

Mobile LPR CAMERA SELECTION

Low and high speed solutions

Presented by

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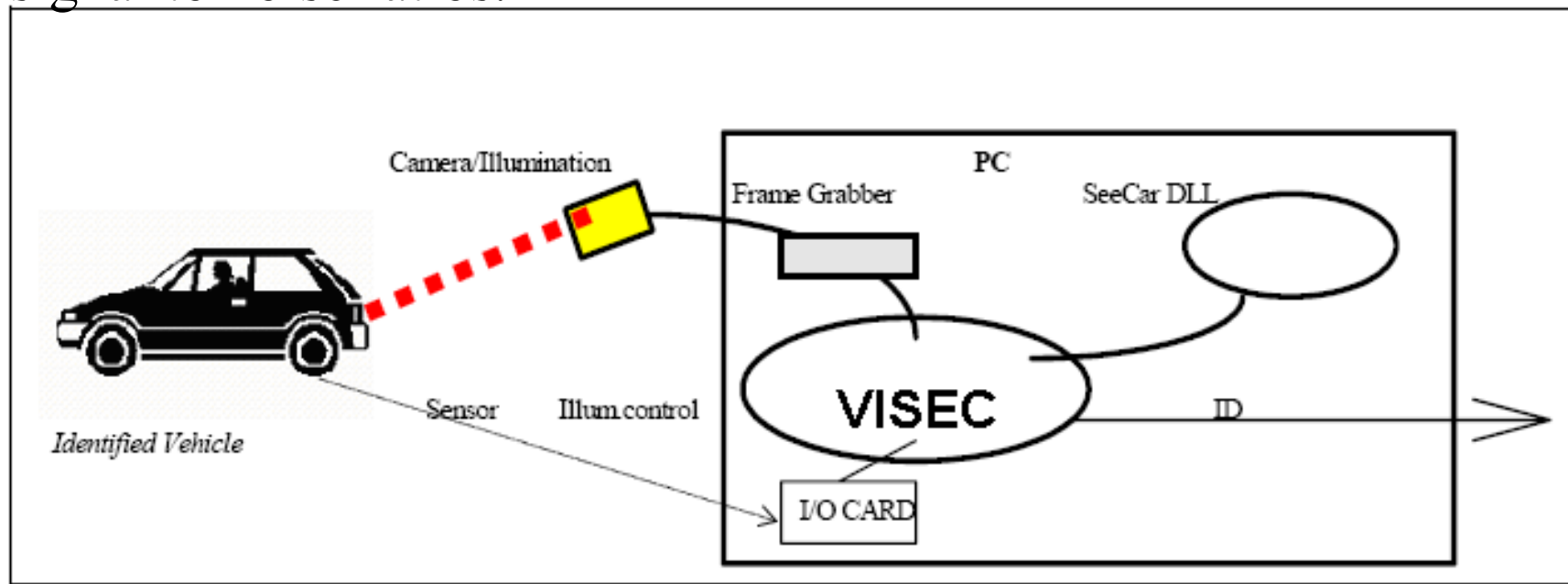
(MBA {IT}; MSc {Image Analysis})

"..any sufficiently advanced technology is indistinguishable from magic." Arthur C. Clark



April 2007

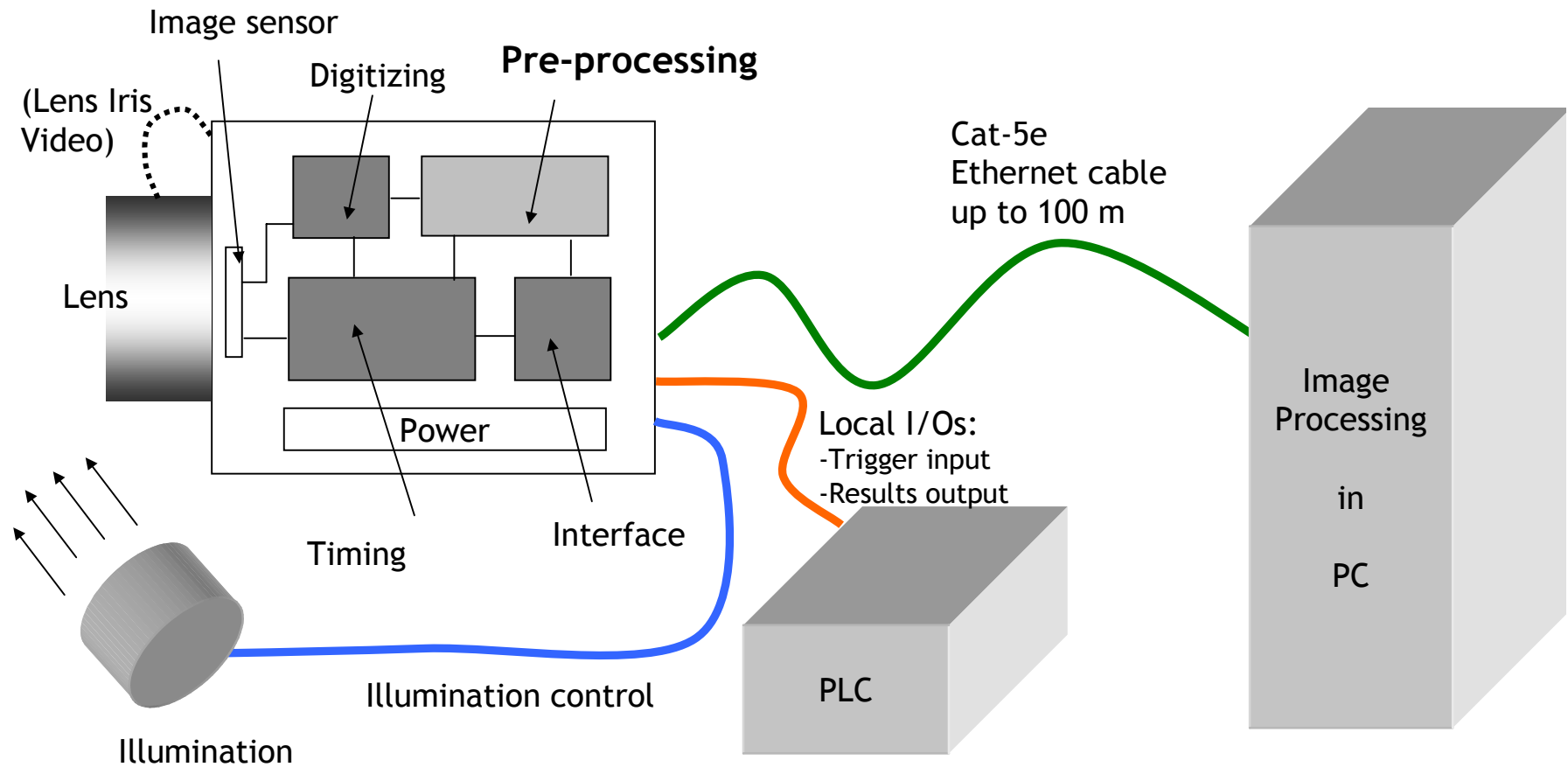
Suggested camera is a black & white optimized camera with high resolution. Illumination unit is integrated near by the camera and designed to assemble as one assembly. This unit camera + Illumination is supported by VISEC application and utilizes its additional features to maximize the results. The application controls the level of illumination (4 levels) and the image capture is synchronized with the illumination to achieve higher signal to noise ratios.



