

RPS Consulting Engineers



A REVIEW OF PAVEMENT MANAGEMENT SYSTEMS IN IRELAND

INTRODUCTION

A Review of Pavement Management Systems for use on the Non-National Road Network

Study Commissioned by Department of Environment, Heritage and Local Government

Completed 2005

The logo for RPS (Road Performance System) consists of the letters 'RPS' in a white, sans-serif font, centered within a dark blue square.

INTRODUCTION

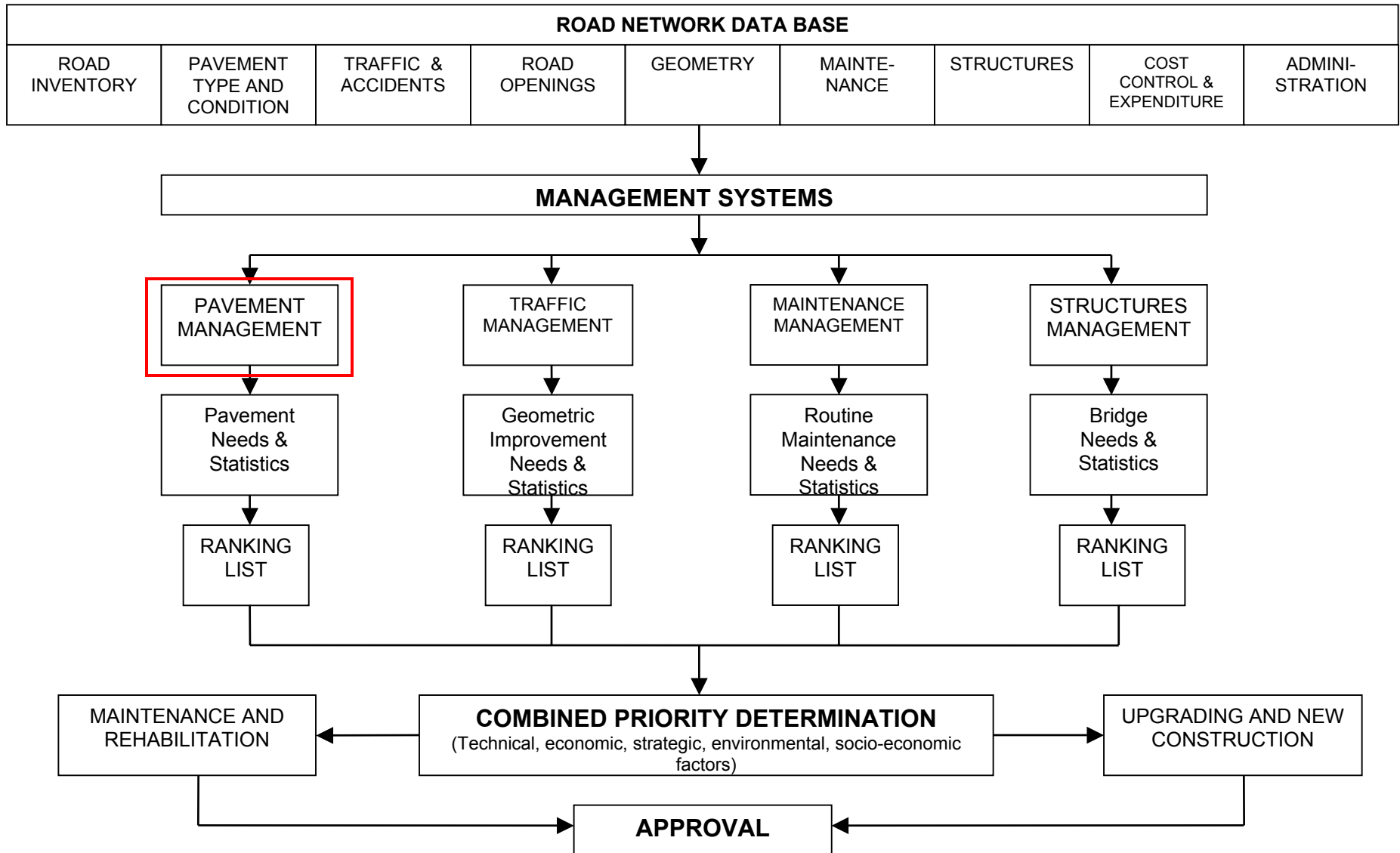
What is a PMS?

A tool to make informed decisions about the maintenance and rehabilitation of a pavement network



