

# *LICENSE PLATE RECOGNITION and FACIAL RECOGNITION & VERIFICATION*

## TRAINING COURSE

In conjunction with:  
**CMT Trading Pty Ltd**

PRESENTED BY

**BARRY DUDLEY** ( MBA {IT}; MSc {Image Analysis}; BSc {Brewing}; BSc Hons {Waste Technology})

**DATE: 2<sup>nd</sup> March 2006**



[www.I-Cube.co.za](http://www.I-Cube.co.za)

# **PRACTICAL DETAILS:**

**! TIMES: 8-10 am (SETUP), 10AM - 1PM, (1-2 Lunch), 2 PM – 4 PM**

**! TOILETS**

**! CELL PHONES, please go outside to take your calls**

**! CONFIDENTIAL INFORMATION IN THE COURSE**

**! LAP TOP / PC needs WORD / PPT / EXCEL**

**! Please write down and SAVE ALL YOUR ANSWERS**

**! Correct name, designation and company for the CERTIFICATE**

**! QUESTIONS AT THIS STAGE?**

**! When asking a question please introduce yourself**

# Introduction

- This course is designed to make you **THINK**
- Giving you **TOOLS** so you can apply them to your specific requirements
- Frame work of presentation
  - **POWER POINT**
  - **CANNED DEMO'S**
  - **LIVE DEMO**
  - **SYSTEM DESIGNS**
  - **DISCUSSION**
  - **EXAM** (apply what you have learnt)

# WHAT YOU WILL BE ABLE TO DO AFTER THE COURSE:

- Prepare and present detailed quotes, including POWERPOINT presentations, demos, system designs, costs and full site requirements for LPR
- Prepare and present detailed quotes, including POWERPOINT presentations, demos, system designs, costs and full site requirements for facial systems.
- Enrol and identify someone with facial ID software
- Use license plate recognition software for OCR of your own license plate images

# TRAINING EXAM

- Q 1 - Please prepare a detailed quote, including a POWERPOINT presentation, system design, cost and full site requirements for the sale of a 2 lane LPR access control system.**
- Q 2 - Please prepare a detailed quote, including a POWERPOINT presentation, system design, cost and full site requirements for the sale of a single camera facial ID system.**
- Q 3 - Please find a folder on your CD called EXAM. In this folder will be face and license plate images.**
  - Please add the facial images to your facial ID software under the names provided. Please ID the people who appear in the files called UNKNOWN 1, 2 & 3.**
  - Please use the license plate recognition software to analyze the provided license plates and write down the total number of different TYPES of plates that were correctly read. So NP123, ND 123 and NA123 would be 1 and 123GP and WOLF2 would be 2 types.**

# Question 1:

Please indicate 3 areas  
where one could use  
Facial recognition

# PRIVACY ISSUES

## REASON / PROBLEM

- Crime prevention
- Personnel management

- NON BIAS SOLUTION
- OLD TECHNOLOGY TO NEW
- Towards 2010
- Monitoring of who is NOT THERE
- OTHER USES



## - Framework Development

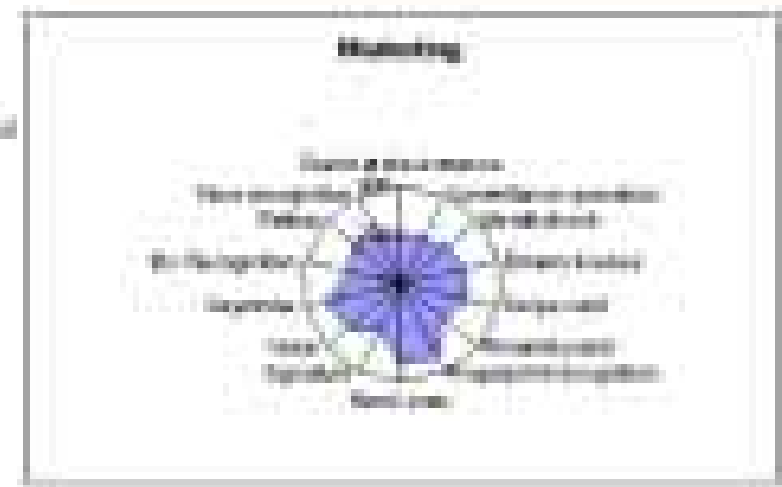


Inducted as partial fulltime of the machine department for the degree of

MASTERS IN HUMAN RESOURCES ADMINISTRATION

Glendon School of Business, Faculty of Management

University of Basel (Switzerland)





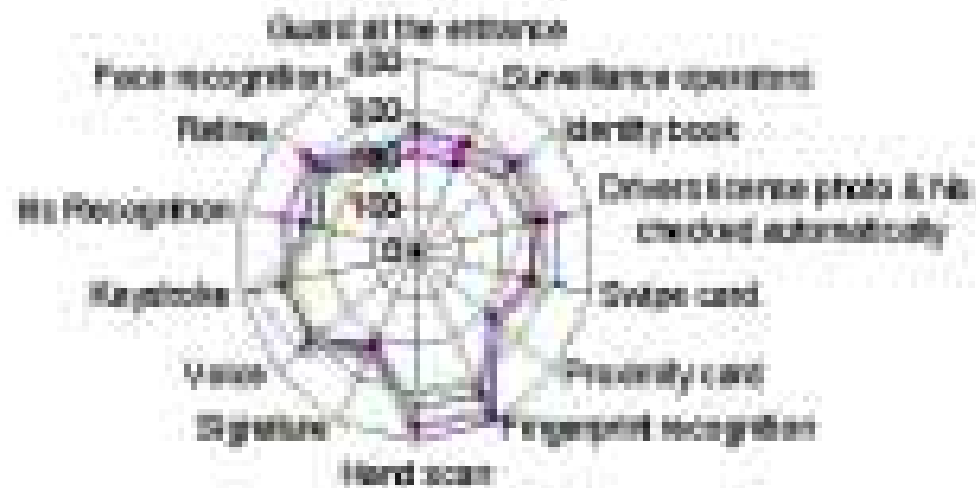
# Obtain MBA dissertation for more details:

**TO OBTAIN A  
COPY:**

**Send an e-mail to:  
[MBA@I-Cube.co.za](mailto:MBA@I-Cube.co.za)**

**A 2 MB file will be  
sent to your e-mail  
address**

Exclusion techniques rated by role players



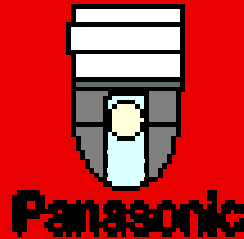
# IDEAL BIOMETRICS

- Twofold accuracy
  - Never accept unauthorised persons (FAR)
  - Never reject authorised persons (FRR)
- MUST be
  - Unobtrusive
  - Intuitive (easy to use)
  - Readily accepted;

Cheap

Objective : Security + Functionality ! (& *cost*)

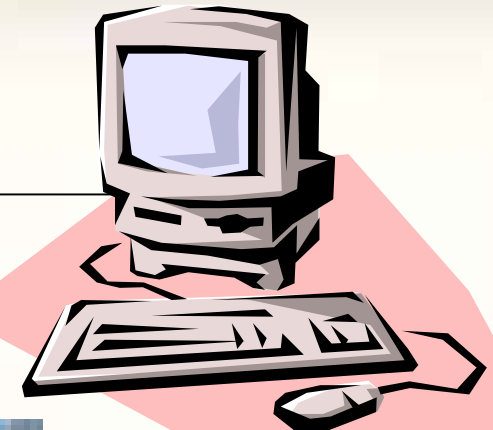
## Facial SYSTEM



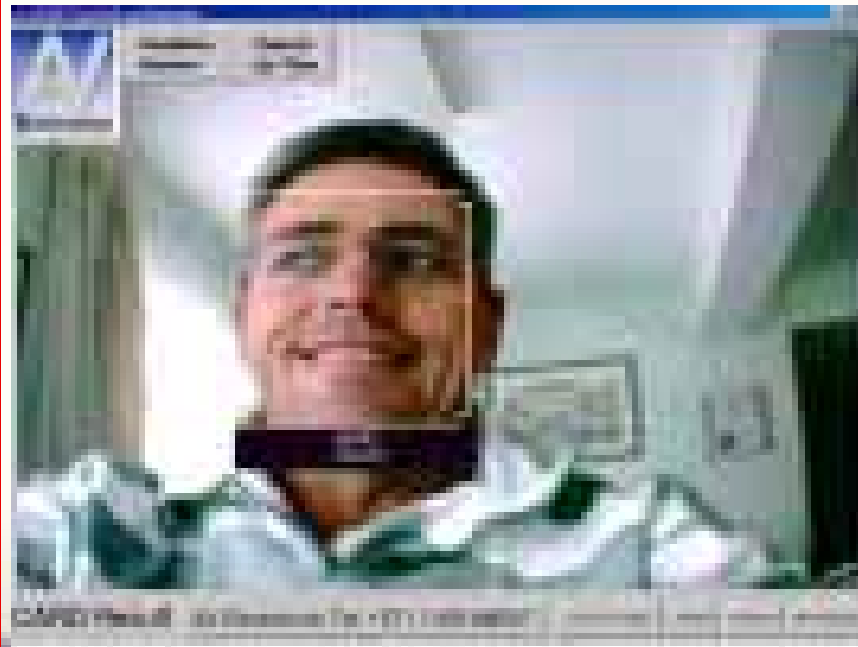
Camera (CCTV / Web Cam  
/ IP / etc. CAMERAS



Frame Grabber



PC Station



FACIAL  
Software

## Question 3:

Please look around the I-CUBE  
WEB SITE, as your next  
question will come from there.

[WWW.I-CUBE.CO.ZA](http://WWW.I-CUBE.CO.ZA)

(COPY ON THE CD)

What is the BOTTOM LEFT PICTURE  
on the FRONT PAGE?

## Question 2:

At the BOTTOM of the  
TRAINING INFORMATION PAGE  
on the I-CUBE web site, which you  
can get to via:

<http://www.i-cube.co.za/training.htm>

What is the PICTURE at the bottom  
of the page?  
Is it LPR or FACIAL?

# Question 4:

PLEASE read any 3 of the NEWS ITEMS concerning FACIAL or LPR! International trends do tend (eventually) to come to SA....

LINKS TO RECENT NEWS STORIES: LPR AND FACIAL

That is the 3<sup>rd</sup> STORY?

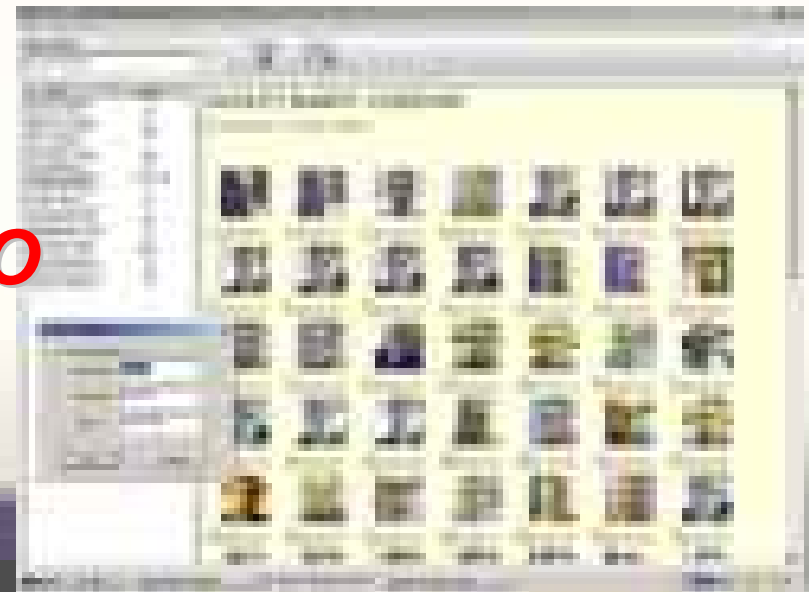
## Facial Recognition

### 2D vs 3D

- 2D systems typically used for identification comparing an image captured with static images. Security personnel finds a match
- 3D systems typically used for verification of people or for identifying with minimal or no personnel involvement



***LIVE DEMO***



Question  
8:  
What  
makes  
HNET  
work so  
well?

