Road Asset Management Systems
+
Performance-Based Contracting

Session 1.4: Method of Data Collection

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February 2020

Agenda

Day 1 Road Asset Management System (RAMS)	Day 2 Road Asset Management System (RAMS)	Day 3 Performance Based Contracting (PBC)
Session 1.1 **Introduction to RAMS**	**Session 2.1** **Data processing and management**	**Session 3.1** **Introduction to PBCs**
Coffee break	Coffee break	Coffee break
Session 1.2 **Functions of a RAMS**	**Session 2.2** **Data analysis and planning**	**Session 3.2** **Performance standards**
Lunch	Lunch	Lunch
Session 1.3 **Data to be collected**	**Session 2.3** **Road asset management**	**Session 3.3** **Inspections and Payments**
Coffee break	Coffee break	Coffee break
Session 1.4 **Method of data collection**	**Session 2.4** **Conclusions and way forward**	**Session 3.4** **Conclusions and way forward**

Data

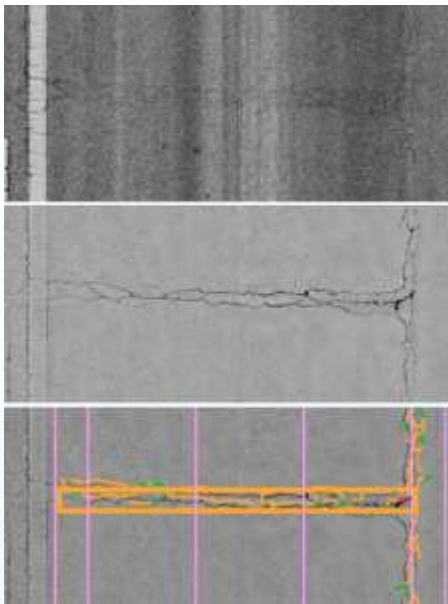
- Needs to be up-to-date (depends on type of data)
- Needs to be complete (entire network)
- Needs to cover the data types required for the function of the RAMS
- Needs to be reliable
- Needs to be sufficiently accurate for the function of the RAMS

Data collection

- Different ways to collect the same or similar data
  - Depends on the required accuracy
  - Depends on how we will use the data – functions of the RAMS

- Example: potholes and cracking
  - Number and size of potholes or cracking
  - Degree of potholes or cracking (Low, Medium, High, Very High)

  - Manual survey in the field
    - Visual assessments from a vehicle
    - Measurements on the road itself - costly
  - Post-processing of video data
    - Visual assessment of categories based on forward-looking camera
    - Low accuracy measurements based on forward-looking camera
  - Automated data collection
    - High accuracy measurements based on downward-looking camera