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ROAD NETWORK MANAGEMENT



PAVEMENT BEHAVIOUR

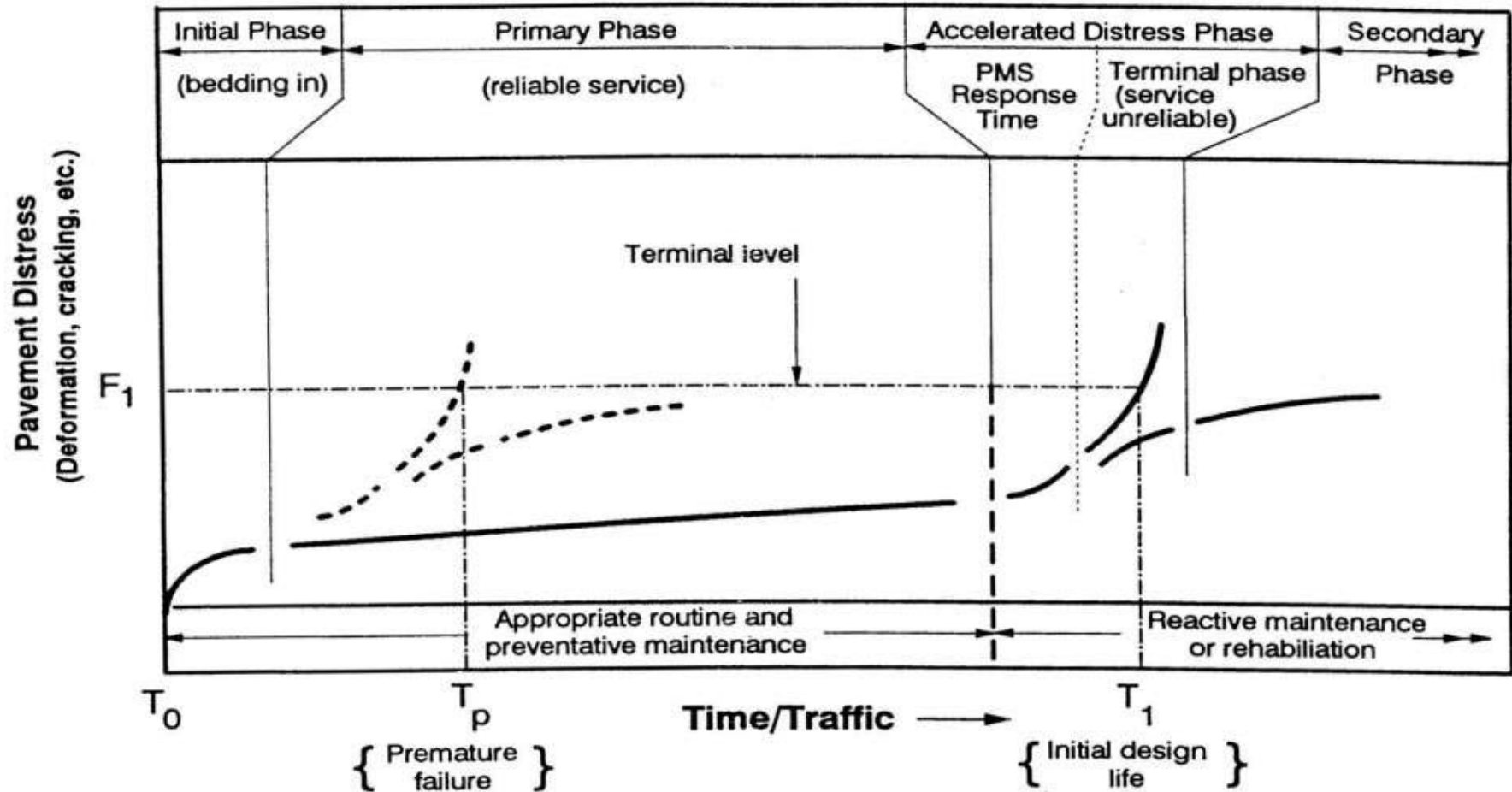
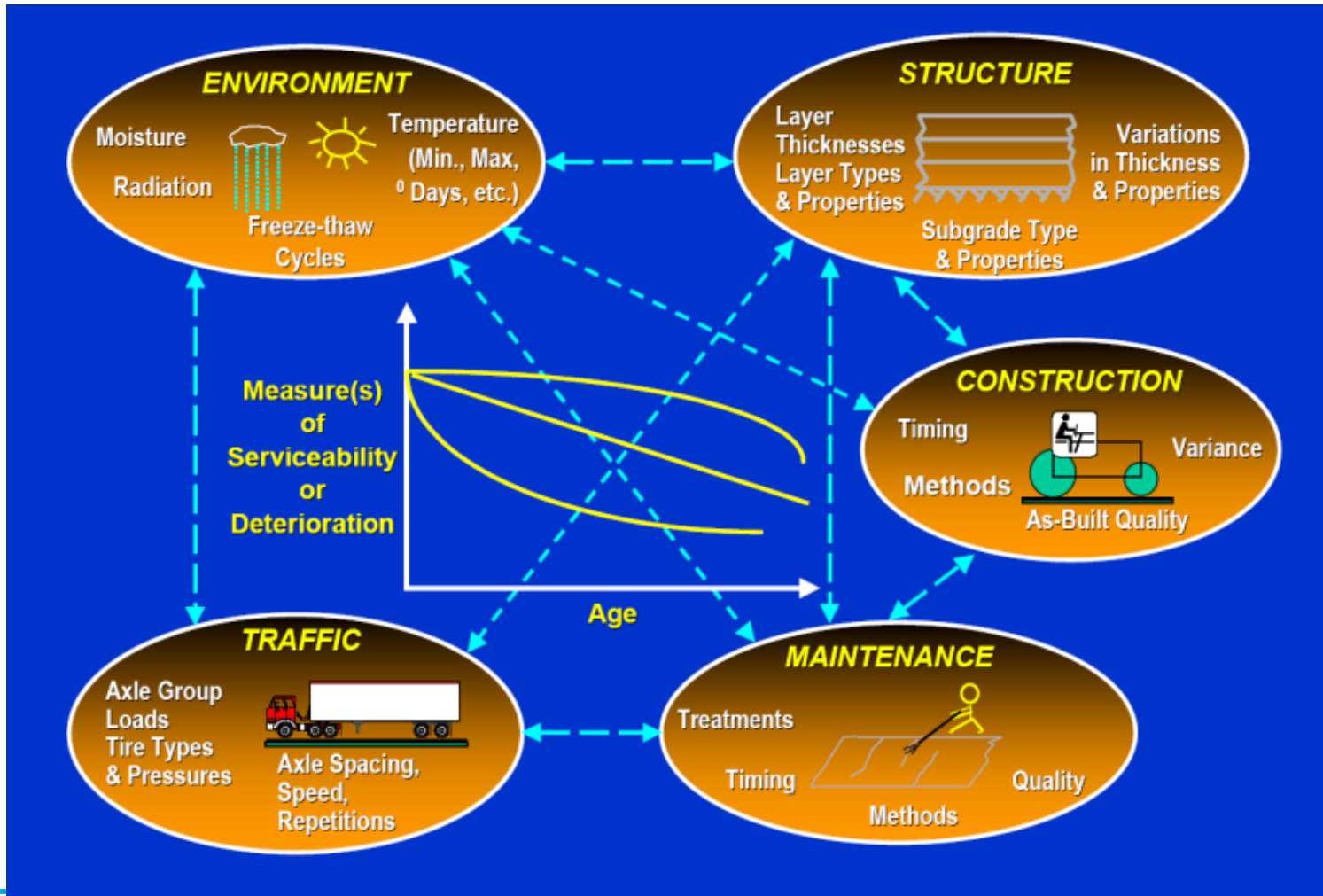


FIGURE 5: GENERALISED BEHAVIOUR OF FLEXIBLE ROAD PAVEMENTS

PAVEMENT PERFORMANCE FACTORS



TYPICAL DATA

INVENTORY

Road No.