Introduction to the facts, features  
and benefits of Face recognition

Installation & user manual  
VERSION 2-2

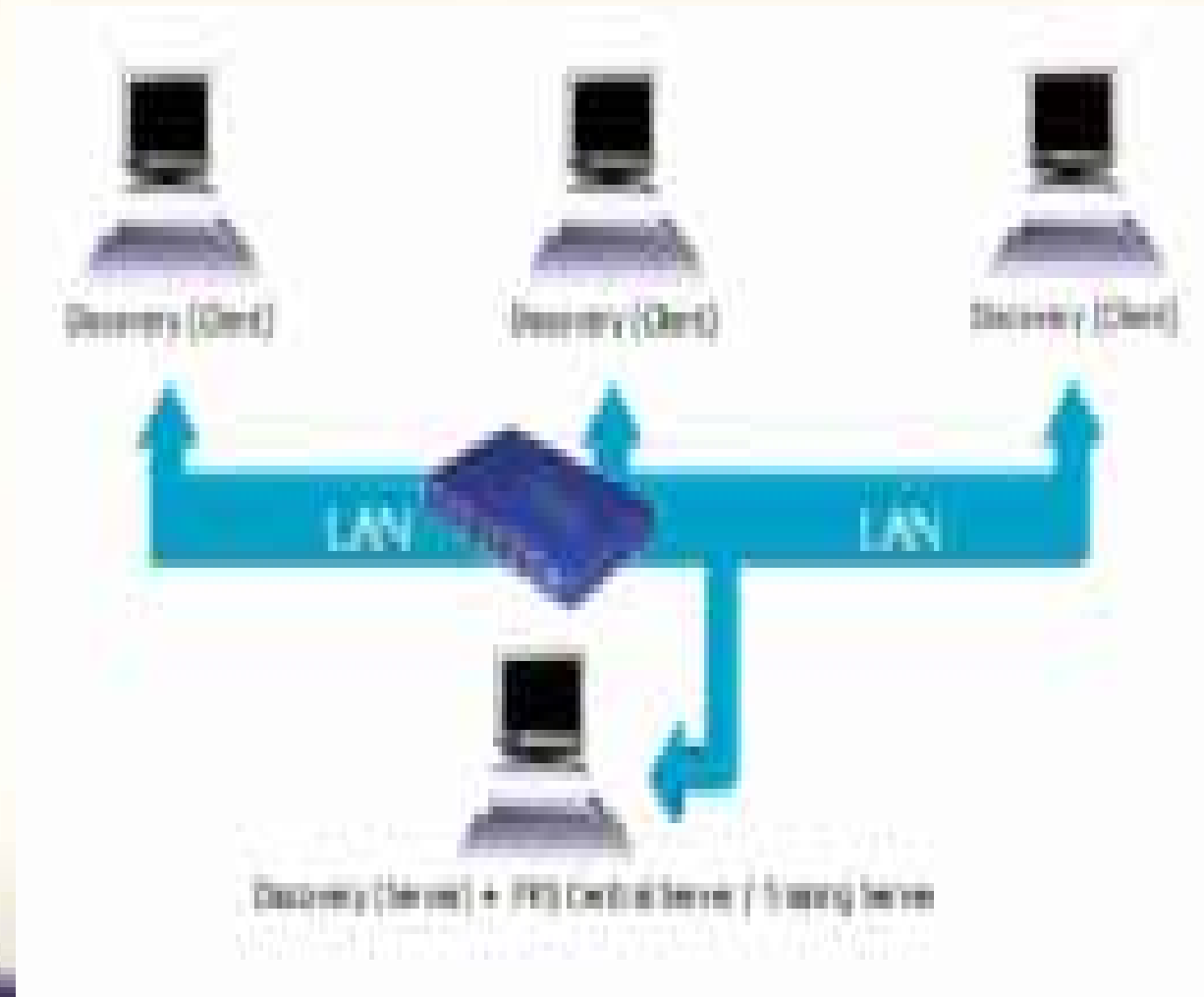
Technical explanation of the HNeT  
technology



## Facial Recognition

**3D System – How  
does this get  
connected?  
USE IP**

**FRS Network (multiple clients, one server): -**



**Speed, accuracy and intelligence  
are among the key qualities**

## Facial Recognition

**3D System – What  
are the benefits?**



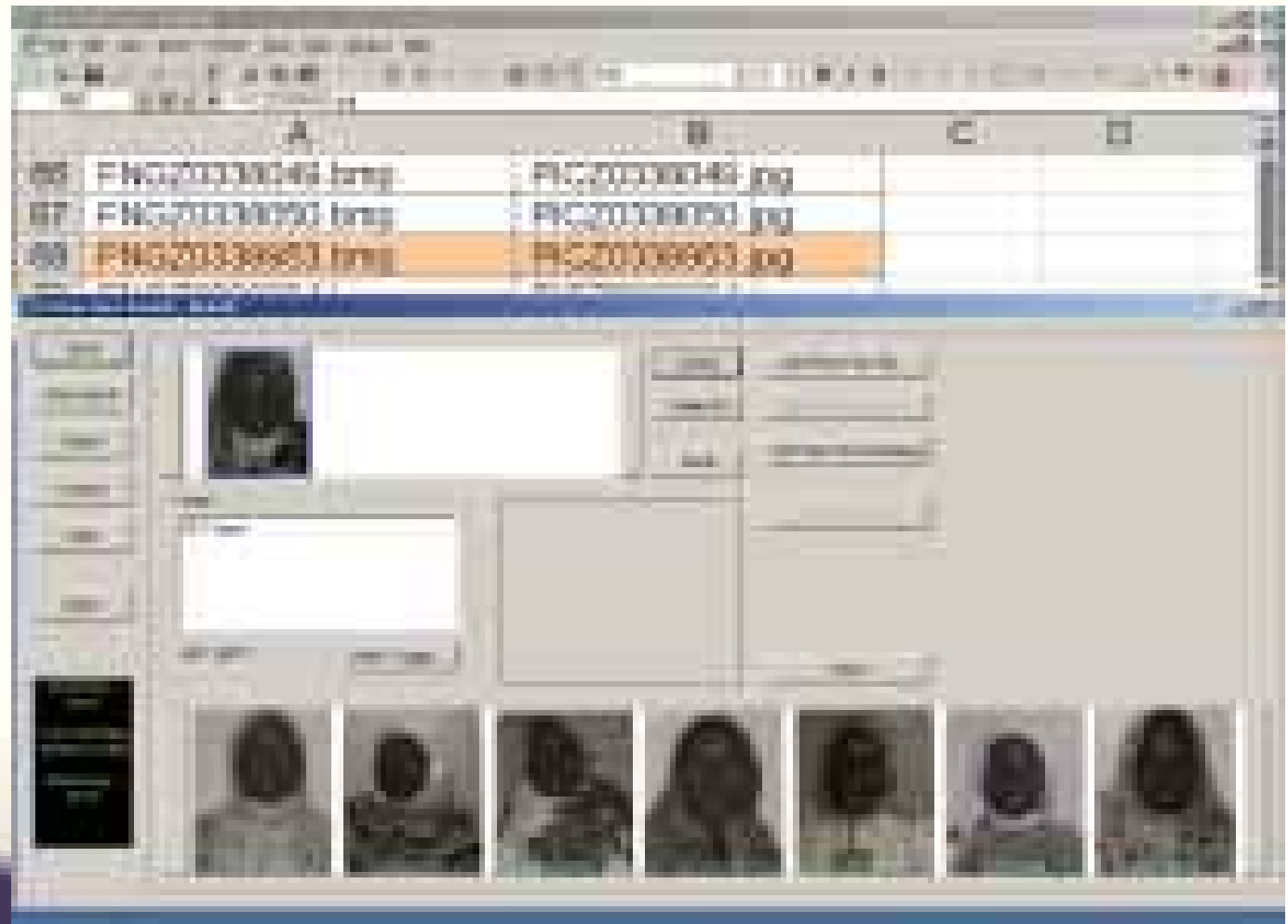
## Facts, features and benefits *of facial recognition*

New real time security alternatives are a reality today, says Ledge, with its lightning fast face recognition system. A leading developer of mission critical retail solutions, Ledge says it is committed to leadership, responsiveness and unparalleled results. "We are driven to empower our clients and partners to go beyond tradition to create new benchmarks for security. Accuracy is everything."

## Facial Recognition

### 3D System – Speed

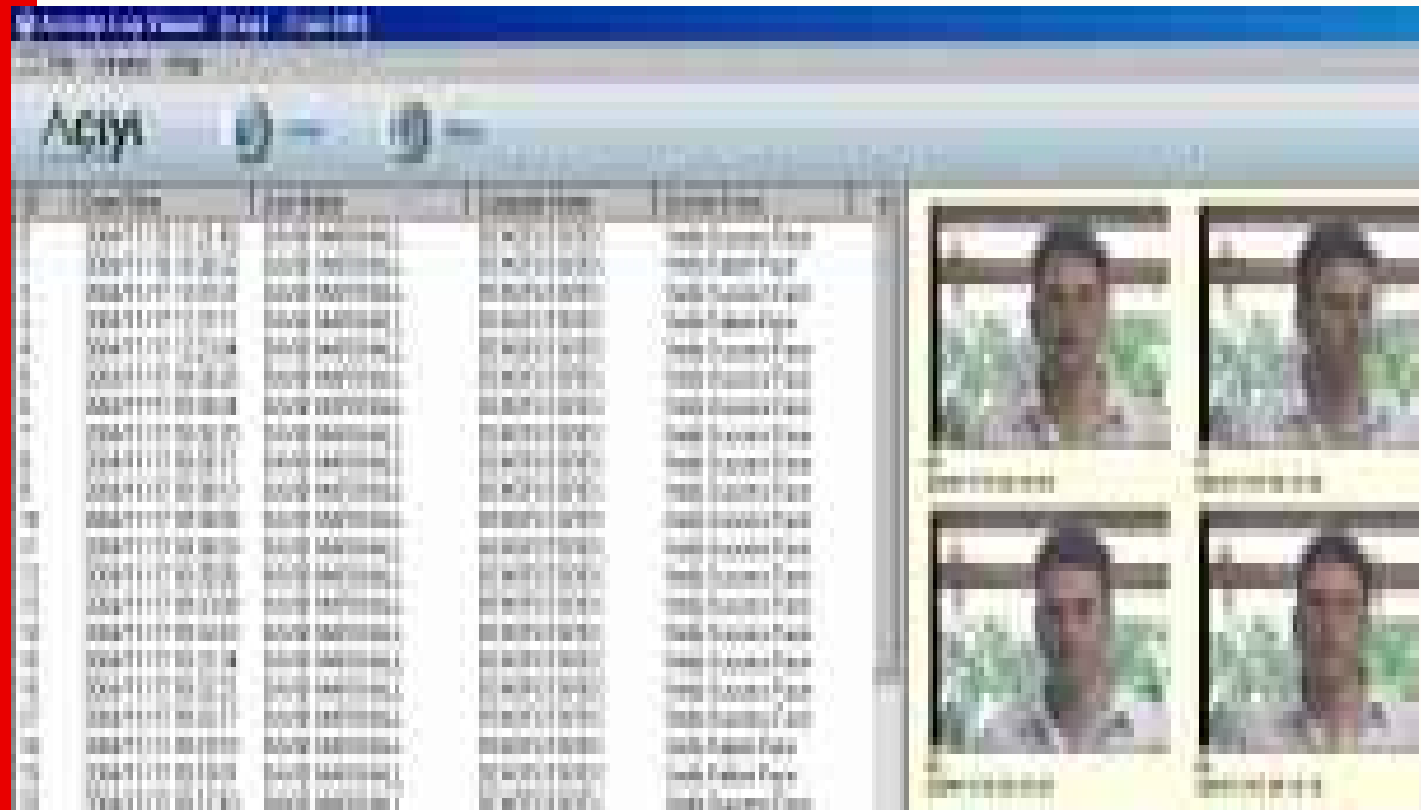
Using a revolutionary core technology HNet, based on neural networks, I-CUBE facial recognition delivers cutting-edge security and split-second processing times.



