



ROAD SAFETY THROUGH TECHNOLOGY

8th IRF Regional Conference on
“Road Infrastructure for Safe
Mobility”

3-5 Oct, 2013 New Delhi

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Technology – A contributor to Road Safety

- ▣ Management of transport network
- ▣ Infrastructure – build and maintenance
- ▣ Vehicle Safety – Smart applications
- ▣ Driver Behaviour – suggestive and corrective options



Impact of ICT on Transport Scenario

- ❖ Enables *smart* utilisation of resources without compromising safety
- ❖ Public interface and information provider.
- ❖ Compulsory choice for some applications
- ❖ In-built Safety Features

Instrumentation in Automobiles....

Management aspects of ICT for Road Safety

By the time monsoon officially ends, city would have seen more than 326 craters per day.



BMC has broken its own record of potholes identified during the monsoon in city this year in comparison to last year.

Last year, the civic body identified 25,270 potholes in 122 days (from June 1 to September 30), that works out to be an average of 207 craters reported each day on its online pothole tracking system.

This year, the

number of potholes recorded has increased to 25,444 in the first 78 days of the monsoon

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Technology for Safe Infrastructure

- ▣ Design Tools and Simulation software's
- ▣ New Materials and Safety products
- ▣ Energy absorbing crash barriers
- ▣ LEDs and other signage technologies
- ▣ Road Marking and warnings.
- ▣ MRTS options
- ▣ Coordinated Incident management



ITS and Road Safety.....

- ▣ Service Oriented Solutions
- ▣ In Vehicle Technologies
- ▣ V2I and V2V communication enabled applications



ITS Enabled Services

Integrated Traffic Control and Management.

User Interfaces – VMS, Internet enabled applications, routing, Ticketing/AFCS,

Objective functions defined by traffic control algorithms have progressed from simple travel time reduction to cover relevant environmental parameters too.



ITS for Automatic Traffic Rules Enforcement

One of the ITS applications that directly contribute to Road Safety.

High Credibility – Accuracy, Integrity and equity.....when it is system generated

.....more.....



ITS – Transportation : Behaviour Enablers

- Public Preferences' moulding
- Road Pricing
- Congestion Charging
- AFC and Common cards
- ATIS/Trip Advisories