Description

Width

Length

Junctions



Pavement Type

Surface Type

Age



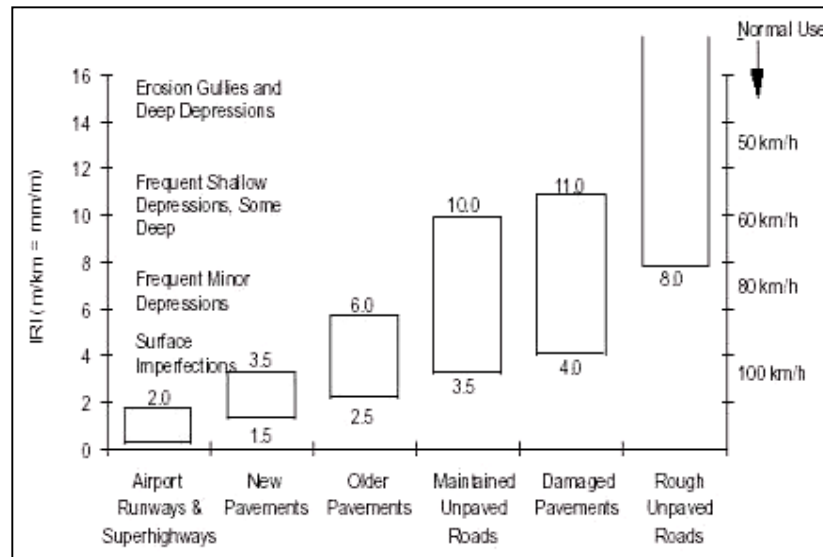
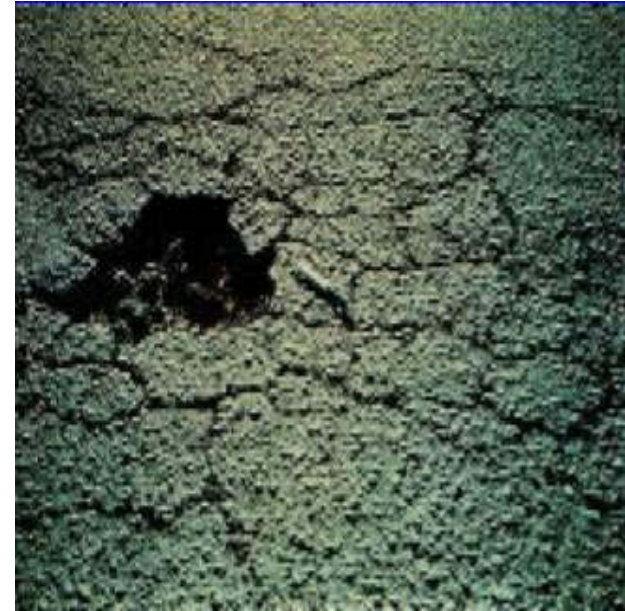
TYPICAL DATA