- **Image** - A stand alone, human readable monochrome JPEG image with approximately 1380 pixels by 512 pixels (for IP cameras) or 768 pixels by 288 (CCTV cameras).
- This image will display the detected plate of the best recognized within the set of images that are captured for that event.
- For vehicle ID an additional color jpg image 768 by 288 pixels, used for optional review. It will share the same file name as the plate image, but will have prefix letter.



Acquire



SeeCar OCR engine

- All of the systems (IP or CCTV) employ the same SeeCar OCR engine, which will run on the local processing units. The OCR engine processes images, locates the relevant license plate ID in the image, and produces an alphanumeric result for each image processed. The OCR engine is based on neural network technology and can be trained to recognize different fonts, characters and syntax. The systems supplied for this Project are specially trained to recognize license plates in Africa, and focus on the local SA plates.



Dome IP



SeeCarHead - Camera/Illumination unit

Camera/Illumination unit for access-control applications



B&W camera with mounted lens

Pulsed LED array (Near Infra-Red or Red spectrums)

Weatherproof Case: IP 65 , Enforced Poly-Carbonate, UV protected

Control circuit (sync and pulse control, 4-levels illumination control)

2-Degrees freedom Mechanical interface

Low energy consumption (15VDC 3A)

Specification	Value
Camera:	Htsol
Sensor	CCD 1/3" B&W CCIR
Resolution	570 TV lines
Lens	6.5-39m"m F1.4 (L639VCS)
Output	1Vp-p / 75W
Physical:	
Case	TPH-1000
Standard	IP 66 , weatherproof
Temperature	-10°C to +50°C
Degrees of freedom	2 (left/right, up/down)
Quality	ISO 9002 Manufactured
Electrical	power supply (12VDC to 15VDC)
Illumination:	IR 500 (HTS-070059000011500)
Spectrum	Near Infra-Red (>700Nm) using a band-pass filter
Angle	30°
Intensity	3 levels (low, medium, high) pulsed
Power for Illumination	15VDC , up to 3A
Effective Range	12M



Pulsed Illumination for 24 HR operation



Figure 1. Comparison of NPP 1168 label images



Vehicle at night

Illumination

Low Speed illumination solution is different from the High Speed solution.

The higher speed and the longer range from the camera to the plate require a different illumination solution:

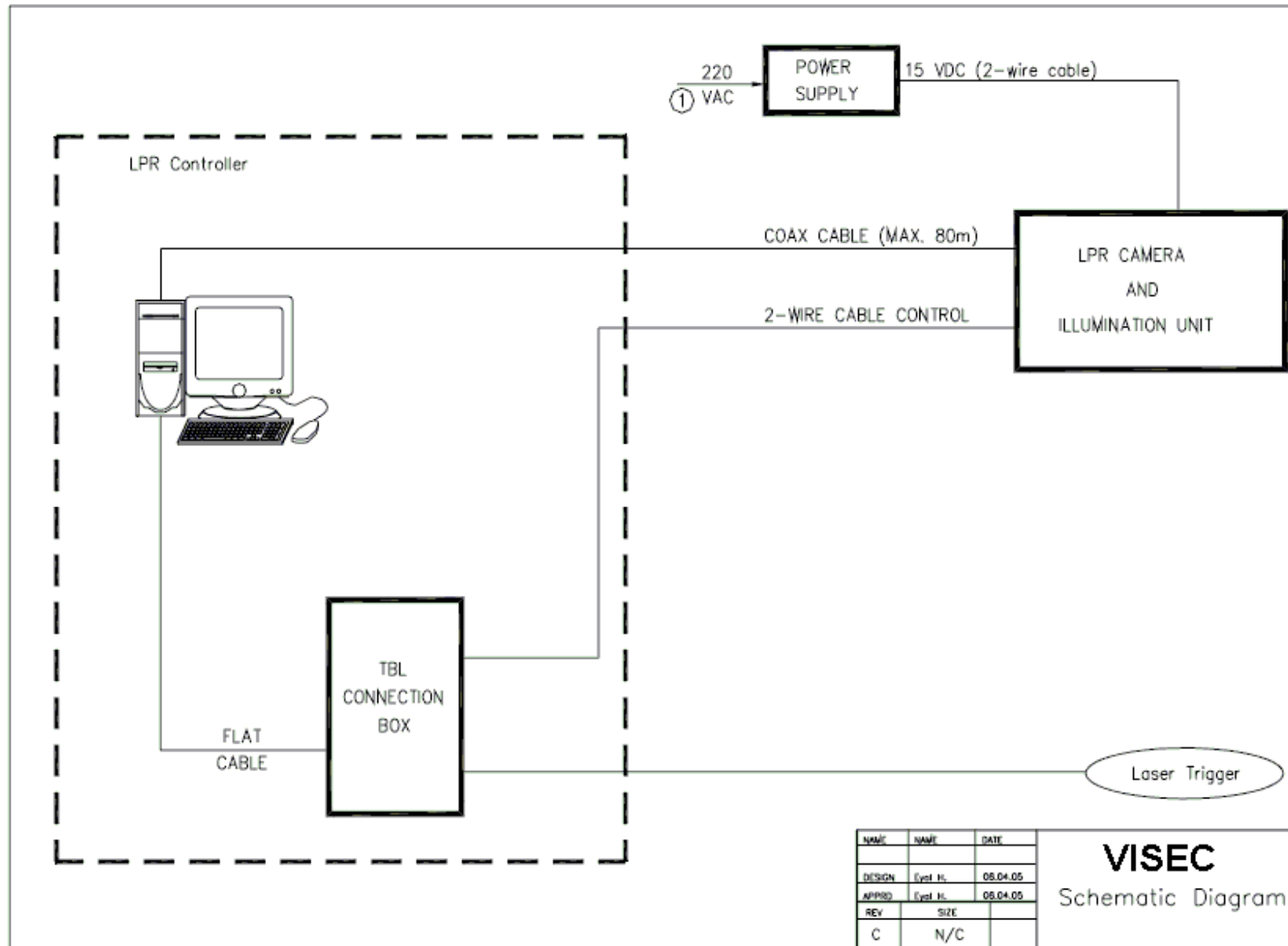
- a) Higher speed requires increased shutter speeds – in order to keep the image sharp and at a high contrast. Since the shutter open time is smaller, it requires more than twice the amount of illumination.
- b) Longer range – the range from the camera to the plate is almost double. This requires about 4 times more illumination.

