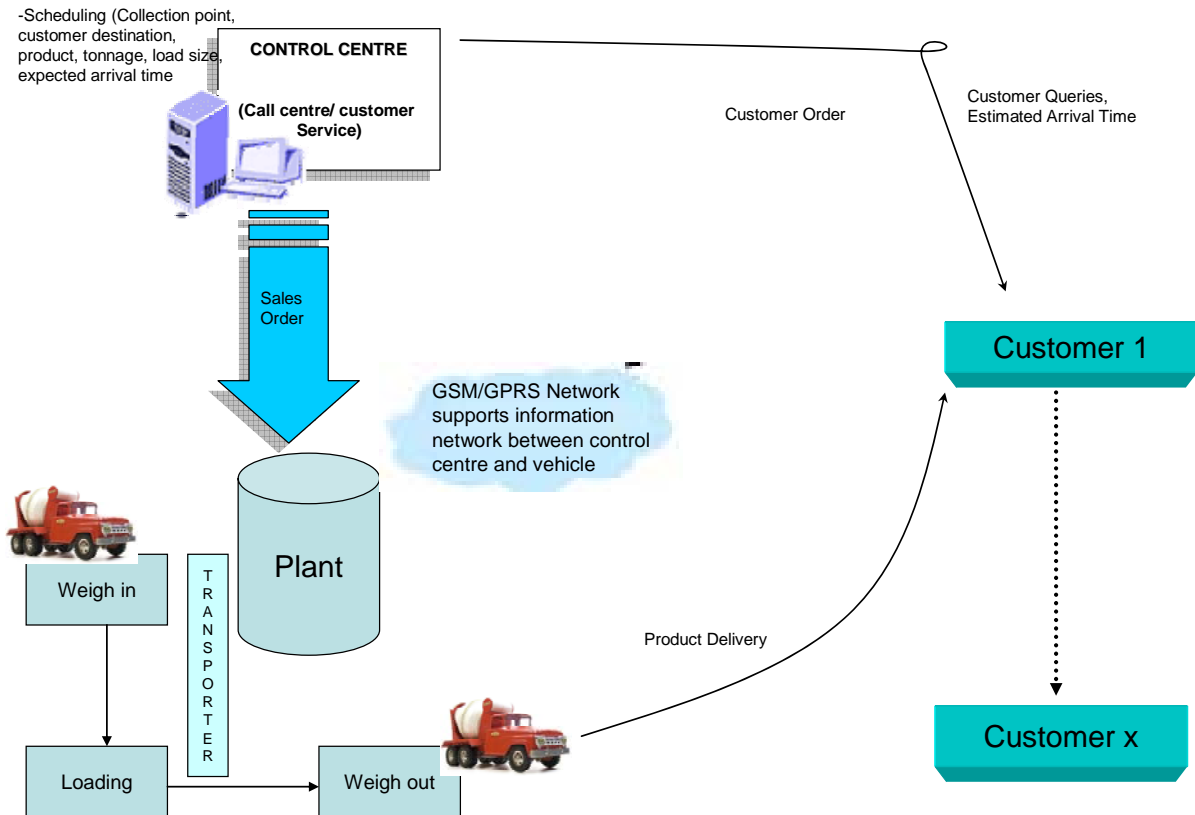


SOLUTION FOR READY MIX CONCRETE OPERATIONS

Readymix Concrete Operations Optimization System



The Need For Operations Optimization System

The above diagram shows ready mix concrete operations from the point of Sales enquiry initiated by the customer to order booking where product (Grade), expected tonnage, load size and the time of arrival is recorded. In a conventional dispatch process, it's great difficult for the dispatcher to predict which Ready-mix truck can be expected to be loaded with cement, their availability and the expected time of arrival at customer site. Since, the dispatcher does not have ready access to vehicle status, it results in delayed delivery or inefficiency and even the keeping buffer time window which may not be actually required if real time vehicle location information is available.

About Our System

InfoTrack, a Singapore based company has a GPRS/GSM based system that harness the power of global positioning system (GPS) using a In-Vehicle Hardware (Blackbox) which contains both GPS and GSM module that transmits Vehicle position from time to time using GPRS communication network to a remote computer server. The data thus

transmitted such as Vehicle location, Speed, Alerts etc is stored in the database of a high end computer server. Our application used structured queries to retrieve data from this database and present to the user in the form of reports. The entire application has been designed with Highly user friendly Graphical Interfaces. The dynamic Status window shows at any point of time the current location of vehicle, its speed, any Exception occurrence etc and this window keeps updating automatically.