CONDITION

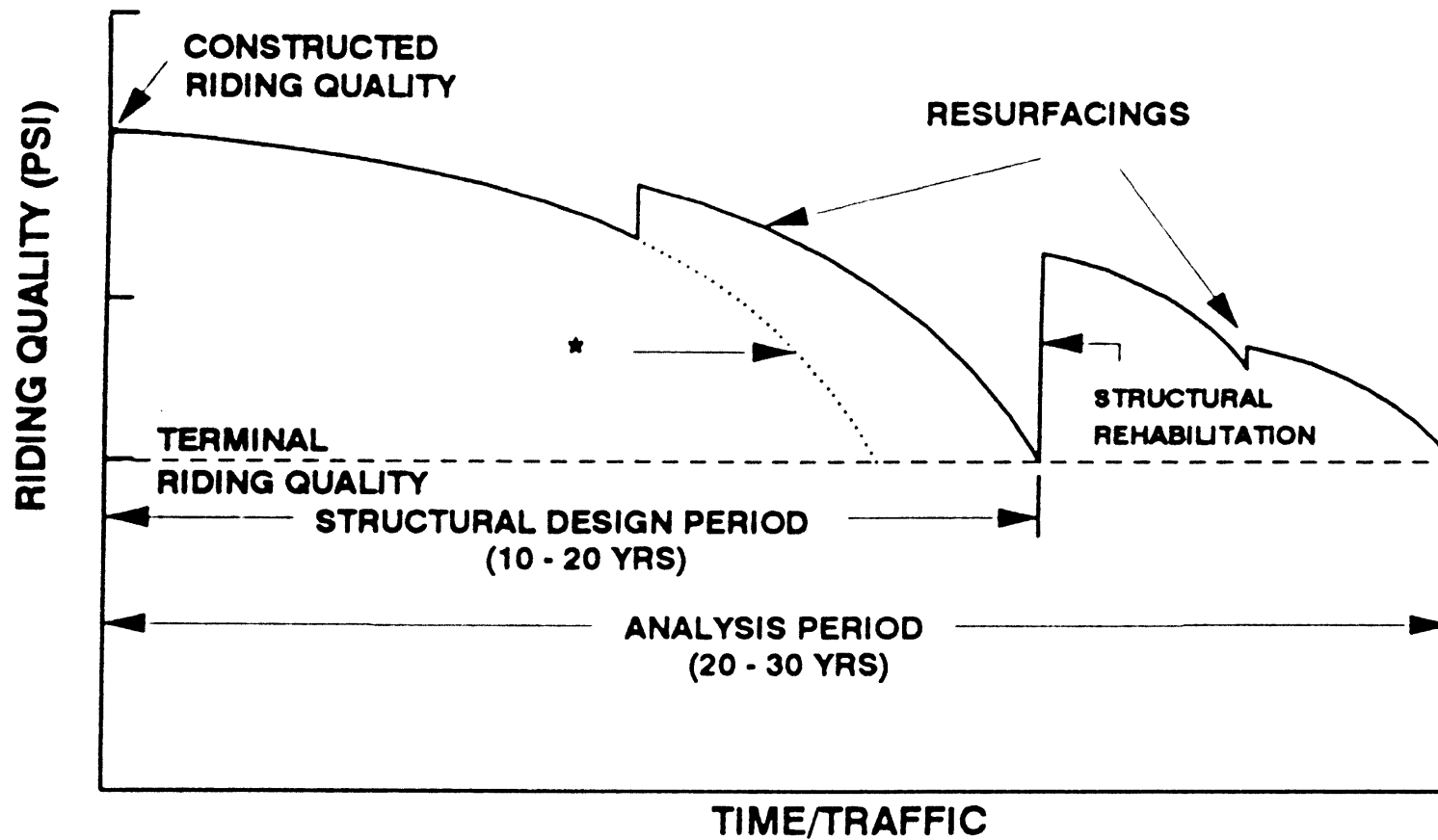
Visual Assessment

Deflections

Riding Quality

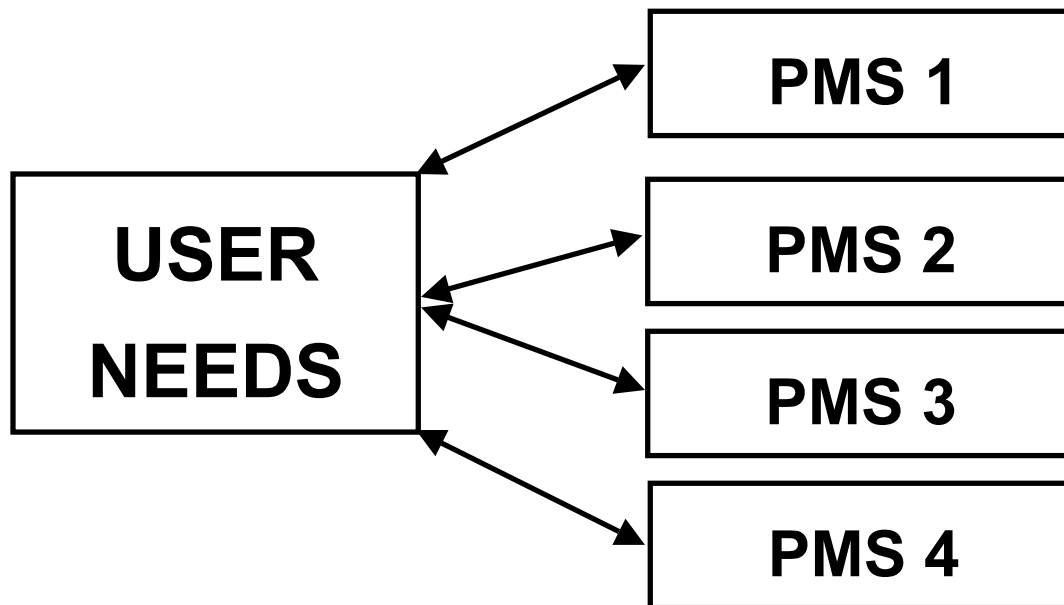


PAVEMENT PERFORMANCE



PMS REVIEW OUTLINE

TECHNICAL FACTORS



EXTERNAL FACTORS

Policies

IT Environment

Institutional

Personnel

Funding



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PMS REVIEW PROCESS

- **Information Gathering**

- Questionnaire
- Visits to Road Authorities
- PMS Research
- PMS vendors

- **Evaluation**

- Environment (IT & Organisation)
- Existing Systems
- Needs & Requirements

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PMS REVIEW PROCESS

- **System Comparison**
 - Detailed requirements
 - Evaluation vs requirements
 - Rating of Systems
- **Conclusions and Recommendations**

The logo for RPS (Risk and Performance System) consists of the letters 'RPS' in a white, sans-serif font, centered within a dark blue square.

EXISTING SITUATION

Road Authorities

– IT Infrastructure

- Hardware & Networks well developed
- In-House software support limited
- External software support – LGCSB / Contractors

– Existing GIS

- All counties have GIS
- Mainly MAPINFO
- A few others (e.g. ArcView Autodesk Map)

The logo for RPS (Radian Public Services) consists of the letters 'RPS' in a white, sans-serif font, centered within a dark blue square.