The following illumination levels will be provided at ground level in the vehicle presence zone:

Horizontal Luminance:

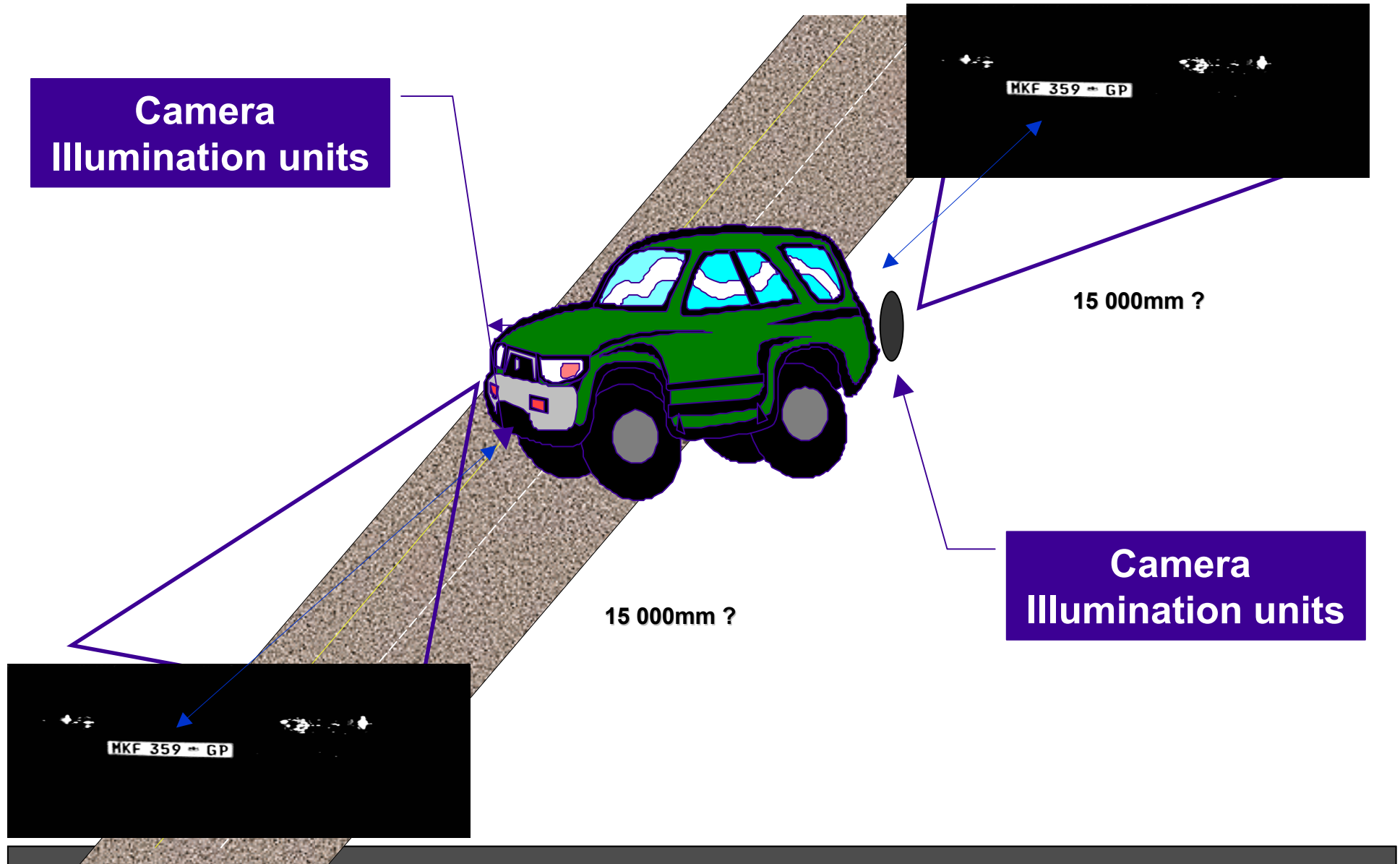
- Average 2.95 foot candles (31.7 lux)
- Minimum 0.36 foot candles (3.9 lux)
- Maximum 9.24 foot candles (99.4 lux)

