
TPF 5(063)

“Improving the Quality of Pavement Profile Measurement”

RPUG UPDATE

November 3, 2015



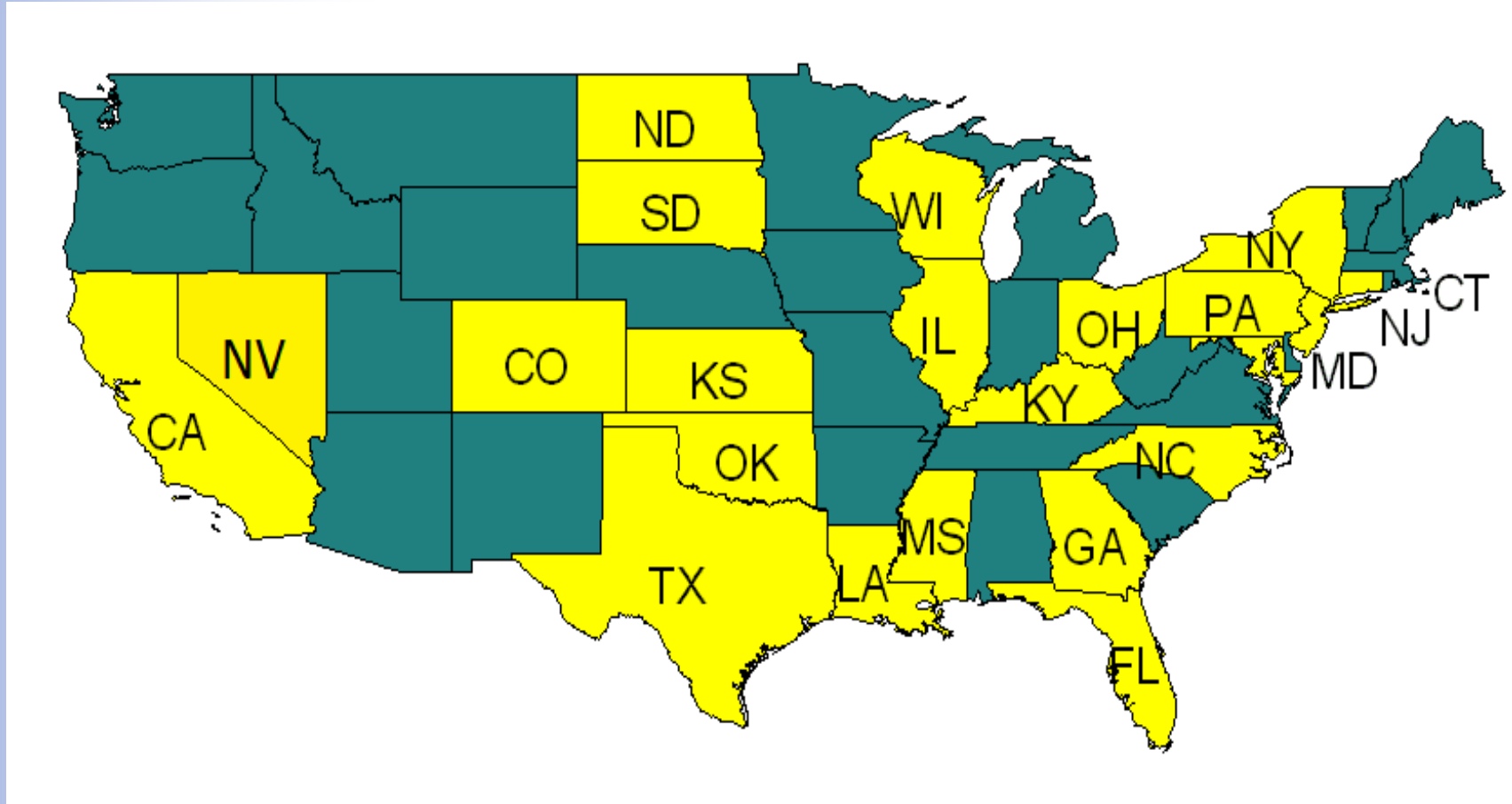
Overview TPF 5(063)

