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# 5<sup>th</sup> IRF Regional Conference

## Technical Session III

# Accident Data Recording System

By

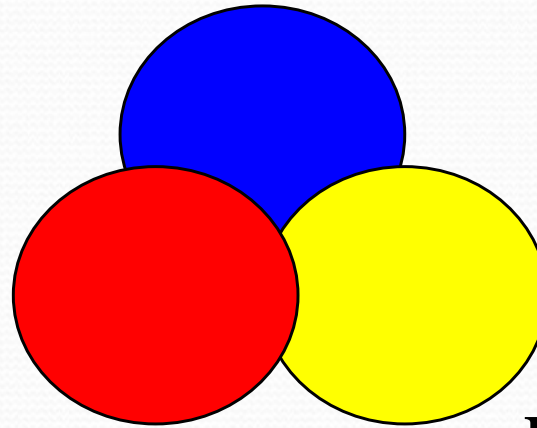
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# Integration for Effective Road Safety Program

**Education**



**Engineering**

**Enforcement**

**Evaluation**



# Integration for Effective Road Safety Program

Integration of 3 Es through encouragement of 3Cs amongst involved agencies

- **Cooperation** - Development of joint road safety priorities
- **Coordination** - Sharing of road accident information
- **Collaboration** – Development of joint solutions for specific road safety issues



# Importance of Crash Data for Proposing Countermeasures

- To tackle road safety issues in a region
- Complex countermeasures can be proposed, developed and implemented ranging across the 3 Es
  - Engineering,
  - Education and
  - Enforcement
- Road crashes are multi-factorial event
- Solutions can come from a wide range of agencies, organisations, community, and commercial sources etc.
  - all are having different needs of the **accident data**

# Importance of Crash Data for Proposing Countermeasures

Phase/ Countermeasure	Human Behaviour	Road & Environment	Vehicle & Equipment
<b>Pre-Crash</b>	Driver education	Skid resistant surface	ABS Braking
<b>In-Crash</b>	Wear seat belt and helmet	Roadside hazards to be removed	Crush zones & Air bags
<b>Post-Crash</b>	First aid training	Access to emergency services	Emergency services

# Research and Evaluation

Good crash data will support road safety through

## Research

- problem identification
- potential program solutions
- development of policies
- countermeasure development

## Evaluation

- responses to countermeasures
- comparisons and prioritization of initiatives
- prediction of success for the future



# Accident Data Collection Process

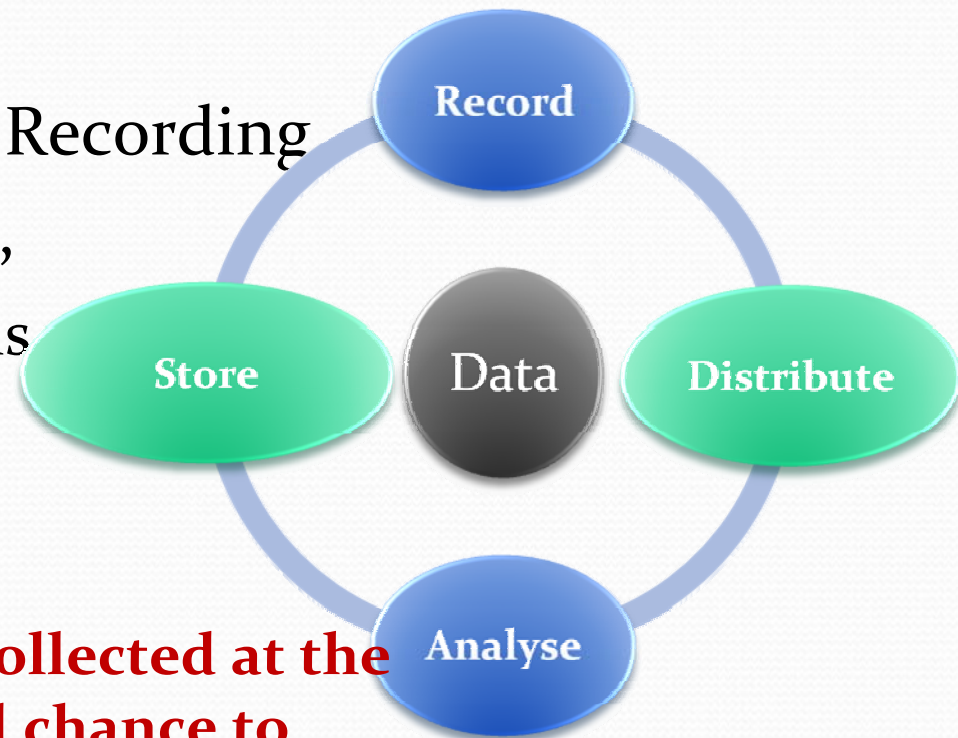
- The accident record presently is being maintained by the police department in the form of FIR. **This is NOT accident data record**
- Each police station records the details of the accident which take place within the area in its jurisdiction
- Data is consolidated in SP's office in district HQ for record
- Shortcomings: Lacks the right balance between the amount of detail recorded about each accident due to
  - Lack of Time



