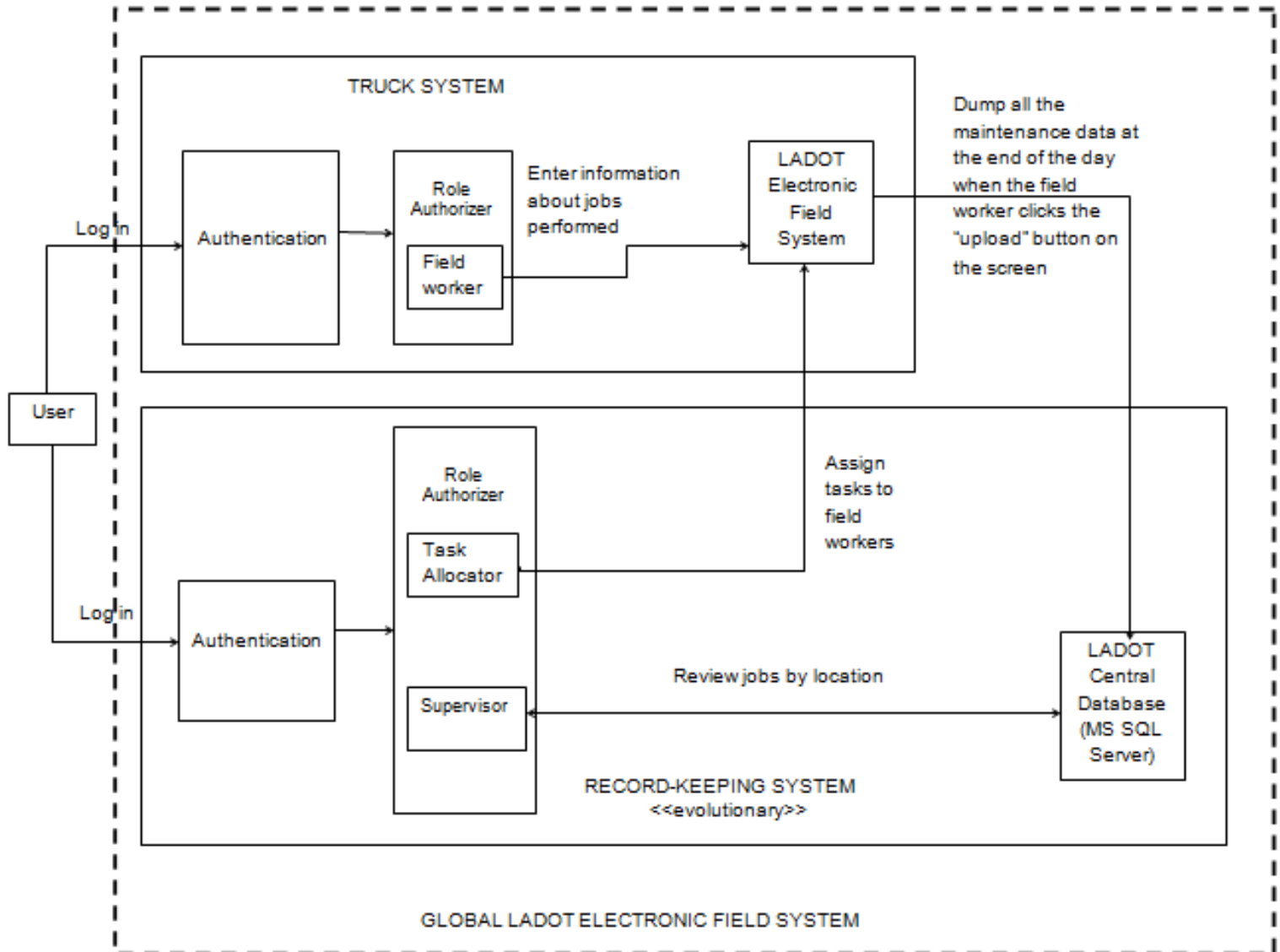
Capabilities	Current System	New System
Roles and Responsibilities	-The LADOT supervisor has to wait for the timesheets having maintenance data to be received on time.	-Maintenance data can be submitted using wi-fi at the yards.
User Interactions	- Employees use paper sheets to enter their time and maintenance data.	-The employees will enter their maintenance data into the forms on the truck system that will ultimately be stored in LADOT's MS SQL Server.
	- Employees manually enter maintenance data. Papers sheets have to be archived for reference.	- Error checking/ validation of work order codes drastically makes the system less labor-intensive
Infrastructure	-After every 14 days timesheets have to be scanned manually	- (Future Capability) After every 14 days, timekeeping data would be sent to the DTIME database.
Future Capabilities	- Change the fields of the form. - Improve the Scanning system's capability to read data reliably	- GPS can be used to track the location of employees. - Devise a mechanism to provide continuous online connectivity. - Scaling up the system to handle higher online traffic.