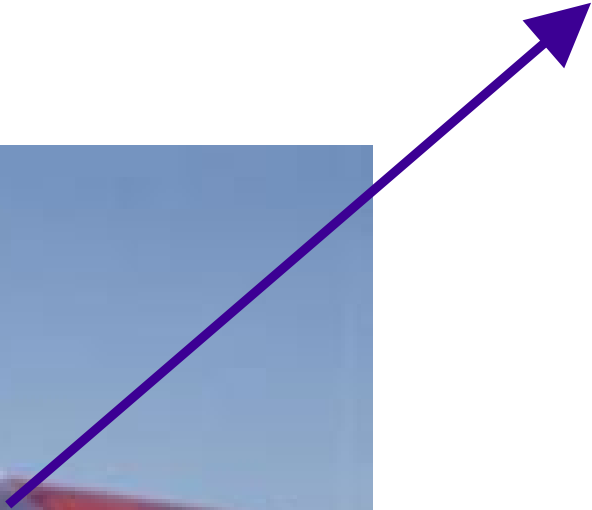




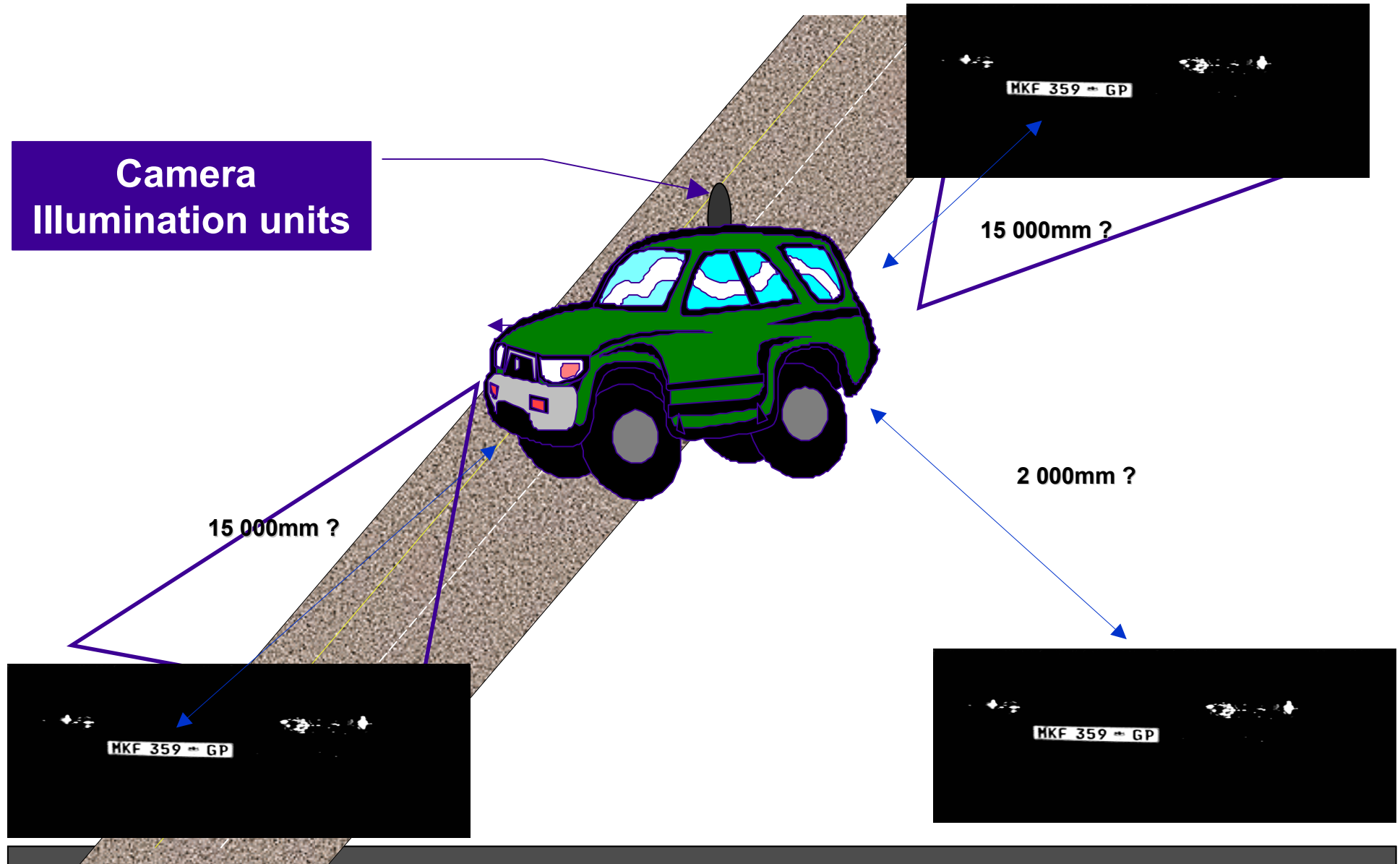
VISEC
Schematic Diagram

Distance and camera angles for moving vehicle: Front and Rear Fixed Cameras

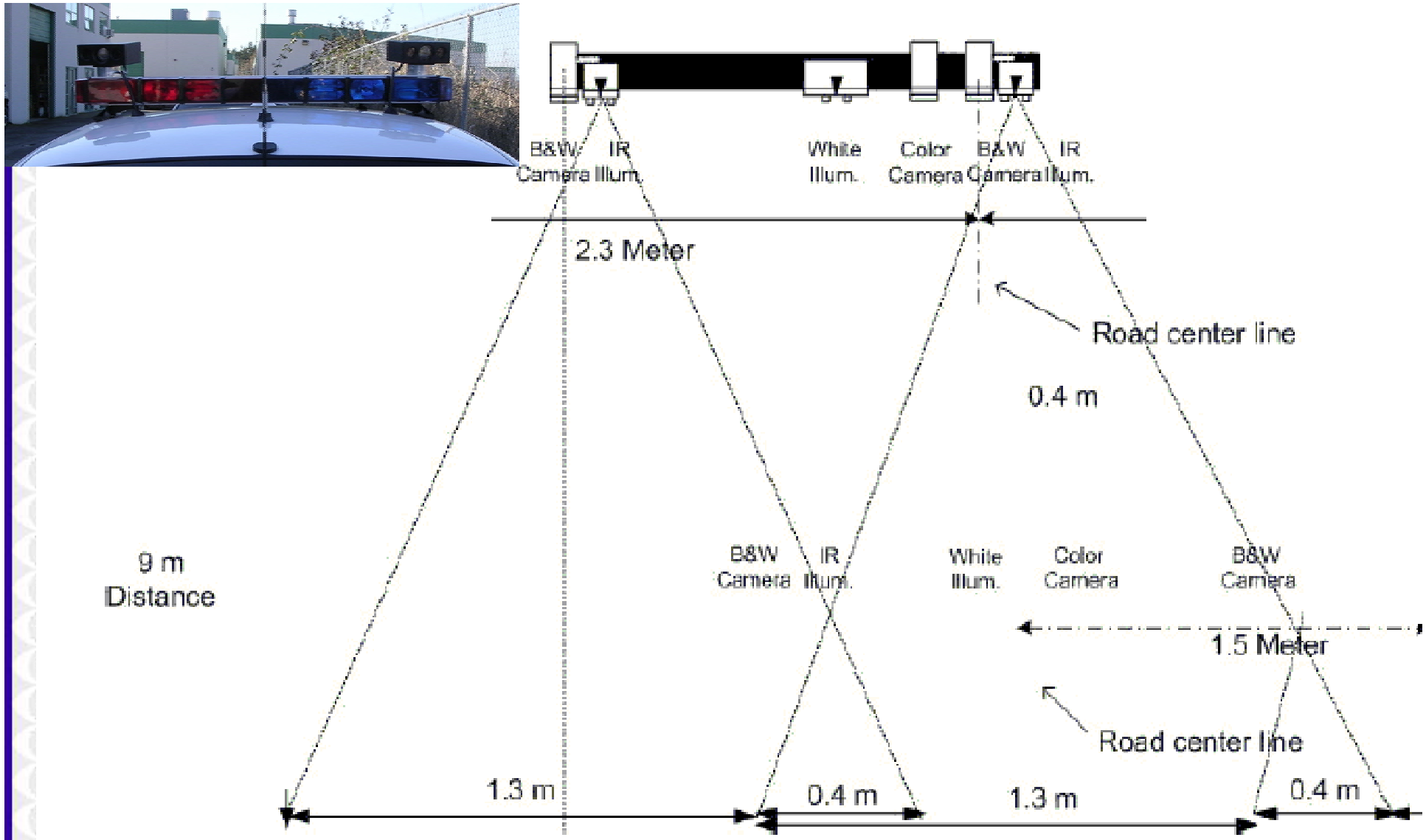




Distance and camera angles for moving vehicle: Dome Camera Mounted on roof



Distance and camera angles for moving vehicle: 2 fixed cameras mounted on roof of car



In car view from roof mounted cameras



Plate Log **Telnet**

430 ADS

430-ADS

Manual Entry...

Correct Entry...