- Study initiated in 2003
- <http://www.pooledfund.org/Details/Study/280>
- FHWA is lead agency with 22 participating State Highway Agencies (SHA's) \$1.8M Study: Partners include:
 - FHWA Office of Asset Management, Pavement and Construction (HIAP)
 - FHWA Long Term Pavement Performance (LTPP)
 - FHWA Federal Lands

Participating State Agencies (22)

- Ohio
- Louisiana
- Kentucky
- California
- Colorado
- Florida
- Georgia
- Kansas
- Mississippi
- New Jersey
- Nevada
- New York
- North Dakota
- South Dakota
- Illinois
- North Carolina
- Maryland
- Oklahoma
- Connecticut
- Texas
- Wisconsin
- Pennsylvania

Participating State Agencies



TPF 5(063) Priorities

1. Build Reference Profile Device - Ongoing
2. Critical Requirements - Completed
3. ProVAL Software - Ongoing
4. Certification/Validation Sites - Ongoing
5. Evaluating Upper Limits of Single Accelerometer – Phase I & II complete
6. Emerging Technology that Enhances Profile Measurement - Ongoing
7. Support for RPUG - Ongoing

Inertial Profilers???

Yes/No?



Proposed SHA Quality Assurance Data Collection Vehicle



AASHTO M328???



Outcome – Quality Management

- Need to manage Inertial Profilers
 - AASHTO M328 – Obtaining
 - AASHTO R56 – Certification
 - AASHTO R57 – Operation
- Need to manage profiles – NOT just IRI
 - Allow low pass filters of 250 mm to 1 m
 - Have vendors provide actual profiles (if outsourced)
- Need to manage specifications
 - Modify if warranted after implementation