## Facial Recognition

### 3D System – Accuracy

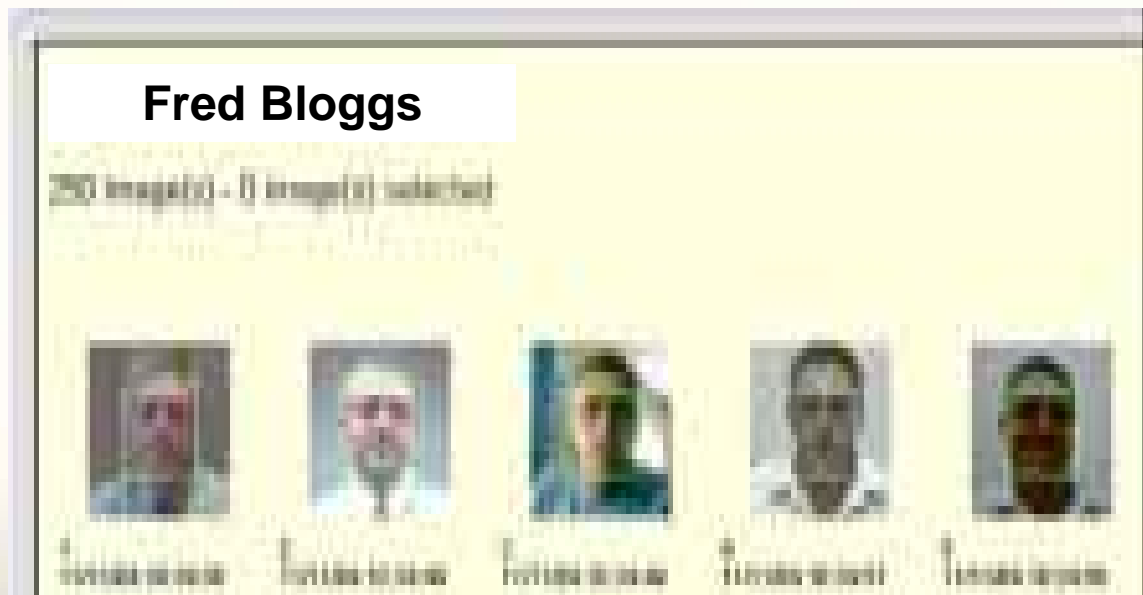
**The proposed FRS was the most accurate technology tested in the International Biometric Group's Comparative Testing for IT Security and E-Commerce**



## Facial Recognition

### 3D System – Intelligence

The proposed FRS learns, remembers and recognises, becoming more familiar with your face each time it sees you, adjusting for difference due to aging and cosmetics.



## Facial Recognition

**3D System – LOG of all FACES which appear in front of any camera connected to the software.**

**Use this for POST ANALYSIS, teaching system WHO we want to look for.**



# Question

6:

**Please write  
down the  
ITEMS  
REQUIRED  
for a POLICE  
STATION  
FACIAL  
SYSTEM**

## COMPLAINTS MANAGEMENT SUMMIT ON JOINT SAFETY INITIATIVES

**ICC Durban 23-25th Feb 2006**

**The ROLE of IT when Dealing with  
Crime: *A proactive early  
warning and crime prevention  
system***

**4 MB PDF**

**Please have a look at the  
presentation, as this will help you  
DESIGN a FACIAL SOLUTION**

## **Facial Recognition SYSTEM DESIGNS:**

**FOR**

- POLICE STATION**
- COMMUNITY COURT**
- PRISON**
- VIDEO LINKED COURT**
- “BLACKSPOTS”**

## **Facial Recognition SYSTEM DESIGNS:**

- POLICE STATION**
- COMMUNITY COURT**
- PRISON**
- VIDEO LINKED COURT**
- “BLACKSPOTS”**
- EQUIPMENT**
- PERSONNEL**
- POSSIBLE OPERATING PROCEDURES**



## **Facial Recognition SYSTEM DESIGNS:**

**FOR**

### **- POLICE STATION**

**- COMMUNITY  
COURT**

**- PRISON**

**- VIDEO LINKED  
COURT**

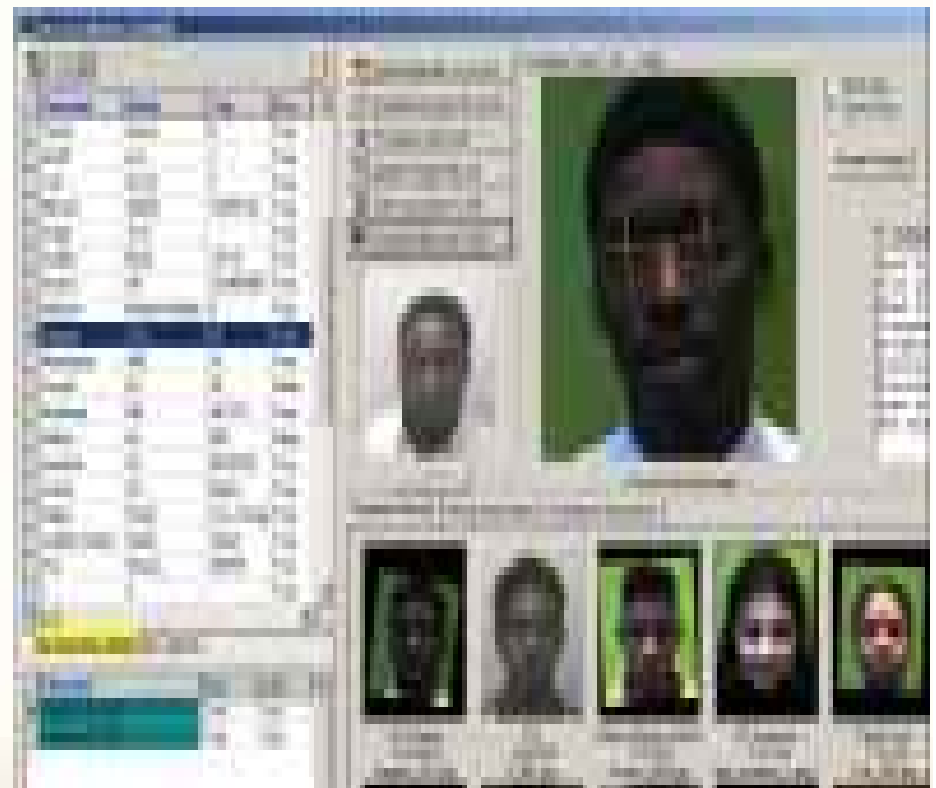
**- "BLACKSPOTS"**

## **Facial Recognition SYSTEM DESIGNS:**

### **- POLICE STATION**

**■ EQUIPMENT**

**■ PERSONNEL**



**■ POSSIBLE OPERATING PROCEDURES**

# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION


Equipment  
required and  
possible source:

- COMMUNITY  
COURTS

- PRISON

- VIDEO LINKED  
COURT

- "BLACKSPOTS"

ITEM	DETAIL	
		Provided BY
Face Recognition software	Ability to add facial images and personal details, create multiple Databases, view closest matches	I4C
TOOLS	Measurement tools, scale / tape measure on the wall behind suspect when captured on camera	I4C or OWN
Frame Grabber	Capture the video from the camera into the Facial software for analysis	I4C or OWN
PC	<ul style="list-style-type: none"> <li>• Microsoft® Windows® 2000 Professional (SP 4) or XP</li> <li>• 1 GHz Pentium 3 Processor</li> <li>• 256 MB RAM</li> <li>• 20 GB HDD (at least)</li> </ul> Keyboard & Mouse	I4C or OWN
Monitor	17 inch PC monitor (at least)	I4C or OWN
UPS	5 Min backup (at least) allowing PC to be shut down	I4C or OWN
Cables	To link camera to PC and Operator	I4C or OWN
Training	3 Hrs to ALL Operators	I4C

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# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

PERSONNEL

- COMMUNITY  
COURTS

- PRISON

- VIDEO LINKED  
COURT

- "BLACKSPOTS"

## PERSONNEL

■ A Facial System Operator who captures the images of all people who pass through the police station

■ Link the IMAGE of the person involved in the crime to the collection of existing data (name, fingerprints, ID no., case no., etc.)

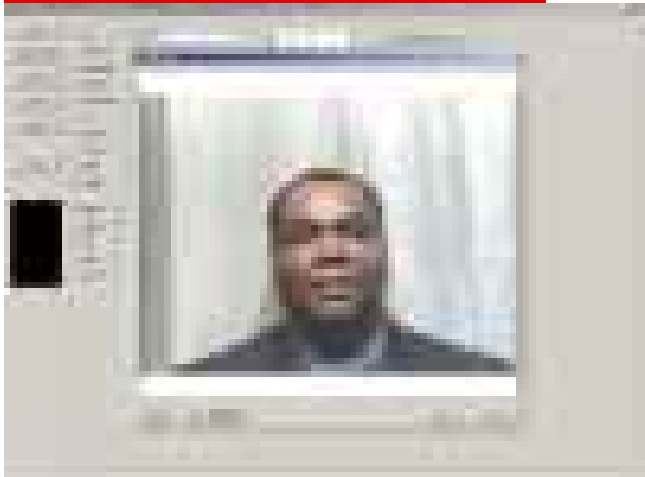
■ Search the DATABASE created over time for REPEAT OFFENDERS

# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

POSSIBLE  
OPERATING  
PROCEDURES



## POSSIBLE OPERATING PROCEDURES

- Ask the person to stand in front of a white wall / sheet, under good lighting.
- Look at the camera
- Operator captures a few images
- Search DATABASE to determine if person seen before / currently in the DB.
- If NOT IN THE DATABASE, add to the database, and link the IMAGE of the person involved in the crime to the collection of existing data (name, fingerprints, ID, case no., etc.)

# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

FRONT END

- COMMUNITY COURTS
- PRISON
- VIDEO LINKED COURT
- "BLACKSPOTS"

**I<sup>3</sup> I-CUBE**



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## **Facial Recognition SYSTEM DESIGNS:**

**FOR**

**- POLICE STATION**

**- COMMUNITY  
COURTS**

**- PRISON**

**- VIDEO LINKED  
COURT**

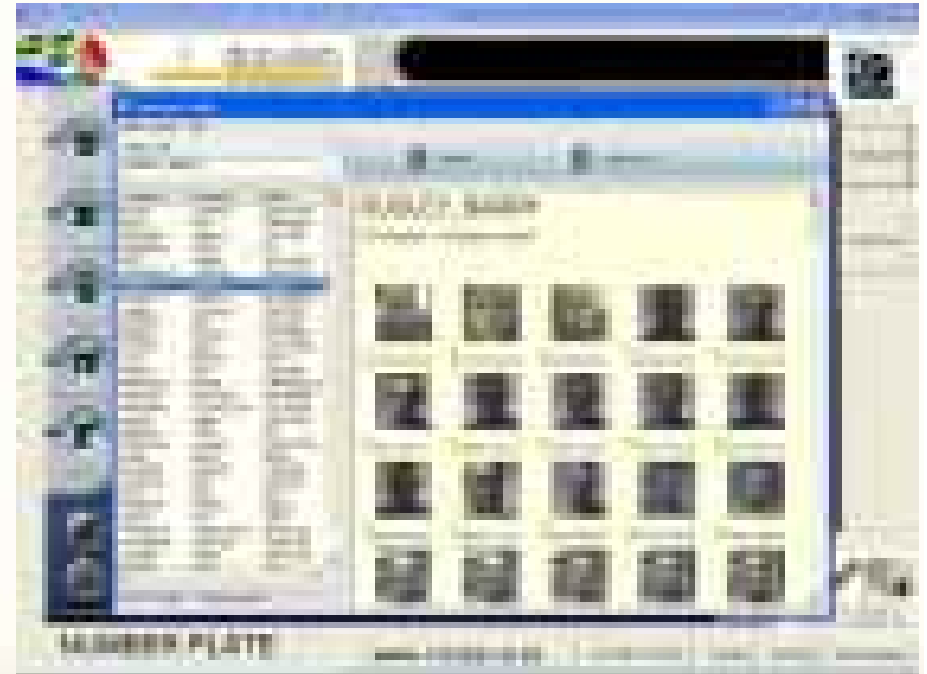
**- "BLACKSPOTS"**

## **Facial Recognition SYSTEM DESIGNS:**

**- COMMUNITY COURTS**

**■ EQUIPMENT**

**■ PERSONNEL**



**■ POSSIBLE OPERATING PROCEDURES**

# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

- **COMMUNITY  
COURT**

**EQUIPMENT  
REQUIRED**

- PRISON

- VIDEO LINKED  
COURT

- "BLACKSPOTS"



ITEM	DETAIL	Provided BY
Face Recognition software	Ability to add facial images and personal details, create multiple Databases, view closest matches	I4C
LAP TOP	<ul style="list-style-type: none"> <li>• Microsoft® Windows® 2000 Professional (SP 4) or XP</li> <li>• 1 GHz Pentium 3 Processor</li> <li>• 256 MB RAM</li> <li>• 20 GB HDD (at least)</li> </ul>	I4C or OWN
Digital Camera	Capture a high resolution image of the person	I4C or OWN
Training	3 Hrs to ALL Operators	I4C

[www.I-Cube.co.za](http://www.I-Cube.co.za)

# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

**COMMUNITY  
COURT**

**PERSONNEL**

- PRISON

- VIDEO LINKED  
COURT

- "BLACKSPOTS"



## PERSONNEL

■ A Court Operator captures the images of the people involved in the community court case

■ Link the IMAGE of the person involved in the case to the existing data (name, ID no., case no., etc.)

■ VERIFY that the person who appears the next case is held actually that same person as was originally present.



# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

- **COMMUNITY  
COURT**

**POSSIBLE  
OPERATING  
PROCEDURES**

- PRISON

- VIDEO LINKED  
COURT

- "BLACKSPOTS"



## POSSIBLE OPERATING PROCEDURES

- Before court begins, operator captures a image of the person who has arrived to appear
- Use the VERIFICATION function to determine if this is the same person who appeared before the court.
- If the person is a MATCH, case continues.
- If NOT A MATCH, case postponed.

# Facial Recognition SYSTEM DESIGNS:

FOR

- POLICE STATION

## COMMUNITY COURT

FRONT END

- PRISON

- VIDEO LINKED  
COURT

- "BLACKSPOTS"



[www.I-Cube.co.za](http://www.I-Cube.co.za)

# Facial Recognition SYSTEM DESIGNS:

## FOR

- POLICE STATION
- COMMUNITY COURT
- **PRISON  
FRONT END**
- VIDEO LINKED  
COURT
- "BLACKSPOTS"



**I<sup>3</sup> I-CUBE**

[www.I-Cube.co.za](http://www.I-Cube.co.za)

## Question 10:

**What has to  
be correctly  
aligned in  
order for  
facial  
comparisons  
to work well?**

Please read the 2D FACIAL  
MANUAL, which you can  
download from the I-CUBE  
web site

OR

On the CD under  
USER MANUALS:  
I-Cube - Face recognition  
FID user manual.pdf

# Install the 2D I-CUBE FACIAL software

Which you can download from the I-CUBE  
web site OR On the CD under  
SOFTWARE: I-CUBE Face Identification

## INSTALL:

Software\ I-CUBE Face Identification\  
DISK1\ SETUP.exe

Then copy fid\_Rio.exe and extract  
REQUIRED FILES.rar to:

C:\program files\I-Cube\facial identification

Run fid\_rio

Read the user manual for how to use the  
software!

# FACIAL EQUIPMENT AND COST

## EXAMPLE QUOTE

EITHER ON CD:

I-CUBE CD\web site\quotes\FACIAL ID and  
Verification from I-CUBE.xls

OR

ON WEB SITE: QUOTES

FACIAL

**2D FACIAL IDENTIFICATION - operator  
assisted ID**

# Questions

Corporate Profiles | Press and Outreach | Database Downloads

					
<p>eric leff 65/100 leff,ERI.jpg</p>	<p>nick leone 74/100 leone,NIL.jpg</p>	<p>gigi mola 73/100 mola,GIM.jpg</p>	<p>lily blings 63/100 blings,LIL.jpg</p>	<p>maria van der Pijl 65/100 vanderpijl,MAR.jpg</p>	<p>romana wilkner 67/100 wilkner,ROM.jpg</p>
					
<p>jan archer 63/100 archer,JAN.jpg</p>	<p>matthias meyer 63/100 meyer,MAT.jpg</p>	<p>luisa barba 65/100 barba,LUI.jpg</p>	<p>alvaro ysa 64/100 ysa,ALV.jpg</p>	<p>stephanie 64/100 stephanie,STE.jpg</p>	<p>angie stock 64/100 stock,ANG.jpg</p>

# License Plate Recognition (LPR) for TREND ANALYSIS, ALARMING ON STOLEN, WANTED CARS AND RECORDING ALL VEHICLES



In Association with



INTEGRATED-INTELLIGENT-IMAGING

I-CUBE

[www.I-Cube.co.za](http://www.I-Cube.co.za)



# Question 1:

Please indicate 3  
DIFFERENT areas  
where one could use  
License Plate  
Recognition

# Wide range of applications...



**Traffic Enforcement**

**Roadblocks**

**Stolen Cars**

## **IN SOUTH AFRICA:**

**Access Control – 11**

(including AVIS, Rupert, SpoorNet head quarters etc.

**Toll Road – 3**

**Violation Film processing – 30**

Including red light violations, speed determination etc.

**Road blocks from 30 min to 30 days**

**Over 1 000  
sites  
worldwide**

## Question 5:

Please read: License  
Plate Recognition - A  
Tutorial

If not on-line: “License Plate  
Recognition - A Tutorial.html”  
on CD under WEB SITE

Please list the **(7) Elements  
of typical LPR systems?**

## **Requirement: TRAFFIC DATA**

**The requirement is to provide Licence Plate Recognition (LPR) technology to facilitate MONITORING and REPORTING of all vehicles passing, providing:**

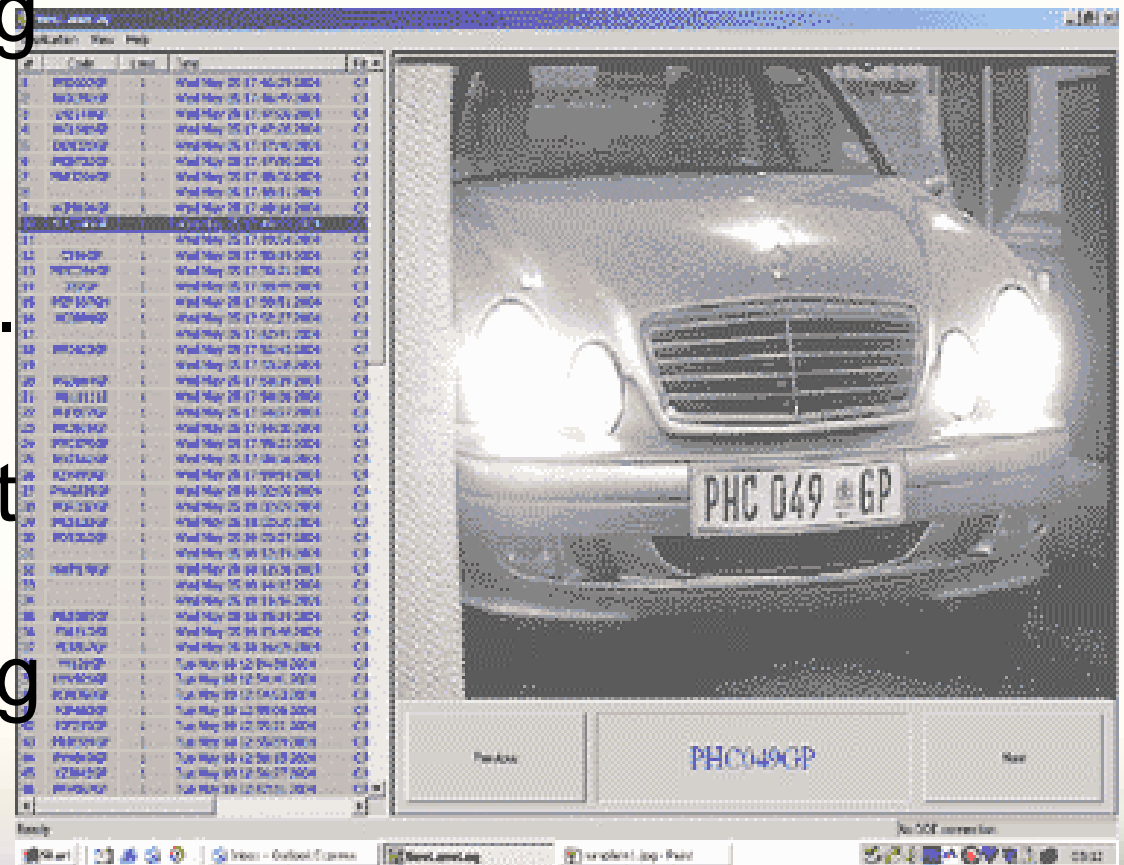
- Arrival time, Lane of travel,**
- Direction of lane, Vehicle Speed**
- Summary reports of the above.**

# Capabilities?

- License Plate Recognition up to 160 KM per hour
- Local database size in excess of 10 million
- Distances from 2 M to 25 M (IR), 100M colour camera
- LPR linked to vehicle colour, sound, shape and other identifying visual characteristics
- LPR linked to driver facial ID (facial recognition)
- Full-featured digital video recorder, so a visual record is created for every vehicle passing the camera
- Sub-second database update for stolen / hi-jacked car

# What is License Plate Recognition?

- LPR is a non-intrusive, computerised method of matching a License Plate to a database of registration numbers.
- Suitable uses:
  - > Law enforcement
  - > Access control
  - > Border monitoring
  - > Toll Roads