Overview: Click on images to enlarge

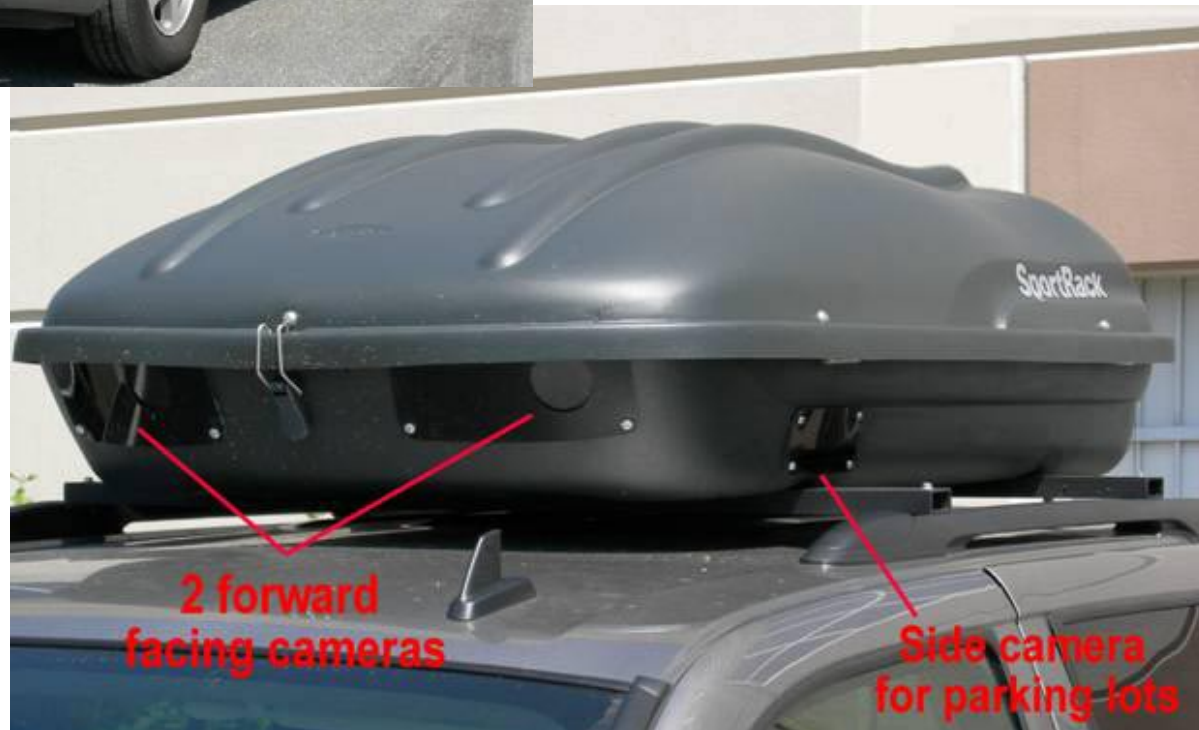
Camera 1 Video Camera 2

Recognitions: 114

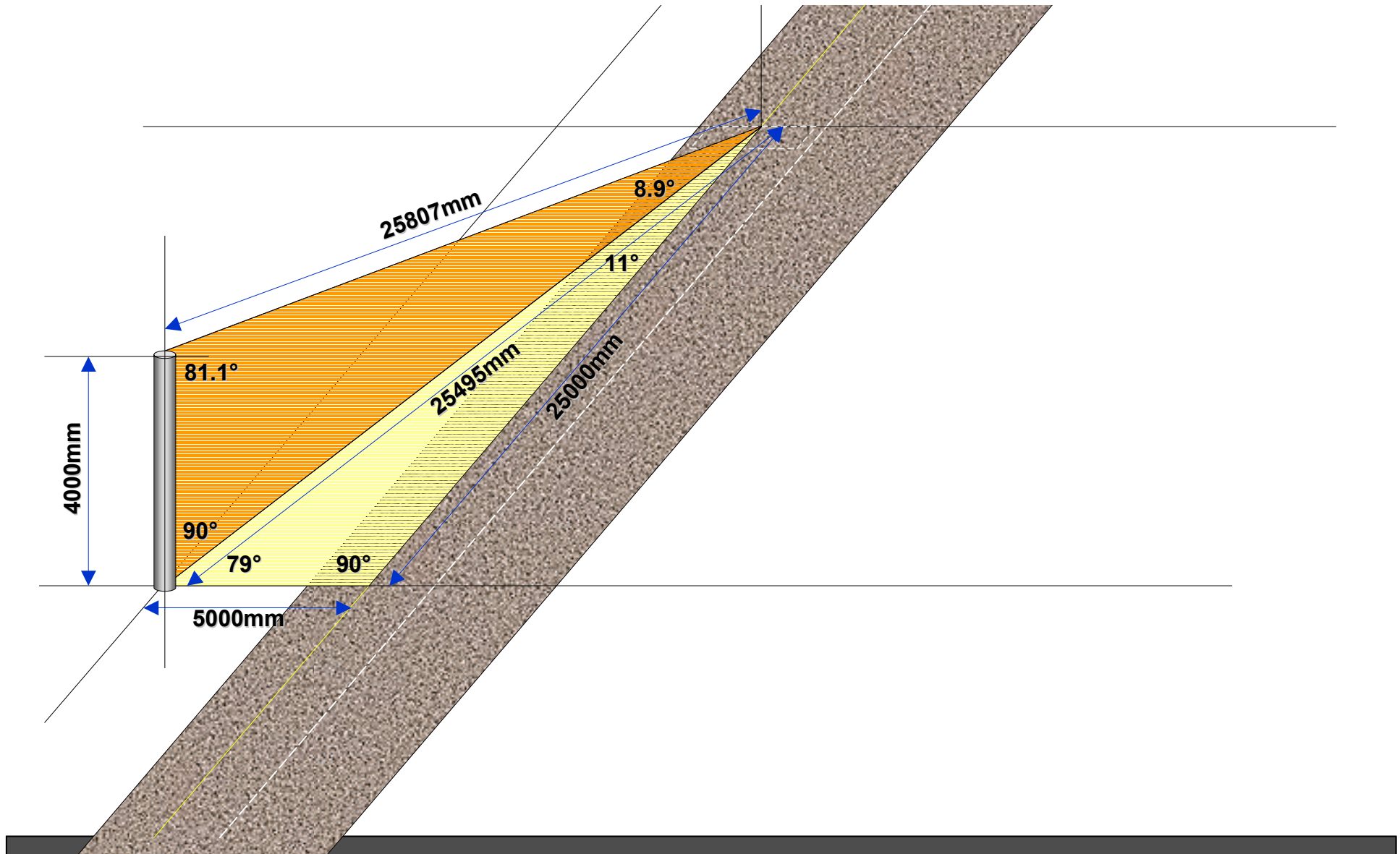
Plate	Lane Label	Time	Nation IC
430ADS	Hawk Dual Left	27 Jul 2006 16:55:52	CA_BC
9656DK	Hawk Dual Left	27 Jul 2006 16:55:49	CA_BC

Log Off

Pause



Distance and camera angles for parked vehicle on a bridge over the freeway



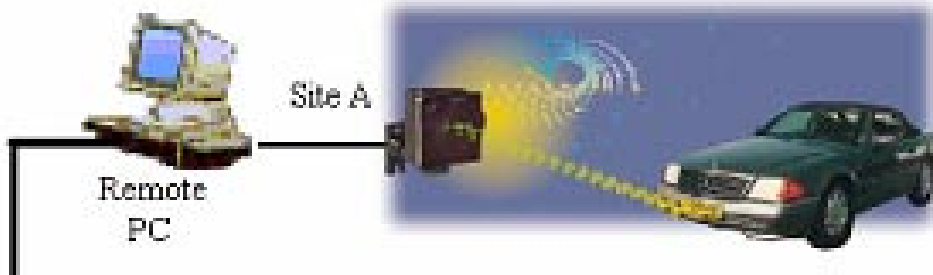
Connectivity



View and Edit members list

You can add a new member, delete, edit or find an existing one.

Member ID	Code	First	Last	
2125	ND576430	5184040	68112054340...	Add