EXISTING SITUATION

– Road Network Databases

- Most have Road network defined & recorded (80%)
- DBMS – Most use MS-Access (74%) (MAPROAD)
- Others – Excel (13%) SQL-Server (9%)

– Existing PMS

- Less than 40% have existing PMS
- Mainly MAPROAD
- Others – Micropaver (1) RoSy (1)

Level of Implementation

- LOW

Level of Knowledge

- LOW



RPS

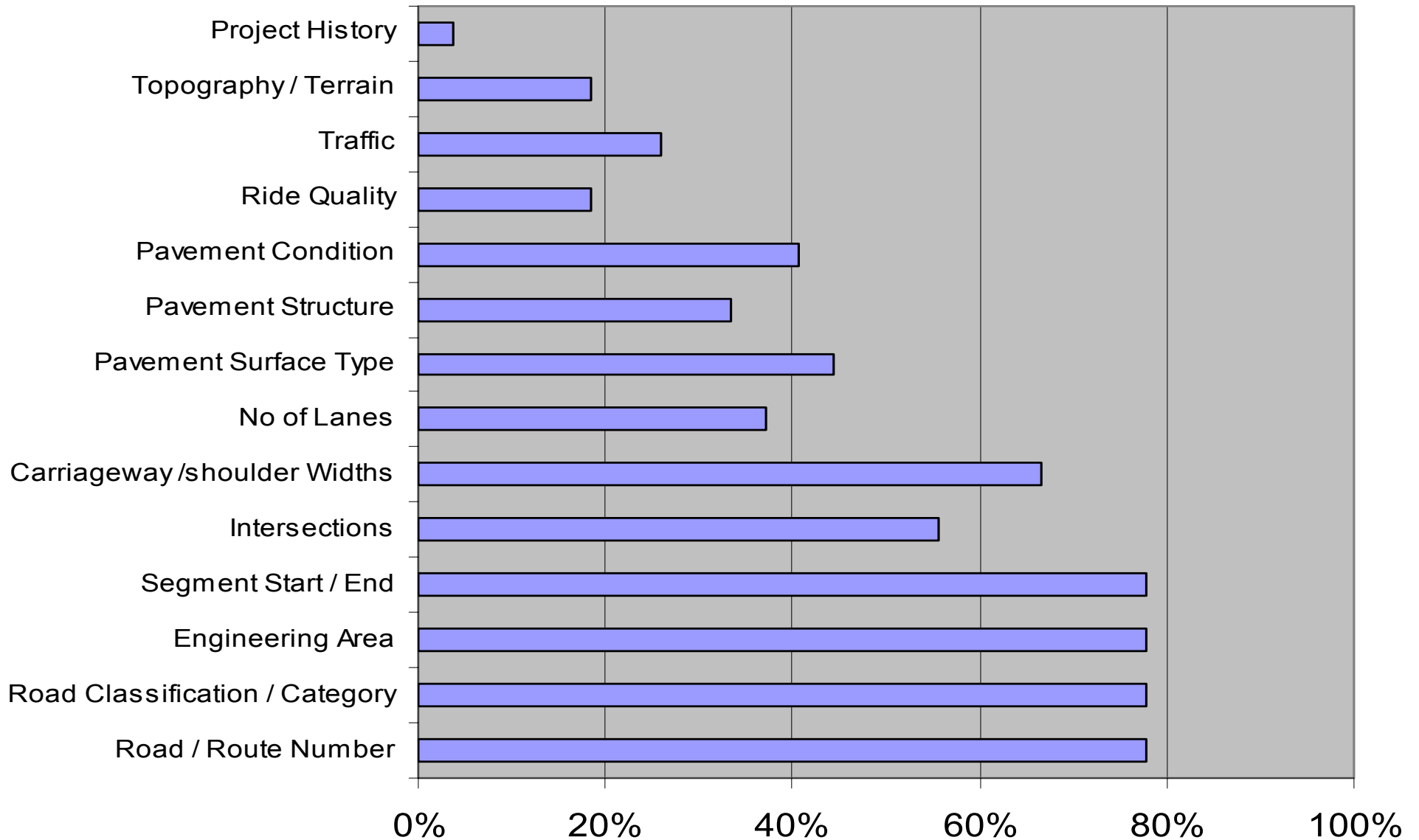
EXISTING SITUATION

Condition Surveys

- Not routine
- No standard methods
- Some experimentation with machine assisted surveys (e.g VODEL, FASTMAP, PMS-ROMDAS)
- Uncertain about value of routine surveys
- Concerns about costs / resources
- Simple systems, methods favoured

The logo for RPS (Royal Port Services) consists of the letters 'RPS' in a white, bold, sans-serif font. The text is centered within a solid dark blue rectangular background.

DESIRED PMS INFORMATION



CONDITION SURVEY NEEDS

- Define data needed
- Develop data collection standards
(methods / frequency / data capture)
- Develop processing standards
(algorithms / decision criteria / reporting / presentation)
- Training
- Resources

The logo for RPS (Raytheon Performance Systems) consists of the letters 'RPS' in a white, sans-serif font, centered within a dark blue square.