**Table 4: Relation to Current System**

## 3.3 Proposed New Operational Concept

### 3.3.1 Element Relationship Diagram

Figure 4: Element Relationship diagram

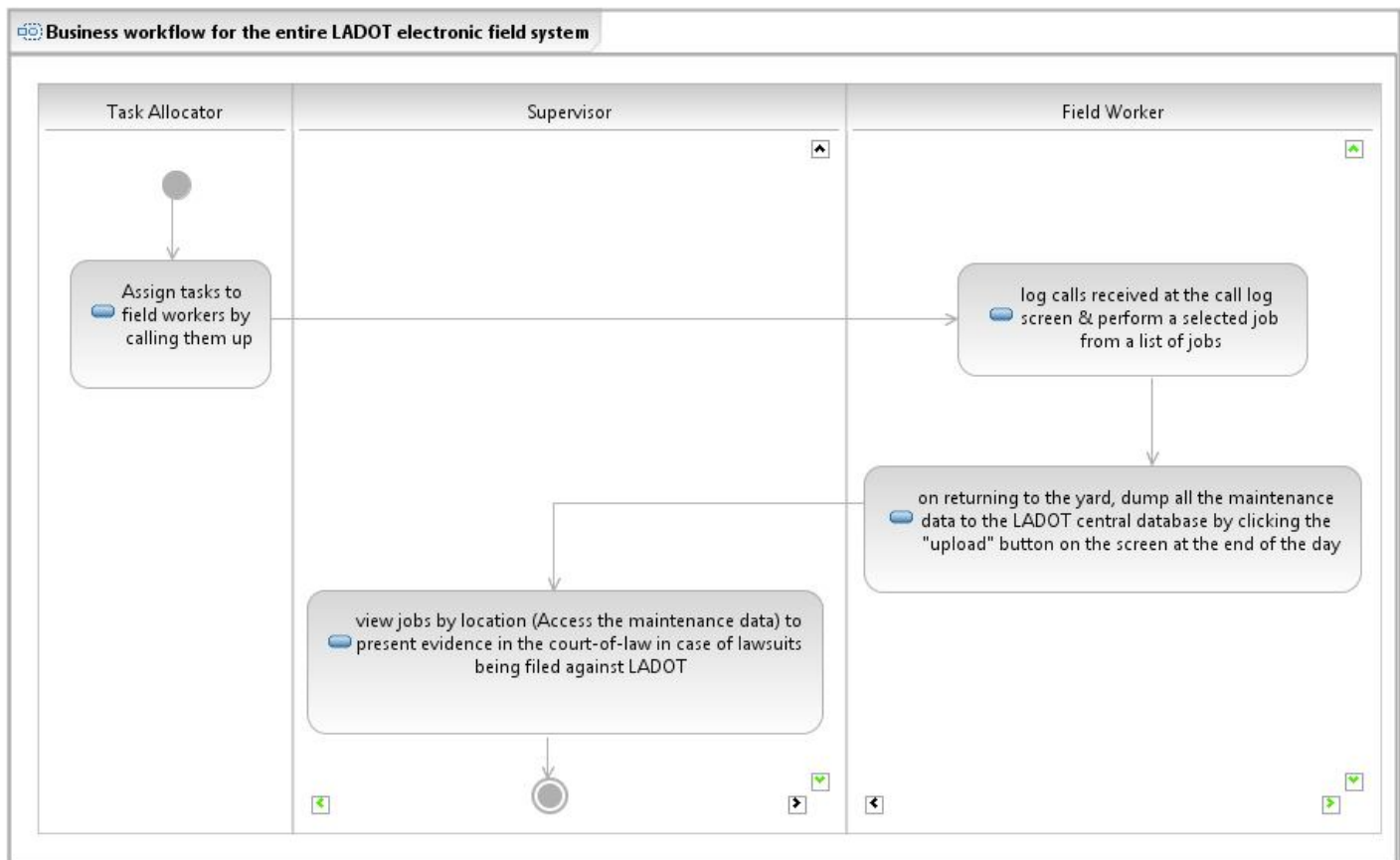


Note: The truck system and the record-keeping system are two separate subsystems of the global LADOT electronic field system. Out of these, only the truck system will be implemented by the end of this semester.



### 3.3.2 Business Workflows

Figure 5: Business workflow for the entire LADOT electronic field system



## **3.4 Organizational and Operational Implications**

### **3.4.1 Organizational Transformations**

- Elimination of scanner and paper work currently being used in the system.
- Need of a database administrator who can ensure regular dumping of maintenance data into the SQL server database.
- The need to designate a maintainer who will manage the system's functionalities and ensure users' accessibility to the system.
- The improved responsibility of the supervisor to track the activities of employees doing signal maintenance in the field.

### **3.4.2 Operational Transformations**

- The option for employees to fill out and submit their timesheets using the truck software system.
- Transitioning from Teleform to the web based forms.
- Administrator, Department heads and users will have to act in accordance to the flow of process outlined in the truck system.