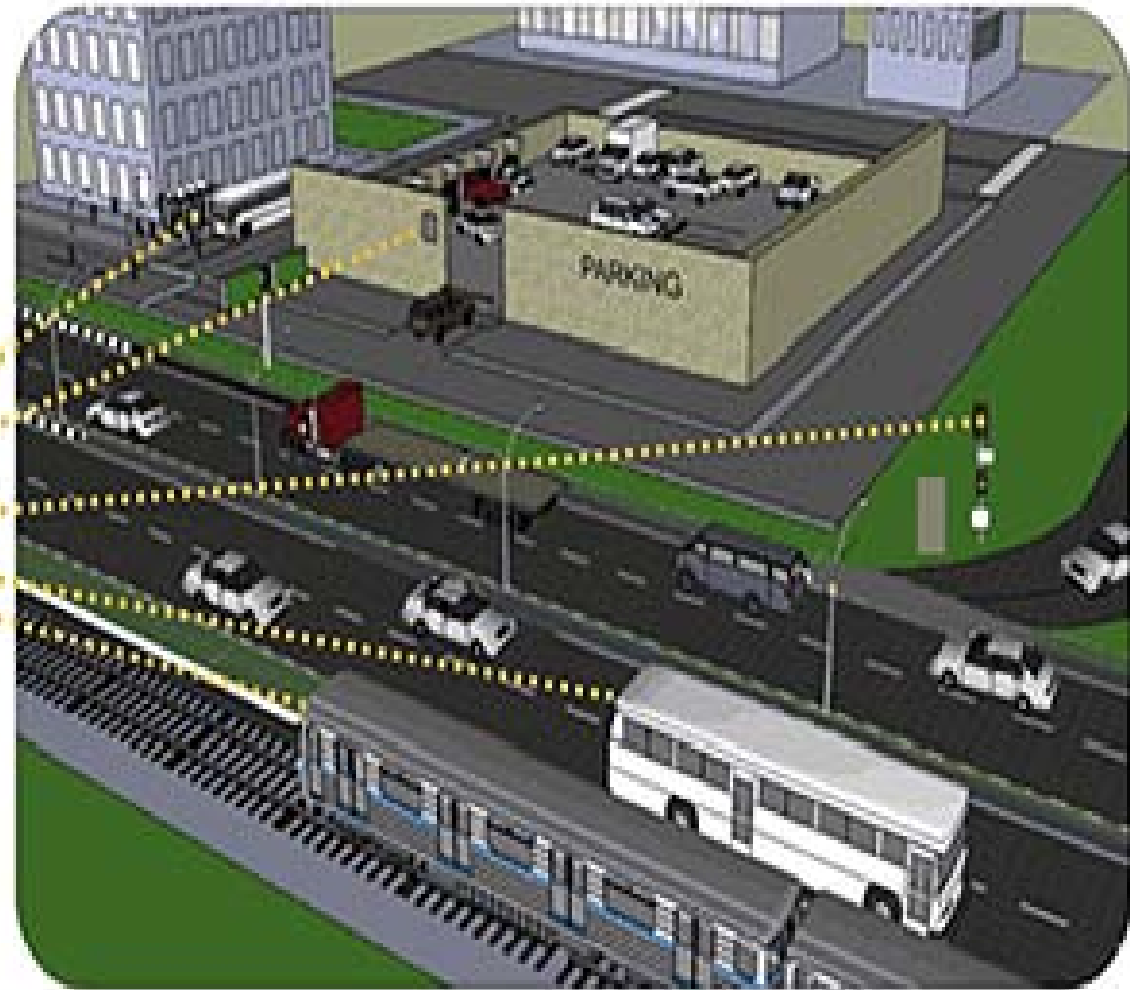
In Vehicle Technologies

Electronic Stability control and host of driver and passenger safety systems.

ITS applications

- ✓ AVLS enabled applications
- ✓ Monitoring and recording of Driver Behaviour
- ✓ Driving Simulation and Training
- ✓ Increasing content of electronics (40%↑) in car build

V2I & V2V Communication Enabled Applications



V2I & V2V Communication Enabled Applications



V2I & V2V Communication Enabled Applications

Automatic Parking is already a common place application...no V2I communication – only Proximity sensors

Collision avoidance systems are increasingly becoming practical.

Platooning is already tested and is planning implementation.

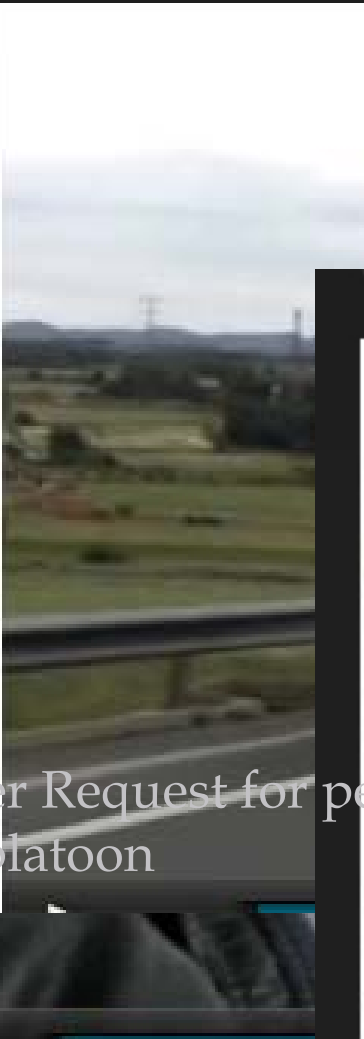
V2V Platooning Application



Permission granted after electronically linking with the vehicle in front



Driver Request for permission to join platoon





V2V Communication Driverless Cars

- ▣ The concept is no longer theoretical... there are quite a few under trials
- ▣ Driverless cars became street legal in Nevada first in June 2011: Oct 2012 in California, Florida, DC,
- ▣ Pilot project for deploying driverless cars on pre determined routes is underway in 12 European cities.

ITS - Direction with safety as the...





REAL TIME ENFORCEMENT FOR TRAFFIC SAFETY

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Real Time Enforcement - Issues

- ▣ Legal Frame work
 - ▣ Pending Bill on Traffic violation penalties
- ▣ Coordination among Agencies
- ▣ Unified Traffic Authority
- ▣ Database & access
- ▣ Standardisation – number plates
- ▣ Institutional framework

Need for Automation for Enforcement

- ▣ Minimise Personal contact and cash transactions
- ▣ Bring in transparency – Accuracy, Equity
- ▣ Improvement of Enforcement Index
- ▣ Reduction is unproductive desk jobs.
- ▣ Payment gateways

On Line Enforcement Pre-requisites

- ▣ Legal Frame Work
- ▣ Database and sharing among stake holders
- ▣ *Vahan* and *Sarathi* Initiative
- ▣ Equipment and back office
- ▣ Operations and Maintenance.