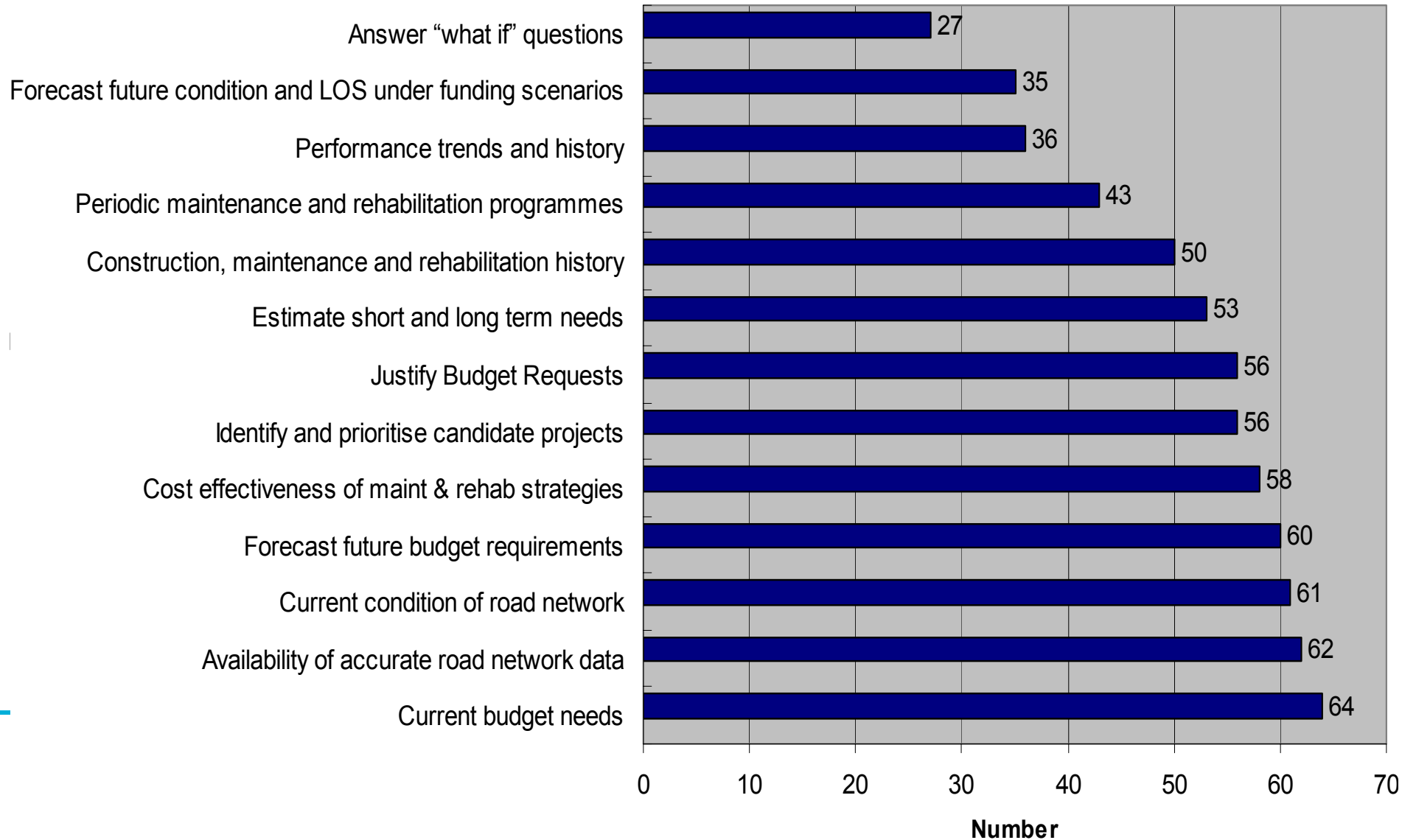
PMS OBJECTIVES

- Availability of accurate road network data
- Construction, maintenance and rehabilitation history
- Current condition of road network
- Identify and prioritise candidate projects
- Current budget needs
- Periodic maintenance and rehabilitation programmes
- Estimate short and long term needs
- Justify Budget Requests
- Answer “what if” questions
- Performance trends and history
- Forecast future budget requirements
- Forecast future condition and level of service under different funding scenarios
- Cost effectiveness of maintenance and rehabilitation strategies