# LPR camera OPTIONS

See Lane



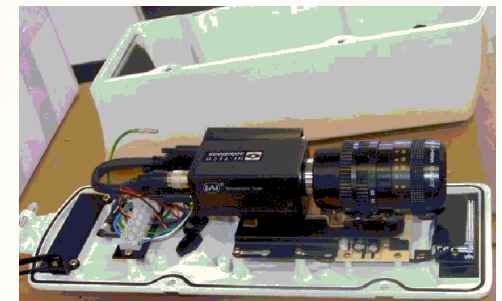
Up to 60 KM/H

See Traffic



Up to 120 KM/H

See Way



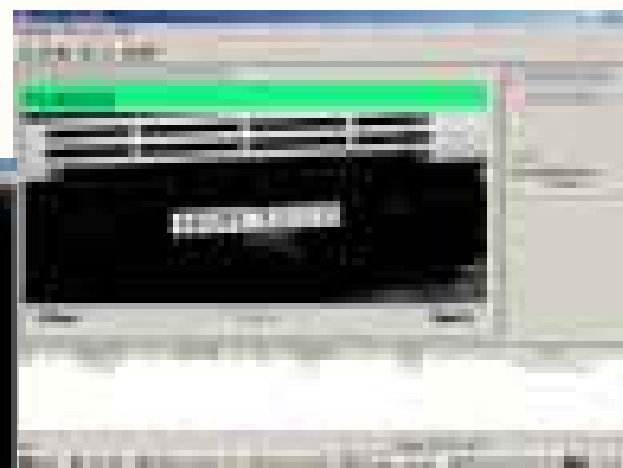
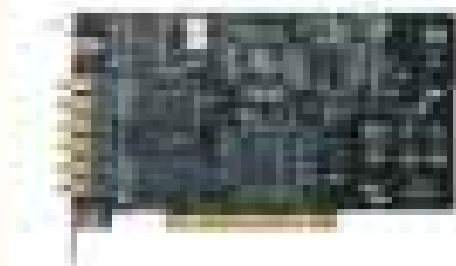
Up to 160 KM/H

# **LPR - 5 easy steps:**

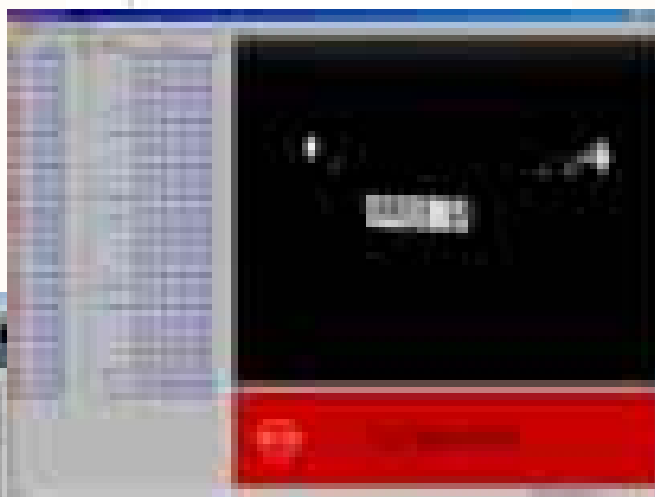
## **1 - Capture**



## **2 – Find plate**



## **3 – OCR**



## **4 – Alarm**



## **5 – Report**





# Question 7: How many lanes are in the LPR SA DEMO software?

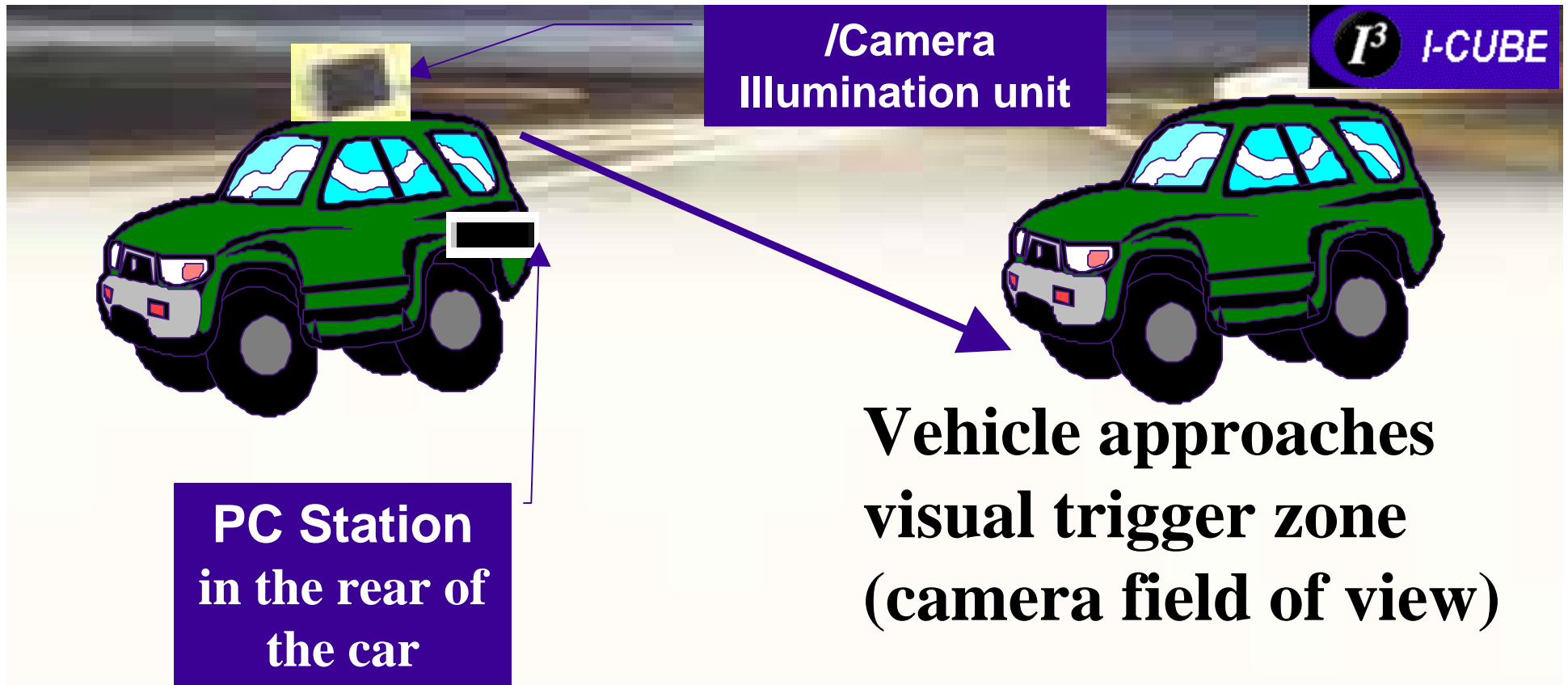
Please DOWNLOAD, UNZIP and RUN the LPR SA DEMO (1 MB) **SeeLane Demo**

Functional version of the SeeLane product without the hardware (frame grabber, IO card) and the OCR DLL services. Purpose is to show the interface and the output features of SeeLane, very useful for early integration.

### **Demo Features:**

- Fully functional interface.
- Supports an authorized vehicle database file.
- Output the results via serial port.
- Act as a DDE server and notifies clients of any incoming vehicles.
- Accept recognition data from ini file

The SeeLane Demo interface is identical to the full SeeLane version.



**LPR OPERATION IN THE FIELD** occurs both while the suspect vehicle is moving and/or while the vehicle is moving (or either could be stationary).

# LPR TRIGGER EVENT

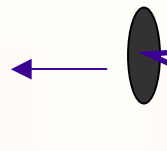
Recognize plate number and compare  
to data base

Combined camera and IR  
unit mounted on roof, rear,  
front or side of vehicle



**LPR**

**BJL 708 NC**



Field of view



PC is in the boot, monitor  
mounted near driver of  
Arive Alive vehicle

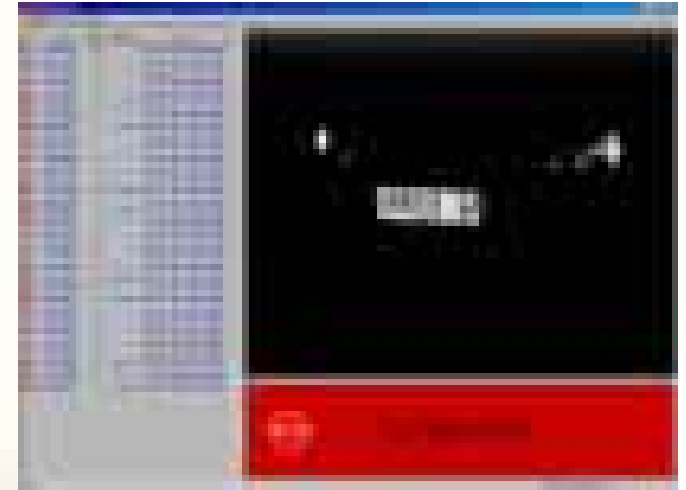
# DRIVER SCREEN



**Vehicle enters / exits  
trigger zone, 2-3 vehicles  
per second per camera,  
all vehicles logged and  
recorded**

Recognition Rate: 0.1-1 s  
per vehicle (or 1-3 /s)

## NORMAL OPERATION



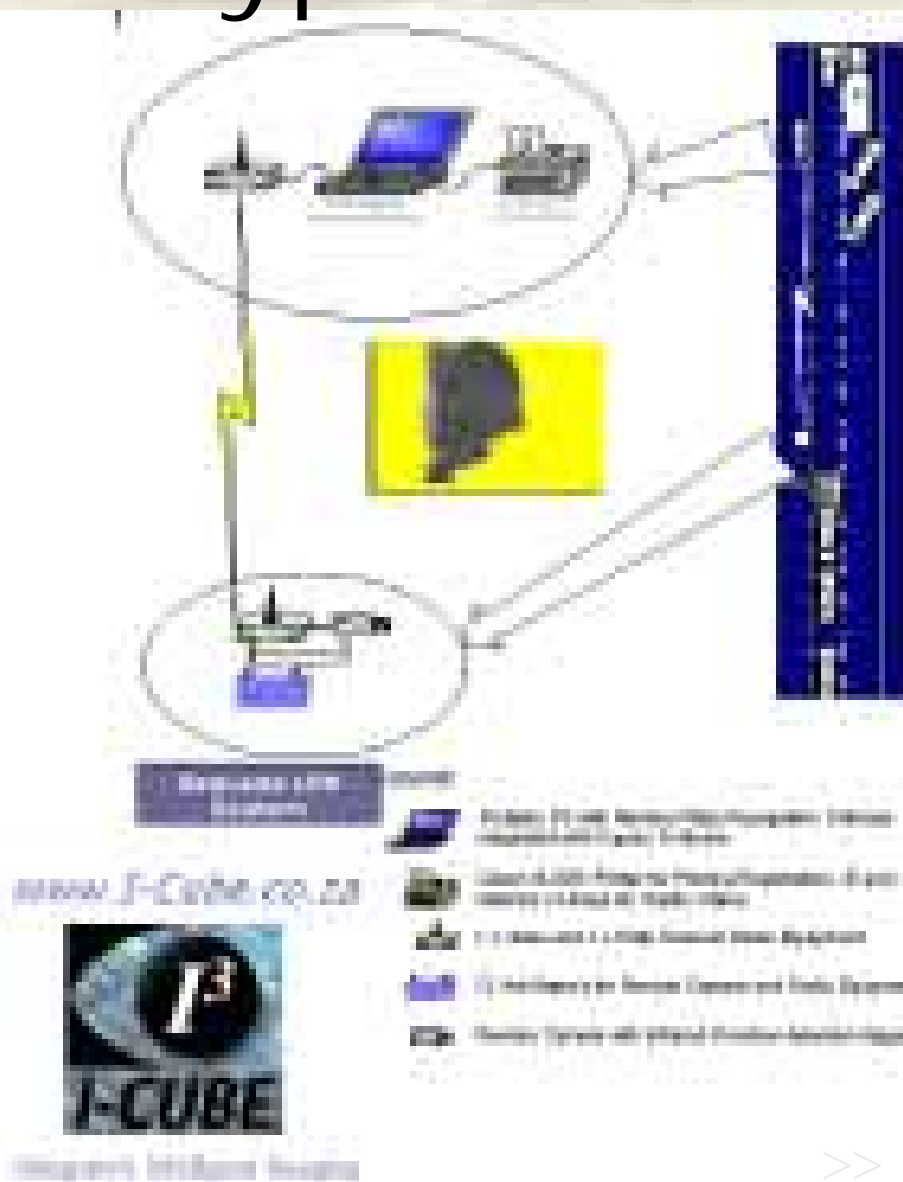
## ALARM SITUATION (audio & visual)