Dynamic Status Report

Status	Vehicle No	Location	Speed	Date Time	GPS	Map It
	XB9217	AIRPORT CARGO ROAD	0	10/04/2006 14:22		Map
	YK5337S	SIGLAP ROAD	22	10/04/2006 14:22		Map
	YL5170	T2 DEPARTURE DRIVE	5	10/04/2006 14:22		Map
	YK9208	CHANGI SOUTH STREET 3	0	10/04/2006 14:22		Map
	YL5437	ANG MO KIO AVENUE 5	11	10/04/2006 14:22		Map
	YL5267	EAST COAST PARKWAY	46	10/04/2006 14:22		Map
	YK274Y	TAMPINES EXPRESSWAY	48	10/04/2006 14:21		Map
	YL5270U	EAST COAST PARKWAY	70	10/04/2006 14:21		Map
	YL5234A	AIRPORT CARGO ROAD	0	10/04/2006 14:21		Map
	YK33B	UBI ROAD 2	0	10/04/2006 13:35		Map
	XB6273	Road Name Not Found	0	08/04/2006 14:00		Map
	YL5214	Road Name Not Found	0	07/04/2006 18:08		Map

The above window updates automatically.

Taxi Tracking

Address:

Long : 103.7832 Distance to pickup location:
Lat : 1.4942

[Zoom-in](#) [Zoom-out](#) [Re-center](#)

Taxi Number...

[Start](#)

[Zoom To Taxi](#)
[Zoom To Address](#)
[Zoom Both](#)
[See all Taxis](#)

List of Taxis :

Please start tracking a taxi first

Address Search

Search by...

Enter Road Name
 [GO](#)

The above icons represent vehicles, and the screen shot shows where in Singapore the vehicles are currently running.

The activity report shows the activity of a given ready-mix truck for a defined period of time. This will show the location besides the speed of the vehicle.

<u>Activity Report</u>		
Vehicle Id: GY7237Z		Infotrack
Duration From: 11/09/2005 04:47 PM to: 11/11/2005 04:47 PM		
Date Time	Location	Speed (Km)
GY7237Z		
11/10/2005 10:01:01 AM	QUEEN STREET	17
11/10/2005 9:58:01 AM	ROCHOR CANAL ROAD	20
11/10/2005 9:48:02 AM	QUEEN STREET	13
11/10/2005 9:47:02 AM	SUNGEI ROAD	15
11/10/2005 9:45:02 AM	ROWELL ROAD	26
11/10/2005 9:34:35 AM	KAMPONG KAPOR ROAD	26
11/10/2005 9:33:34 AM	JALAN BESAR	48
11/10/2005 9:31:34 AM	BENDEMEER ROAD	52
11/10/2005 9:29:35 AM	BENDEMEER ROAD	31
11/10/2005 9:14:18 AM	SIANG KUANG AVENUE	7
11/10/2005 9:12:18 AM	JALAN WANGI	11
11/10/2005 9:10:19 AM	ALJUNIED ROAD	7

The Geo-fence report helps to understand the Vehicle Entry/ Exit time from the customer site or the plant.

<u>Geofence Report by Customer</u>			
Duration From: 11/24/2005 10:15 AM to: 11/25/2005 10:15 AM			
Infotrack			
Vehicle No	Entry Time	Exit Time	Duration Hrs:min
GIN AUTO CLINIC			
NBG 4558	11/25/2005 4:47:26AM	11/25/2005 6:06:17AM	1:18
Pasir Gudang Terminal			
WGT1041	11/25/2005 8:55:34AM	11/25/2005 9:50:05AM	0:54
WGT1041	11/25/2005 4:34:06AM	11/25/2005 5:42:04AM	1:07
WGT1041	11/24/2005 6:18:10PM	11/24/2005 7:03:57PM	0:45
WGT1041	11/24/2005 3:35:48PM	11/24/2005 4:28:19PM	0:52
WGT1041	11/24/2005 11:27:19AM	11/24/2005 12:32:33PM	1:05
Port Dickson Terminal			
NBG2410	11/25/2005 2:58:27AM	11/25/2005 3:40:03AM	0:41
NBG 4558	11/24/2005 8:56:22PM	11/24/2005 9:32:44PM	0:36
NBG2410	11/24/2005 4:26:28PM	11/24/2005 6:00:35PM	1:34
NBG 4558	11/24/2005 12:27:13PM	11/24/2005 2:54:00PM	2:26

The above shows vehicle entering GIN Auto clinic on 25th Dec 2005 at 4:47 a.m and leaving the premises at 6:06 a.m and thereby spending 1 Hour and 18 minutes.