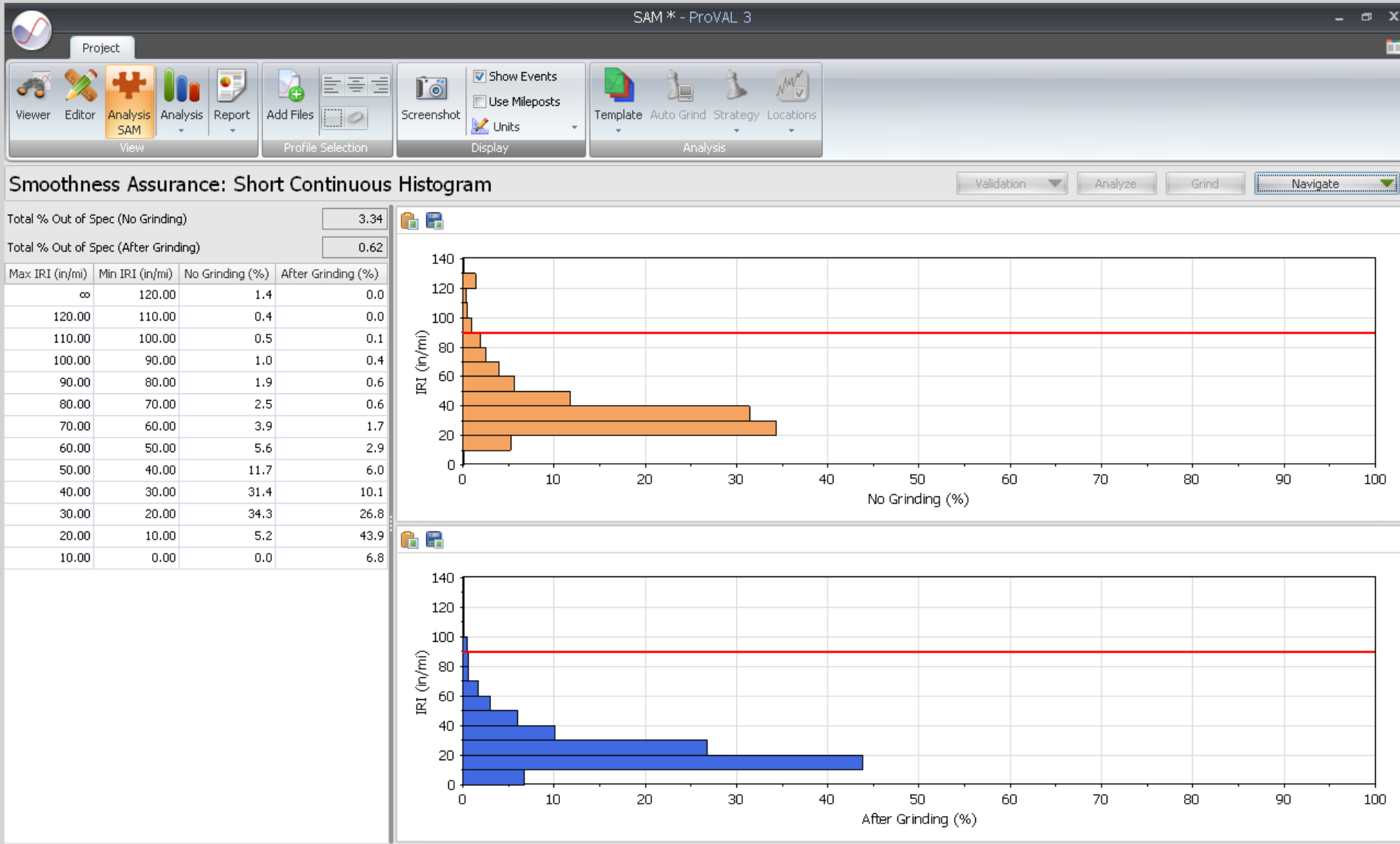
Progress on TPF 5(063) Priorities

1. Build a Reference Profile Device (ongoing): Two parts –
 - i. Benchmark Testing – UMTRI - Completed
 - ii. Reference Devices – New round of evaluations September 2015 at MnROAD – Participants were:
 - i. Shima - Japan
 - ii. ICC - Florida
 - iii. SSI - California
 - iv. ARRB - Australia
2. Critical Requirements (completed): UMTRI; final report on pooled fund study website – “Critical Profile Accuracy Requirements”