[www.I-Cube.co.za](http://www.I-Cube.co.za)

# Manual road blocks



# Typical LPR Installation



# Configuration

I<sup>3</sup> I-CUBE

Automatic  
Database search  
(local)

Possible to  
have multiple  
cameras to  
cover the  
front, rear and  
side of the car  
(for use when  
cars are  
parked)

Database  
remotely  
updated



Multiple images are captured at  
different IR illuminations

Trigger when  
a plate seen

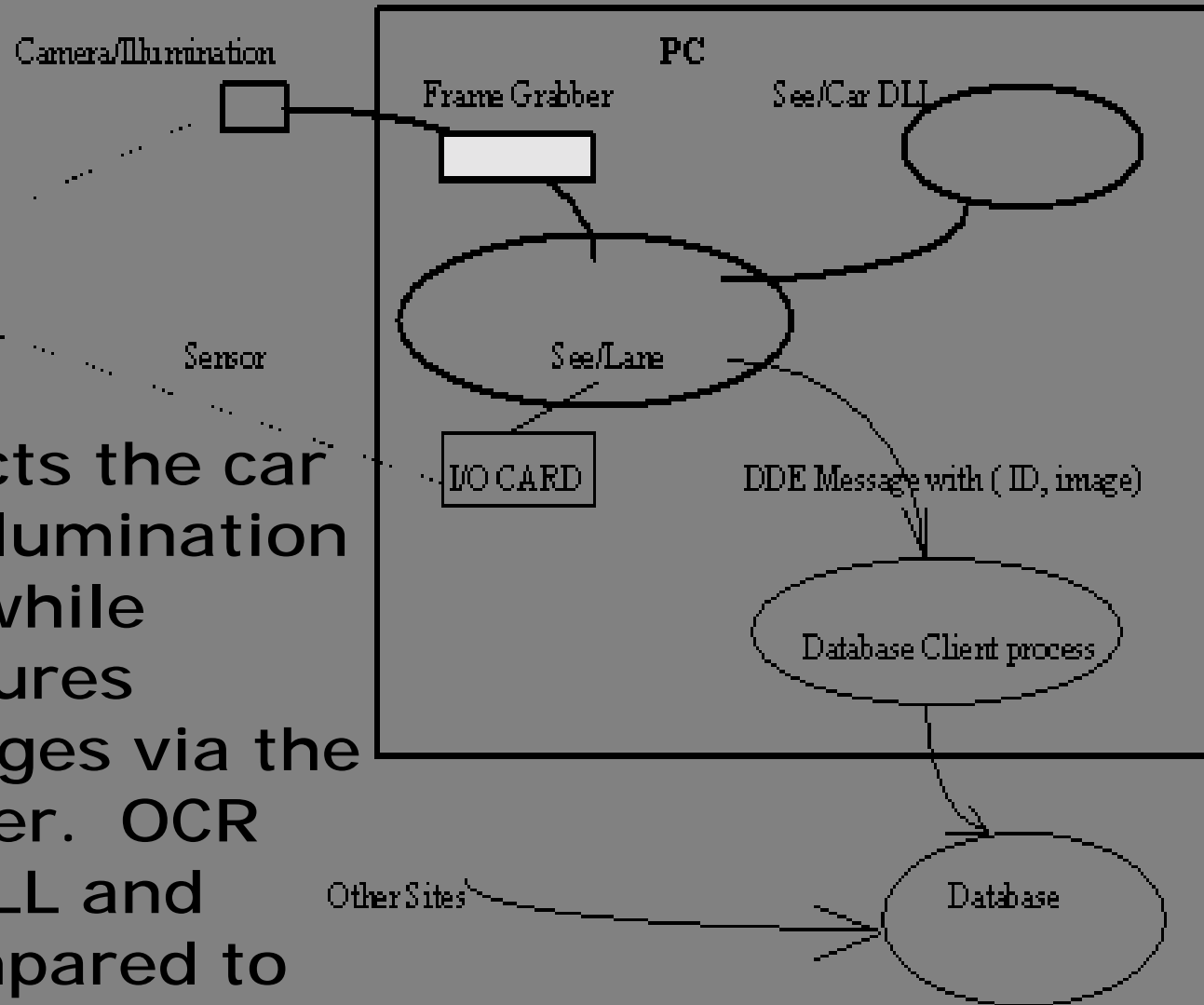
[www.I-Cube.co.za](http://www.I-Cube.co.za)

# LPR SOFTWARE DESIGN



Identified Vehicle

Sensor detects the car / plate. IR illumination unit pulses while camera captures multiple images via the frame grabber. OCR occurs via DLL and result is compared to database via client process





## Possible to obtain the following information:

- Number plates detected per period of time
- Suspected plates
- Vehicle offence (such as speeding or talking on a phone, etc.)

Possible to update database information via:

- USB; CD / DVD
- removable hard drive
- Other (open protocol)

Vehicles identified which are:

- Stolen
- Hi – jacked
- Un – roadworthy
- Expired license
- Outstanding traffic warrant
- Other (user defined, such as speeding)

## Vehicles information obtained:

- Pre-event (before the transgression occurs, from 5 min to 10 seconds)
- The event
  - crossing a white line,
  - talking on a cell phone
  - Overtaking on a blind rise
  - Etc.
- Post-Event (after the transgression occurred)
- Colour
- Other (user defined, such as speeding)

## LPR LOG

All LPR is downloaded when required or saved each day allowing review of cars seen

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,

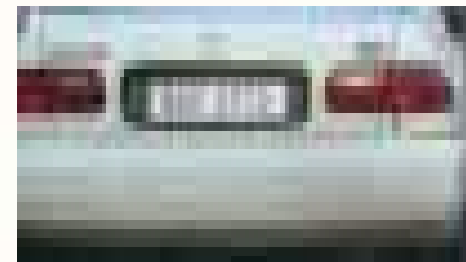
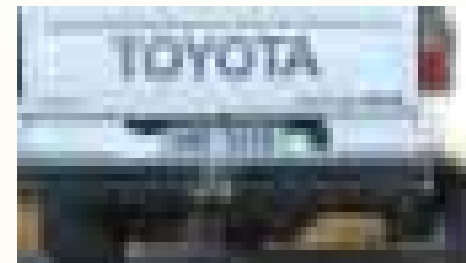
LJD977GP,,,,,,,,,3,No,,Sat Aug 14 09:05:22 2004,

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 images are kept!*

# **LPR-based speed measurement system**

**A new system now available that measures average Highway speed based over a long distance, and issues a warning or speeding ticket.**

**The LPR cameras installed at sites that are located several kilometres apart. Each unit automatically captures the images, recognizes the plate, and reports the passing vehicles license plate. SEE CAR SPEED matches the pairs and calculates the average speed by the time taken to between the two points.**

# AVERAGE SPEED DETERMINATION

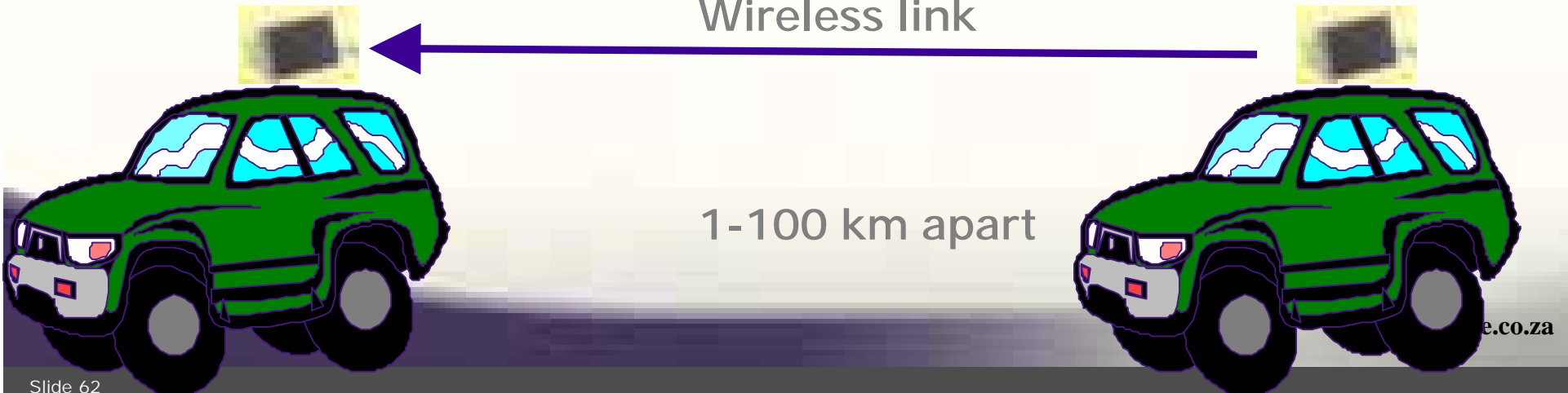
The SOFTWARE obtains the distance that POINT A and B are apart from the built in GPS combined with an accurate on board distance measurement unit, set a 0 at Point A and driven to POINT B.

