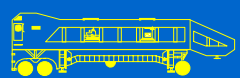
# Applications

Prof Wynand JvdM Steyn
CSIR BE

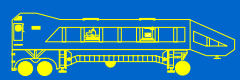
# Introduction

- HVS is a tool that can be used to obtain a certain outcome
- Test plan need to reflect test objectives
- Right tool for the question or just a bigger hammer?

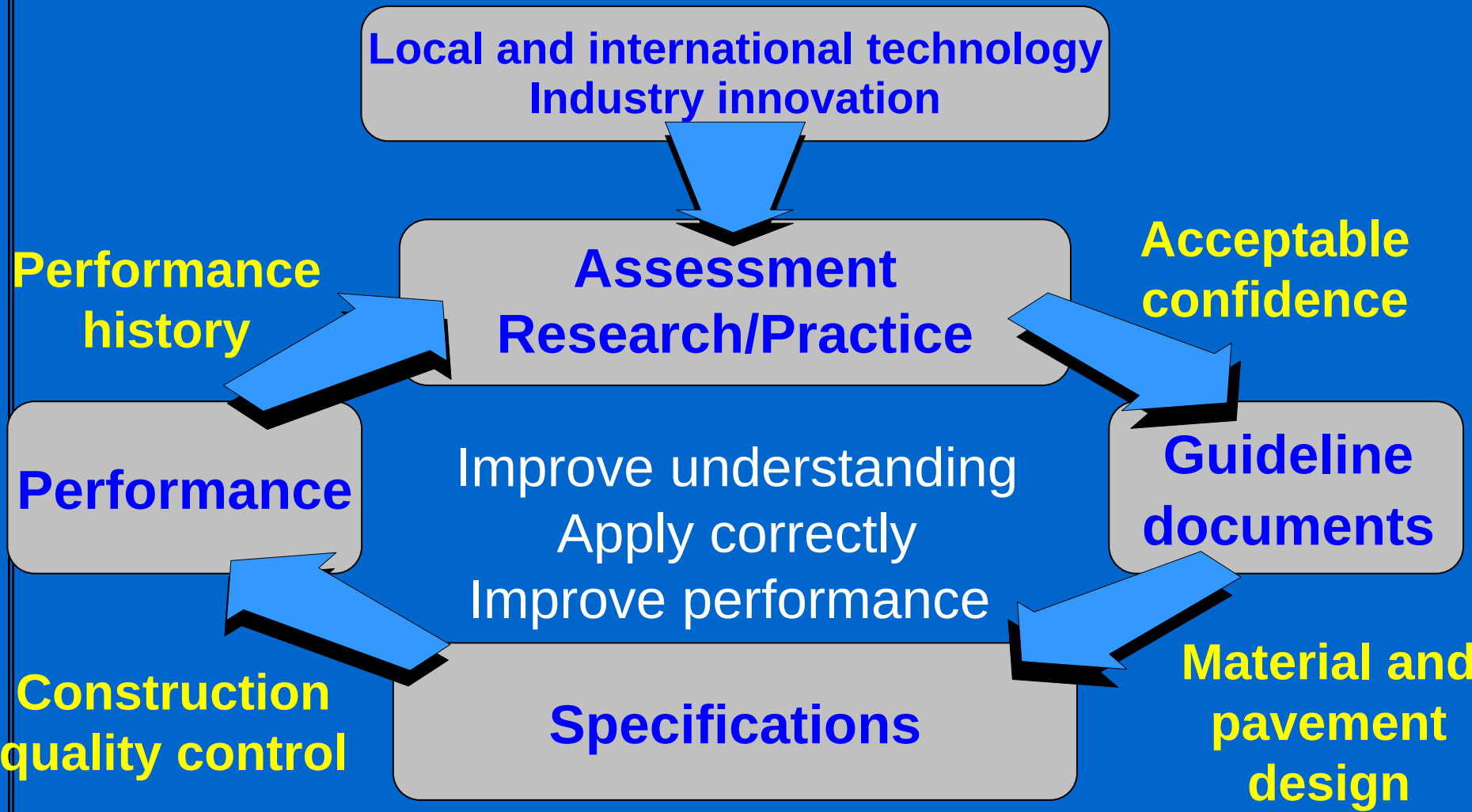


# Contents

- Specific types of tests
- Guidelines and standards

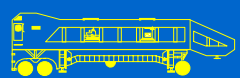


# RDI cycle of pavement technology



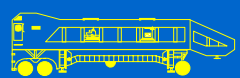
# Types of tests

- Fundamental research
- Applied research
- Selection procedures
  - Rehabilitation option evaluation
  - Product evaluation
- Guideline development



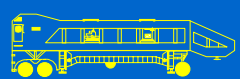
# Fundamental research

- Broader and deeper understanding of pavement related topic
- Fundamental plan consisting of full test matrix
- Long-term testing
- Higher degree focus as outputs
- Base new guidelines and standards on this



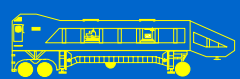
# Applied research

- Focused on specific research questions
  - Rutting / fatigue behaviour
  - Environmental effects
  - Surfacing behaviour
- Shorter term focus
- Focused effort on behaviour of specific aspect
- Also monitor the rest



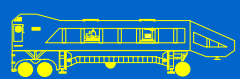
# Selection procedures

- Selection of a specific option between various alternatives
- All other parameters similar
- Examples
  - Rehabilitation options
    - Only change base and surfacing
    - Pre-defined number of repetitions and environmental conditions
  - Product evaluation
    - Specific product response under different conditions



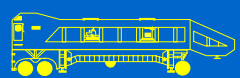
# Guidelines and standards

- Identify aspects of pavement / material response that require clarification
- Ensure that it can not be determined merely through laboratory test or field evaluation
- Design experiment to obtain specific answers
- Typically outcome of a range of tests
- Not necessarily related originally



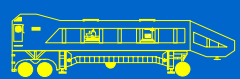
# Guideline Documents

- Acceptable confidence established
- Translates fundamental and practical understanding to application guidelines
  - Design philosophy
  - Sound engineering principles
  - Design process



# Guideline development example

- Range of tests performed over 5 years
- Specific objectives
  - Evaluate the design methods used for the design of Asphalt Treated Permeable Base (ATPB) layers and conventional Asphalt Concrete (AC) base layers
  - Compare the fatigue performance of gap-graded Asphalt Rubber Hot-Mix (ARHM) overlays with that of conventional Dense Graded Asphalt Concrete (DGAC) overlays
- **Additional spin-off**
  - Substantial data base on pavement response and performance at the particular test site
  - Used for the improvement of ME design models in terms of permanent deformation model of subgrades



# Typical outputs