This report shows vehicle wise geo-fence entry/ exit details.

Trip Planning & Analysis: The trip scheduling module allows the user to plan a trip and save the trip with a trip ID so as to retrieve the trip details later. The trip can be planned from plant to site and then back by defining the time expected to reach and a stoppage allowance at the customer site. Now, when the vehicle runs on a real time, our system checks whether the vehicle has reached the location as per the plan and if not then what is the variance and this information is available in a tabular format as per the example below.

<u>Comprehensive Trip Report Analysis</u>						
Vehicle Id: HR63 0703						
Duration From: 12/21/2005 12:31 PM to: 12/21/2005 12:31 PM						
Start	Start at	Reach Location	Reached at	Expected Arrival time	Deviation (mins) (-) Delay	
HR63 0703						
Trip1_211205_DJ						
Gati, Delhi Office	12/21/2005 22:00 PM	Delhi Airport	12/21/2005 22:28 PM	12/21/2005 22:20 PM	-8	
Delhi Airport	12/21/2005 23:58 PM	Gati, Delhi Office	12/22/2005 00:17 AM	12/22/2005 00:08 AM	-9	
Gati, Delhi Office	12/22/2005 03:17 AM	Stoppage , Near Bahora	12/22/2005 04:35 AM	12/22/2005 04:37 AM	2	
Stoppage , Near Bahora	12/22/2005 05:55 AM	Shahjanpur border	12/22/2005 06:35 AM	12/22/2005 06:35 AM	0	
Shahjanpur border	12/22/2005 07:35 AM	Gati, Jaipur Office	12/22/2005 10:33 AM	12/22/2005 10:35 AM	2	
Trip1_221205_JD						
Gati, Jaipur Office	12/22/2005 21:45 PM	Shahjanpur border	12/23/2005 01:02 AM	12/23/2005 00:50 AM	-12	
Shahjanpur border	12/23/2005 01:32 AM	Delhi Airport	12/23/2005 04:11 AM	12/23/2005 04:12 AM	1	
Delhi Airport	12/23/2005 04:41 AM	Gati, Delhi Office	12/23/2005 05:13 AM	12/23/2005 05:11 AM	-2	
Trip2_231205_DJ						
Gati, Delhi Office	12/23/2005 21:10 PM	Delhi Airport	12/23/2005 21:52 PM	12/23/2005 21:30 PM	-22	
Delhi Airport	12/23/2005 22:52 PM	Gati, Delhi Office	12/23/2005 23:20 PM	12/23/2005 23:37 PM	17	
Gati, Delhi Office	12/24/2005 03:00 AM	Stoppage , Near Bahora	12/24/2005 04:40 AM	12/24/2005 04:48 AM	8	
Stoppage , Near Bahora	12/24/2005 04:50 AM	Shahjanpur border	12/24/2005 06:04 AM	12/24/2005 05:47 AM	-17	
Shahjanpur border	12/24/2005 07:04 AM	Gati, Jaipur Office	12/24/2005 10:27 AM	12/24/2005 10:14 AM	-13	
Trip2_241205_JD						
Gati, Jaipur Office	12/24/2005 21:10 PM	Delhi Airport	12/25/2005 04:01 AM	12/25/2005 03:50 AM	-11	