# Proposed Accident Data Recording & Management System

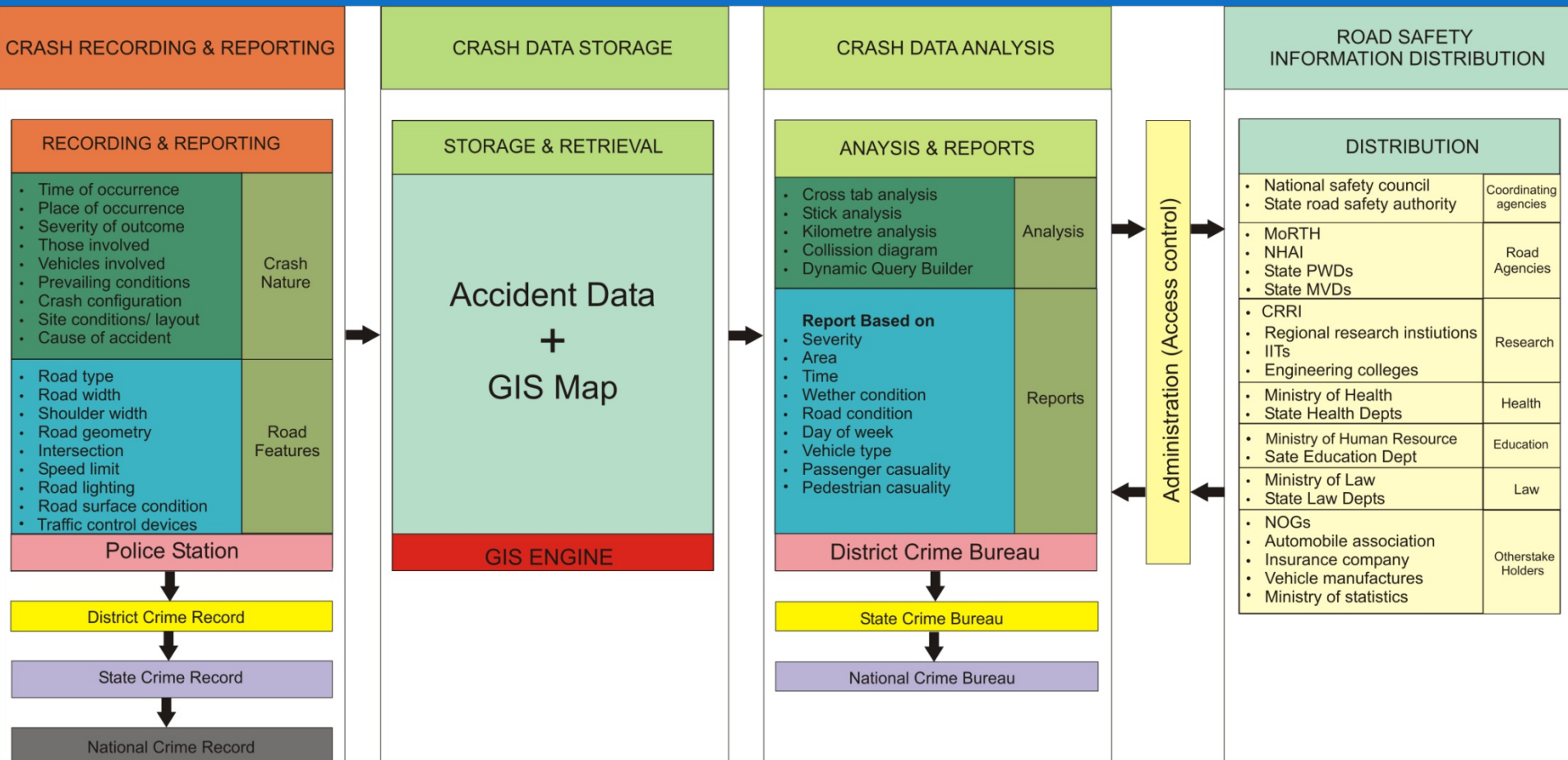
Road crash data systems generally will have four major components

- Crash Data Collection and Recording
- Data Storage and Retrieval,
- Process of Accident Analysis
- Method for Reporting and Distributing Data



**Please Note: If the data is not collected at the first instance, there is no second chance to collect the data from accident scene**

# Accident Recording & Management System



# Proposed Accident Data Recording & Management System

- **Crash Data Collection & Recording**
- **Database Requirement**
- **Accident Location Possible Outcomes**
- **Data storage, retrieval and analysis**
- **Road safety information reporting**
- **Administration and tools module**

