



Road Management System Project in Bulgaria

“Development of a Road Management System in Bulgaria”.

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LISBOA 26TH OF MAY 2010
Petri Jusi, RMS Specialist / Team Leader**



Background

- The Road Infrastructure Agency (RIA) of Bulgaria has contracted Finnroad Ltd. in association with Roadscanners Ltd. and Ramboll (DK) Ltd. to carry out consulting services entitled “Development of a Road Management System and Design and Procurement of Pilot Contracts for Performance-Based Maintenance and Management of Roads Projects”.
- The assignment falls under the umbrella of the World Bank financed Road Infrastructure Rehabilitation Project (4695-BUL).
- The services were commenced by Finnroad on February 16, 2009 and were completed in May 2010 when the final Consultancy Completion Report was submitted.



Road Management System (RMS) Project Objectives and Scope



- **The main objective was to implement a modern and sustainable RMS in the Roads Infrastructure Agency (RIA) in Bulgaria included:**
- **Develop and put in operations an integrated Road Management System (RMS) that will provide the planning and programming framework for preparing annual and multi-year programs for maintenance and rehabilitation of the road network**
- **Prepare and estimate of annual road maintenance needs for the National road network, and a rolling 3 or 5 year periodic maintenance under a budget constrains**
- **Analyze and identify maintenance scenarios based on performance targets, and estimate costs for different types of road maintenance and rehabilitation works**
- **Assist NRIA in designing and procuring three pilot contracts for Performance-based Maintenance and Management of Roads (PMMR). In addition, three traditional contracts will be establish for control purposes. The PMMR and control contracts should preferably cover different climatic or terrain conditions**

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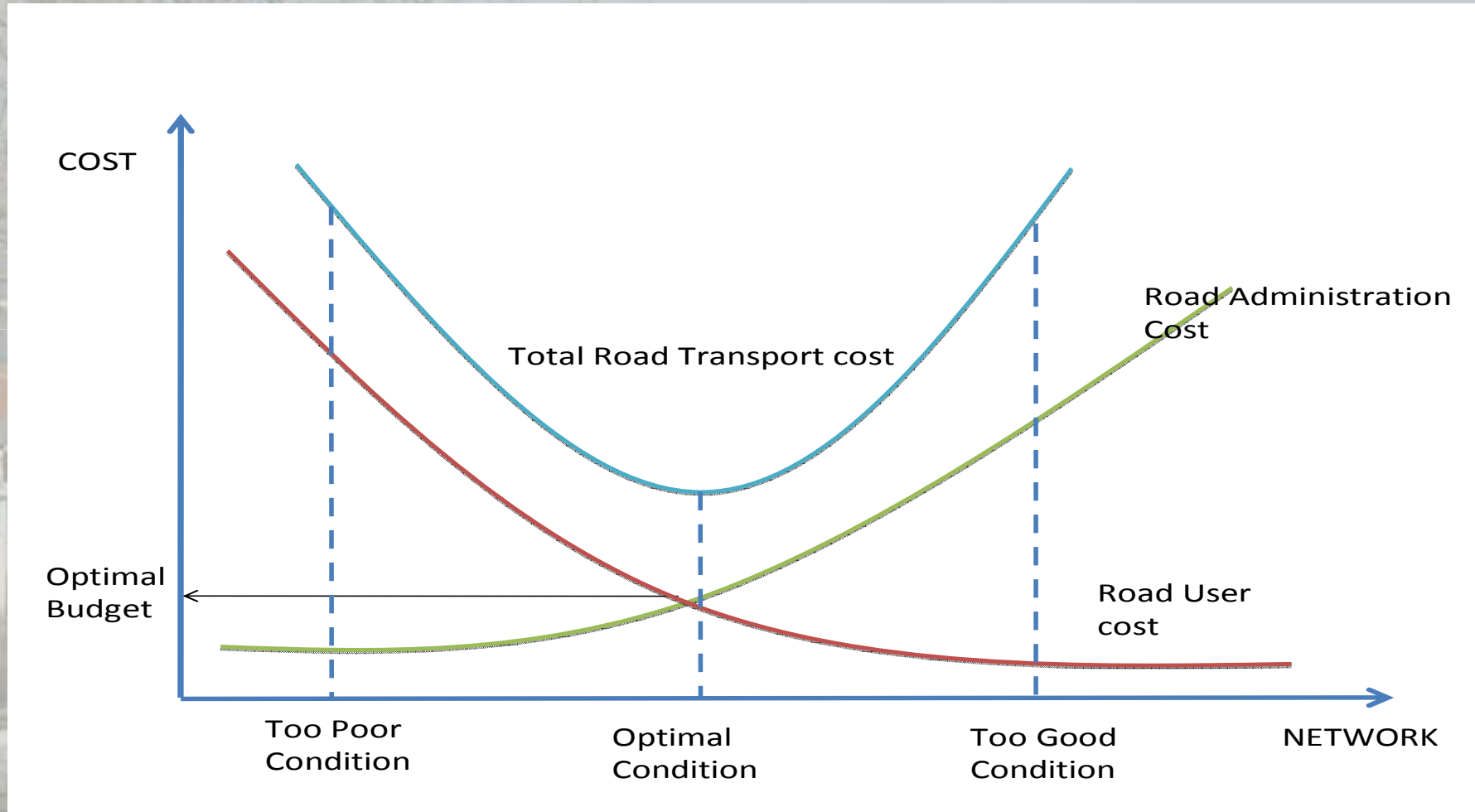


What is Road Management System (RMS)

- **Roads are a major economic asset, and the management of this asset is tremendously important for economic development. The functions of the road management process can be categorized as:**
 - Planning and Budgeting;
 - Programming; and,
 - Operations.
- **Major activities include:**
 - Needs Assessment;
 - Strategic Planning, including budgeting for new development and asset preservation;
 - Development, under budget constraints, of multi-year works expenditure programs; and,
 - Collection of Data. All of the above activities need data. Major data items include road network inventory, condition, traffic, and economic data.
- **RMS Definition**
 - An RMS is as any system that is used to store and process road network inventory, condition, traffic and related data, for road network planning and programming. Associated with the RMS are appropriate business processes



