

# LICENSE PLATE RECOGNITION

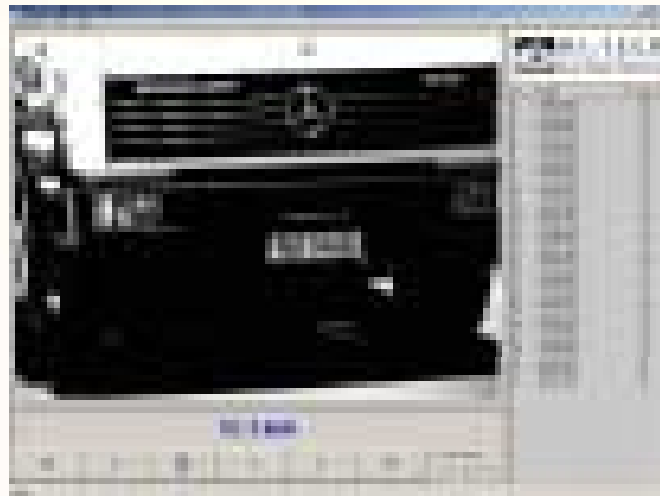
Presented by  
*Barry T. Fryer Dudley*

(MBA {IT};  
MSc {Image Analysis})

***I-CUBE***

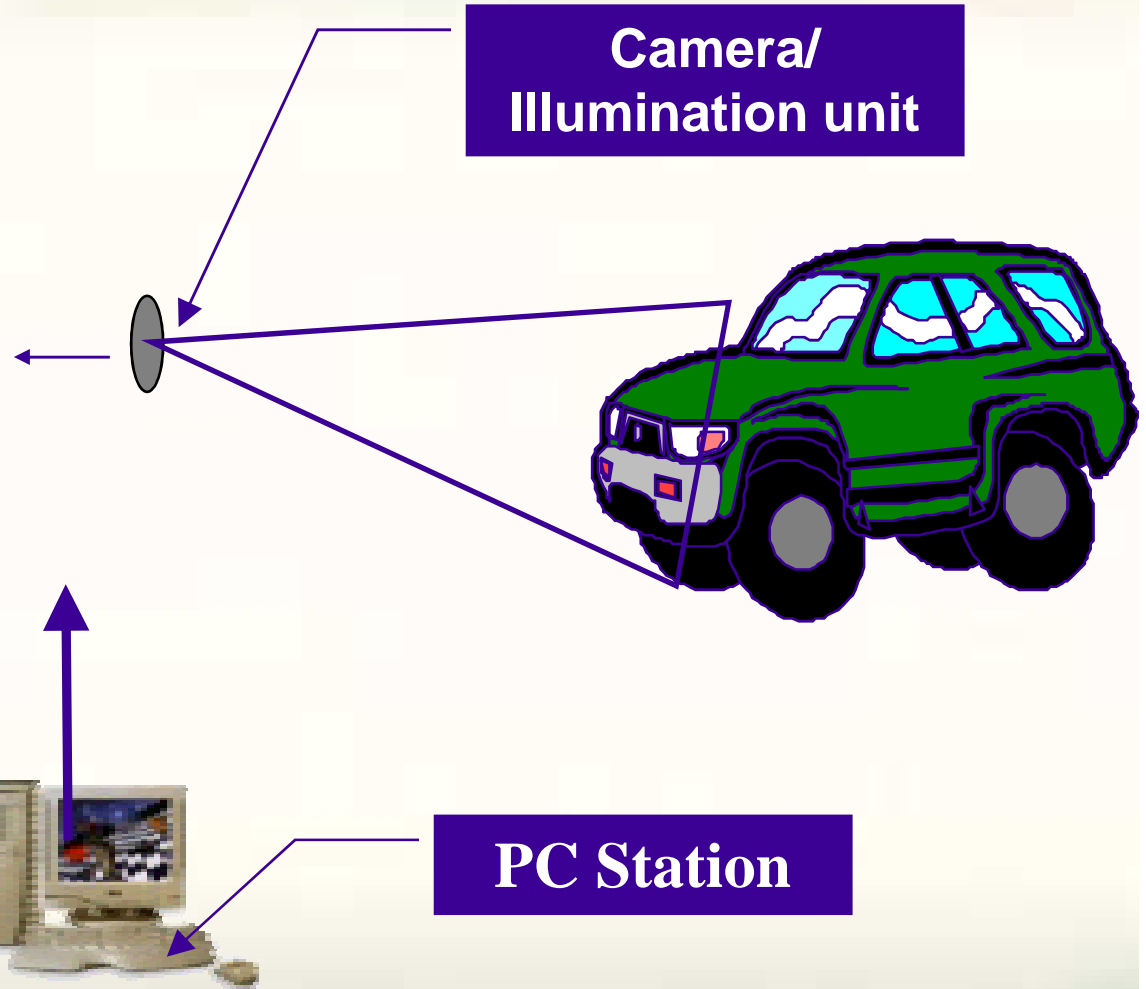


# Recognize plate number and LOG



LPR

NU1460



# LPR Log

LICENSE PLATE, LANE, USER, DATE

NMR 5628,.....,1,Yes,,Sat Aug 14 09:05:16 2004,

NMR 3970,....., 2,No,,Sat Aug 14 09:05:18 2004,

MKF359GP,.....,1,Yes,David Smith,Sat Aug 14 09:05:20 2004,

LJD977GP,.....,3,No,,Sat Aug 14 09:05:22 2004,

ND474276,.....,2,Yes,Daniel Bush,Sat Aug 14 09:05:24 2004,

DYK370GP,.....,3,No,,Sat Aug 14 09:05:30 2004,

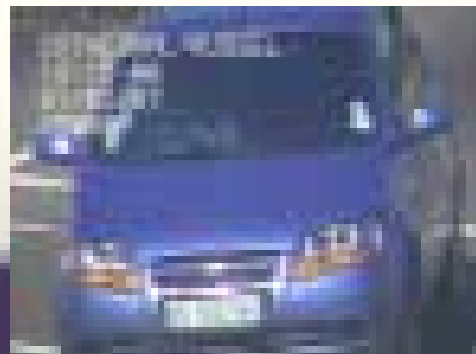
LGW487GP,.....,1,Yes,Goldy Luck,Sat Aug 14 09:05:36 2004,