# Proposed Accident Data Recording & Management System

## ➤ Crash Data Collection & Recording

- ✓ Information required to be completed at the scene on an easy-to-complete format or a hand-held device like PDA
- ✓ Single form designed for all purposes
- ✓ Computer coded data format

## ➤ Database Requirement

### The nature of accident

- Time of occurrence
- Place of occurrence
- Severity of outcome
- Those involved
- Vehicles involved
- Prevailing conditions
- Crash configuration
- Site conditions/layout
- Cause of accident

### Road features & operating controls

- Road type
- Road width
- Shoulder width
- Road geometry
- Intersection characteristics
- Speed limit
- Road lighting
- Road surface condition
- Traffic control devices

# Proposed Accident Data Recording & Management System

## ➤ Accident Location - Possible Outcomes

- ✓ Accident characteristics to be meticulously collected at crash sites
- ✓ An accurate and precise accident location is a critical characteristic to obtain reliable results from accident analysis studies
- ✓ Two forms of error possible - one associated with the actual physical location of the crash, second with the recording of that location

Physical site identification	Transfer of location data to database	Location Outcome
✓	✓	✓
✓	✗	✗
✗	✓	✗
✗	✗	✗

# Proposed Accident Data Recording & Management System

## ➤ Data Storage, Retrieval and Analysis

Storage of the collected accident data in GIS platform

- **Data analysis**

Various analyses include

- Cross Tab Analysis
- Stick Analysis
- Kilometre Analysis
- Collision Diagram generation
- Dynamic Query Builder

- **Reports based on**

- Type of area
- Time
- Weather conditions
- Road conditions
- Day of the week
- Vehicle types
- Passenger causality
- Pedestrian casualty.



# Proposed Accident Data Recording & Management System

## ➤ Road Safety Information Reporting for various Stakeholders/Agencies

- National Safety Council
- MoRTH, NHAI, State PWDs, State MVDs
- CRRI, Regional Research Institute, IITs , Engg. Colleges
- Health Depts - Central and State
- Ministry of Human Resources - State Education Dept.
- Ministry of Law, State Law Depts.
- National Crimes Bureau
- Indian Roads Congress, International Road Traffic and Accident Database
- Ministry of Statistics
- Insurance Companies, Vehicle Manufacturers

# Proposed Accident Data Recording & Management System

## ➤ Administration and Tools Module

### ▪ Administration Module

- granting access rights
- periodic back up file and distribution of data

### ▪ Tools Module

- importing digital maps
  - creating monitor areas
  - updating IRC crash and collision symbols
  - labelling the maps
- 
- Access to the main database application is to be restricted using user names, user groups and password



# Main Features of the Application

- Multi-lingual capabilities – based on programmed built-in menu and capability of addition in menu
- Support for multiple databases
- Support for multiple GIS & GPS functions
- Pictorial menu for accident types and collision diagram with vehicular movements
- Link to police information system for FIR etc (with complete information)
- Extensive support for all statutory national and international accident data reporting formats  
- to be extracted in separate data modules

# Actions for Institutionalizing Accident Data Management System

## ➤ Police Training

- Provide training sessions
- Have full time data specialists to provide initial support
- Ensure Help/Guidelines are readily accessible and usable

## ➤ Ensuring accurate data entry

- First Information Report (FIR) information, that is factual/immutable be transferred to the accident report extract
- Have unique identifier linking FIRs to accident report extracts
- Any 'false case' FIRs be identified and deleted from accident recording system and compiled separately

# Actions for Institutionalizing Accident Data Management System

## ➤ Recording accurate location data

- Use of GPS devices for precise location data
- Use very basic GPS which provide coordinates (recorded automatically)
- GIS maps linked to GPS locations (automatically)
- Maps can be produced showing accurate road data location, district information, police area information etc.



# **Actions for Institutionalizing Accident Data Management System**

- Use of the program by Police (including GPS function) for precise location data
  - Develop an extract of the accident report form which contains the required data fields for FIR, and all other information shall be optional
  - New accident data recording system will facilitate to extract mandatory fields consistent with the Police accident report requirements
  - Translation of the extracted form into accident report extract and ensure consistency

# Actions for Institutionalizing Accident Data Management System

## ➤ Rollout across the country

- Enter Back Data (2 Years)
- Demonstrate how the system reduces the time to record crash data and faster use in analysis
- Launch the program in limited sites where expertise is available (initially)
- Expand it to whole country



# Actions for Institutionalizing Accident Data Management System

## ➤ Administration

- Organise sub-task groups with experts and stakeholders to take responsibility and respond to early teething problems
- Establish linkage to researchers and technical colleges with graduate students/staff to provide ongoing support

## ➤ Procurement/Provision

- Hand-held device with built-in GPS location recorders for all police stations
- Provisions for data handling experts for FIR data extraction (for initial periods)
- Provision of computer systems, printers and web access



Thank You