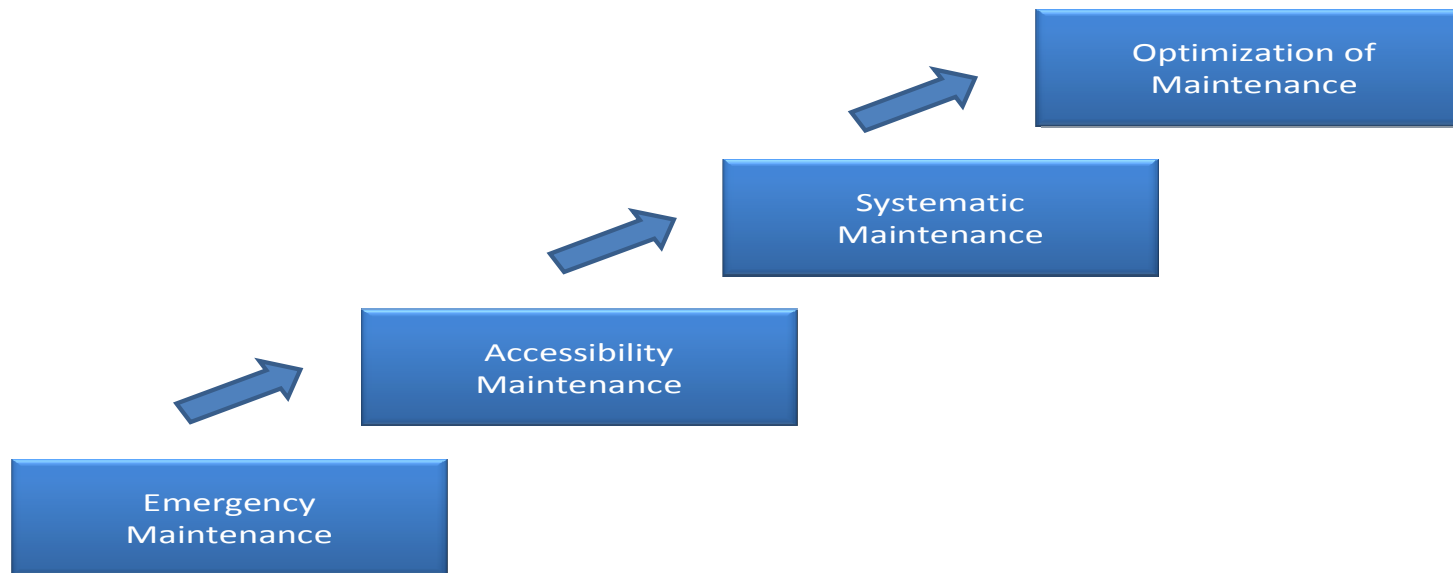
Minimizing Total Road Transportation Costs





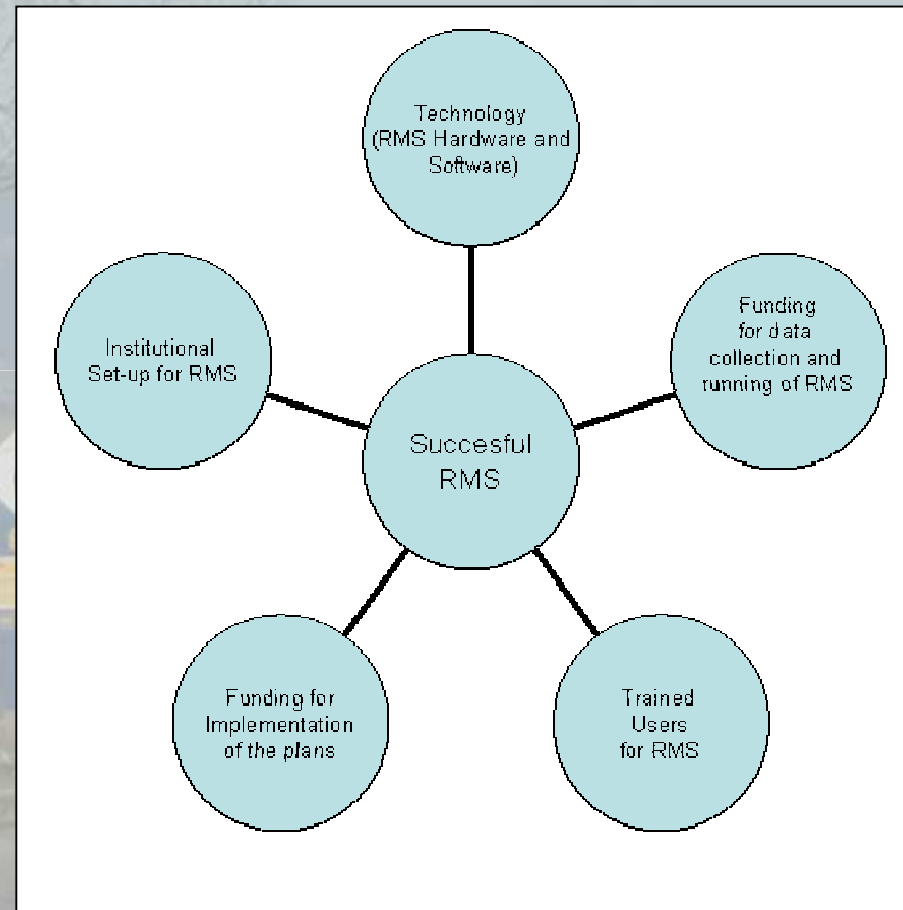
Steps of Maintenance Management with RMS