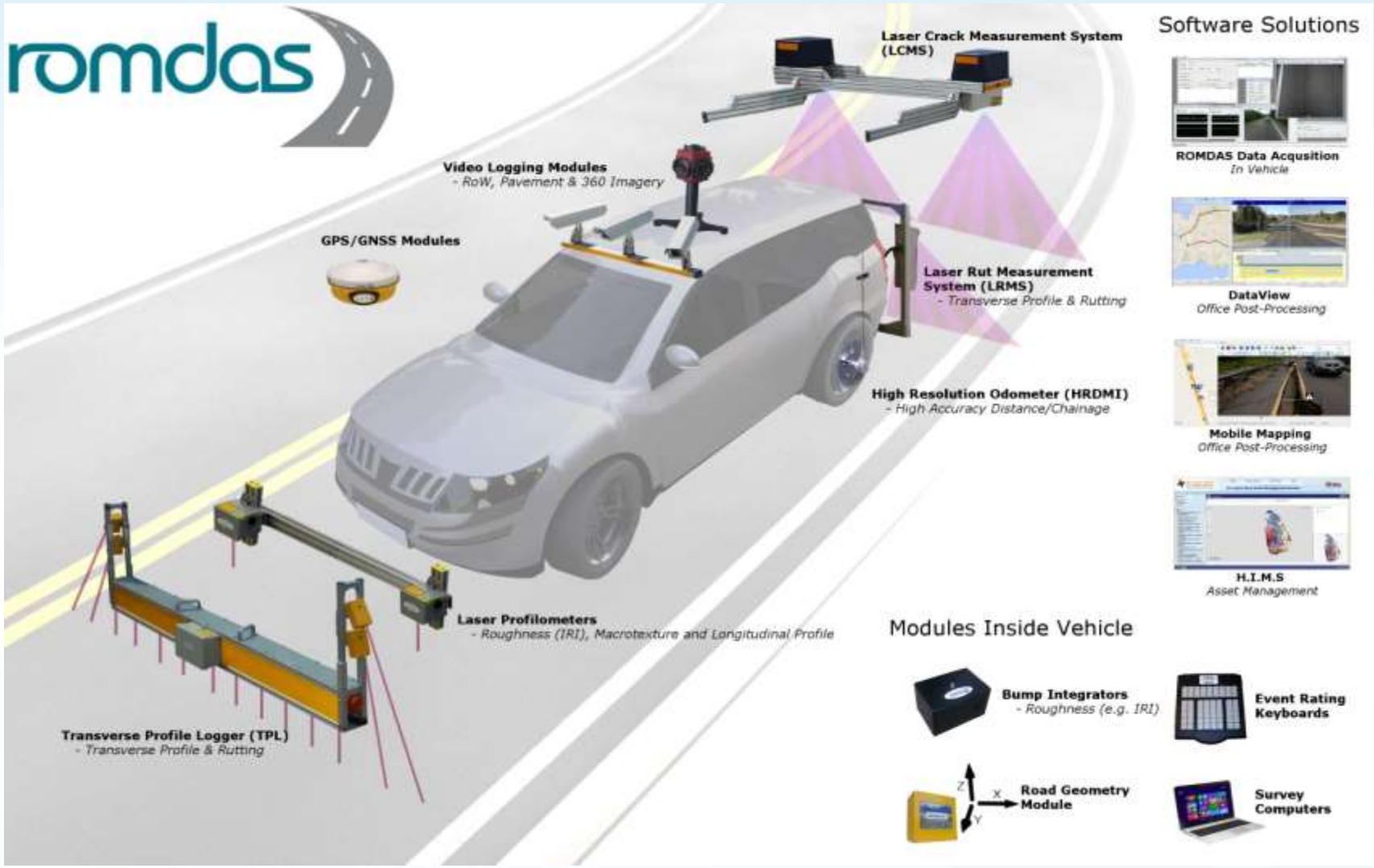
Combining data collection

- Different data types are often collected together
  - Using different equipment
  - During a single survey
  - This reduces data collection costs

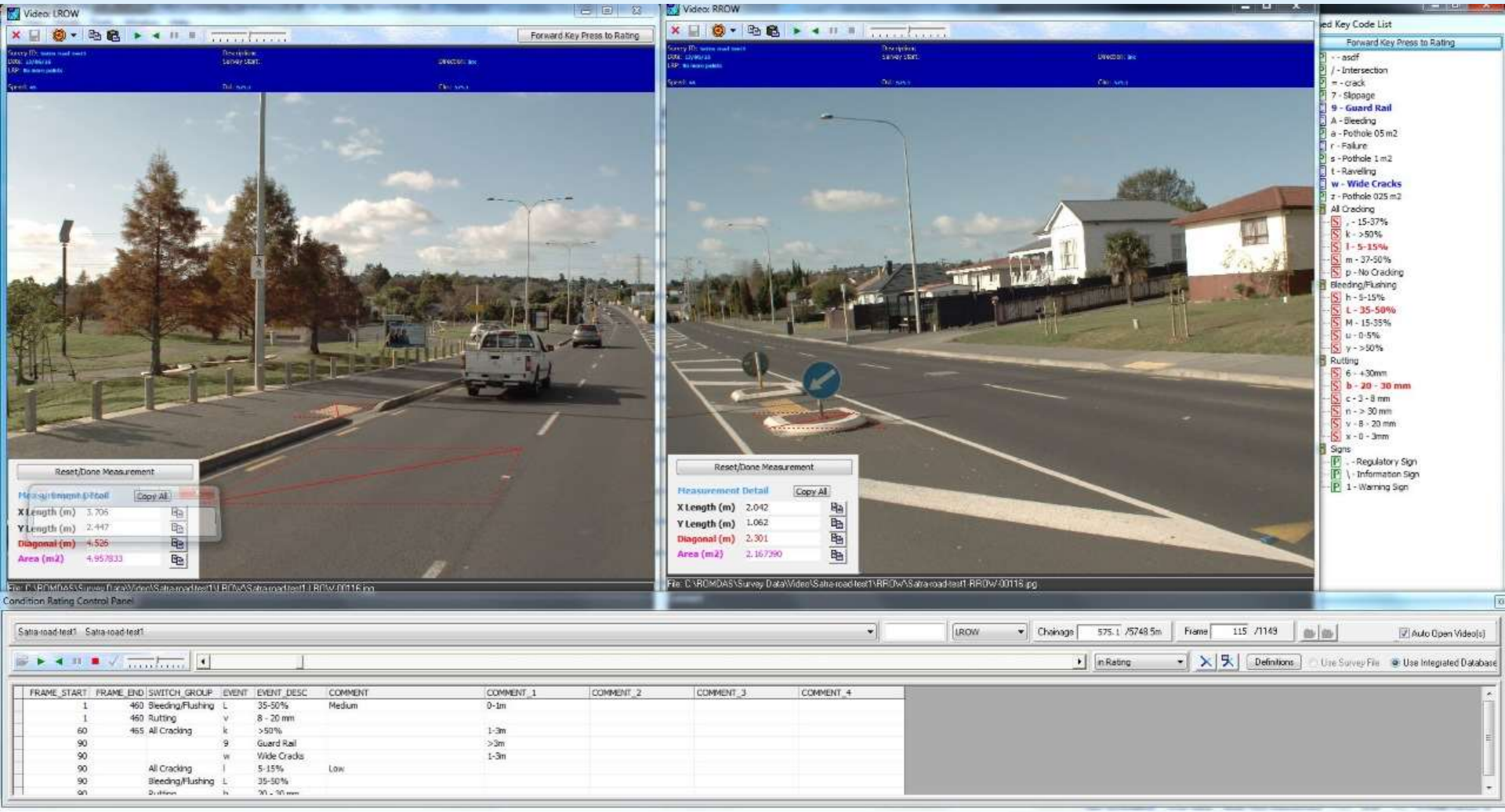
- Not possible for all data
  - Some data can be collected in a drive-over survey
    - IRI data
    - Video
    - Road length
  - Some data requires stopping (and measuring)
    - Culvert data
    - Bridge abutment data
    - Falling Weight Deflectometer