KPR835GP,.....,3,No,,Sat Aug 14 09:05:38 2004,

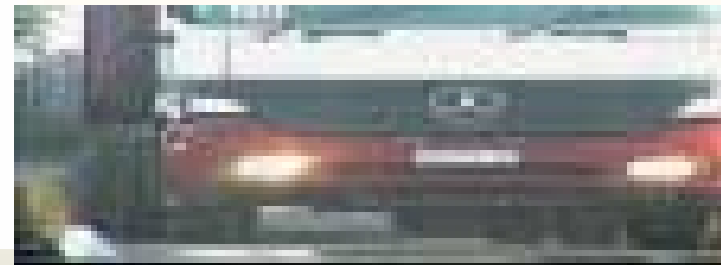
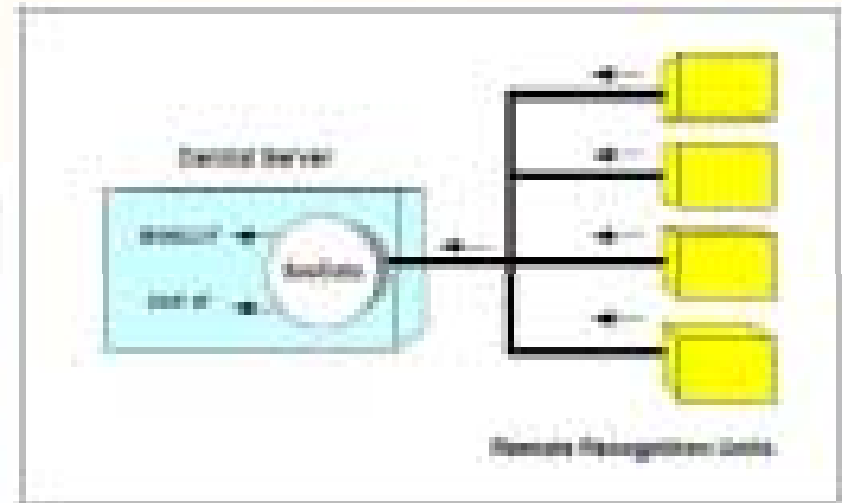
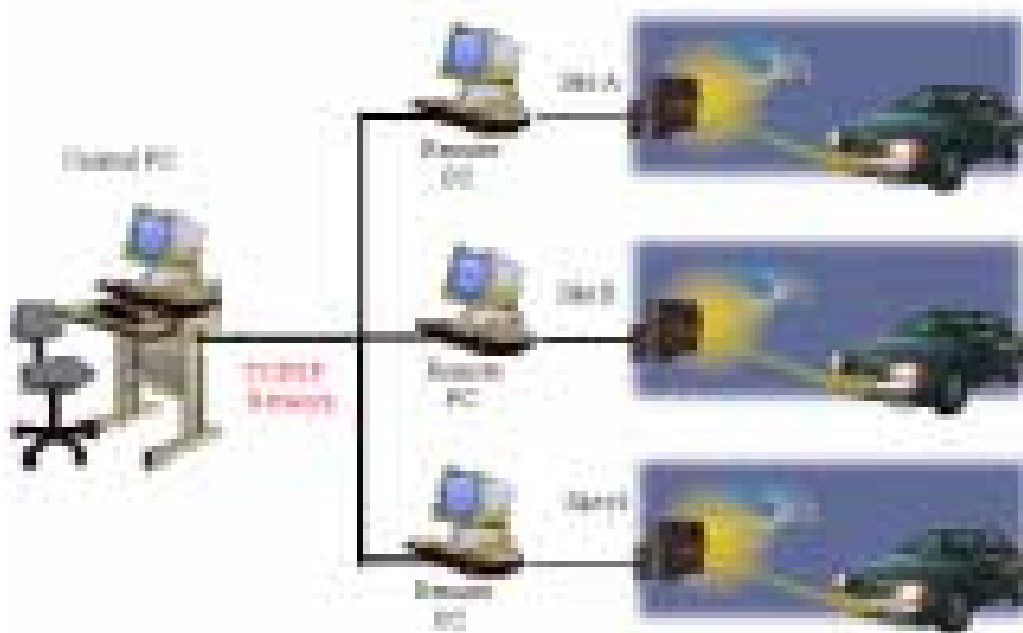