THE STEPS FROM EMERGENCY MAINTENANCE TO OPTIMIZATION OF MAINTENANCE OPERATIONS





Key Factors of the Successful implementation of RMS in Bulgaria



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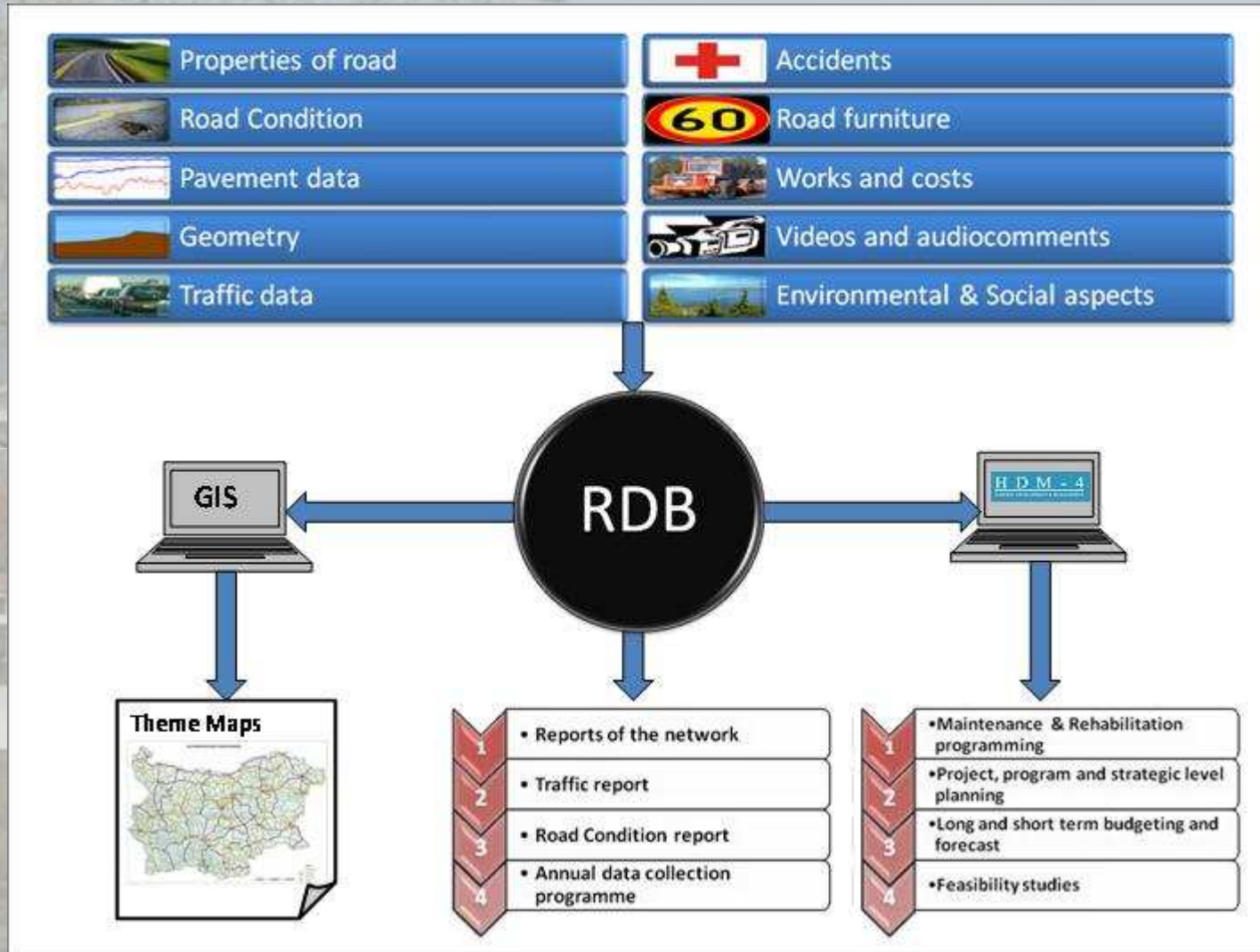


Road Management System (RMS), Core Components

- RMS - RDB (Road Data Base)
- RMS - HDM-4 (Management and Budgeting Tool)
- RMS - GIS (Geographic Information System)
- RMS - Viewer
- RMS - Web Browser

