

Feedback on the 3rd International Conference on APT and its implications to HVSIA

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Summary of HVS representation

- Keynote / Plenary session
 - 9 presentations, 2 HVS related
- 59 presentations in technical sessions
- 21 Papers from HVS related research (36%)
 - (3 from ALF, 2 from MLS)
- Tuesday: Pre-conference Workshops
 - 4 workshops:
 - APT for Airport Pavements
 - Introduction to APT (HVS)
 - Evaluation of APT benefits (HVS)
 - Measuring and modeling of APT (HVS)

HVS Presentations in General Topics

HVS / total per topic

• Long Life Pavements	2 / 4
• Performance Evaluation	5 / 8
• Modeling of Pavement Systems	5 / 11
• Control and management of APT Facilities	1 / 4
• Instrumentation and data management	1 / 4
• Overlays	1 / 4
• Economic evaluations of APT programs	3 / 4
• Airport Pavements	1 / 4
• Asphalt Materials	0 / 6
• Pavement management and Rehabilitation	0 / 4
• Climate and seasonal effects	2 / 3
• Implications for Design	0 / 3

On what should we focus?

- Summary of the Opening session -

- Angel Aparicio: General Director Cedex
Robert Skinner, TRB Executive Director
Bouزيد Choubane, Chairmain TRB AFD40
Claude van Rooten: President FEHRL Europe
Francisco Criado, General Roads director, Spain
- Long standing link between APT and the history of pavement design
- Robert Skinner (TRB Executive Director) highlighted the close relationship between TRB and APT and the importance of international collaboration in transportation research
- Differences between APT and LTPP; long-term effects; need for improved modeling; show the tax-payers the benefits of what we do
- Claude Van Rooten (FEHRL): international collaboration; focus on efficient, safe, sustainable transport systems

On what should we focus?

- Summary of the Keynote Session -

- Director General: Roads-Spain:
 - need to develop accurate performance predictions;
 - evaluations of marginal materials, and
 - performance of rehabilitated pavements.
- Academia (UCD):
 - address *Strategic Issues* and *Implement* the results.
 - do pre-project benefit/cost analysis to define goals;
 - need to communicate with public;
 - “*address tomorrow’s problems not today’s*”

Plenary Session 2

- Implementing APT facilities in developing countries
 - Initial facility cost should be “spread out” over several tests
 - In Europe 0.20-0.25 Euros per pass (in 2004)
- Twelve years of APT in Brazil
 - Data interpretation and analysis, environmental effects, improved instrumentation
 - Technology Transfer
- The ALF in China
 - Increased interest of government on APT

Long-life Pavements

- Perpetual pavements CAN be tested with APT
 - Do not overstress, use realistic loads
- APT enables testing at various wheel speeds
 - Significantly different response
- APT is an efficient tool for testing emerging technologies
 - Warm-asphalt mixtures
 - Precast concrete slabs
- Opportunities for Public/Private Partnerships (PPPs)

Asphalt Materials

- Issues raised
 - Construction variability and effect on performance
 - Need to perform replicate experiments
 - Aging of asphalt for testing

Modeling

- Current modeling approaches:
 - Empirical (e.g. current AASHTO)
 - Mechanistic-Empirical (e.g. future AASHTO MEPDG)
 - Incremental-recursive modeling (e.g. CalME)
- Incremental-recursive modeling by updating material properties with time
 - Monitor not only performance but response
- Use of probabilistic analysis
 - Confidence intervals on response (please no R^2)

Overlays

- APT is ideal for assessing overlay strategies in conjunction with laboratory testing
 - Used to better understand cracking mechanisms and cracking behavior
- Modified binders show significant performance benefits
- Tack coat designs are better understood
 - Use of appropriately selected tack coats reinforced

Economic Analysis

- Cost-benefit analyses extremely important for justifying research with APT
- Need to be realistic and defensible
- Structured, transparent approach needs to be followed
 - Analyses should be done before & after research
- Very important component of APT research “marketing”

Instrumentation and Data

- .. Virtual sensor (research in progress)
- .. Measurements are far from perfect
- .. Develop criteria to discern between good and bad readings
- .. Installation of gauges is one of the most important factors in APT
- .. Need better instrumentation:
 - Concerns about using strain gages to monitor long-term performance (gage drift)
- .. NCAT is conducting a strain gauge precision study
- .. Common calibration protocol should be established

Open Forum

- Realistic prediction accuracy
 - Point estimates are useless, rather make use of Probabilistic concepts
- APT without modeling is “useless”
- Need to convince the sponsors to invest on some “basic research”
- When requesting funding:
 - link APT plans to national interests (environment, accidents)
 - Convert technical results to dollars
 - Be able to explain results in 30 seconds

Implications for Design

- .. New whitetopping technology
- .. APT ability to test new technologies before being implemented full-scale
- .. Importance but difficulties simulating representative environmental conditions
- .. Importance of modeling environmental conditions for long-term performance predictions

Environmental Effects

- .. Moisture is a key variable that should be controlled in APT and measured in LTPP
- .. Temperature is a key variable that can be successfully controlled during APT
 - At surface and with depth
- .. Both need to be model to capture seasonal effects
- .. Large amounts of data are collected
 - Need for user friendly accessible databases

Funding Issues:

- Views of Andrew Dawson -

- .. Why does funding decline?
- .. Why are funders often unenthusiastic about APT given the financial benefits?
- .. Is there going to be a terminal decline in funding?
- .. Is APT the future tool, or is it a technology of increasingly historic interest as better techniques become available with which to develop better pavements and materials?
- .. Does APT have a continuing strategic role?
- .. Is the remaining benefit of APT largely limited to specific, quality assurance and product development applications?

Funding Issues: Possible reasons

- .. Particular implementation benefits are often difficult or impossible to trace back to particular APT testing
- .. Poor linkage between cost and benefit
- .. If APT delivers better standards and materials the benefit in a later project may not be visible
- .. if visible it will usually be in a later fiscal year, so difficult to demonstrate

Possible Reasons: Road authorities

- .. Increasingly stepping away from construction, management, standardisation
- .. Outsourcing all elements
- .. They define a service level and policy goals
- .. APT is not of interest to them

When does APT excite a funder?

- in assessing proprietary products
- in forensic studies
- predicting performance for pavements built/managed as part of Public Private Partnership schemes
- in each case there is a strong commercial element
- as well as the 'insurance' application

2nd Suggestion

- In this changing contractual climate, APT will necessitate
 - more imaginative use,
 - a much stronger integration of APT work with other technologies,
 - more efficient facilities and
 - even stronger requirement for global co-operation
- APT needs to be needed by those who have the money
- Should be client-focussed

Making APT more 'sexy'

- Use advertisements.
- Market it to Joe Public (the citizens).
- Predict reductions in carbon footprint and widely publicise APT's ability
- Rename it. APT is for assessing & prediction of performance and for saving money the name needs to say so.
- Define benefits in terms of Sustainability, Educational, Knowledge-based society, Climate change impacts as well as Economy

Present emphasis
of APT usage

ed by potential APT funders

- saving construction and operation costs,
- limiting liability,
- obtaining a well defined time schedule (for operation as well as construction), and
- cost certainty – i.e. financial risk reduction
- minimising impacts on environment & communities

Future emphasis
of APT usage?