All LPR data is saved each day allowing review of trucks seen

**All images are kept!**



Sites = 3  
Lanes = 10



**Bi-directional: 0**  
**Single direction: 10**



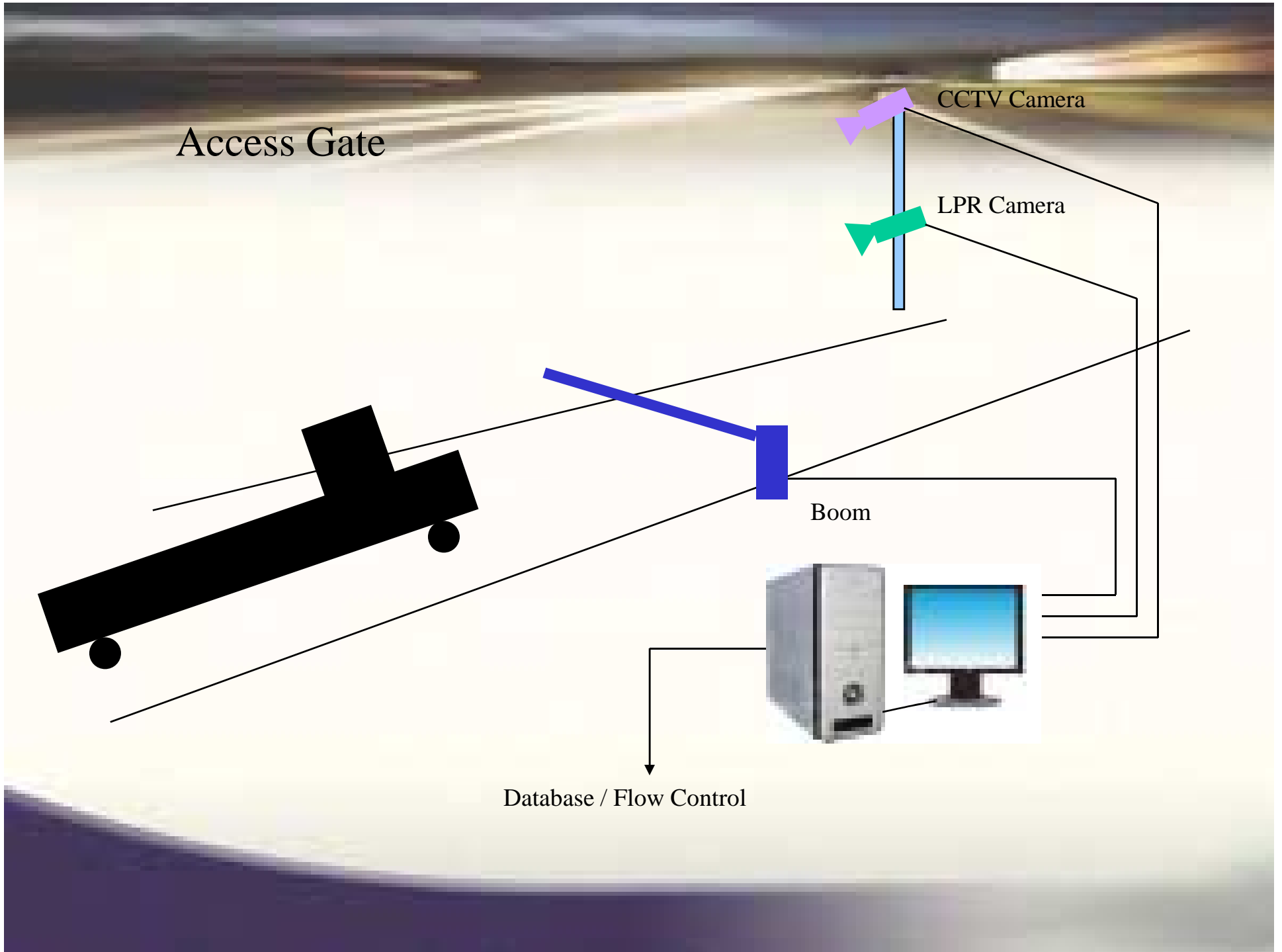
Access Gate

CCTV Camera

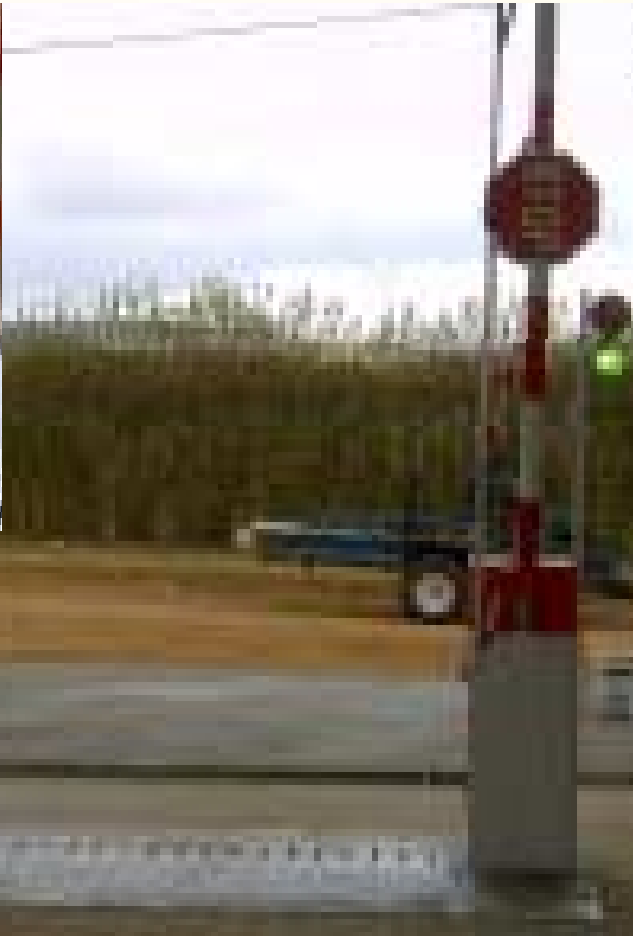
LPR Camera

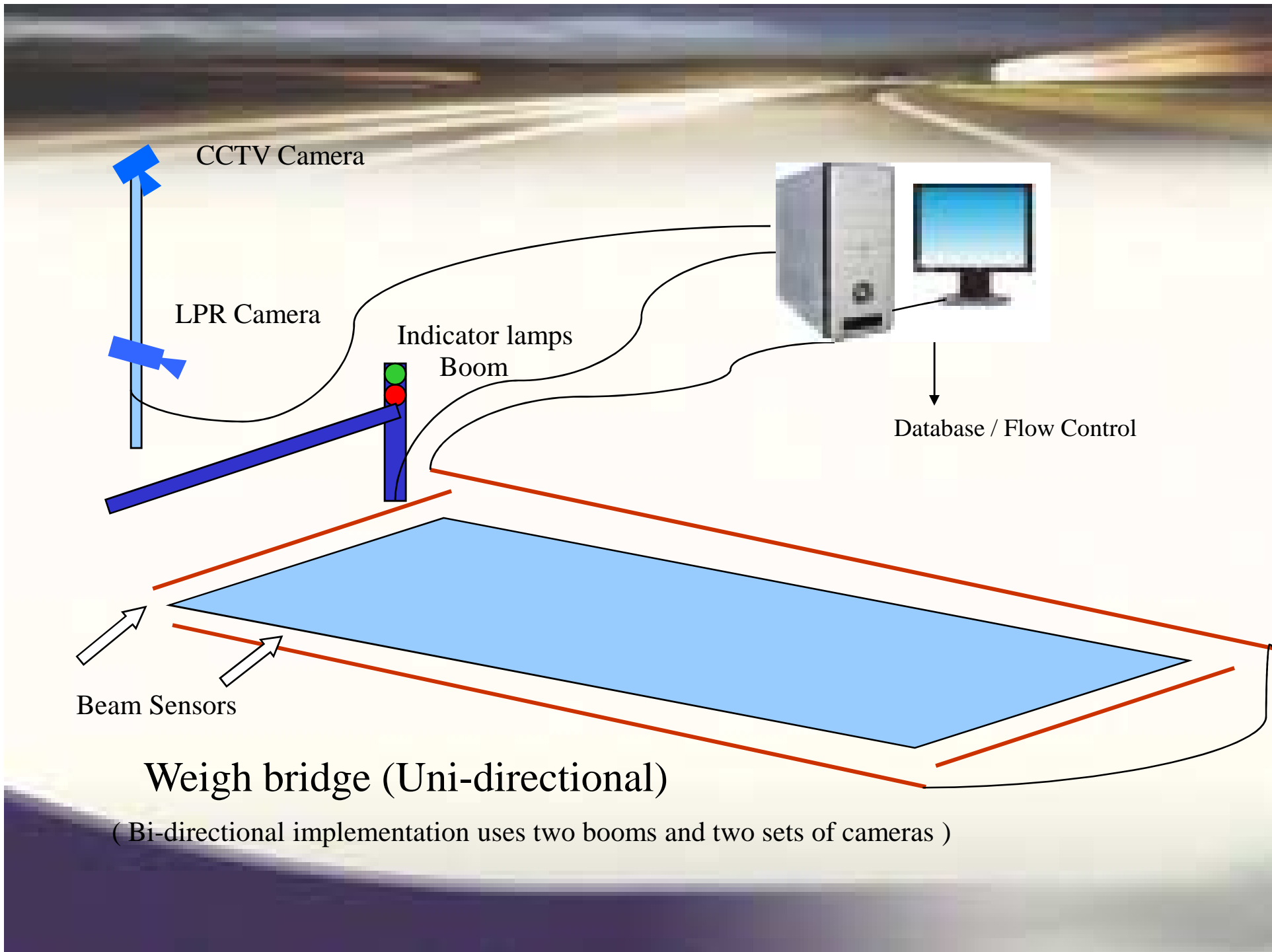
Boom

Database / Flow Control



# ACCESS CONTROL





## Weigh bridge (Uni-directional)

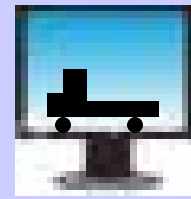
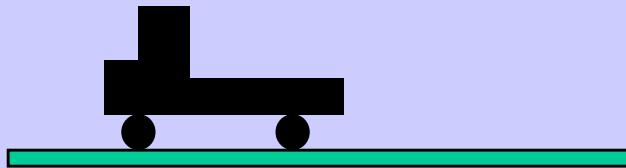
( Bi-directional implementation uses two booms and two sets of cameras )