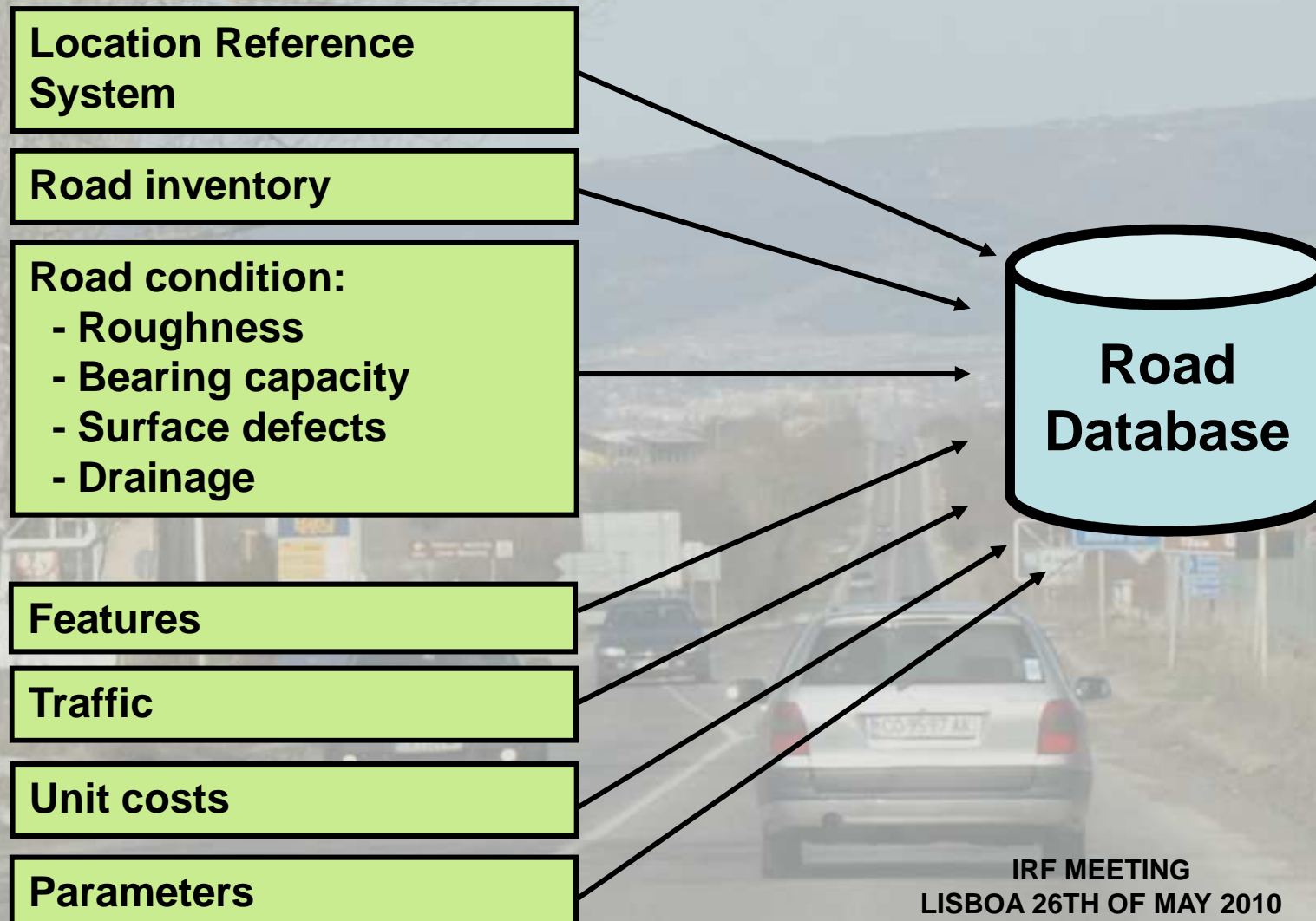


System Set-Up





RMS - Road Data Base





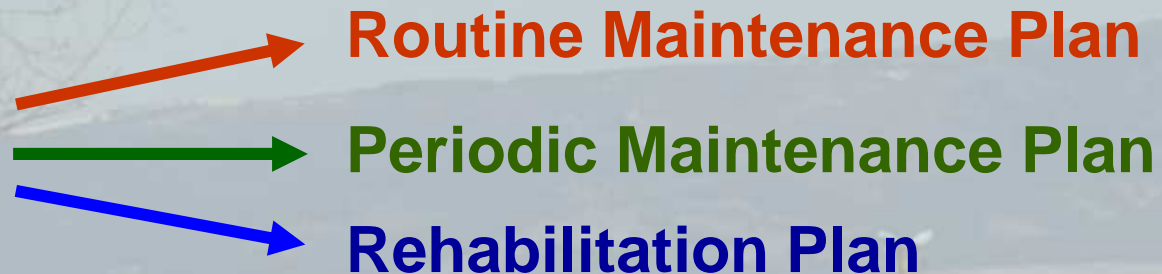
RMS - HDM-4

- The Consultant proposes to use HDM-4 as the Management and Budgeting Tool and the Pavement Management System in the Project. With HDM-4 model it is possible to prepare:
 - i) Short-term (such as annual) and long-term budget/maintenance plans for routine and periodic maintenance, rehabilitation and reconstruction,
 - ii) Setting appropriate maintenance item definitions and maintenance and rehabilitation intervention criteria,
 - iii) Prioritizing actions and allocations for addressing maintenance and road service needs,
 - iv) Scheduling the maintenance works and allowing monitoring of its implementation,
 - v) Developing an effective pavement system capable of life cycle cost analysis,
 - vi) Preparing standardized report for monitoring, reporting and tracking trends on the level of service of the road network and on the physical condition of roads and bridges
 - vii) Analyzing and identifying maintenance scenarios



