

Association
mondiale
de la Route



World Road
Association

Road Safety Inspections

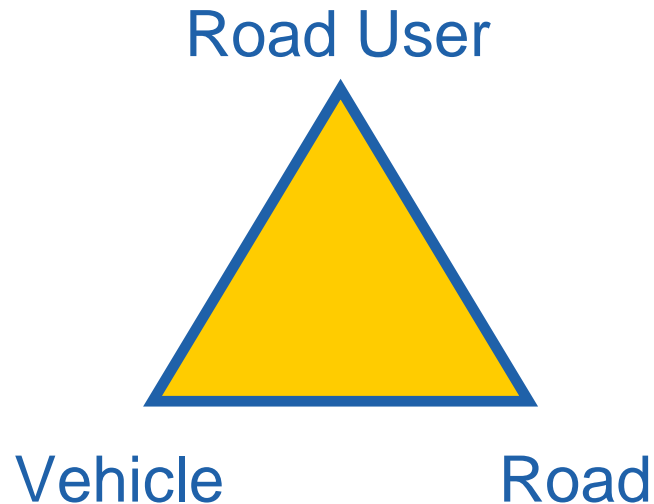
Phil Allan
Australia

ROAD SAFETY SEMINAR
Lome, Togo
October 2006

Definition

A Road Safety Inspection (RSI) is an on-site systematic review of an existing road or section of road to identify hazardous conditions, faults, deficiencies that may lead to serious accidents