No vehicle



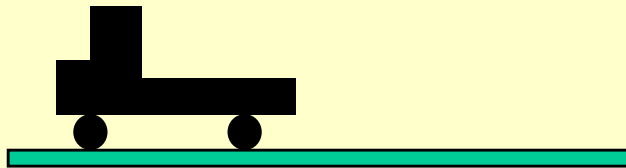
00.00

Vehicle enters  
weigh bridge



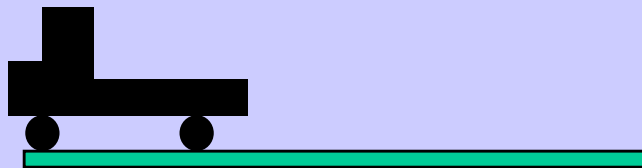
00.00

Vehicle within  
sensors, weight  
obtained



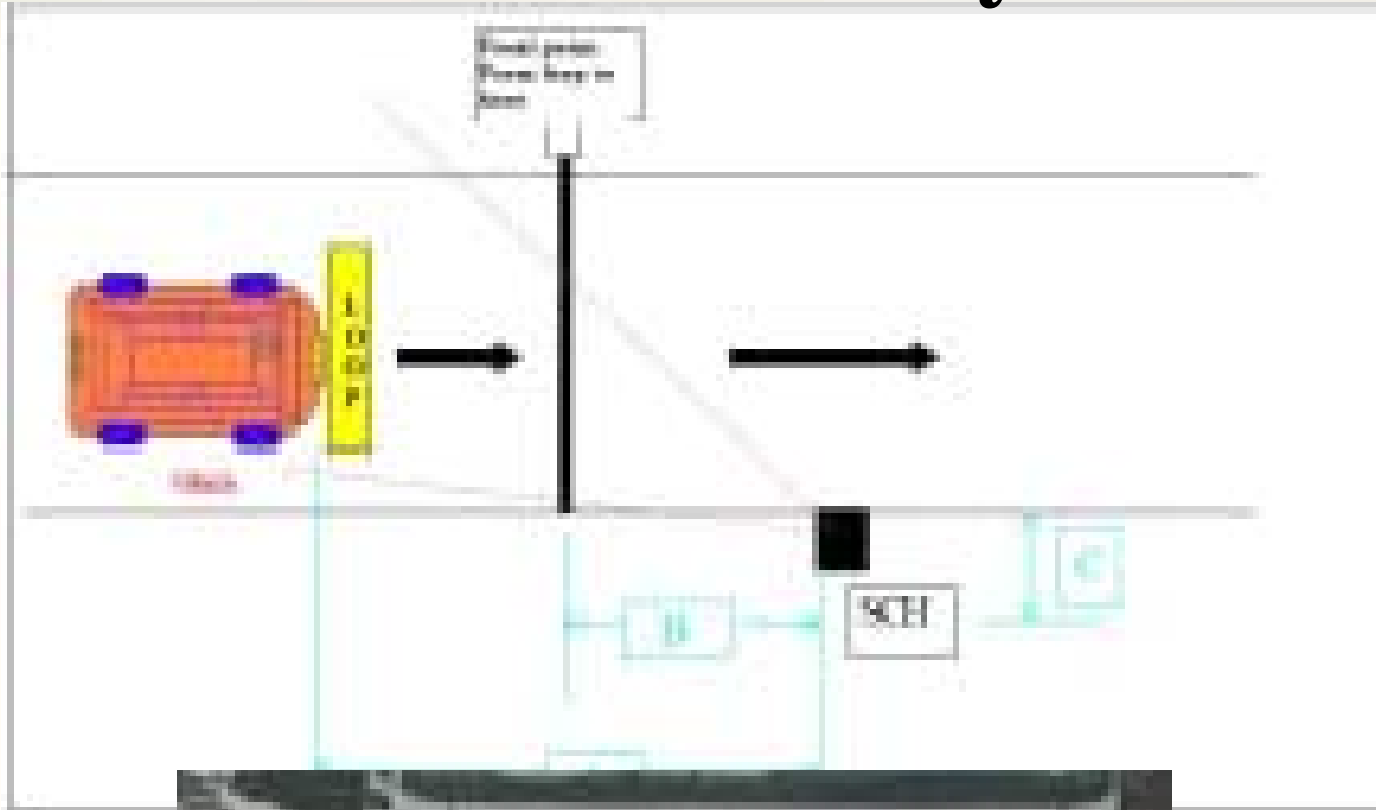
XX.XX

Vehicle outside  
sensors, no weight  
read

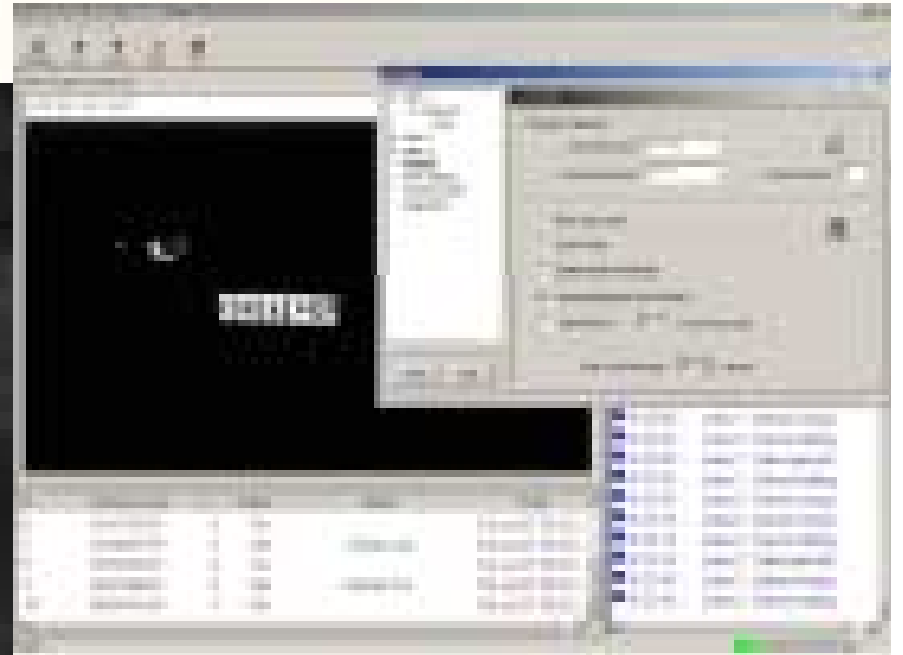


00.00

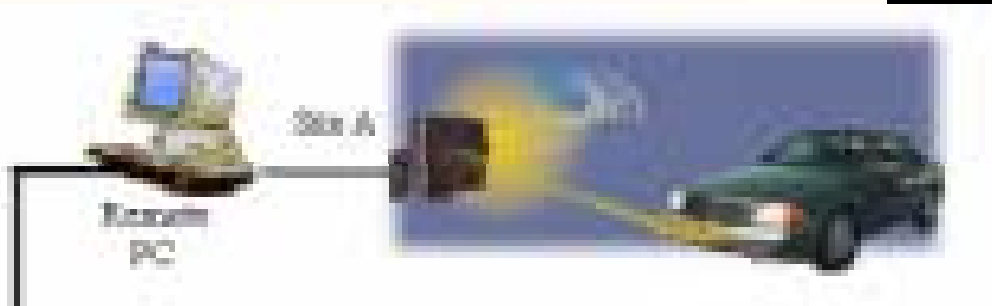
# Front LPR Layout



# 24 Hour Operation using pulsed, IR cameras



# Additional options with LPR:



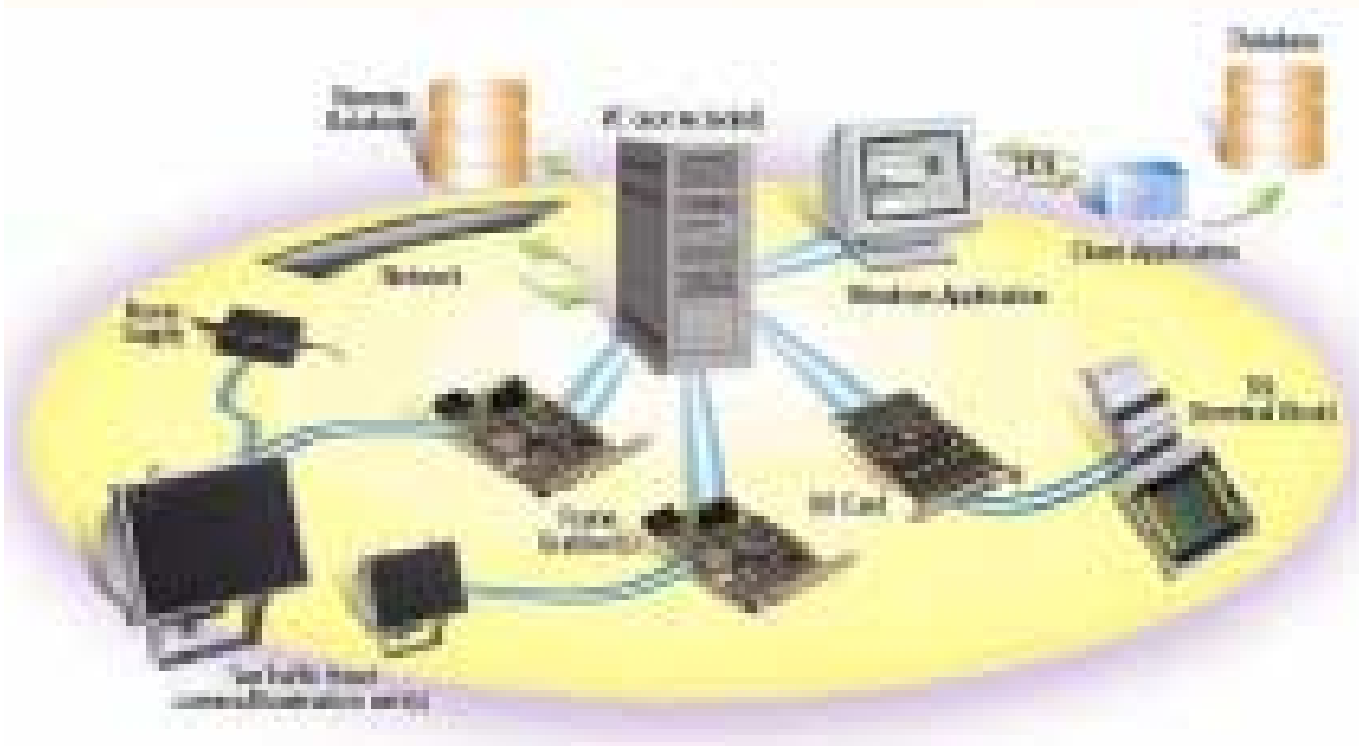
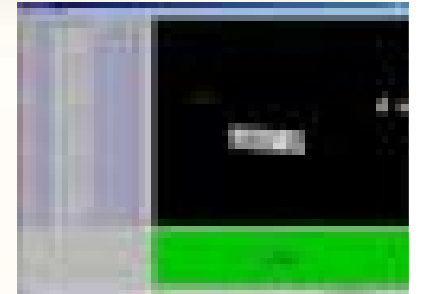
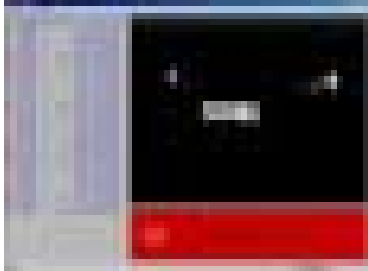
BAKER4ZN,,,,,,,,,1,No,,Thu Jul 27 18:01:45 2006,  
C:\Program Files\HI-TECH Solutions\SeeWay\New E\060727\11\_15479750\_1.jpg