Indian Experiences

- ▣ Off line system by Delhi police – special forms filled in by field staff – MICR and challan generation –late 90's and 00's.
- ▣ First on line blackberry based application – Bangalore Sept 2007.
- ▣ Tremendous increase in enforcement figures
- ▣ Appreciated by Public.

Results of On line Enforcement in Bengaluru

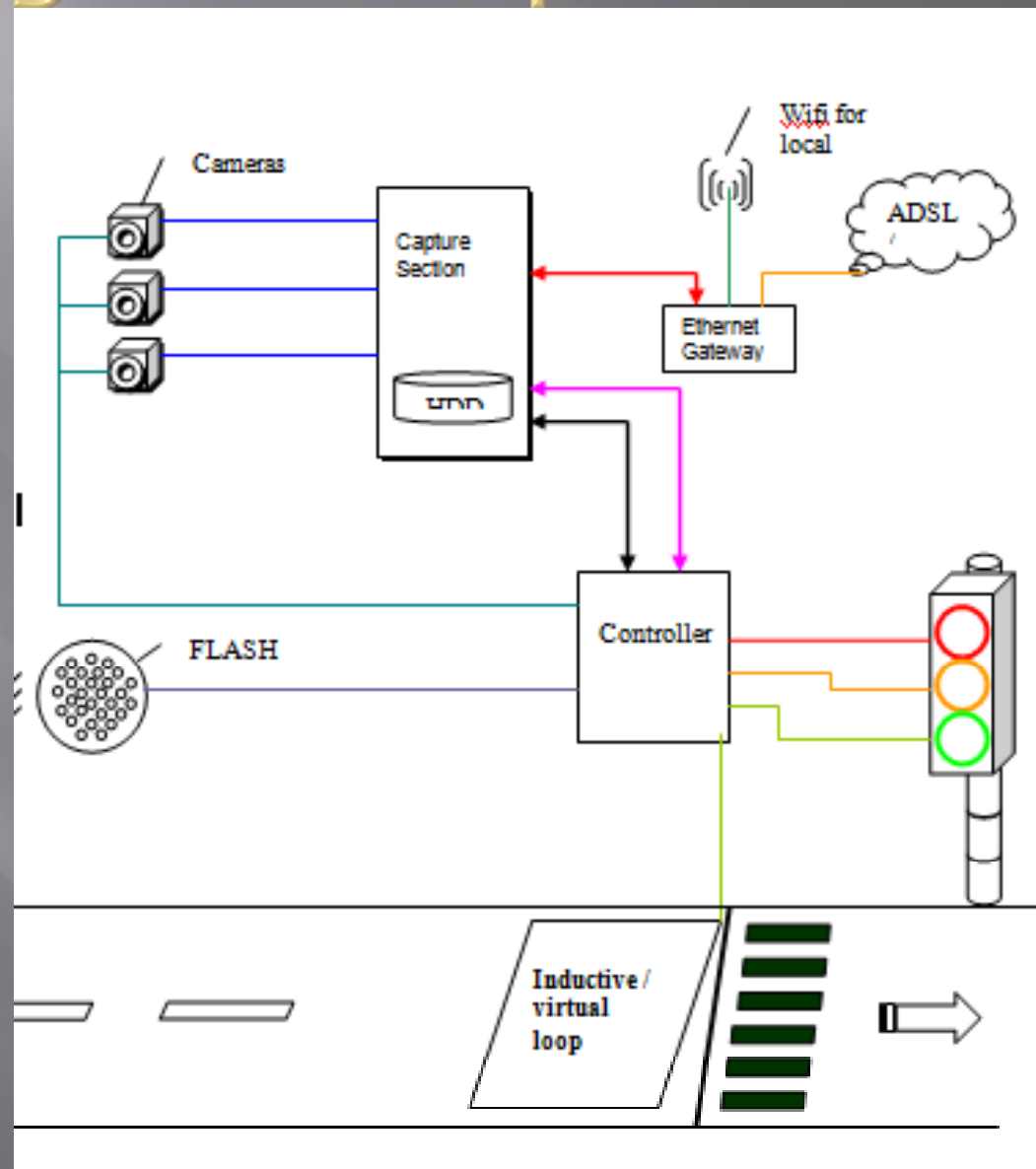
Total No. of cases booked & fine amount collected before Blackberry introduced

Sl No	Year	Cases booked (Lakhs)	Fine amount collected (Crores)
1	2002	13.30	13.60
2	2003	12.80	14.11
3	2004	11.30	12.87
4	2005	17.00	20.28
5	2006	16.60	21.27
6	2007	14.40	19.91