RMS - HDM-4

COMPONENTS

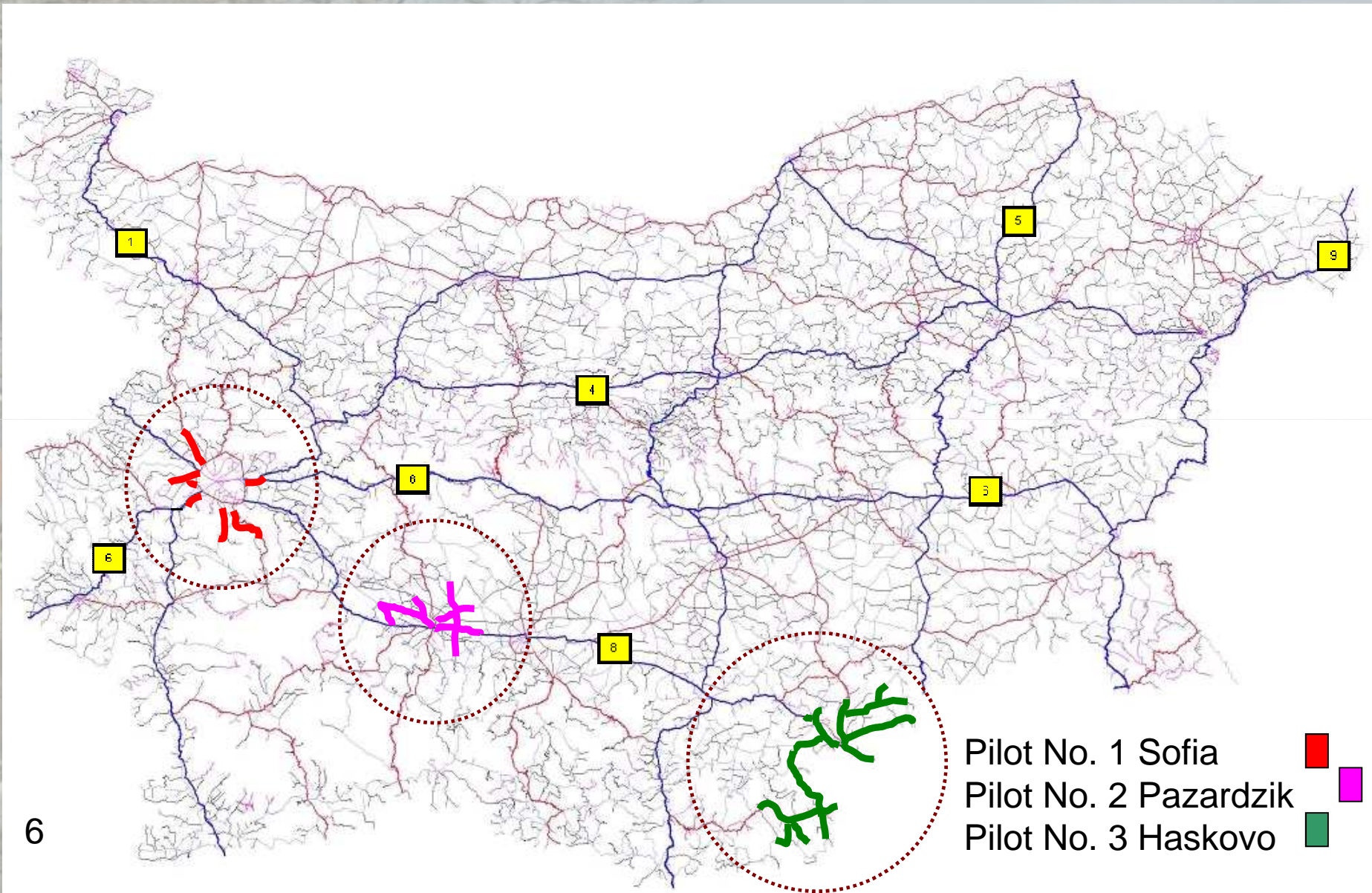


Theme Of Annual Maintenance Plan

- ❑ Each leva spent must be a Carefully considered investment for each kilometer in the long-term conservation of an infrastructure asset.
- ❑ **All maintenance works will have to be qualified before financing.**
- ❑ The “Short Term Focused Plan” aimed at achieving the objectives of “Long Term Strategic Plans”



RMS – GIS, PMMR Pilots





RMS – Web Browser

Dissemination of RMS Outputs and Inputs through RMS Web Browser

Benefits:

- Efficient data management and transfer between road organizations and other stakeholders
- Access to information is possible from anywhere and at any time through the internet
- Improved transparency
- Updated information available for all the users immediately it is available
- Improved Team communication, collaboration and decision-making
- Raising the awareness of road users

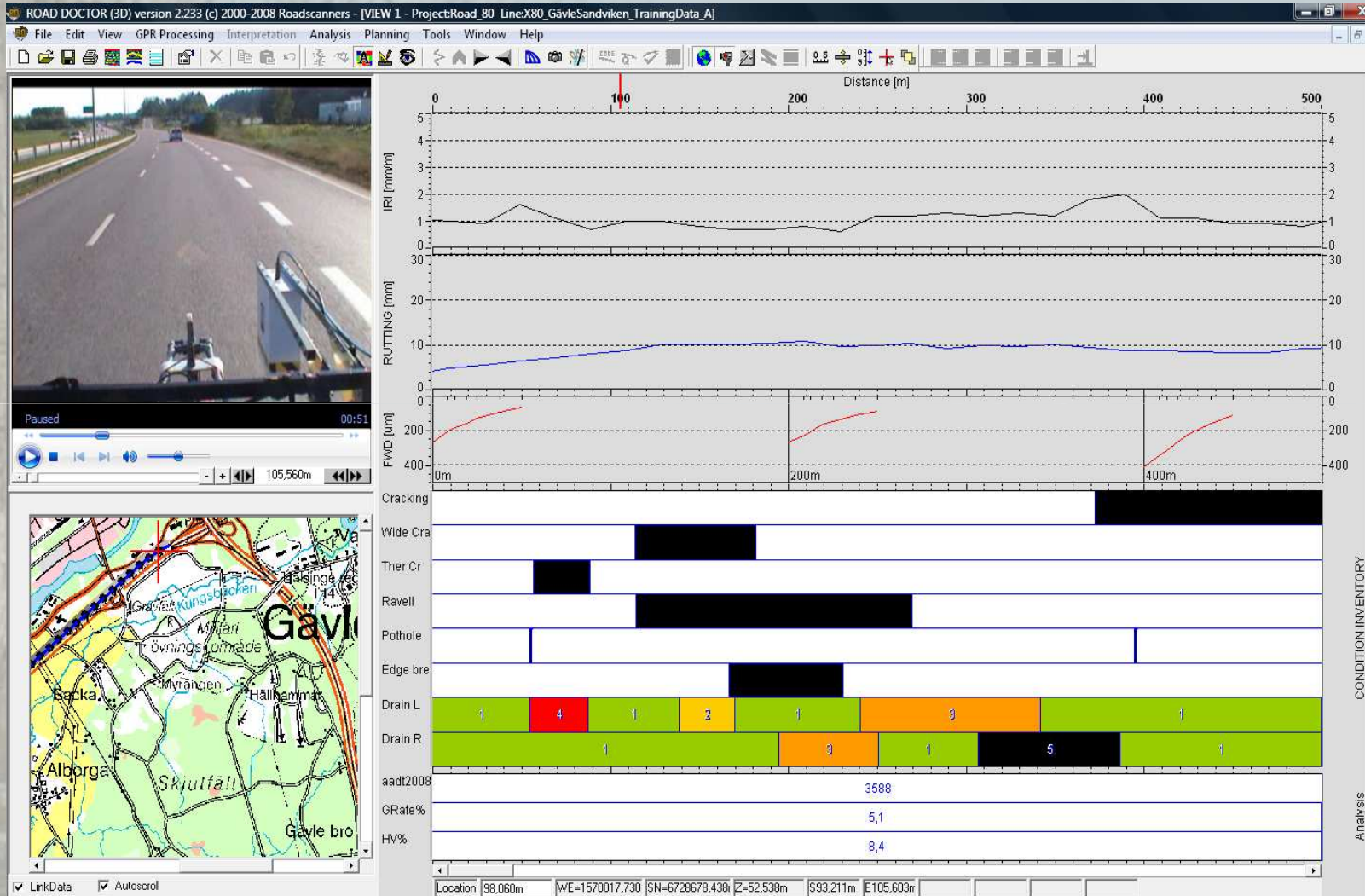
Methodology:

Not all the data is available for all the users. Different user licenses for public and for professional use

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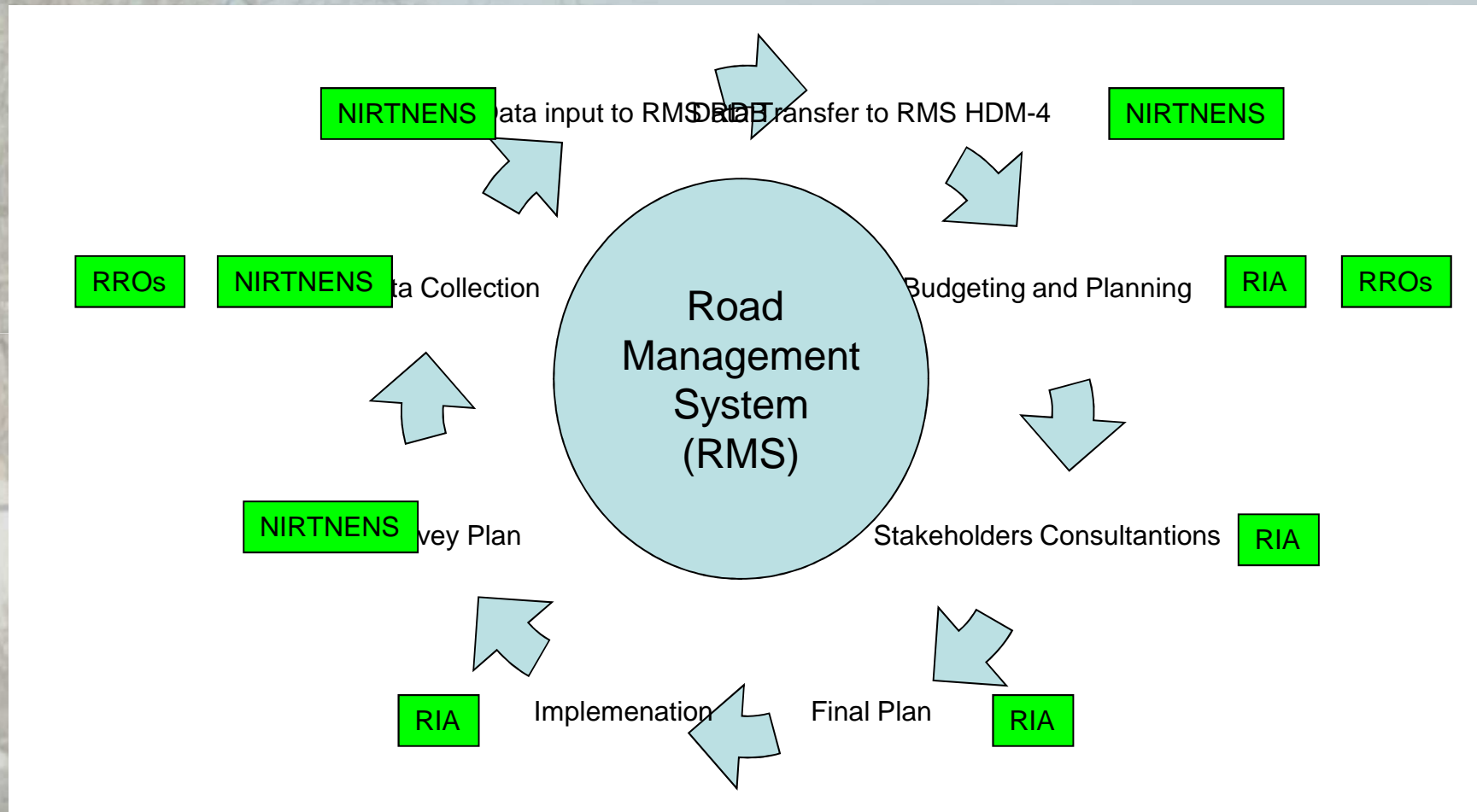
RMS - Viewer