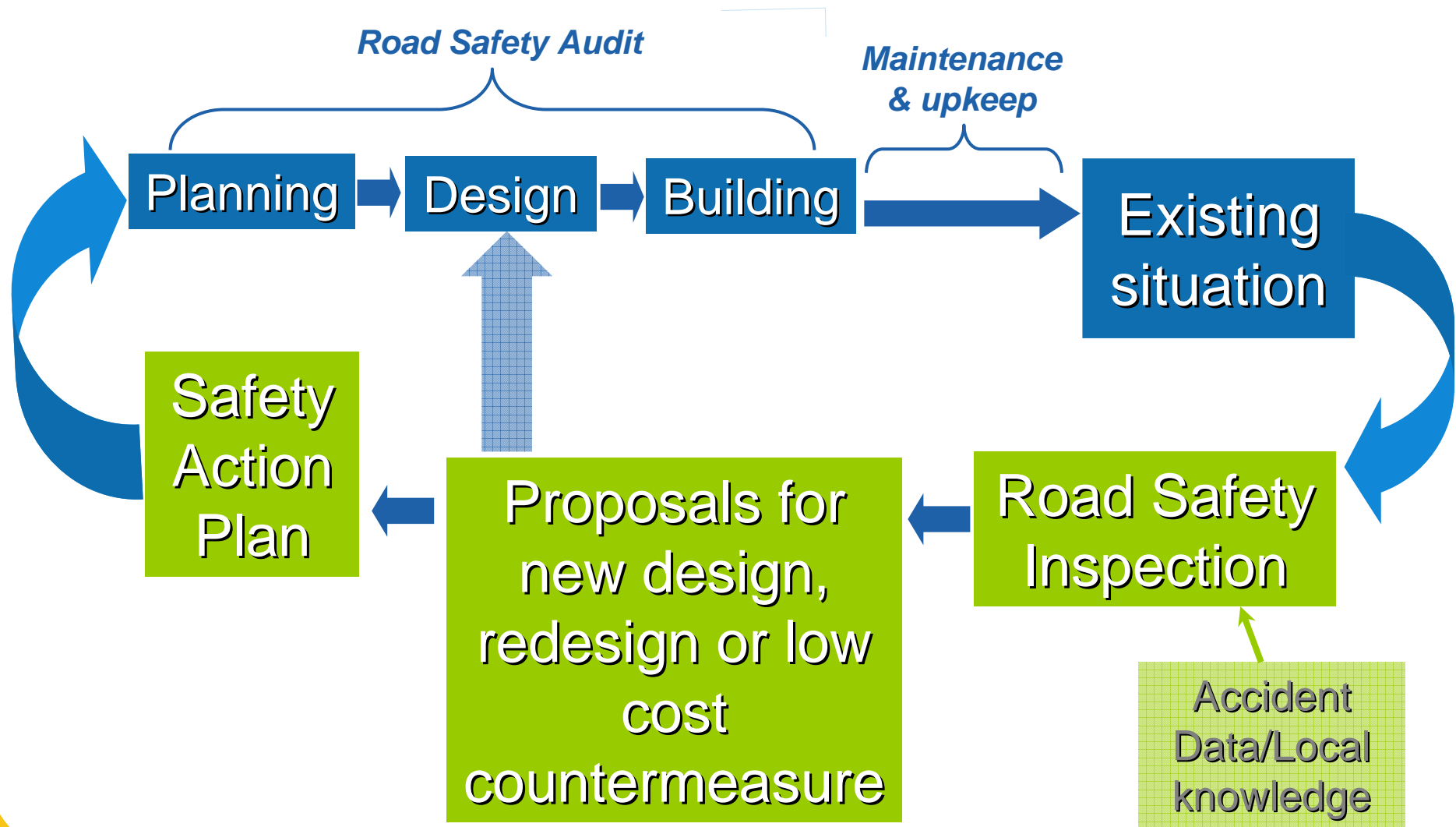
The Systems View



- Accidents can be caused by failure of one component
 - Vehicle or road or road user
- Or by an interaction between components
 - Vehicle and road or road and road user

RSIs focus on the road and roadsides and what influence it might have on an accident

Process



What should be looked at?

Function

- Role
- Traffic Mix
- Traffic Volume



What should be looked at?



- Cross section including surface conditions and drainage
- Alignment
- Intersections , Junctions, Traffic signals
- Railway Crossings
- Service and rest areas including petrol stations, restaurants, shopping facilities and parking places
- Parking, Loading and Deliveries
- Traffic signing, Markings, Lighting
- Roadside features (including slopes, planting, civil engineering structures, drainage ditches and other obstacles)
- Passive safety installation
- Public Transport stops
- Needs of motorcyclists, pedestrians and cyclists



A variety of issues should be checked:

- Inspections should be regular (timing not fixed)
- Inspections are not related to routine maintenance
- Inspections should be conducted at night as well as during the day, possibly at various times of day and possibly in winter and summer
- Inspections should be conducted by people with experience, background and knowledge





RSI and Accident Data

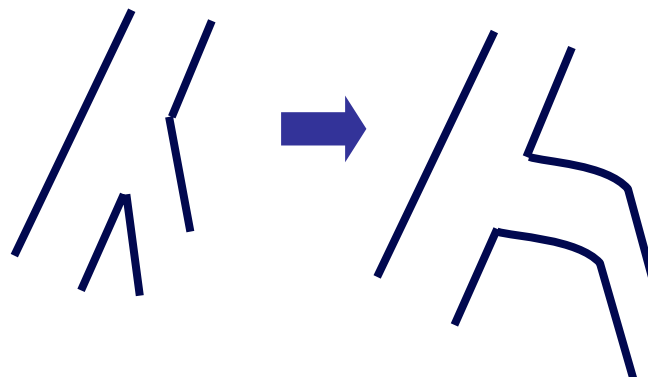
- RSIs aim to identify any features that may lead to future accidents, so that remedial treatment may be implemented before accidents happen

- RSIs have the following benefits:
 - Identification of types of features that exist across the network for 'mass-action'
 - To specifically address safety, rather than relying on routine maintenance
 - To provide a comprehensive overview of safety issues along a certain road

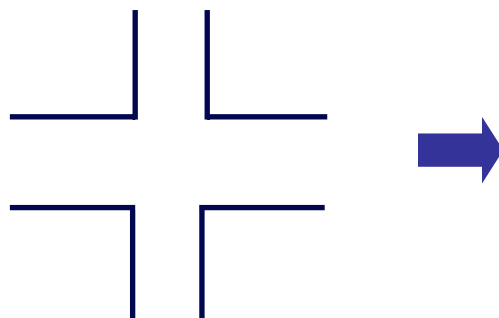
Why do inspections?

