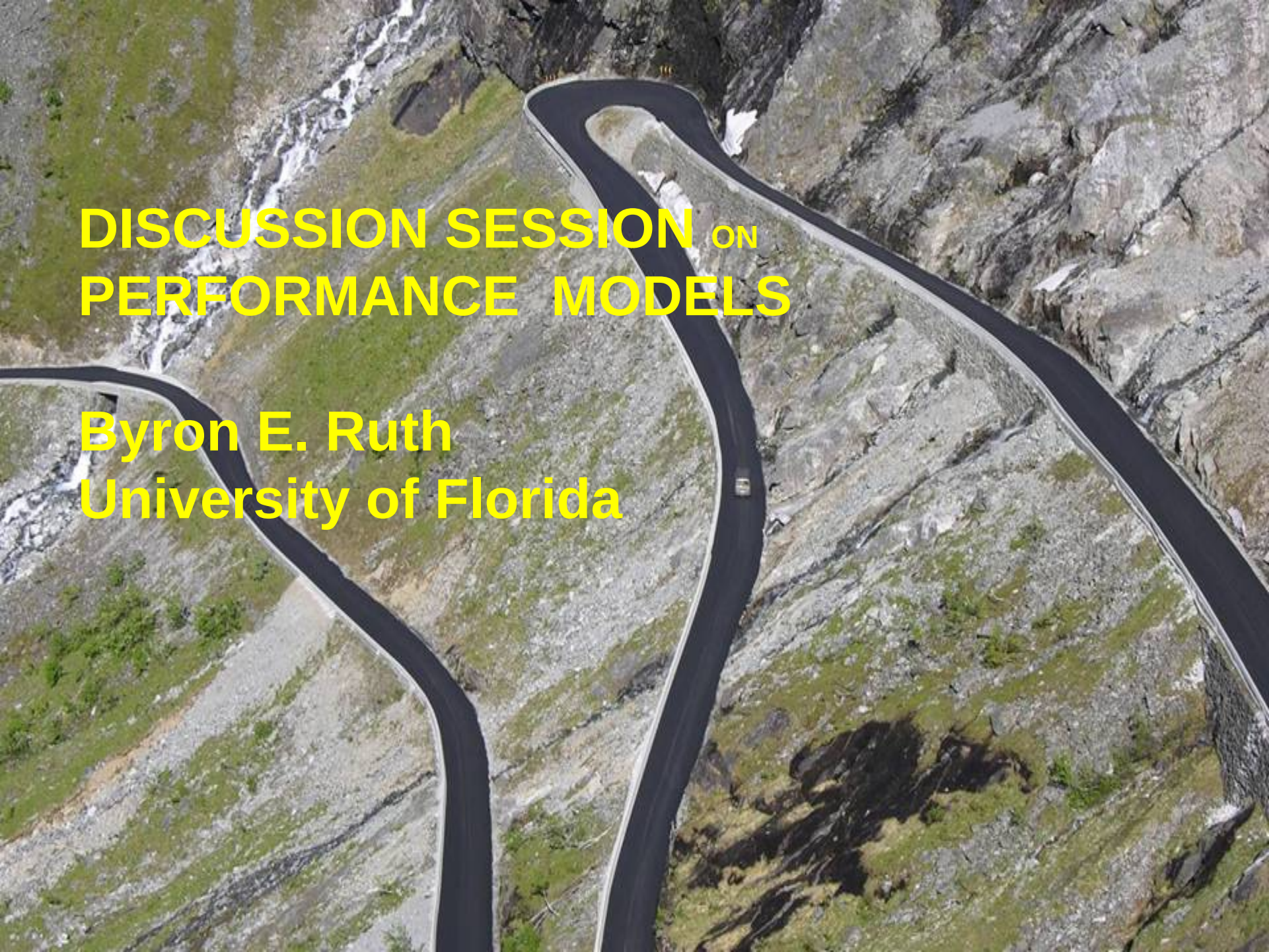

DISCUSSION SESSION ON PERFORMANCE MODELS

Byron E. Ruth
University of Florida

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It is essential that pavement performance models define the long term behavior of all critical and necessary elements of insitu materials and conditions.

A lack of information regarding the pavement foundation, subgrade, and moisture conditions may negate the best of

Proper characterization of constructed pavements should provide reasonable estimates of predicted future performance. However, the vagaries of nature may have a significant effect on these predictions. Therefore, to be on the safe side, historic trends in temperature, rate of cooling, traffic (ESALs), etc. should be used in the development of pavement performance models.

Asphalt aging and identification of conditions to produce cracking, rutting, and deterioration probably pose the most difficult task in modeling efforts.

There is considerable difference between a universally applicable performance prediction model and one developed for regional use where performance is dependent upon fewer variables.

In some situations the effect of traffic and bitumen properties may suffice to predict pavement cracking.

For example, the number of transverse cracks within 3km of pavement were defined by the penetration of the bitumen for specific levels of traffic using data from numerous 7 to 8 year old test roads in Quebec, Canada.

High deflection pavements, as categorized by Dynaflect tests, produced no cracking when the recovered pen values were 98 whereas values below 50 gave an increasing degree of cracking.

This indicates that the degree of short and long term age hardening as well as the initial consistency of the binder has a significant effect on performance models.