POINT B

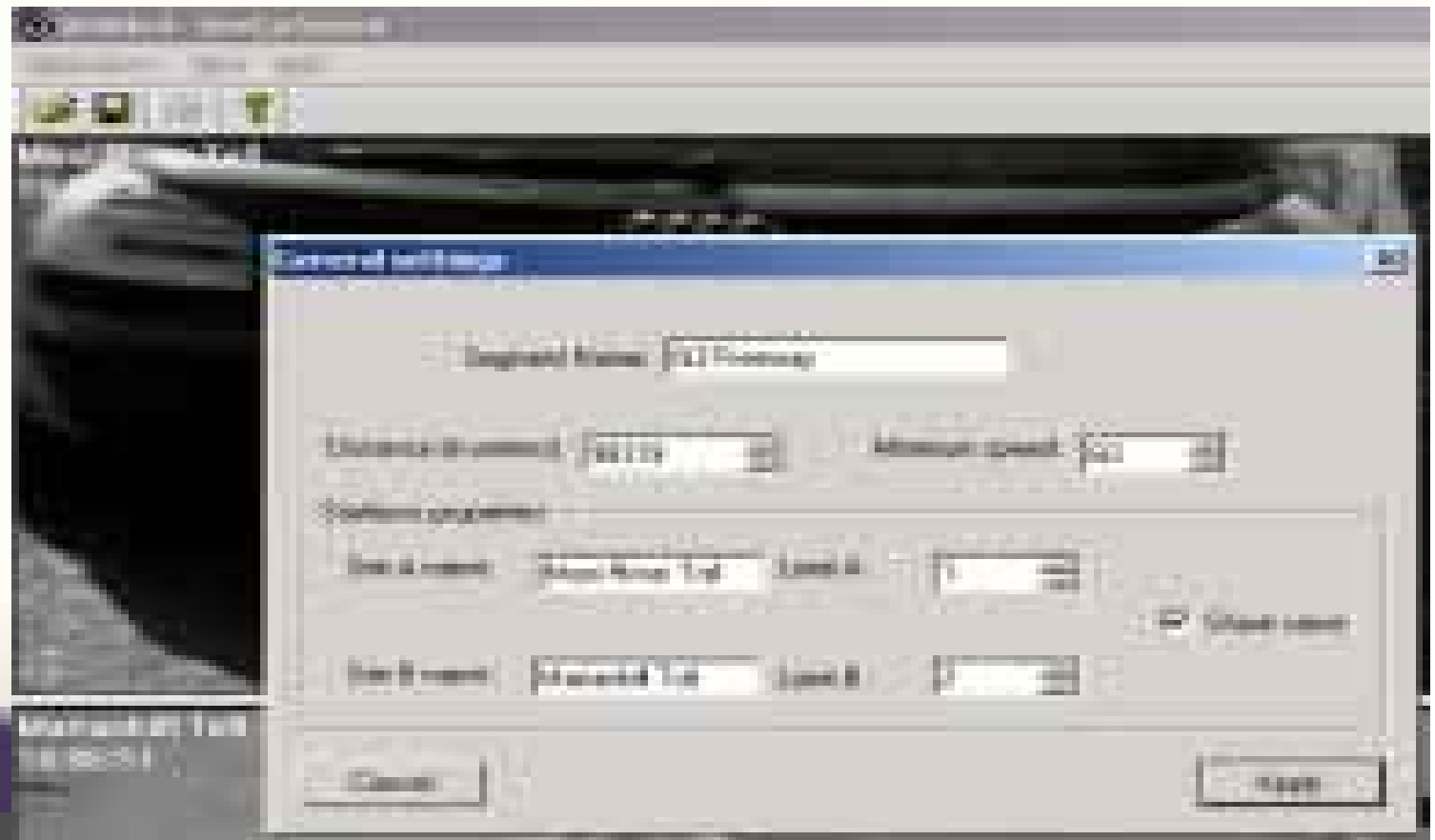
POINT A

Wireless link

1-100 km apart



**In the LPR SOFTWARE set the minimum speed at which you wish to get alerts at POINT B**

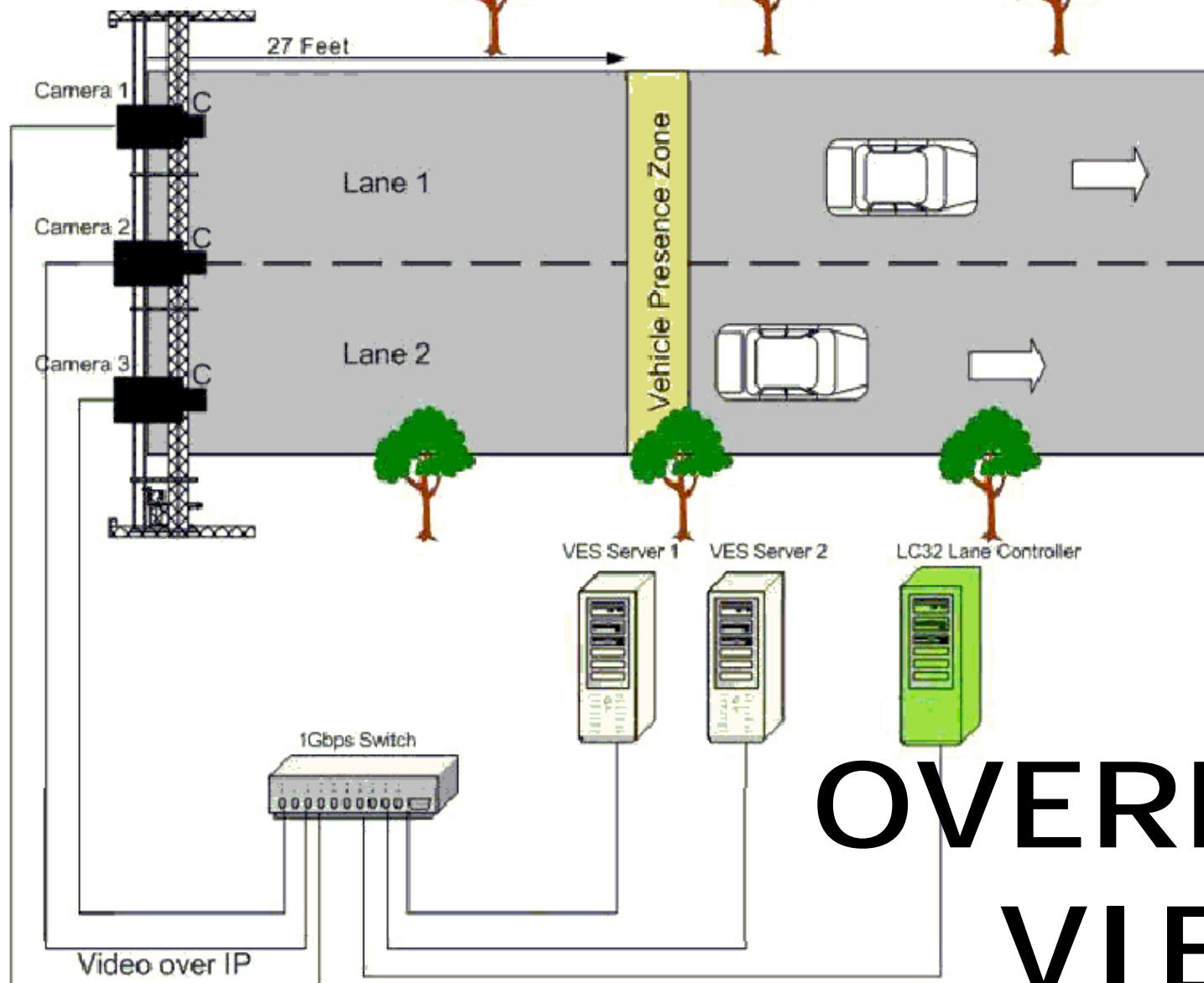


**You can see all the images and the speeds, along with date, time, place and other details (up to 4 cameras per vehicle)**

**The system can also be connected to roadside Traffic signs that can alert the drivers in real time on their speeding violation.**

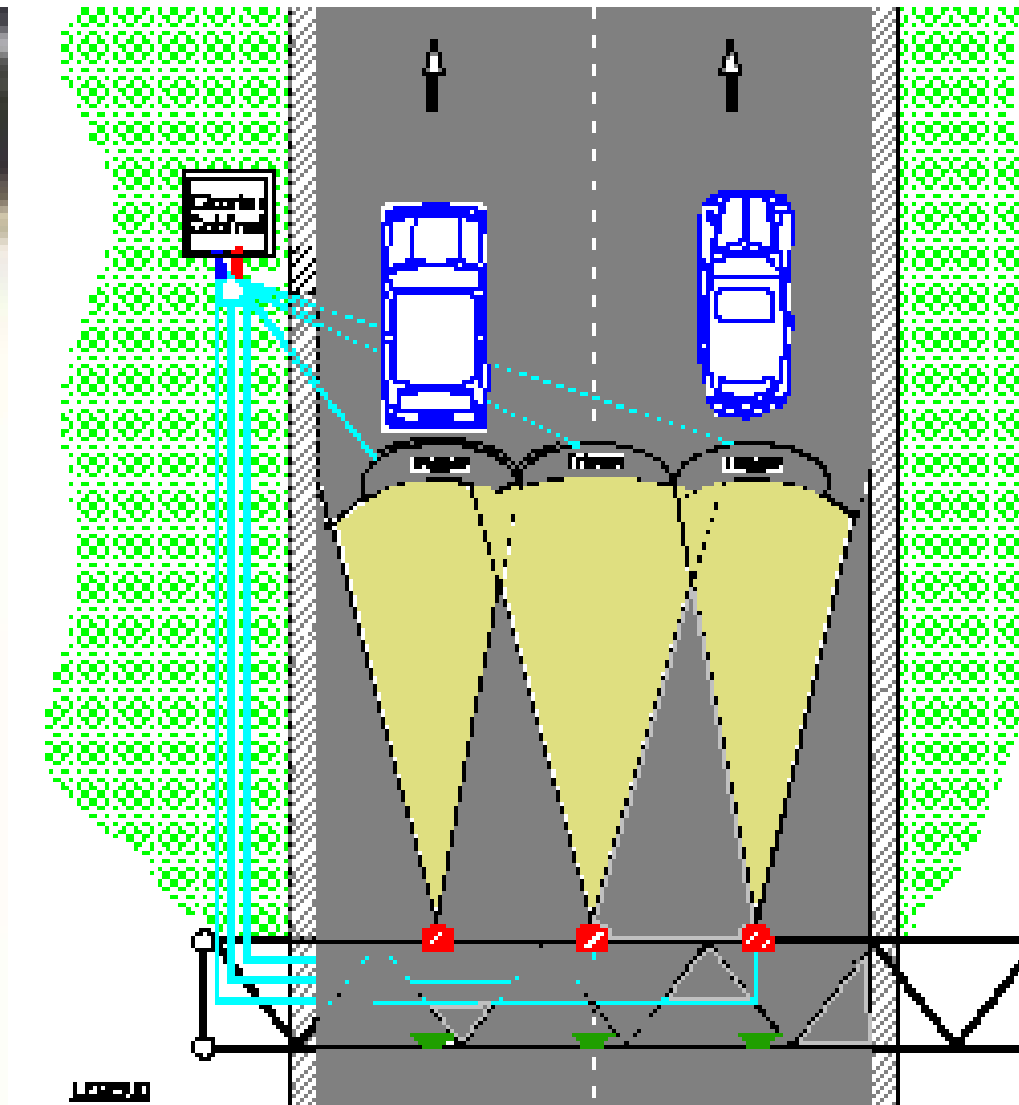
***PLEASE SLOW DOWN: NP 123 (Mr. Dudley) YOU ARE SPEEDING, 23 KM OVER THE LIMIT***





# OVERHEAD VIEW

# SEEWAY TYPICAL LAYOUT



- LAYOUT**
- 1M CAMERA
  - Manhole unit
  - 1M Conduit with Communications Ducts Laid at 40cm Depth
  - 11.5" Communication for data
  - 11.5" Communication for power
  - 400mm Communication Man Hole
- NOTE: ALL DIMENSIONS IN M

1000	1000	1000
1000	1000	1000
1000	1000	1000
1000	1000	1000
1000	1000	1000
1000	1000	1000

See Way  
Typical Layout

## PROCEDURE:

- Each SPEED DETERMINATION unit consists of a PC, 2 cameras and MOTION OR LOOP triggers, connected via a LAN.
- LPR occurs as vehicle approaches site A and B via SEE WAY,
- Image capture of vehicle FRONT (POSSIBLY BACK, DRIVER & COLOUR)
- LPR Recognition occurs in 100-400ms
- If captured at both points, and above SET SPEED, ALARM triggered!