2126	NU110217	5178002	57022151440...	Edit
2127	ND94584	5178007	4600051150...	Find
2128	NU10243	5178009	75111050290...	Delete
2129	NPN90526	5179060	75000554070...	
2130	NU21098	5183260	73091562760...	
2131	ND321049	9378908	46021295730...	
2132	ND2482	9378150	74120850820...	
2133	ND37732	5180383	6806058700...	
2134	NU158068	5179469	77103152980...	
2135	NU29050	9375777	73122450880...	
2136	NUR29008	9372499	49040351430...	Close

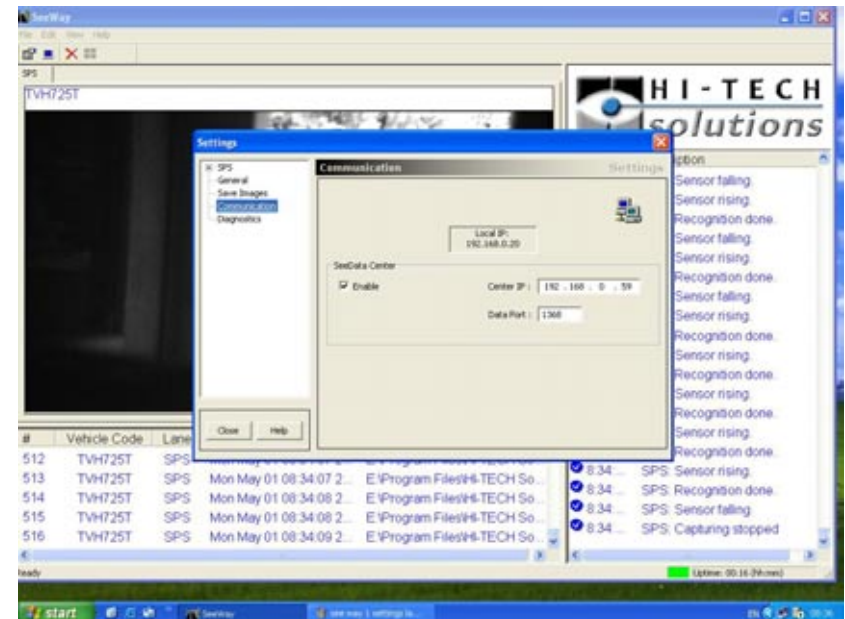


BAKER4ZN,.....,1,No,,Thu Jul 27 18:01:45 2006,
C:\Program Files\HI-TECH Solutions\SeeWay\New E\060727\11_15479750_1.jpg