Example of survey equipment

- Example from ROMDAS – this is only one of many possible suppliers



Example of Post-Processing



Data collection timing

- Data generally collected after winter or rainy season
  - Most damage occurs during that season
  - Data remains up-to-date until next winter/rainy season
- Post-processing can be carried out throughout the year
- Data to be used for planning and budgeting
  - Needs to be aligned with budget submission / fiscal year
  - Take account of time required for data processing and analysis
- Generally a peak period for data collection
  - Few months each year
  - Depends on network size and portion to be surveyed each year
  - Depends on frequency of surveys

Example: Pakistan

ID	Task Name	2nd Quarter			3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarte	
		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Data Collection				September 15					November 15								
2	Strategy and Programme Analysis							November 16		December 16								
3	Regional Stakeholder Consultations							December 17			January 16							
4	Detailed Project Level Appraisal									January 17			March 3					
5	Scrutiny by RMA Technical Scrutiny Party										March 4		March 10					
6	Review by the Steering Committee										March 11		March 17					
7	Approval by Chairman NHA and NHA Executive Board										March 18		April 2					
8	Convey of Approval to Regions												April 3					
9	Updation of Maintenance Contractors Enlistment											April 4		May 2				
10	Preparation of Detailed Tender Packages by Regional Offices										March 19		April 15					
11	Bids Invitation, Evaluation & Contract Awards											April 16			June 16			
12	Commencement and Completion of RMA Works		July 1													June 30		

Data collection frequency

- Inventory data
  - Only changes if road is damaged or improvements are made
  - Recording damages/improvements in RAMS will keep it up-to-date
  - Still need to update inventory data every 5-10 years
    - Entire network or only portion
    - Can be simple check of existing data – correct/add only where incorrect/missing
- Condition data
  - Changes rapidly – old data not useful
  - New data needs to be collected
  - Generally every 1-2 years for planning
    - May be longer period for low level roads (monitoring)
    - Less frequently for structures
- Traffic data
  - Can be adjusted based on general traffic growth
  - Still need to update traffic data every 5 years

Data collection frequency

- Lower frequency = Lower accuracy/reliability (data is outdated)
- Higher frequency = Higher cost

- Again the question is what accuracy is required

- Programme analysis
  - Higher accuracy required to determine treatment for each road link
- Strategy analysis
  - Lower accuracy required to determine mix of treatments for entire network

In-house or contracted out

- Condition data collection has peak each year
- Inventory/traffic data collection has peak every few years

- Data collection by in-house staff has benefits
  - Develop specific skills particular to your system
  - Avoid procurement delays and other issues
- It also has drawbacks
  - What will in-house staff do between peaks? Can they be involved in other aspects of the RAMS and planning?
  - How to ensure budget for operation (fuel, per diems) and equipment repairs?

- Can certain data collection tasks be outsourced?
  - Does the capacity/equipment exist in-country?
  - How can quality be ensured?

Example: Georgia

- Data collection is done in-house
  - ROMDAS survey vehicle
    - GPS, odometer, 3 video cameras, laser profilometer
  - 2 mobile traffic counting stations
  - Operated by RAMS unit – 3 staff

- Data needs expected to increase
  - Road inventory (passportization)
  - Bridge Management System
  - iRAP assessments using video data

- Some data collection likely to be outsourced
  - Maintenance contractors already required to collect traffic data
  - Just data collection or also post-processing

Example: Timor-Leste

- No data collection carried out yet
  - ROMDAS survey vehicle used for contract performance monitoring
    - GPS, odometer, laser profilometer, bump integrator, (1 video camera, DataView software)
- Currently a RAMS is being developed
  - Requires data to operate
- WB to support data collection for national and municipal roads
  - Using the existing ROMDAS vehicle
    - Basic inventory and condition data
    - Post-processing of video data using DataView software (e.g. bridges, surface distress)
  - Providing fixed/mobile traffic counters to roads department for traffic counts
  - On-the-job training to government staff
  - Government staff to replicate in future years (RAMS unit, Maintenance Department)

Group Work

- How will we collect the data from the previous session?
- Who will collect it?
- How often will the data be collected?
- What resources are needed?
- Can we reduce the data collection from the previous session?