**DATA is sent in REAL TIME via TCP/IP**  
**to *many other vehicle DATABASES***

# DATABASE OF VEHICLES

**ALLOWED:**

**Alarm if not allowed**





**DATA: Updated in real time;**

- **Stored in a SQL Database**

- **Ability to SMS / E-Mail / Export**

- **Generate multiple reports**

- **View live & recorded video from**

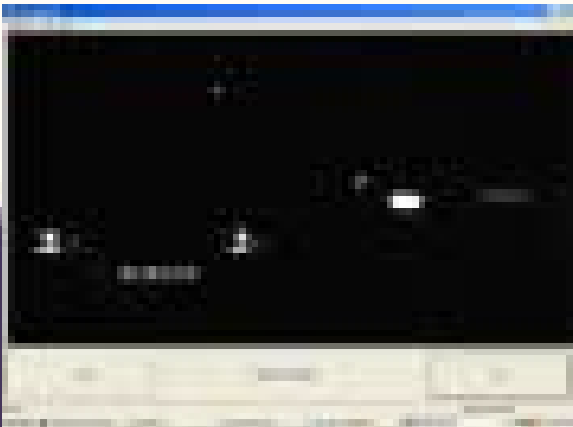
**Control room and remote sites**

- **Search based on plate, time, lane, driver, ID no, weight, etc,**

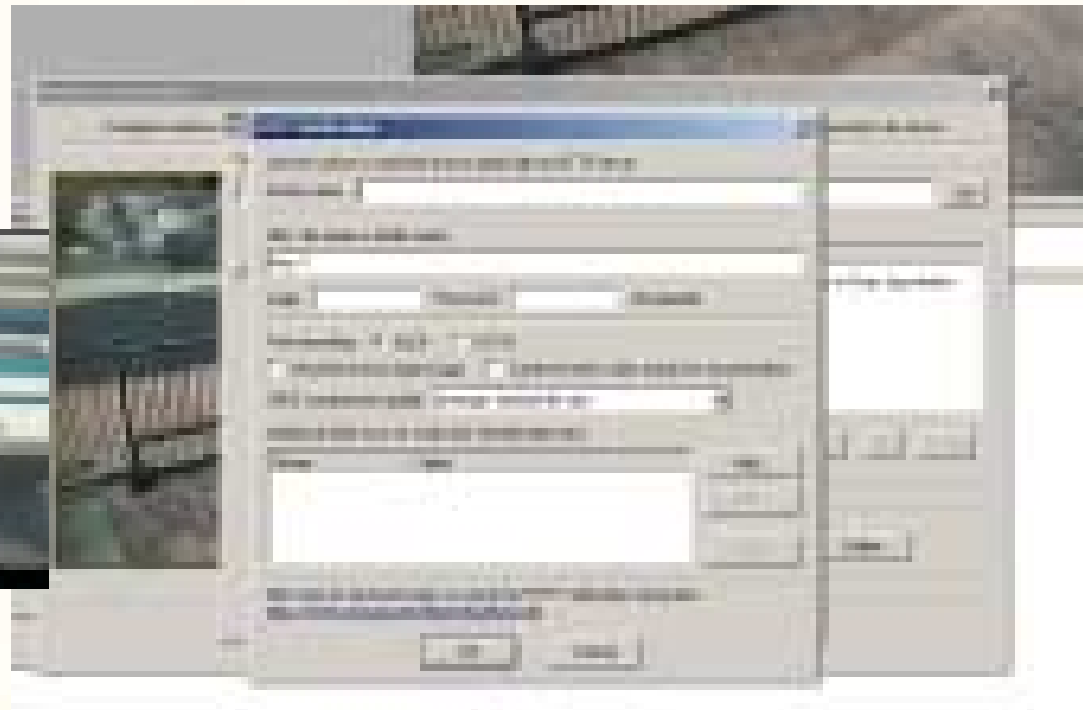
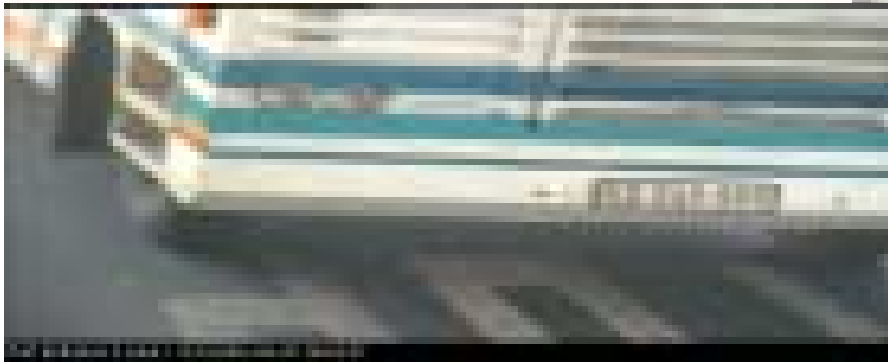
- **Remote gate open (where no plate exists)**

## Database / Flow Control

- Registers Vehicles
- Manages access across site
- Captures weight data
- Keeps track of last location of vehicle
- Maintains database of vehicle and timber movements