It can reduce the potential or the actual number of accidents at intersections, for example:

- changing an intersection from a Y junction to a T junction



- Changing a cross road to a roundabout



Why do inspections?

It can reduce the potential or actual number of head on collisions, for example:

- Wire rope barriers
- Audio tactile markings
- Coloured central medians



Why do inspections?

It can reduce the potential or actual number of accidents for vulnerable road users, for example:

- Pedestrians
- Cyclists
- Mopeds



Why do inspections?

It can reduce the potential or actual number of accidents involving roadside Hazards, for example:

- Removal
- Protection

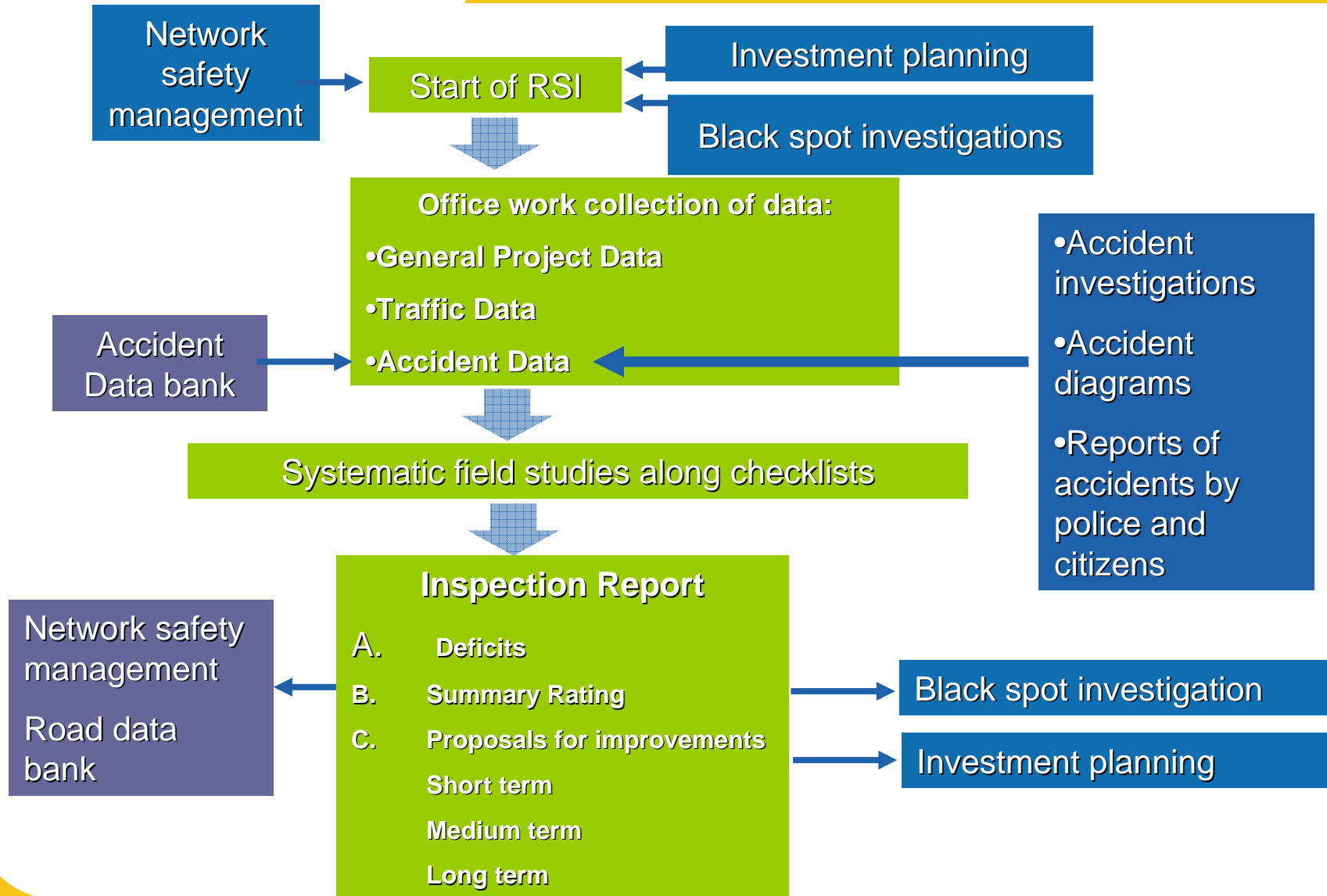




The procedure of a Road Safety Inspection

1. Preparation of the field study in the office
2. The field study itself focusing on completing the check list
3. The RSI report

The work flow





1. Office work

Preparation for the Field Study

General project data

- Road function
- Traffic situation
- A basic analysis of accident data
- Road standard
- Surroundings
- Video or pictures of the road is an option

Preparation

- The field study – necessary equipment
- Check lists/Investigation form



1. Preparatory work in Office

Road Function

- Describe the function of the road
 - Is it a national, regional or local road?
- What kind of vehicle traffic uses this road?
 - Is it long or short distance traffic
 - Is there a mixture of traffic?
 - Is the road part of a major traffic route?
- What about heavy vehicle traffic?
 - Is the proportion more or less than average?
 - Is it a cargo route?
- Do vulnerable road users such as pedestrians or cyclists use the road?
- Describe the surroundings in general.
 - Is the road situated in a rural, sub-urban or urban area?
- If the road passes through agricultural areas, there are probably many slow moving vehicles that use the road.



1. Preparatory work in Office

Traffic Situation

- Determine the traffic volume
- Determine the traffic growth during the last 5 years
- Determine the composition of the traffic
 - The proportion of private cars, buses and trucks
- Is the traffic volume expected to change in the future?



1. Preparatory work in Office