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PMS OBJECTIVES



FUTURE PMS NEEDS

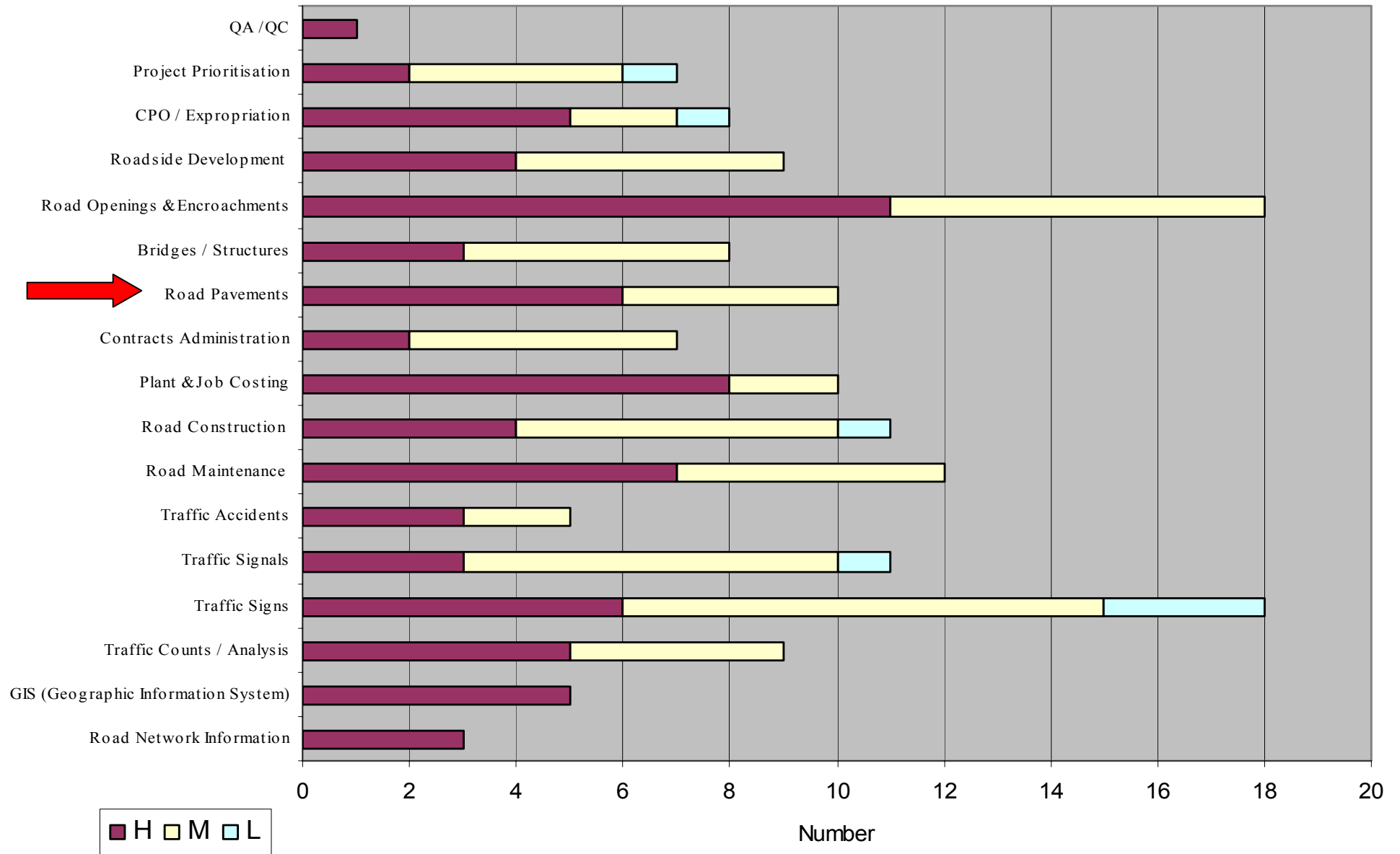
– Future PMS

- Most (78%) wish to introduce PMS
- Not always highest priority






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PROPOSED MANAGEMENT SYSTEMS



CURRENT STATUS

PMS Logical Design

- Location and referencing 
 - Recording of condition data 
 - Inventory of maintainable assets 
 - Selection of options for remedial works
 - Projection of future condition
 - Costing of works
 - Management of budgets
 - Budgetary and maintenance needs
 - Prioritisation on a condition basis
 - Prioritisation using econometric principles
- _____
- TRANCHE 1
- _____
- TRANCHE 2
- _____
- TRANCHE 3
- _____

(Based on UKPMS)



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PMS REQUIREMENTS

- Institutional
- Information Technology
- Functional
- Compatibility
- Support and Training
- Cost

36 Factors
Total

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PMS SELECTION REQUIREMENTS

- **Institutional**
 - Adaptable to Organisation
 - Simplicity
 - Quick Implementation
- **Information Technology**
 - Windows NT Networks
 - Network-enabled
 - Databases expandable
 - Modularity
 - GIS Compatibility (Mapinfo)

The logo for RPS (Resource Planning System) consists of the letters 'RPS' in a white, sans-serif font, centered within a dark blue square.

PMS SELECTION REQUIREMENTS

- **Functional**

- Network Referencing Systems
- Network Maintenance Tools
- Flexible Inventory and attributes
- Condition Monitoring
- Prioritisation Tools
- Work Programming and Budgeting Tools
- Reporting and Viewing

- **Compatibility Requirements**

- Expandability
- Other Systems

- **Support and Training**

- **Cost**

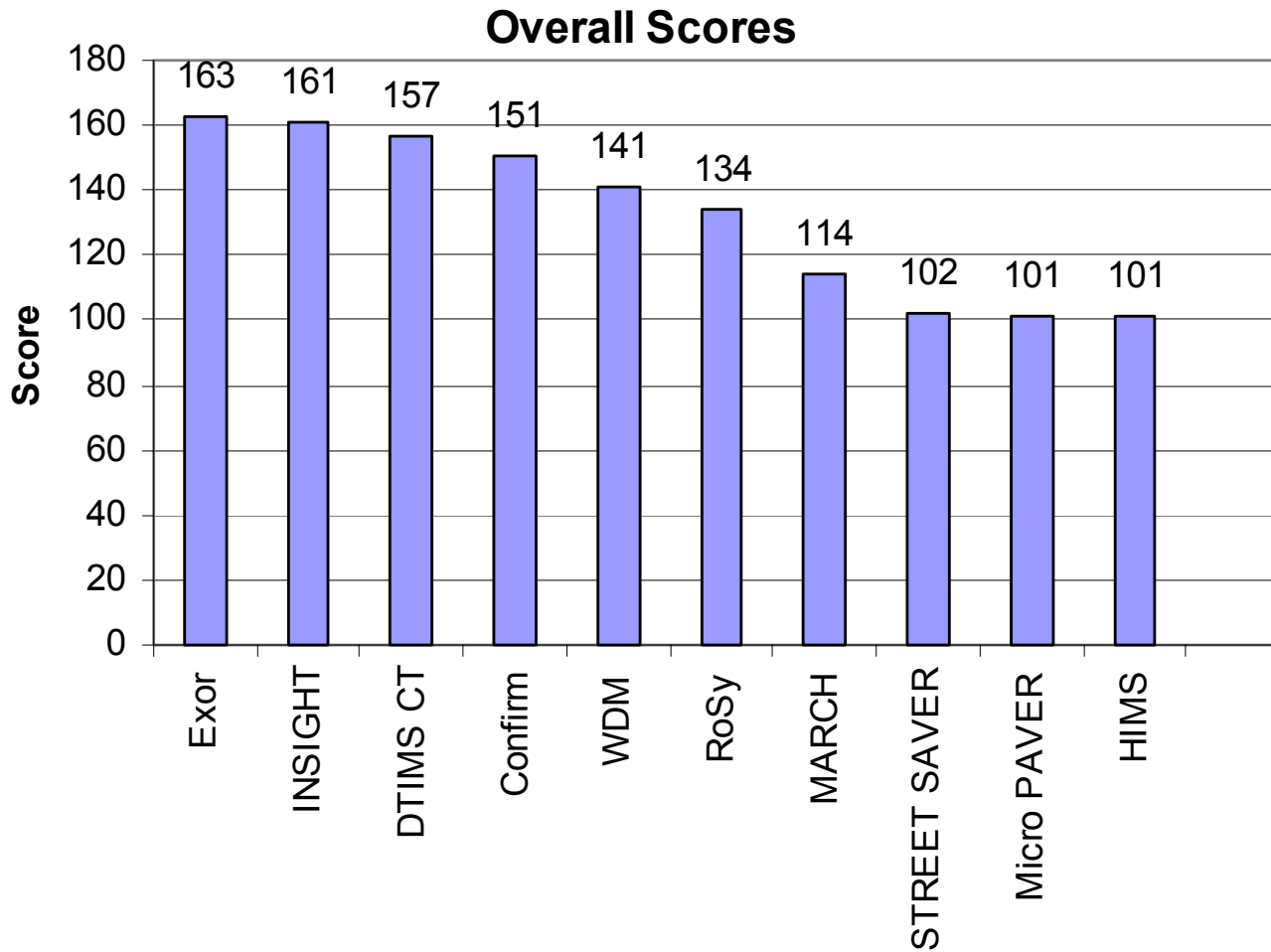
The logo for RPS (Rail Project System) consists of the letters 'RPS' in a white, bold, sans-serif font, centered within a dark blue square background.