Pavement research in northern Alberta, Canada, suggests that the International Roughness Index (IRI) can enhance our understanding of the effect of seasonal climatic variations on pavement performance and models.

High speed laser profiling of the shoulder and inner (IWP) and outer wheel (OWP) paths was conducted on various highways for six years during the summer and winter. Winter freezing produced a 15 to 25 percent increase in mean IRI over the measurements taken during the summer.

The proportion of km designated as being good decreased in the winter. The effect of rehabilitation indicated the IRI was substantially reduced from values obtained prior to rehabilitation, but had minimal change for the summer time.

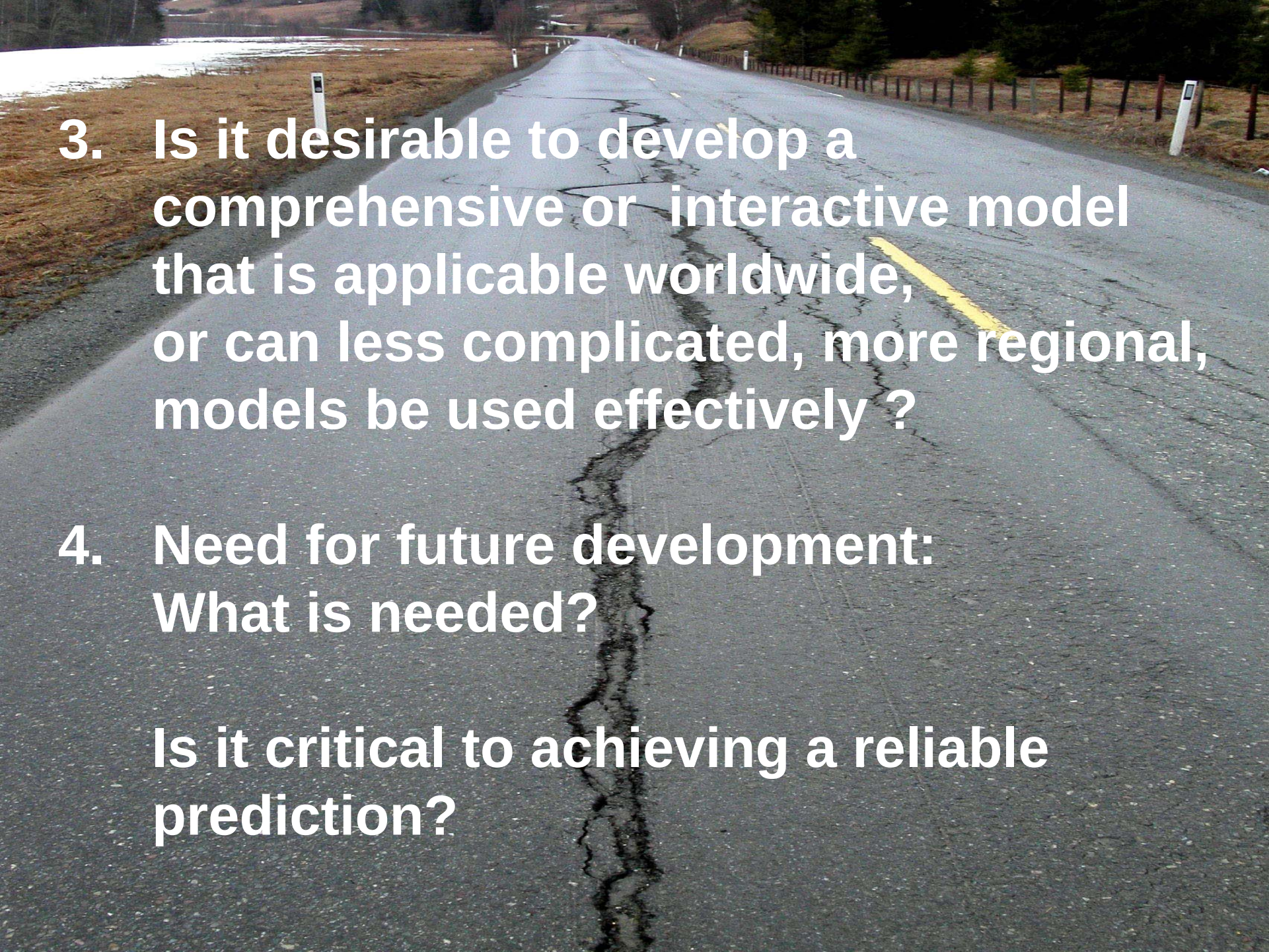
IRI may not always provide an adequate appraisal of pavement performance. Pavements with extensive cracking may give longservice lives provided surface and subsurface drainage is very good.

Today's presentations clearly illustrate differences as well as some commonality in pavement performance modeling.

If is agreeable to you, I would like to conduct our discussions according to specific topics, starting with:

1. Need for performance predictions.
   Why are models of value for design, rehabilitation,
   life cycle analysis, etc?

2. Should pavement rutting and cracking models be considered as separate and independent?



3. Is it desirable to develop a comprehensive or interactive model that is applicable worldwide, or can less complicated, more regional, models be used effectively ?

4. Need for future development: What is needed?

   Is it critical to achieving a reliable prediction?

5. Other related topics that need to be discussed.