**DATA from plate compared to local database PLUS
sent in REAL TIME via TCP/IP and DDE**

The data will be transmitted to the TCS in two forms:

- Windows DDE (Dynamic Data Exchange) Message - sent to the CCS server TCPIP network. The DDE will contain the VES Optical Character Recognition described below.
- Image file - which will be stored on the VES server, then transmitted to the NCS via a dedicated transfer service running on the Trip Processing Server.






2) VES Optical Character Recognition Data:

- PC unique ID integer number
- License Plate string
- TCS Synchronization Code
- Date and Time of Image Capture
- File Name (a link to the name of the resulting .jpg file stored in the VES, plus the overview image if present)
- Confidence of the recognition result
- Plate flag
- GPS data
- Other data as required

Remote Operation

All lanes - SeeMonitor [_] [□] [×]

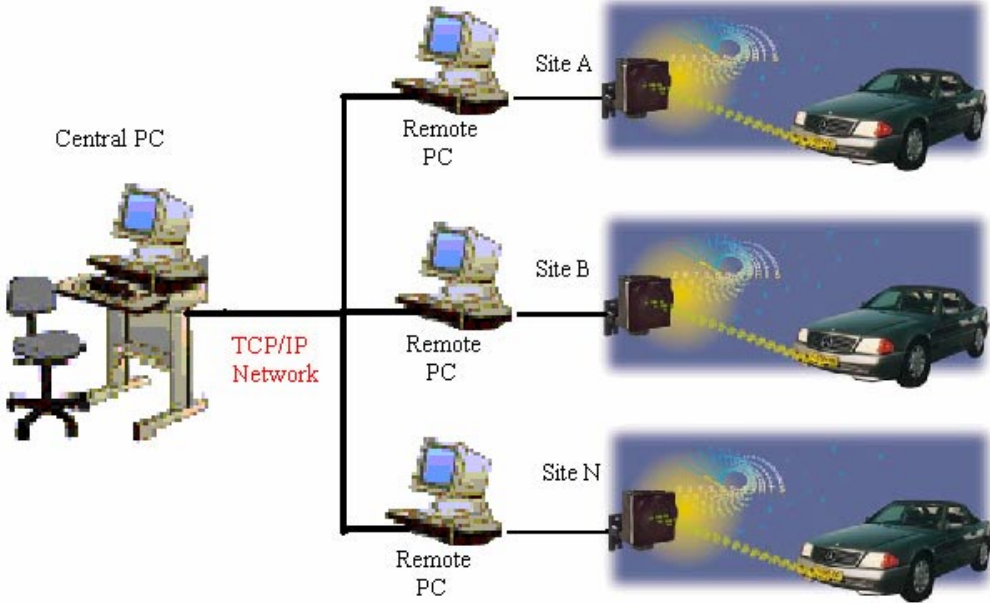
File View Help

Name	UNC / IP	Status	Last event	Source	Version
● Lane1	OCR1				
● Lane2	OCR2				
● Lane3	OCR3				
● Lane4	OCR4				
● Lane5	OCR5				
● Lane6	OCR6				
● Lane7	OCR7				
● Lane8	OCR8				
● Lane9	OCR9				
● Lane10	OCR10				
● Lane11	OCR11				
● Lane12	OCR12				
● Lane13	OCR13				