Road Standard

- Describe the road standard and include comments on:
 - Road function
 - Traffic volume
 - Types of junctions
 - Types of intersections
 - Speed limits etc.
 - Alignment/geometry
- Analyse the speed limits
 - Are they suitable for built up areas?
 - Are there vulnerable road users?
 - Are children, elderly and disabled frequent users?
 - Does it match the alignment of the road?



1. Preparatory work in Office

Surroundings

- Describe the surroundings
 - Is it rural, urban or suburban?
- What kind of surroundings are there?
 - Forest
 - Agricultural
 - Built up
 - Combination of the above
- In built up areas, describe in detail if it is industrial, shopping or residential
- Are there facilities that generate heavy traffic?
- Has there been any change of land use?
- Does the road pass through any towns or villages?



2. Field Study

What to take on the field study:

- Equipment
 - Safety Vest (reflecting)
 - Spirit Level and tape measure
 - Digital camera
 - Road map
 - Passenger car (flashing light/warning triangle)
 - Check lists
 - Office work outcomes
- The inspection should be led by a trained person with a background in traffic engineering and road design, who can bring in experts with a knowledge of guidelines and regulations about traffic, signs etc as necessary. Must have strong communication skills



3. Checklists

There will be different checklists for different types of roads

The checklist for RSI will be very similar to the checklist for the post opening stage of a Road Safety Audit

Road Safety Inspection - Checklist for Interurban Roads Nr.Section

Issue	No.	Question	Yes/ No	+	-	Remarks
1. Function and surrounding	1	Is the design of the road according to its function and hierarchy in the network?				
	2	Are there mixed functions?				
	3	Do we realize the change of functions carly enough (around 300 m ahead)?				
	4	Are transitions installed between different functions?				
2. Cross section Climate and water	1	Is the cross section appropriate to the function?				
	2	Are any facilities put in place to counter climatic problems effective?				
	3	Is there sufficient drainage for the road and surrounds?				
	4	Is there an open drainage system within the safety zone?				