COMMERCIAL SYSTEMS EXAMINED

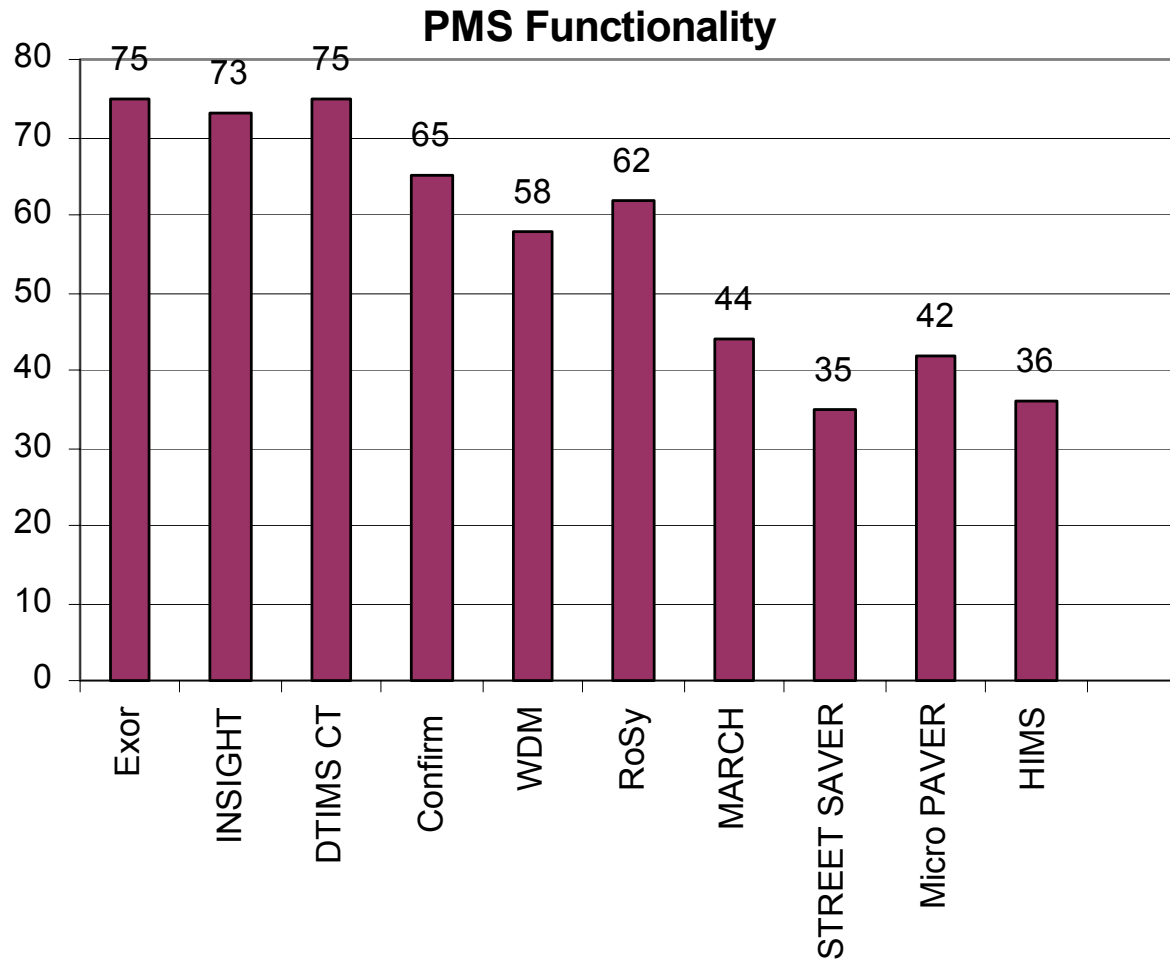
- microPAVER
- dTIMS
- MARCH
- WDM
- Exor
- Insight
- Confirm
- RoSy
- HIMS
- STREETSAVER

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COMMERCIAL SYSTEM RATINGS



COMMERCIAL SYSTEM RATINGS



COMMERCIAL SYSTEMS RECOMMENDED

EXOR

INSIGHT

dTIMS

CONFIRM

- Good functionality
- Adaptable
- Expandable
- GIS compatible
- Similar cost
- Good Support



RPS

MAPROAD

- Developed by LGCSB
- MAPINFO GIS
- Installed in most Local Authorities
- Road network data
- Basic PMS functionality
- Other RMS (e.g. Accidents / Bridges / Traffic)
- Supported by LGCSB

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CAN MAPROAD BE UPGRADED?

- Well resourced development team
- Databases recently upgraded
- Existing user base
- Tailor – made system possible
- LGCSB committed to meeting needs of Authorities
- Upgrading cost reasonable



PMS IMPLEMENTATION

– Issues

- Implementation Process
- Implementation Factors
- Strategy – incremental or all-at-once
- PMS Awareness
- Succession Planning

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RECOMMENDATIONS

PMS System

- MAPROAD

Implementation Process

- Structured
- Expert Assistance
- Steering Group
- Network Definition
- PMS Awareness

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