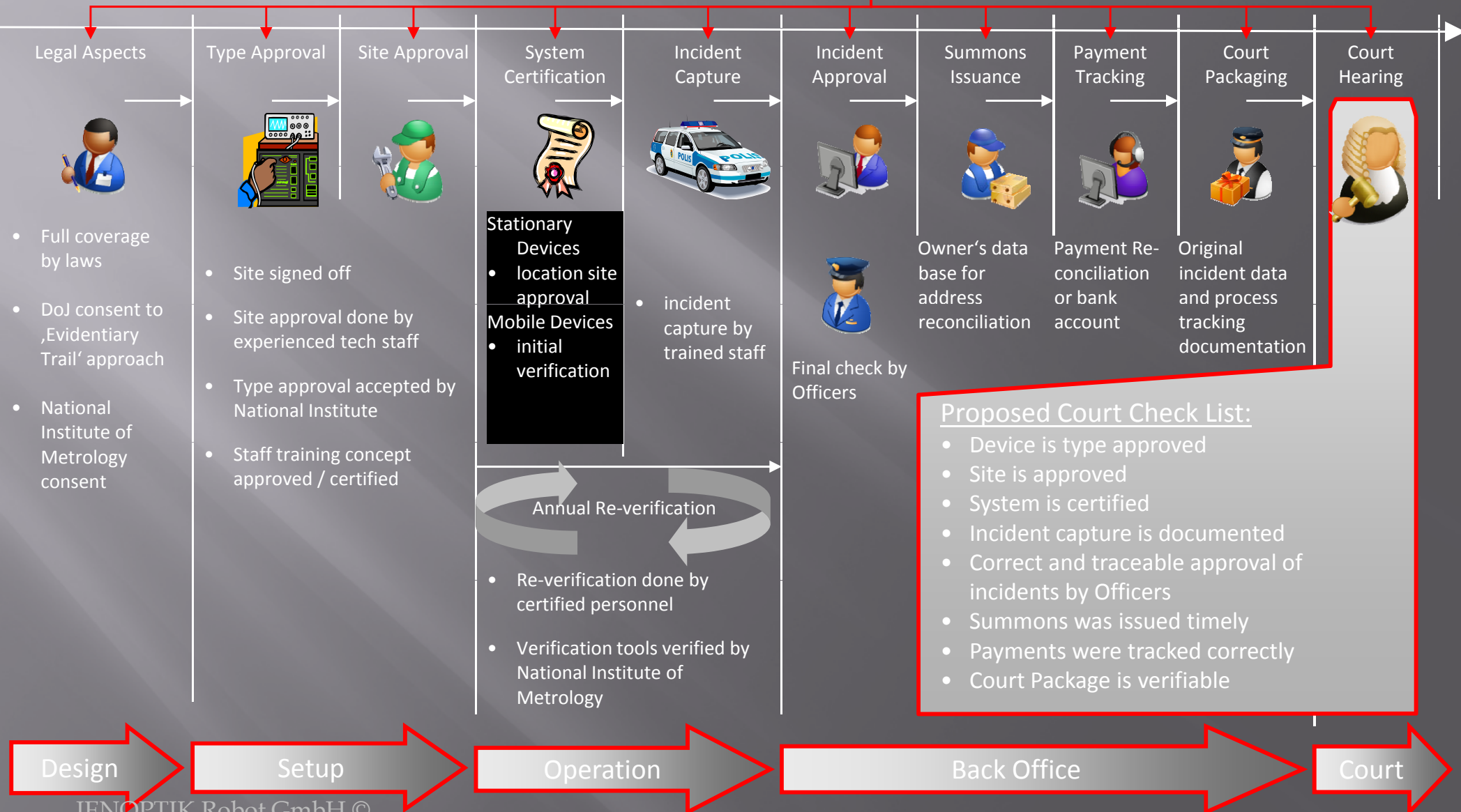
Total No. of cases booked & fine amount collected after Blackberry introduced

Sl No	Year	Cases booked (Lakhs)	Fine amount collected (Crores)
1	2008	20.80	29.50
2	2009	26.40	37.61
3	2010	33.33	47.55
4	2011	34.80	50.56
5	2012	52.05	53.85