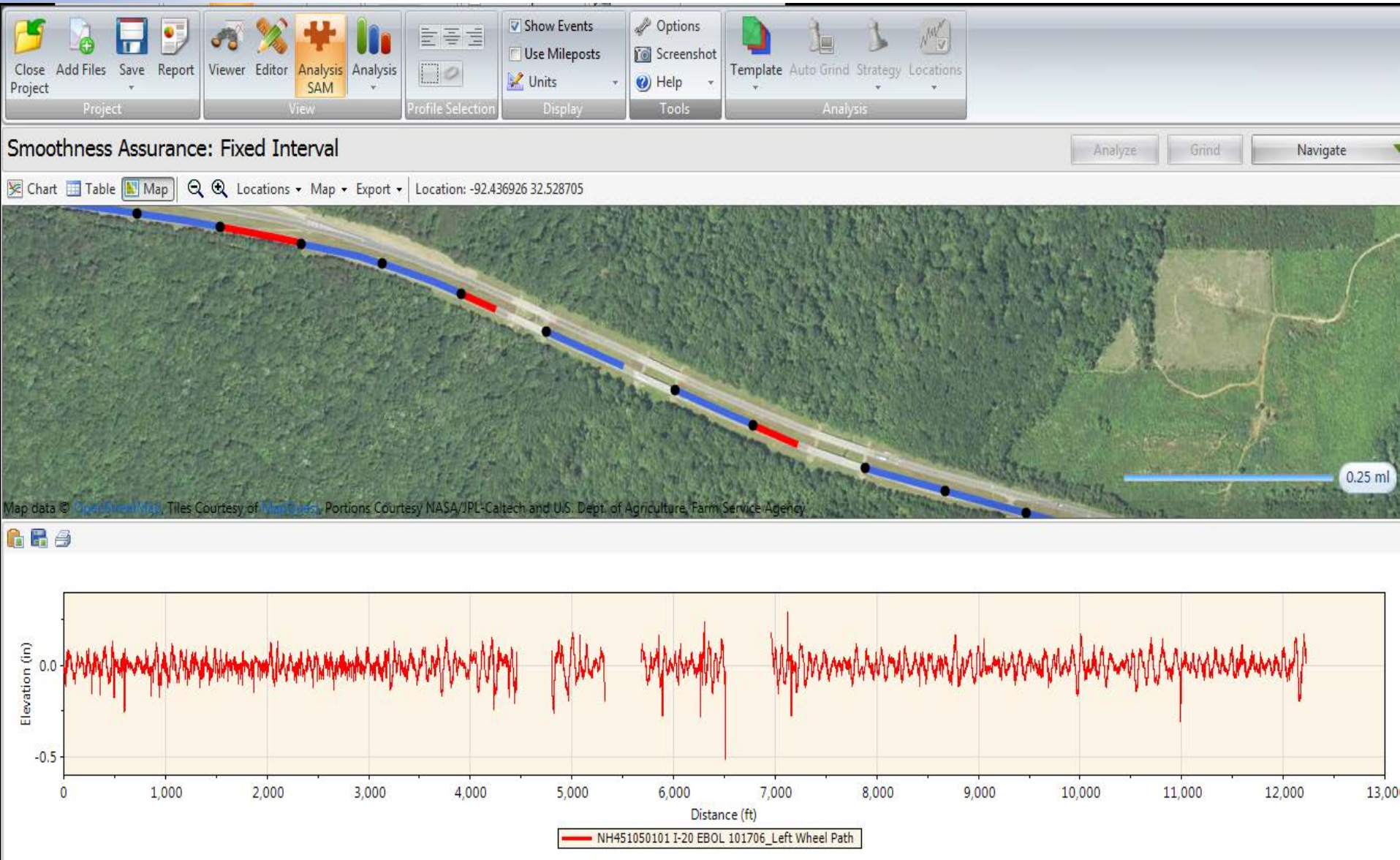
TPF 5(063) Priorities - continued

3. FHWA ProVAL Software: The Transtec Group, Inc. – www.roadprofile.com
- ProVAL 3.5 released Sept. 2014
 - Includes GPS & mapping capabilities
 - Version 3.6 due in six months
 - Multiple workshops – 4 of 6 remain
 - Scheduling underway for FY16
 - Next round??

ProVAL 3.5 software & workshops



ProVAL Version 3.5 includes mapping



Export files to Google Earth

The image shows a screenshot of the Google Earth desktop application. The main window displays a satellite view of a rural landscape with a path highlighted in blue and orange. The path starts at a yellow pin labeled "Start" on the left and ends at a yellow pin labeled "Stop" on the right. The path follows a road that curves through the landscape. The interface includes a toolbar at the top with various icons for navigation and editing, a "Sign in" button in the top right, and a vertical navigation pane on the right side with a compass, a hand icon, a person icon, and a zoom slider. At the bottom, there is a status bar with the text "© 2014 Google" and "Google earth". The system tray at the very bottom shows the Windows taskbar with icons for Internet Explorer, Firefox, and other applications, along with the system clock showing "10:34 AM 9/10/2014".

Start

Stop

© 2014 Google

Google earth

Imagery Date: 3/26/2013 32°31'31.85" N 92°26'05.31" W elev 133 ft eye alt 9525 ft

1998

10:34 AM 9/10/2014

TPF 5(063) Priorities continued

4. Certification/Validation Site

- i. Report completed by FHWA
- ii. Trial for National Certification at MnROAD
– October 2015 – Participants:
 - i. Ames Engineering, Inc. – Iowa
 - ii. ARAN – Fugro: Texas/Canada
 - iii. ARRB – Australia
 - iv. ICC - Florida
 - v. Mandli – Wisconsin
 - vi. Pathway - Oklahoma
 - vii. SSI – California
 - viii. Pavemetrics - Canada

TPF 5(063) Priorities continued

5. Evaluating Upper Limits of Single Accelerometer

- i. Phase I: Starodub, Inc. – complete
- ii. Phase II: Completed Dec. 2011

6. Emerging technology that enhances pavement profile measurement

- i. Urban IRI measurement – FHWA WFL
- ii. Urban and low speed profile indices (NCHRP 10-93)
- iii. Distance Measurement Instruments (DMI)
- iv. Non-inertial ride measurement

7. Support for RPUG

FHWA Toolkit – Ride Quality

- Smoothness
 - ProVAL software (www.roadprofile.com)
 - ASTM E2560-14: Standard Specification for Data Format for Pavement Profile
 - NHI 131100 “Pavement Smoothness”
 - AASHTO Ride Quality Standards Implementation Contract
 - M328 Equipment Specification
 - R54 Accepting Ride Quality using an inertial profiler
 - R56 Certification of Inertial Profilers
 - R57 Operation of Inertial Profilers

Questions?

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