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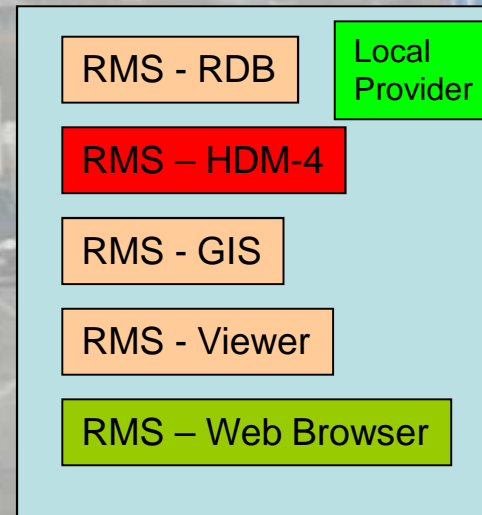
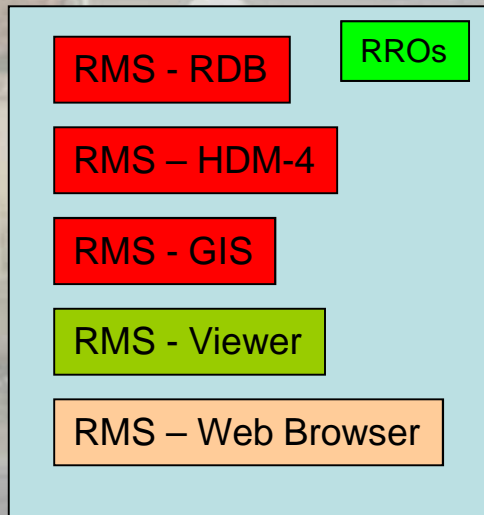
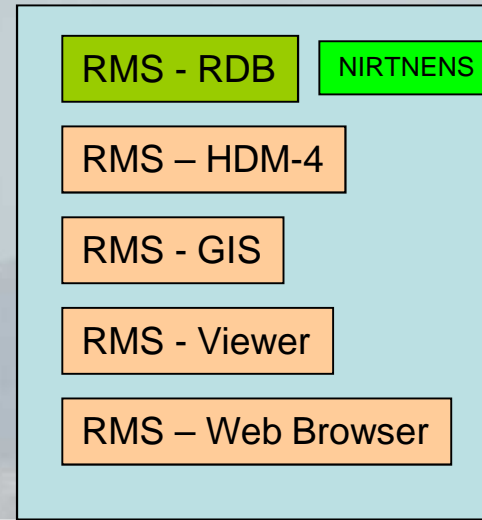
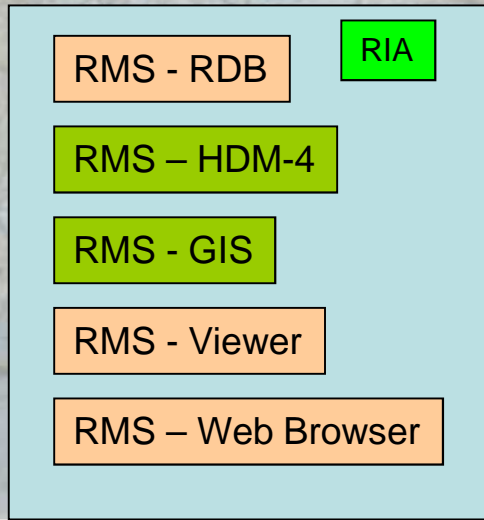
RMS Annual Cycle and Responsibilities



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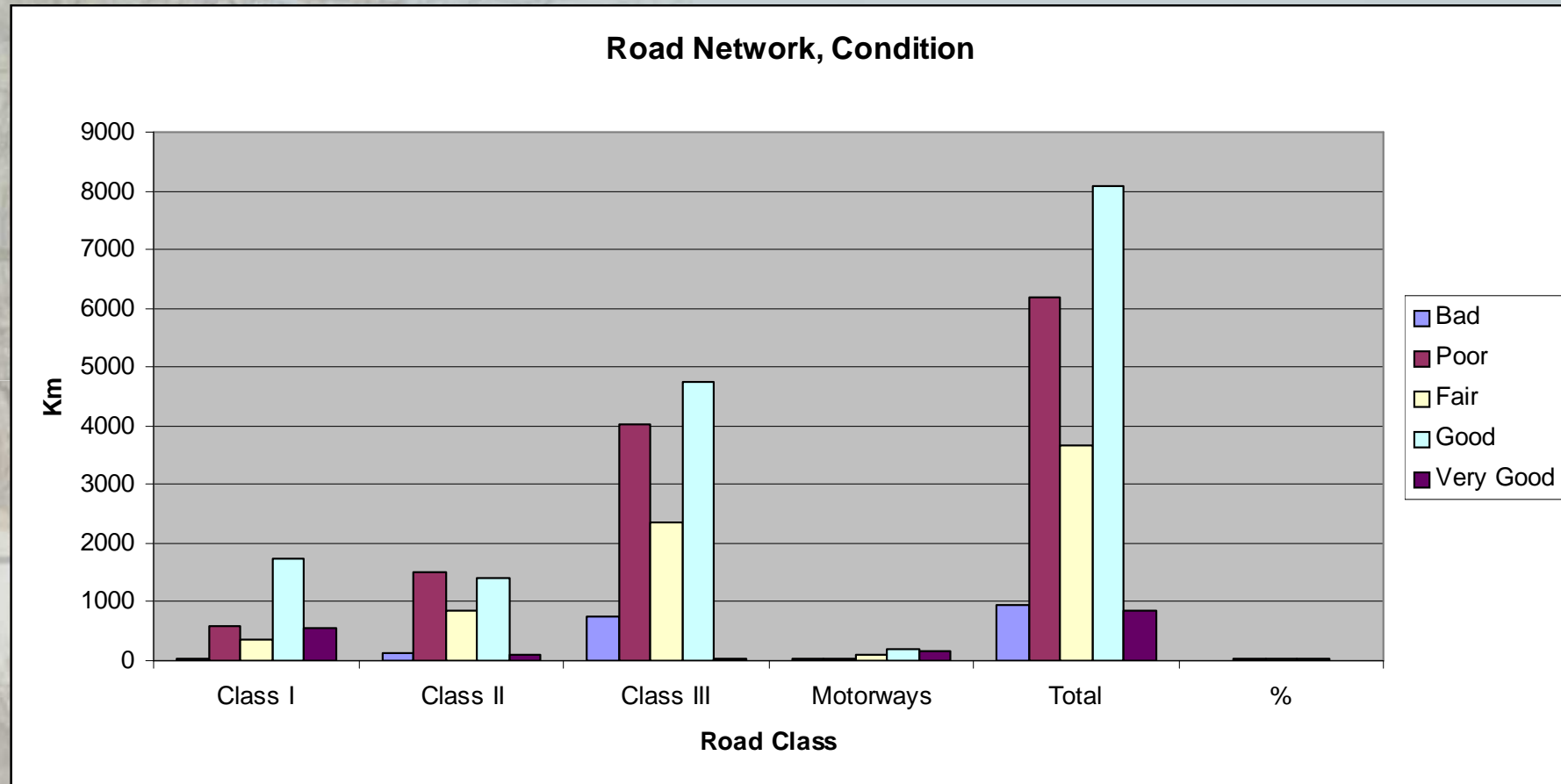
Proposed Institutional Set-Up for RMS