OCR1

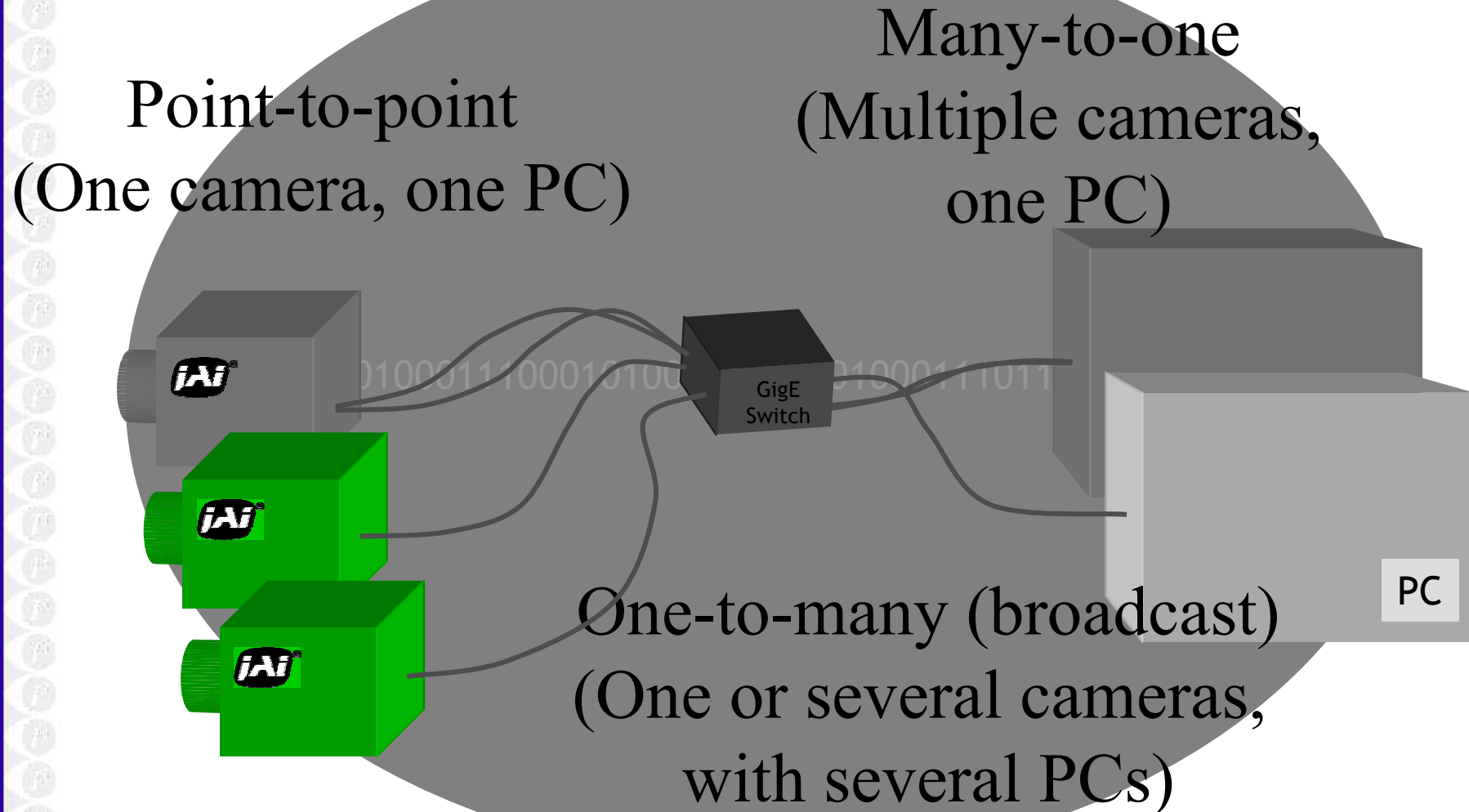
- [-] Trapac Exit
 - Lane1 (OCR1)
 - Lane2 (OCR2)
 - Lane3 (OCR3)
 - Lane4 (OCR4)
 - Lane5 (OCR5)
 - Lane6 (OCR6)
 - Lane7 (OCR7)
 - Lane8 (OCR8)
- [-] Trapac In1
 - Lane9 (OCR9)
- [-] Trapac Main
 - Lane10 (OCR10)
 - Lane11 (OCR11)
 - Lane12 (OCR12)
 - Lane13 (OCR13)



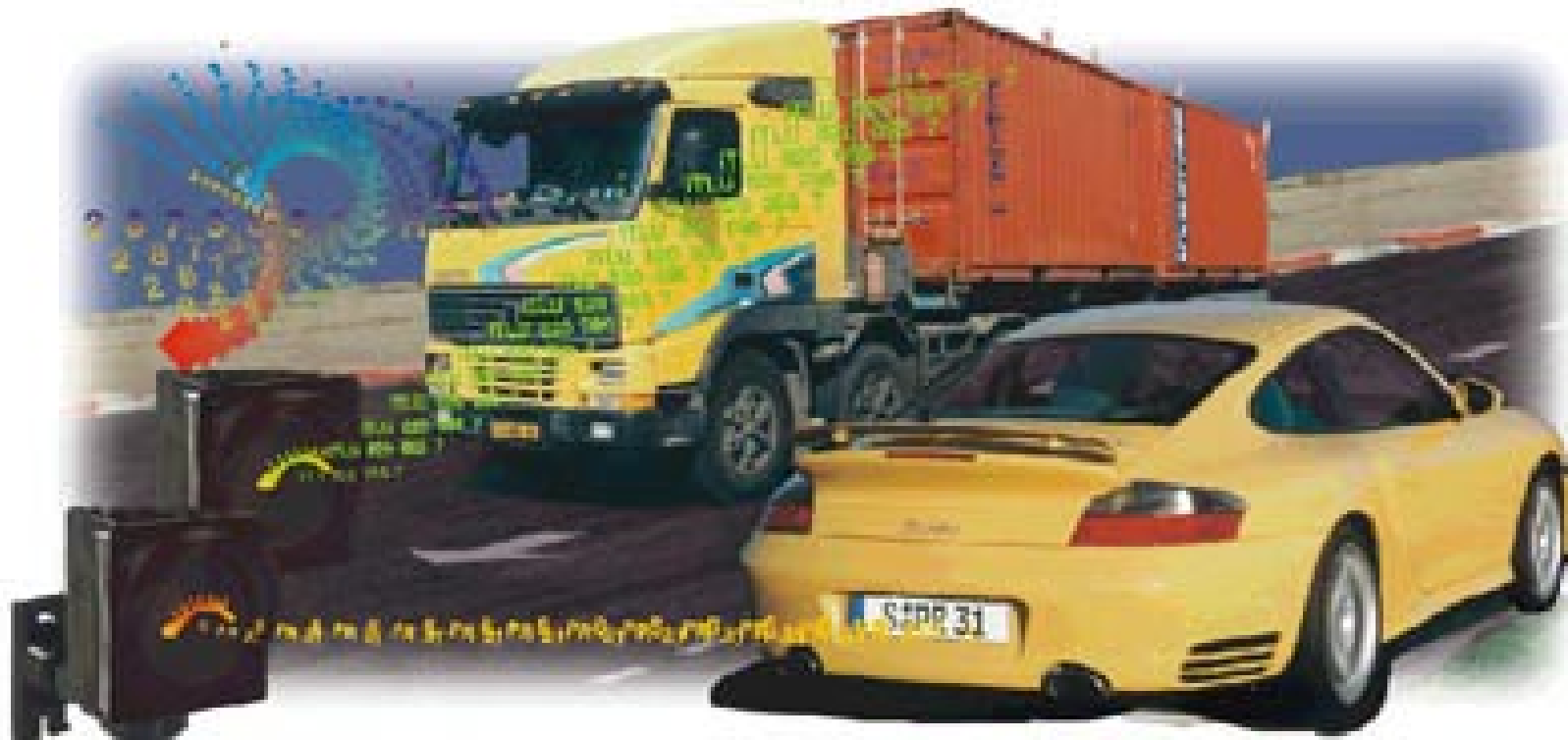
TCP/IP Network

Ready

Possible IP system configurations



Seeing Is Believing





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I-CUBE

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