# WEIGH BRIDGE DATA:



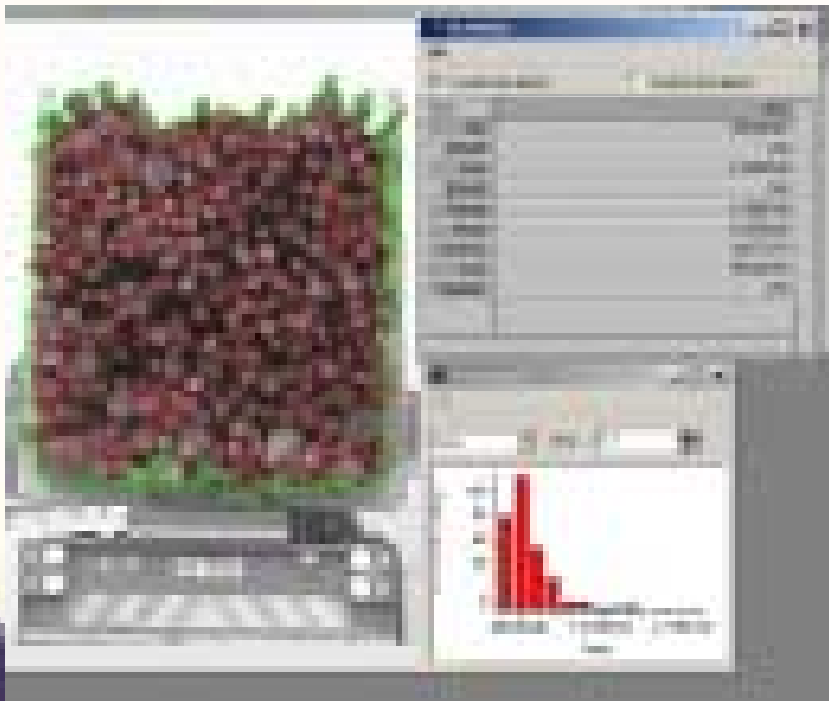
- Support **weigh bridge operators**

# Recorded Information

<i>Criteria</i>	<i>Captured</i>	<i>Result</i>	<i>Result</i>
License Plate Recognition		Front NP13278	<b>LOGGED</b>
Truck Shape / Truck Colour		Overview image	<b>LOGGED</b>
Weight (Tara / gross)	Poll weigh bridge	32 560 KG	<b>LOGGED</b>
Date / time / location / invoice number	12345	Unique No.	<b>LOGGED</b>
Vehicle Load		Gum / Wattle	<b>LOGGED</b>

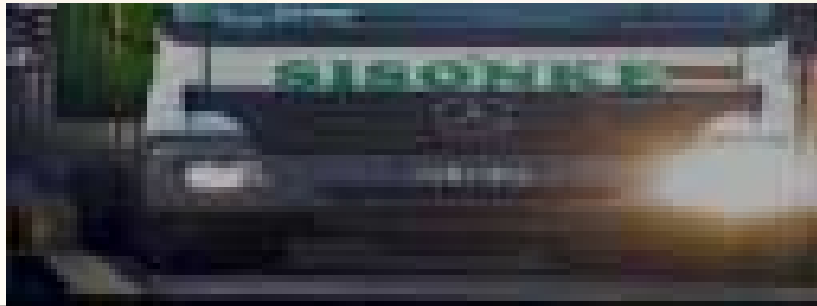
# LOAD CAPTURED CLASSIFICATION TO BE INVESTIGATED ONCE INSTALLED

Load Recorded?



- TYPE:
- Wattle?
- Gum?
- Rejected

# Additional items possibly captured yes:



Truck Colour



Recognition Rate:  
0.2 sec



Vehicle:

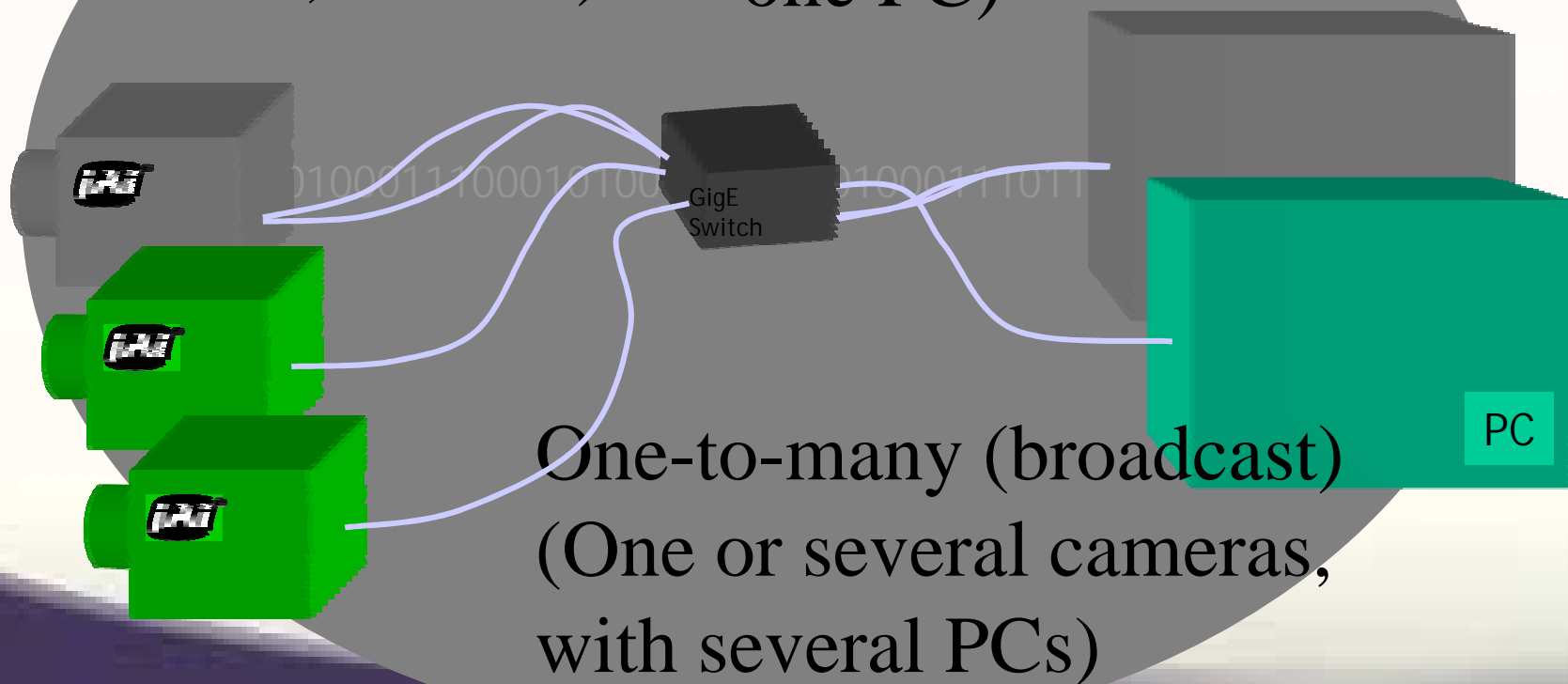
- Colour
- Shape



# System configuration: BROADCAST

Point-to-point  
(One camera, one PC)

Many-to-one  
(Multiple cameras,  
one PC)



# Link between IN & OUT

Arbitration to Campdown



Speed The Motion

- Motion Log File
- Live Streaming

Buttons: [Motion Log], [Live Streaming], [Refresh], [Stop]

Time	Lat	Long	Alt
08:00:00	50.851228	-1.281228	100
08:00:05	50.851228	-1.281228	100
08:00:10	50.851228	-1.281228	100
08:00:15	50.851228	-1.281228	100
08:00:20	50.851228	-1.281228	100
08:00:25	50.851228	-1.281228	100
08:00:30	50.851228	-1.281228	100
08:00:35	50.851228	-1.281228	100
08:00:40	50.851228	-1.281228	100
08:00:45	50.851228	-1.281228	100
08:00:50	50.851228	-1.281228	100
08:00:55	50.851228	-1.281228	100
08:01:00	50.851228	-1.281228	100
08:01:05	50.851228	-1.281228	100
08:01:10	50.851228	-1.281228	100
08:01:15	50.851228	-1.281228	100
08:01:20	50.851228	-1.281228	100
08:01:25	50.851228	-1.281228	100
08:01:30	50.851228	-1.281228	100
08:01:35	50.851228	-1.281228	100
08:01:40	50.851228	-1.281228	100
08:01:45	50.851228	-1.281228	100
08:01:50	50.851228	-1.281228	100
08:01:55	50.851228	-1.281228	100
08:02:00	50.851228	-1.281228	100