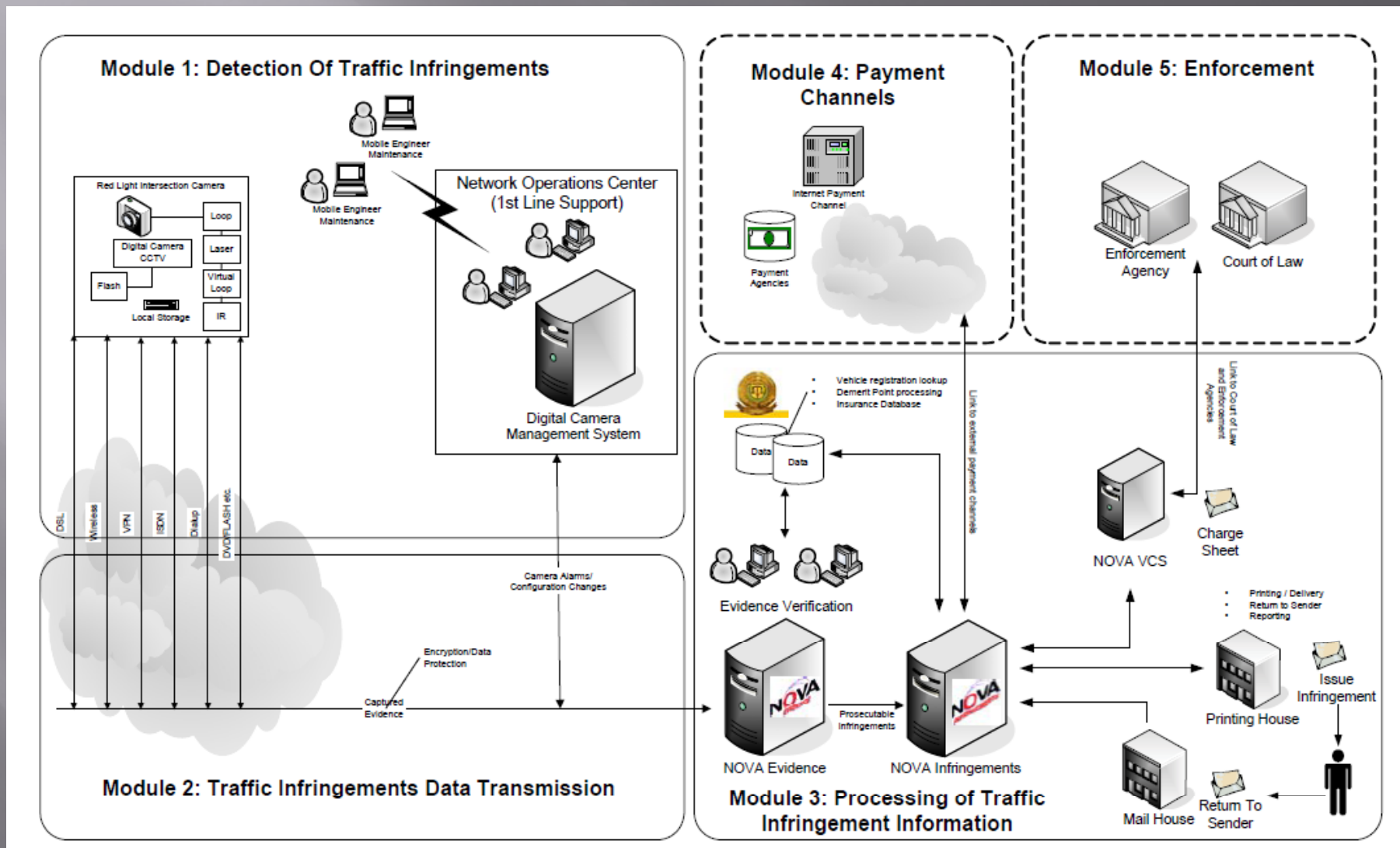
Online Enforcement Red light and speed Violations



Chain of Evidence – On line Enforcement



Back office System



Indian Experiences

- ▣ 5 sites were installed in Bengaluru in 2011.
None is working now
- ▣ Cases in other cities like Kolkata, Delhi, Hyderabad is not different
- ▣ ANPR is still a challenge...
- ▣ % of tickets generated from captured violations was less than 10
- ▣ Revenue from tickets do not justify resources required...

Indian Experience - Chennai

Indian Experiments with outsourcing

- First such project is on implementation phase in Chennai city.
- 100 Junctions are being set up with cameras and communication devices to generate tickets to
- Payments to contractors are per citation and it is yet not clear what kind of technology is used and whether they will stand up to legal scrutiny.
- It is important to do the first project right or else the whole concept will be a non starter ever.

SCRAPPED

Way forward for India

- ▣ Hopefully the new laws will encourage investments in Enforcement systems which will naturally enhance road safety
- ▣ Many cities are considering large scale enforcement systems implementation - Pune is implementing one
- ▣ No local Industry... lack standards and adherence to legal requirements.
- ▣ There will be more big brothers watching in future for sure...



Thank you

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