- Responsibility
- Access
- Regional Access

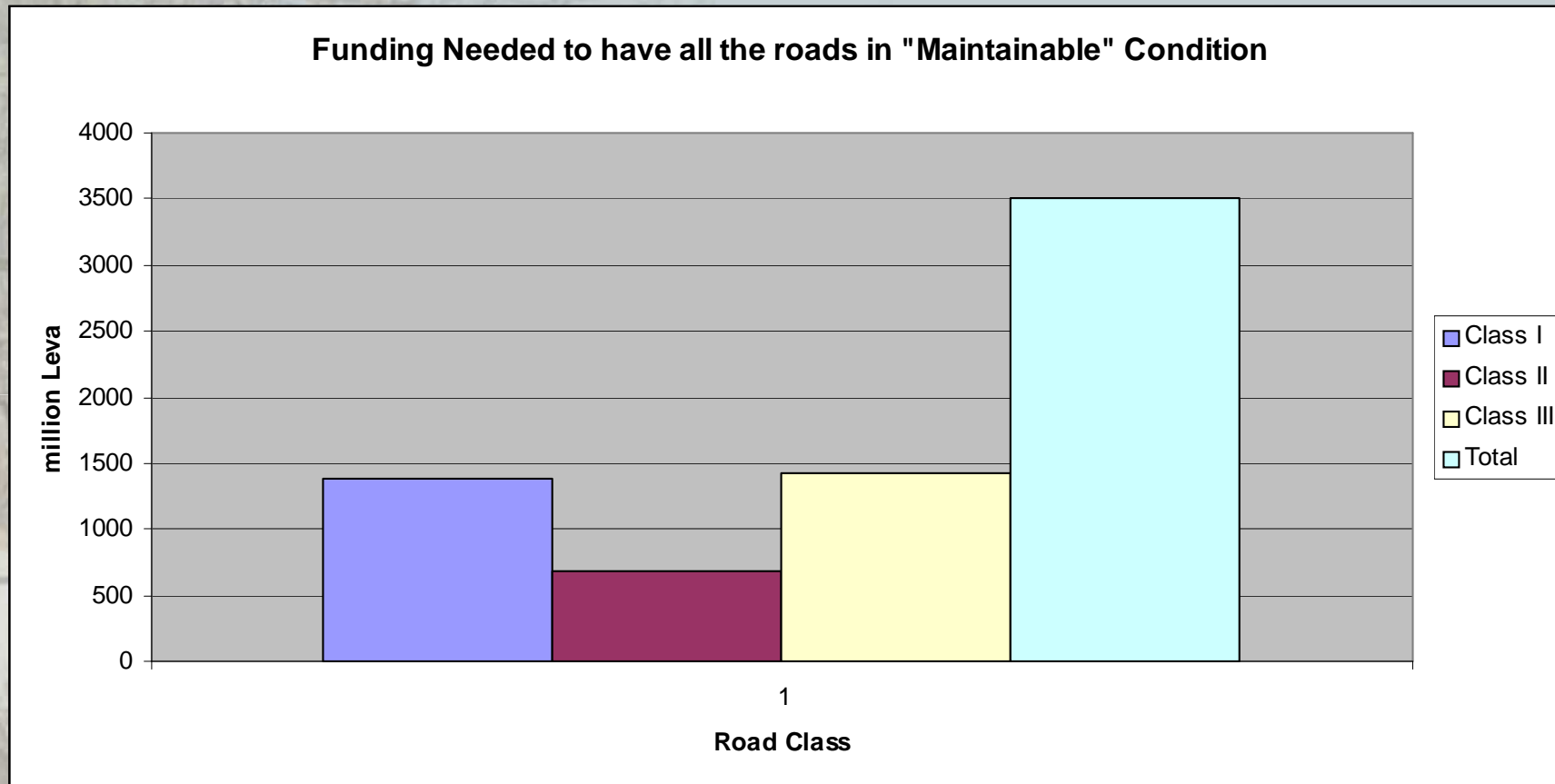


RMS Outputs, Condition





Unconstrained Budget Run





Annual Routine (Minimum) Maintenance Costs

Name	BG DO minimum [mln. LEVA]				
	2010	2011	2012	2013	2014
01 Blagoevgrad	2,30	2,30	2,30	2,49	2,51
02 Burgas	3,98	3,98	3,98	4,34	4,38
03 Varna	2,28	2,28	2,28	2,51	2,53
04 Veliko Turnovo	3,33	3,33	3,33	3,65	3,68
05 Vidin	2,20	2,20	2,20	2,43	2,45
06 Vraza	2,42	2,42	2,42	2,66	2,69
07 Gabrovo	1,80	1,80	1,80	1,95	1,97
08 Kjustendil	1,94	1,94	1,94	2,13	2,15
09 Kurdjali	2,30	2,30	2,30	2,49	2,51
10 Lovech	2,65	2,65	2,65	2,91	2,94
11 Montana	2,17	2,17	2,17	2,39	2,41
12 Pazardzik	2,58	2,51	2,48	2,62	2,64
13 Pernik	1,89	1,89	1,89	2,08	2,10
14 Plovdiv	3,33	3,33	3,33	3,63	3,67

Name	BG DO minimum [mln. LEVA]				
	2010	2011	2012	2013	2014
15 Pleven	2,76	2,76	2,76	3,04	3,06
16 Razgrad	1,81	1,81	1,81	1,99	2,01
17 Russe	1,84	1,84	1,84	2,03	2,04
18 Silistra	1,81	1,81	1,81	1,97	1,99
19 Sliven	1,86	1,86	1,86	2,05	2,07
20 Smolyan	1,96	1,96	1,96	2,12	2,14
21 Sofia	6,73	6,74	6,74	6,74	6,74
22 Stara Zagora	3,00	3,00	3,00	3,29	3,32
23 Dobrich	2,96	2,96	2,96	3,25	3,28
24 Targovishte	1,86	1,86	1,86	2,05	2,07
25 Haskovo	3,33	3,33	3,33	3,33	3,33
26 Shumen	2,07	2,07	2,07	2,23	2,27
27 Yambol	2,14	2,14	2,14	2,34	2,36

Note ! Annual average 69,20 million Leva

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Conclusions

- Institutional Set-Up
- Comprehensive Training Program
- Sustainability

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