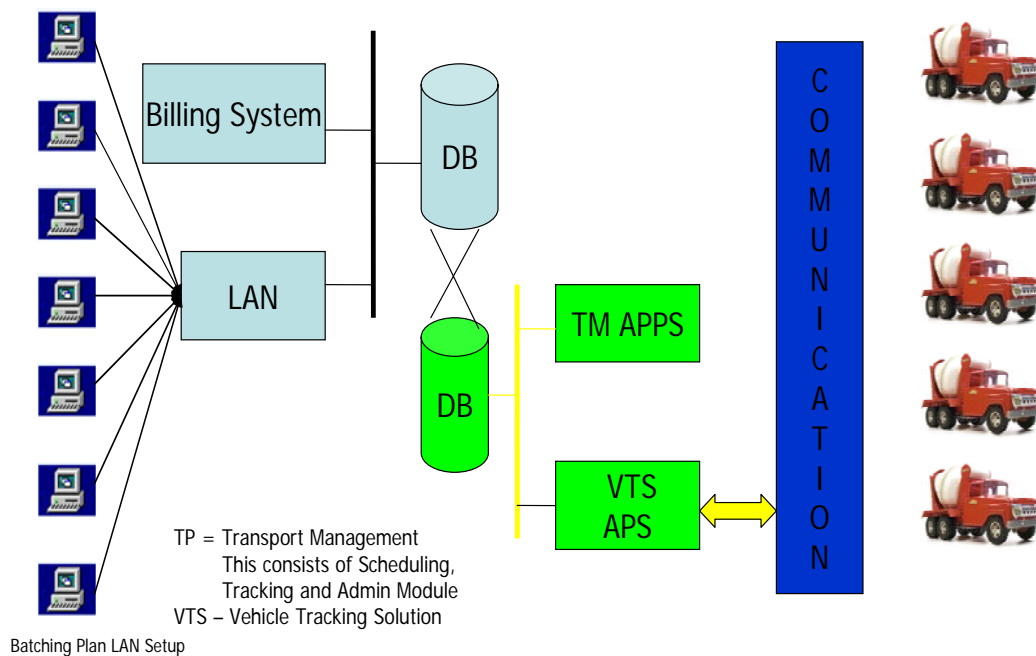
Page 1 of 2

It's important for any organization to know the average distance run by their ready-mix trucks for a given day and understand the fuel consumed and an average fuel cost to the company so as to keep a track on the operations cost. Well, InfoTrack has a report that will help in understating the delay in reaching customer site or destination. It compares the expected arrival time with the actual arrival time and a report is generated that shows the expected arrival time Vs. actual arrival.

Besides the above reports, our system is capable of generating a Window Popup stating that the vehicle has left the site after unloading the cement. All these are complimented with SMS alert that will alert the dispatcher with the SMS alert when the Ready-Mix truck leaves the site heading for the plant. This SMS alert has been facilitated in order for dispatcher to receive this vital information even though he is not in front of a computer and helps in taking informed decision while he is on the move. He are envisaging that this tool should empower modern day operation staff in being highly productive and helping the company in achieving their delivery commitments. By implementing the proposed system, a ready-mix company will see returns on investment in the form of

more new jobs being done, operations personnel being able to commit a delivery time based on the actual vehicle status, fewer accidents, optimized dispatching of mixers, less wear & tear of vehicle owing to improved driving discipline.

Solution Architecture:



The above solution architecture shows the flexibility of InfoTrack application to integrate seamlessly with external third party applications like the billing system of the ready-mix company. The communication channel between the VTS application and ready-mix truck is the GPRS network. This GPRS network is highly efficient with relatively broader bandwidth capable of transporting current vehicle location, speed, alert signals quite fast. We have worked out to the finest details of contingency plan where in our in-vehicle hardware can poll data to a secondary server in case if the primary server fails. Such a contingency plan using cutting edge technology is first in the industry which reflects the seriousness and commitment that we have to our customer.

Benefits of our System

- ❖ Real time info on Vehicle location and the status of Vehicle.
- ❖ Exit/ Entry Info from Customer Site available automatically on an internet connected PC.
- ❖ Can commit to the customer on a realistic basis regarding the arrival time.
- ❖ Delivery Proof through Geo-fence reports.
- ❖ Dynamic Status window helps dispatcher to know vehicle location without disturbing the driver.
- ❖ Dispatcher can plan trips, assign a name to each trip using Trip Schedule and system does the check whether the vehicle has reached on time or delayed.
- ❖ Trip schedule helps in defining trips and allocating a time window for vehicle to unload the cement at customer site, if any delay, it will be shown in the report.
- ❖ Journey Report shows driver start time, end time, distance traversed for the day, fuel consumed and the fuel cost.
- ❖ Stoppage report shows the places where the vehicle has stopped for more than the defined time frame.
- ❖ Our system helps in optimum utilization of available resources.
- ❖ Our system can be integrated with in-house developed Billing system so as to capture customer wise trip details etc.
- ❖ Help the dispatcher in load distribution among the fleet and utilize the fleet in a balanced manner.
- ❖ Helps to reduce fuel consumption, increase driver productivity, increase the no. of jobs that can be taken, decreases operational cost etc.
- ❖ Dash board reports available to Sr. management.
- ❖ Vehicle wise profile available for preventive maintenance.

System Requirement For Using The Proposed System:

- ❖ A Pentium PC with Windows 2000/XP
- ❖ IE Browser
- ❖ Internet Connection