3. Checklists

Characteristic	No.	Question
Lighting	1	Have the audit results from the previous audit phase been taken into consideration?
	2	Have fixed obstacles been sufficiently safeguarded?
	3	Is the stationary lighting appropriate?
	4	Is the road sufficiently illuminated?
	5	Is the lighting of special situations (transition zones, changes in cross section) suitably designed?
	6	Is the transition from a built-up to a rural road or from an illuminated to an unilluminated road appropriately designed (village/town outskirts)?
	7	Do remaining unlit areas present potential problems?
	8	Does the existing road lighting lead to conflicts in recognizing the yellow indication (sodium discharge lamps)?
	9	Does lighting need to be changed so that crossing pedestrians are clearly visible?
	10	Is contrast lighting required at the junction?
	11	Does the ambient lighting present any special requirements?
	12	Can the stationary lighting cause problems in recognizing the traffic signs or the alignment of the road?
	13	Are the lighting masts situated outside of the safety zone or properly protected?
	14	Is stationary lighting at junctions/service and rest areas properly situated?
	15	In the areas where is no stationary lighting, are there any potential dangers?



Main topics of the checklist

- Function
- Cross sections
- Alignment
- Intersections, Junctions, Traffic Signals
- Railway crossings
- Service and rest areas (petrol stations, restaurants, shopping facilities, parking places etc.)
- Parking, Loading and Deliveries
- Traffic signing, Markings, Lighting
- Road side features (including slopes, plantings, civil engineering structures, drainage ditches and other obstacles)
- Passive safety installations
- Public Transport stops
- Needs of pedestrians and cyclists (extra sidewalks and crossings)



4. RSI - Report

- The Road Safety Inspection report is the official document in which the result of the inspection is collected

- Usually there are three parts in the report:
 - PART A – general information about the road section

 - PART B – Investigation form with the deficiencies

 - PART C – Suggestions for countermeasures



4. RSI - Report

➤ PART A

- About the activities having been undertaken
- A general description of the road or road section has to be added including the traffic situation (for example traffic volumes, composition of the traffic volumes)

4. RSI - Report

➤ PART B

- Will describe the deficiencies which were found and an assessment of the safety deficiencies
- It will contain the completed investigation form and the documentation with pictures
- Accurate location of deficiencies is critical

Results of Road Safety Inspection on the..... : National Road No.... between and	
Length	Aboutkm
Max Speed	... km/h outside, ... km/h inside towns and villages
1. Function and surrounding	National Highway, long distance transport
Linear settlements?	
2. Cross sections	
3. Alignment	
4. Intersections	
Traffic Signals	
5. Service and rest areas	
6. Traffic signing and marking	
7. Lighting	
8. Railway crossings and Bus stops	
9. Road side features	
Civil engineering structures	
Plantings and trees	
Other obstacles	
10. Passive safety installations	
11. Motorbikes and cycle needs	
12. Pedestrian needs	

4. RSI - Report

- PART C – will contain proposals for:
 - **Short term measures**
 - for immediate improvement of the situation
 - **Medium term measures**
 - for smaller investments or maintenance measures
 - **Long term measures**
 - for larger investments

Note: Cost will be an issue but remedial works should be prioritised according to risk

Example from Greece

- Most intersections in the **western part** are not designed properly with left turn lanes and some are not perpendicular. We couldn't investigate all intersections. The intersection with the local road to Prodomo – end of the **eastern part** – is used as an example:
- The intersection is very wide with extra lanes for different directions guided by traffic islands above the level of the carriage way. The radii of turning lanes allow high speeds. There are some dangerous conflict points and the visibility of the traffic on the main road is partly obstructed by course of the turning lane (eg the driver on the right turn has to look backwards when entering the main road). There is lighting but no traffic light and no speed limit ahead of the intersection. There are no crossing facilities for pedestrians and cyclists.





In Summary

- RSI is an on-site detailed review of an existing road looking for potential problems
- RSIs should be regular and follow a standard process and look at a range of issues
- If accident data is available, its input is valuable in road selection or understanding of typical accidents
- RSIs should be carried out by an expert and/or expert team
- RSIs should result in a report with possible (high and low cost) countermeasures



Thank you for your attention

Name: Phil Allan

Email: Phil.Allan@saugov.sa.gov.au

Telephone: +618 8204 8843