Route : Arbitration to Campdown

Distance: 88.480 Miles

Duration: 88.480 Hours

Speed Limit: 11.700

Time Difference: 8.000.000

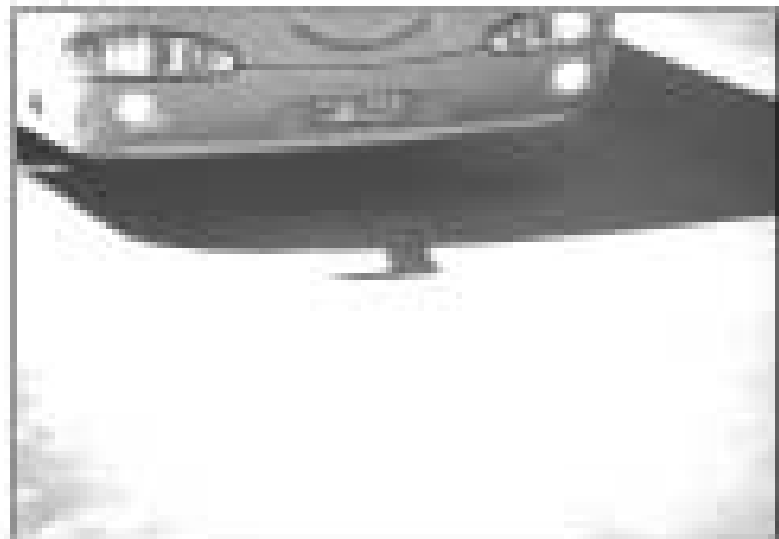
Number of Points: **ND597749 And**

Average Speed: **173km/h**



04/09/2011 [Print Report]

004 Storage



004 Storage



Full View Status

- 004 A Log 1
- 004 B Log 1

Full

- 004 Log 1
- 004 Log 2
- 004 Log 3
- 004 Log 4
- 004 Log 5
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- 004 Log 96
- 004 Log 97
- 004 Log 98
- 004 Log 99
- 004 Log 100

Vehicle	Time at Site A	Time at Site B
0010001	04/09/2011 11:40:00	04/09/2011 11:40:00
0010002	04/09/2011 12:00:00	04/09/2011 12:00:00
0010003	04/09/2011 12:20:00	04/09/2011 12:20:00
0010004	04/09/2011 12:40:00	04/09/2011 12:40:00
0010005	04/09/2011 13:00:00	04/09/2011 13:00:00
0010006	04/09/2011 13:20:00	04/09/2011 13:20:00
0010007	04/09/2011 13:40:00	04/09/2011 13:40:00
0010008	04/09/2011 14:00:00	04/09/2011 14:00:00
0010009	04/09/2011 14:20:00	04/09/2011 14:20:00
0010010	04/09/2011 14:40:00	04/09/2011 14:40:00
0010011	04/09/2011 15:00:00	04/09/2011 15:00:00
0010012	04/09/2011 15:20:00	04/09/2011 15:20:00
0010013	04/09/2011 15:40:00	04/09/2011 15:40:00
0010014	04/09/2011 16:00:00	04/09/2011 16:00:00
0010015	04/09/2011 16:20:00	04/09/2011 16:20:00
0010016	04/09/2011 16:40:00	04/09/2011 16:40:00
0010017	04/09/2011 17:00:00	04/09/2011 17:00:00
0010018	04/09/2011 17:20:00	04/09/2011 17:20:00
0010019	04/09/2011 17:40:00	04/09/2011 17:40:00
0010020	04/09/2011 18:00:00	04/09/2011 18:00:00
0010021	04/09/2011 18:20:00	04/09/2011 18:20:00
0010022	04/09/2011 18:40:00	04/09/2011 18:40:00
0010023	04/09/2011 19:00:00	04/09/2011 19:00:00
0010024	04/09/2011 19:20:00	04/09/2011 19:20:00
0010025	04/09/2011 19:40:00	04/09/2011 19:40:00
0010026	04/09/2011 20:00:00	04/09/2011 20:00:00
0010027	04/09/2011 20:20:00	04/09/2011 20:20:00
0010028	04/09/2011 20:40:00	04/09/2011 20:40:00
0010029	04/09/2011 21:00:00	04/09/2011 21:00:00
0010030	04/09/2011 21:20:00	04/09/2011 21:20:00
0010031	04/09/2011 21:40:00	04/09/2011 21:40:00
0010032	04/09/2011 22:00:00	04/09/2011 22:00:00
0010033	04/09/2011 22:20:00	04/09/2011 22:20:00
0010034	04/09/2011 22:40:00	04/09/2011 22:40:00
0010035	04/09/2011 23:00:00	04/09/2011 23:00:00
0010036	04/09/2011 23:20:00	04/09/2011 23:20:00
0010037	04/09/2011 23:40:00	04/09/2011 23:40:00
0010038	04/09/2011 24:00:00	04/09/2011 24:00:00
0010039	04/09/2011 24:20:00	04/09/2011 24:20:00
0010040	04/09/2011 24:40:00	04/09/2011 24:40:00
0010041	04/09/2011 25:00:00	04/09/2011 25:00:00
0010042	04/09/2011 25:20:00	04/09/2011 25:20:00
0010043	04/09/2011 25:40:00	04/09/2011 25:40:00
0010044	04/09/2011 26:00:00	04/09/2011 26:00:00
0010045	04/09/2011 26:20:00	04/09/2011 26:20:00
0010046	04/09/2011 26:40:00	04/09/2011 26:40:00
0010047	04/09/2011 27:00:00	04/09/2011 27:00:00
0010048	04/09/2011 27:20:00	04/09/2011 27:20:00
0010049	04/09/2011 27:40:00	04/09/2011 27:40:00
0010050	04/09/2011 28:00:00	04/09/2011 28:00:00
0010051	04/09/2011 28:20:00	04/09/2011 28:20:00
0010052	04/09/2011 28:40:00	04/09/2011 28:40:00
0010053	04/09/2011 29:00:00	04/09/2011 29:00:00
0010054	04/09/2011 29:20:00	04/09/2011 29:20:00
0010055	04/09/2011 29:40:00	04/09/2011 29:40:00
0010056	04/09/2011 30:00:00	04/09/2011 30:00:00
0010057	04/09/2011 30:20:00	04/09/2011 30:20:00
0010058	04/09/2011 30:40:00	04/09/2011 30:40:00
0010059	04/09/2011 31:00:00	04/09/2011 31:00:00
0010060	04/09/2011 31:20:00	04/09/2011 31:20:00
0010061	04/09/2011 31:40:00	04/09/2011 31:40:00
0010062	04/09/2011 32:00:00	04/09/2011 32:00:00
0010063	04/09/2011 32:20:00	04/09/2011 32:20:00
0010064	04/09/2011 32:40:00	04/09/2011 32:40:00
0010065	04/09/2011 33:00:00	04/09/2011 33:00:00
0010066	04/09/2011 33:20:00	04/09/2011 33:20:00
0010067	04/09/2011 33:40:00	04/09/2011 33:40:00
0010068	04/09/2011 34:00:00	04/09/2011 34:00:00
0010069	04/09/2011 34:20:00	04/09/2011 34:20:00
0010070	04/09/2011 34:40:00	04/09/2011 34:40:00
0010071	04/09/2011 35:00:00	04/09/2011 35:00:00
0010072	04/09/2011 35:20:00	04/09/2011 35:20:00
0010073	04/09/2011 35:40:00	04/09/2011 35:40:00
0010074	04/09/2011 36:00:00	04/09/2011 36:00:00
0010075	04/09/2011 36:20:00	04/09/2011 36:20:00
0010076	04/09/2011 36:40:00	04/09/2011 36:40:00
0010077	04/09/2011 37:00:00	04/09/2011 37:00:00
0010078	04/09/2011 37:20:00	04/09/2011 37:20:00
0010079	04/09/2011 37:40:00	04/09/2011 37:40:00
0010080	04/09/2011 38:00:00	04/09/2011 38:00:00
0010081	04/09/2011 38:20:00	04/09/2011 38:20:00
0010082	04/09/2011 38:40:00	04/09/2011 38:40:00
0010083	04/09/2011 39:00:00	04/09/2011 39:00:00
0010084	04/09/2011 39:20:00	04/09/2011 39:20:00
0010085	04/09/2011 39:40:00	04/09/2011 39:40:00
0010086	04/09/2011 40:00:00	04/09/2011 40:00:00
0010087	04/09/2011 40:20:00	04/09/2011 40:20:00
0010088	04/09/2011 40:40:00	04/09/2011 40:40:00
0010089	04/09/2011 41:00:00	04/09/2011 41:00:00
0010090	04/09/2011 41:20:00	04/09/2011 41:20:00
0010091	04/09/2011 41:40:00	04/09/2011 41:40:00
0010092	04/09/2011 42:00:00	04/09/2011 42:00:00
0010093	04/09/2011 42:20:00	04/09/2011 42:20:00
0010094	04/09/2011 42:40:00	04/09/2011 42:40:00
0010095	04/09/2011 43:00:00	04/09/2011 43:00:00
0010096	04/09/2011 43:20:00	04/09/2011 43:20:00
0010097	04/09/2011 43:40:00	04/09/2011 43:40:00
0010098	04/09/2011 44:00:00	04/09/2011 44:00:00
0010099	04/09/2011 44:20:00	04/09/2011 44:20:00
0010100	04/09/2011 44:40:00	04/09/2011 44:40:00