Untitled - SeeCarSpeed

Application View Help



Mooi River Toll  
15:49:49



Marianhill Toll  
15:50:05



#	Car ID	Start	End	Kph	Seconds	
1	0063CM	15:40:48	15:41:01	276.9	13	
2	9103IV	15:40:36	15:41:03	133.3	27	
3	0395FP	15:41:12	15:41:25	276.9	13	
4	6182HQ	15:41:00	15:41:27	133.3	27	
5	XD9371	15:41:34	15:41:47	276.9	13	
6	8908QL	15:41:22	15:41:49	133.3	27	
7	LGW487GP	15:43:08	15:43:22	257.1	14	
8	DYK370GP	15:43:20	15:43:36	225.0	16	
9	ND474276	15:43:18	15:43:50	112.5	32	
10	LJD977GP	15:43:32	15:44:04	112.5	32	
11	ND474276	15:44:06	15:44:22	225.0	16	
12	LGW487GP	15:44:10	15:44:26	225.0	16	
13	HFP848GP	15:44:31	15:44:47	225.0	16	
14	DYK370GP	15:44:41	15:44:57	225.0	16	
15	LGW487GP	15:44:59	15:45:15	225.0	16	
16	LGW487GP	15:45:47	15:46:03	225.0	16	
17	KPR835GP	15:46:21	15:46:37	225.0	16	
18	LJD977GP	15:46:29	15:47:01	112.5	32	
19	HFP848GP	15:46:55	15:47:11	225.0	16	
20	ND474276	15:47:03	15:47:19	225.0	16	
21	DYK370GP	15:46:49	15:47:21	112.5	32	
22	KBW141GP	15:47:45	15:48:17	112.5	32	
23	MKF359GP	15:48:03	15:48:19	225.0	16	
24	ND474276	15:48:39	15:48:55	225.0	16	
25	HFP848GP	15:49:03	15:49:35	112.5	32	
26	LJD977GP	15:48:53	15:49:41	75.0	48	
27	KPR835GP	15:49:49	15:50:05	225.0	16	

Car license plate id:

KPR835GP

Car speed

225.0Kph

Delta:

+165.0Kph

File zone Net zone

Ready

DDE connection OK.

Site A: 128

Site B: 67

www.I-Cube.co.za

# Advantages over other techniques:

- Violation detection is not based on a singular point (as most other methods do) but rather on the length of the route, so it slows down the traffic along the entire route rather than in specific points which are quickly known to drivers;
- Automatic and easy to set up;
- Provides the evidence in images;
- Covers all lanes and operates 24 hours

# LPR LOG

LICENSE PLATE, LANE, USER, DATE

HFP848GP,.....,1,Yes,Rachel Tim,Sat Aug 14 09:05:16 2004,

KBW141GP,.....,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 images are kept

## LOG FOR A SINGLE EVENT

Added,1,NP192785,100,100,100,100,100,100,100,100,100

Added,2,NP132785,100,100,100,100,100,100,100,100,100

Added,3,NP12785,91,100,100,75,100,100,100,100

Added,4,NP12785,91,100,100,75,100,100,100,100

Best,2

Result,NP132785

Added,1,NP132785,95,100,100,100,100,100,100,100,100

Added,2,NP132785,100,100,100,100,100,100,100,100,100

Added,3,NP132785,100,100,100,100,100,100,100,100,100

Added,4,NP12785,96,100,100,75,100,100,100,100

Best,3

Deleted,4

Result,NP132785

Added,1,NU44667,99,100,100,100,100,100,100,100,100

Added,2,NU44667,99,100,100,100,100,100,100,100,100

Added,3,NU44667,99,100,100,100,100,100,100,100,100

Added,4,NU44667,99,100,100,100,100,100,100,100,100

Added,5,NU44667,99,100,100,100,100,100,100,100,100

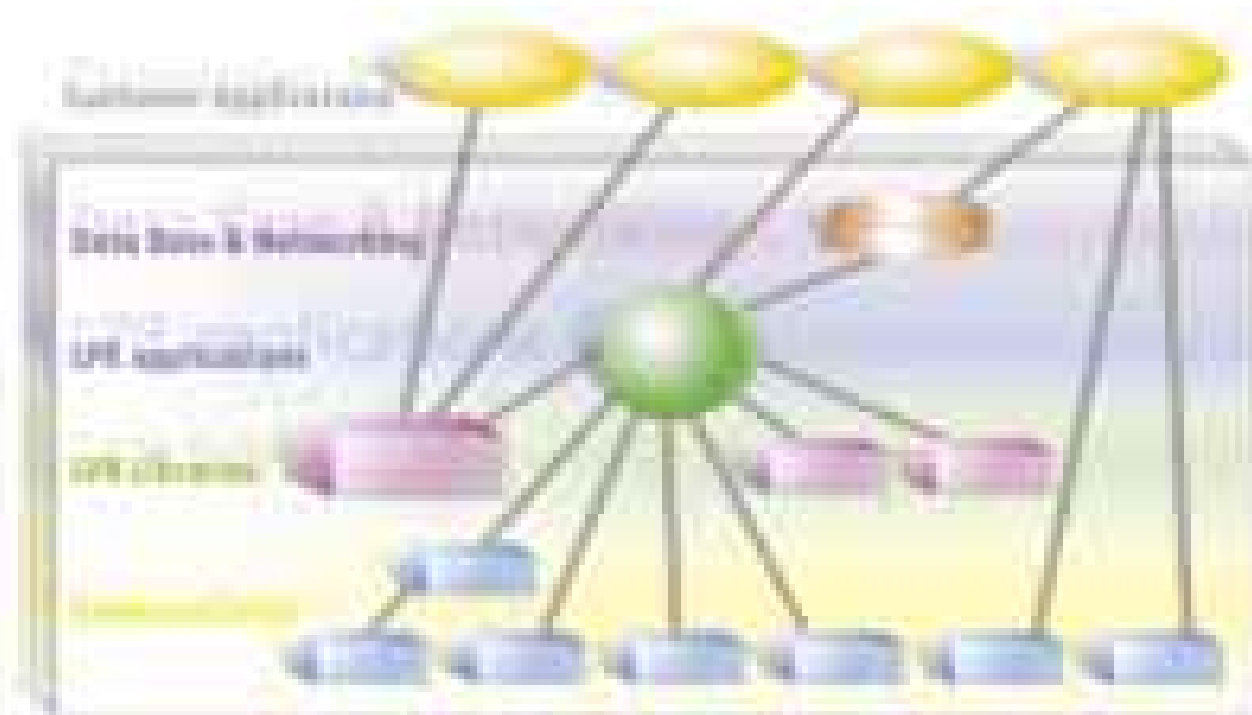
Added,6,NU446M7,75,100,100,100,100,30,40,100

Best,3

Deleted,6

Result,NU44667

[www.I-Cube.co.za](http://www.I-Cube.co.za)



- Exports all required data
- Imports weight / axle / violator details
- Imports weight / axle violation status changes

Question  
9:  
How many  
personlised  
plates are  
in the LPR  
DEMO of  
RSA  
customised  
plates?

Please **DOWNLOAD** and run  
Player.exe LPR Demo of RSA  
Customised Plates. zip (3 MB)

The demo player introduces the powerful capabilities of our SeeCar vehicle License Plate Recognition (LPR) software/system. It performs true identification of the license plate in real time.

The player is capable of reading both bmp and jpg images of various types (color, B&W, 8, 16, 24 & 32 bit per pixel). It performs autodetection of image subtype (grayscale, color, number of bits per pixel, etc.). The images are included in the same directory, and their properties are configured in the format.ini configuration file.



# PAYMENT OPTIONS

OPTION 1: CAPITAL amount upfront

OPTION 2: RENTAL per month

OPTION 3: PAY FOR USE, an amount per transaction OR PPP



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I-CUBE

## EXAMPLE QUOTE

# LPR EQUIPMENT AND COST

EITHER ON CD:

I-CUBE CD\web site\quotes\LPR linked to  
Facial Verification for 7 lanes.xls

OR

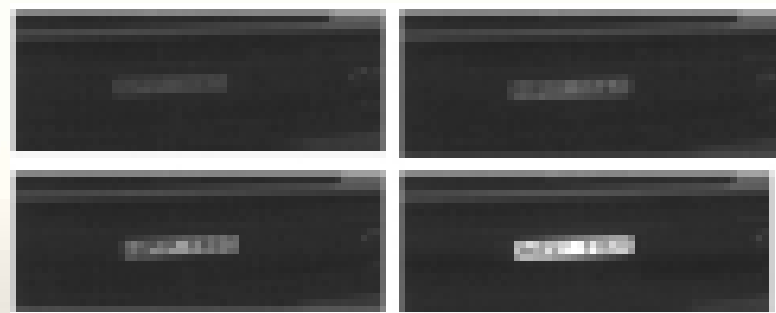
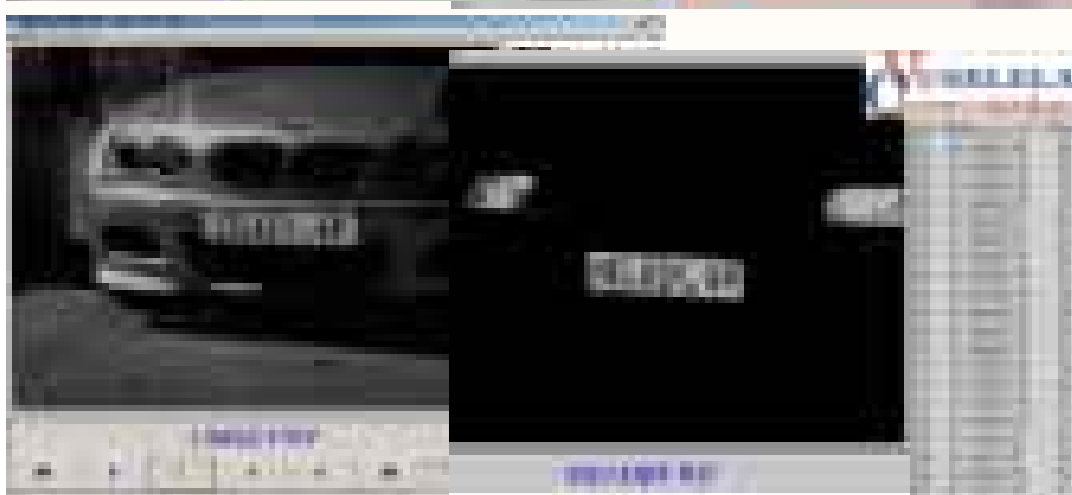
ON WEB SITE: QUOTES

**Combined LPR and Facial Capture /  
Verification:**

LPR linked to FACIAL- presentation /  
proposal / costing

# Questions

**035** Spaces  
**005** Parked



# TRAINING EXAM

- Q 1 - Please prepare a detailed quote, including a POWERPOINT presentation, system design, cost and full site requirements for the sale of a 2 lane LPR access control system.**
- Q 2 - Please prepare a detailed quote, including a POWERPOINT presentation, system design, cost and full site requirements for the sale of a single camera facial ID system.**
- Q 3 - Please find a folder on your CD called EXAM. In this folder will be face and license plate images.**
  - Please add the facial images to your facial ID software under the names provided. Please ID the people who appear in the files called UNKNOWN 1, 2 & 3.**
  - Please use the license plate recognition software to analyze the provided license plates and write down the total number of different TYPES of plates that were correctly read. So NP123, ND 123 and NA123 would be 1 and 123GP and WOLF2 would be 2 types.**