**Route : ASHBURTON to CAMPERDOWN**

Direction : NO ASD ALL SPEEDS

Distance : 1076

Speed Limit : 20

Time Difference : 6 min 28 sec

Number Plates : **NP56483 and NP56483**

Average Speed : **120km/h**



# TOTAL SOLUTION

LPR Software

Cameras

Database

Install & Support



# MAINTENANCE INCLUDED

2 hour response time

6 hour response

Same business day

24 hour response

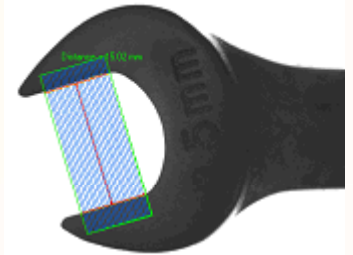


Plate Log **TALON**

**CAR 835**

Video

Manual Entry... << >>

Correct Entry... Recognitions: 2799

Plate	Lane Label	Time
<b>CAR835</b>	LANE 1	28 Dec 2007 07:29:30
CA824752	LANE 1	28 Dec 2007 07:29:29
CA243223	LANE 1	28 Dec 2007 07:29:18
CN11965	LANE 1	28 Dec 2007 07:28:56
CFM40926	LANE 1	28 Dec 2007 07:28:54

Plate Log Alarm Log Event Log Search User Hotlists Setup Log Off

<<<< << Pause >> >>>>

# PRICE OPTIONS?

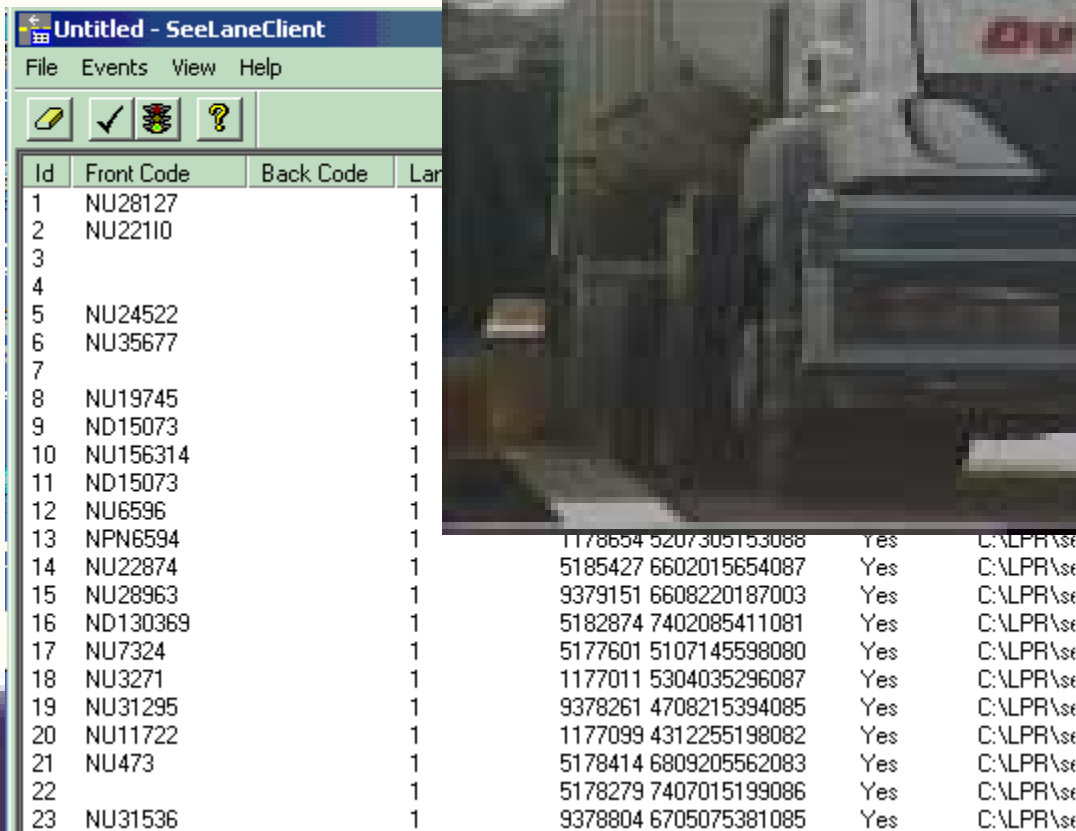
Capital amount

Rental option

Cost per Transaction



# Trucks per day: average 250 trucks (?) & X staff vehicles



The screenshot shows the SeeLaneClient software interface. The window title is "Untitled - SeeLaneClient". The menu bar includes "File", "Events", "View", and "Help". Below the menu bar is a toolbar with icons for editing, checking, deleting, and help. The main area displays a table with the following columns: "Id", "Front Code", "Back Code", and "Lar". The table contains 23 rows of data, with the last row (Id 23) having additional columns for "Yes", "C:\LPRA\sr", and "5178279 7407015199086".

Id	Front Code	Back Code	Lar			
1	NU28127		1			
2	NU22110		1			
3			1			
4			1			
5	NU24522		1			
6	NU35677		1			
7			1			
8	NU19745		1			
9	ND15073		1			
10	NU156314		1			
11	ND15073		1			
12	NU6596		1			
13	NPN6594		1	1178654 5207305153088	Yes	C:\LPRA\sr
14	NU22874		1	5185427 6602015654087	Yes	C:\LPRA\sr
15	NU28963		1	9379151 6608220187003	Yes	C:\LPRA\sr
16	ND130369		1	5182874 7402085411081	Yes	C:\LPRA\sr
17	NU7324		1	5177601 5107145598080	Yes	C:\LPRA\sr
18	NU3271		1	1177011 5304035296087	Yes	C:\LPRA\sr
19	NU31295		1	9378261 4708215394085	Yes	C:\LPRA\sr
20	NU11722		1	1177099 4312255198082	Yes	C:\LPRA\sr
21	NU473		1	5178414 6809205562083	Yes	C:\LPRA\sr
22			1	5178279 7407015199086	Yes	C:\LPRA\sr
23	NU31536		1	9378804 6705075381085	Yes	C:\LPRA\sr



# **DRIVER BIOMETRIC & FACIAL IMAGE NOT SELECTED**





Hand Held Unit – not required

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*“..any sufficiently advanced technology is indistinguishable from magic.” Arthur C. Clark*