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Engineering the Pavement Life-Cycle

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ACPA



ISAP

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Pavement Conference**
Charleston, WV
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Our Chat Today...

- Let's define some terms
- The pavement life-cycle
- Key questions/statements
- Where do we go from here?



“Performance” ??



www.youtube.com



www.northernstar.com

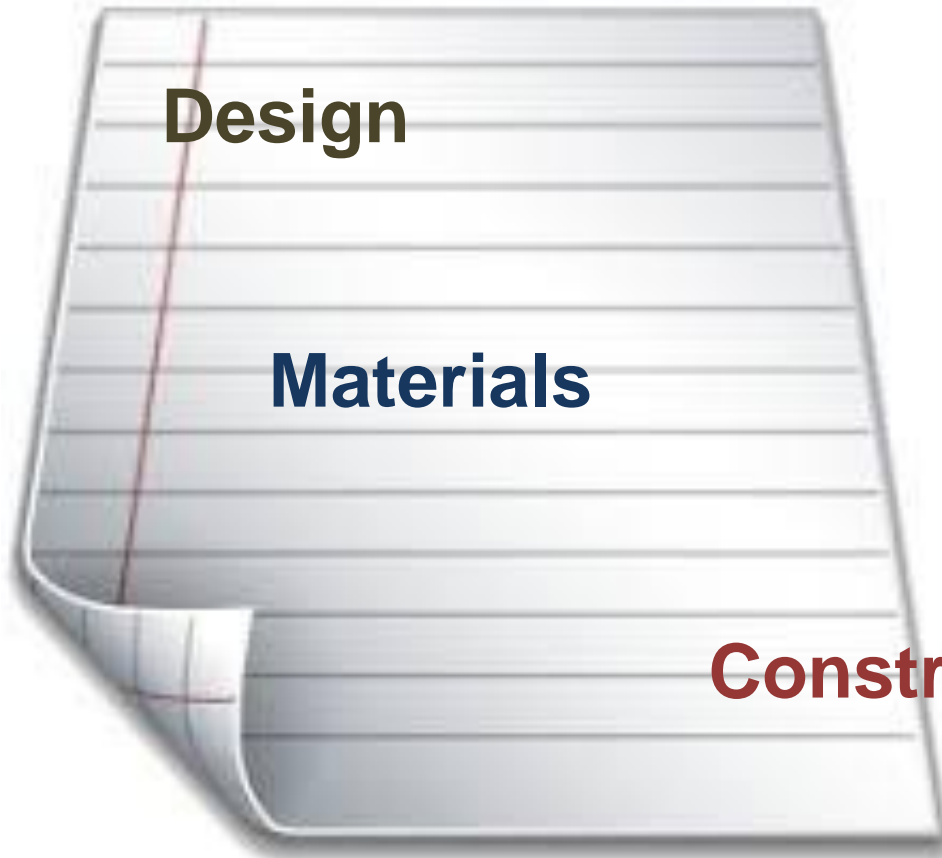


www.mankatotimes.com

What constitutes
pavement
performance?



Are all your folks on the same page when defining “performance”?



Design

Materials

Construction

Maintenance

**Pavement
Management**



“Life” ??

How long does a NEW pavement last?





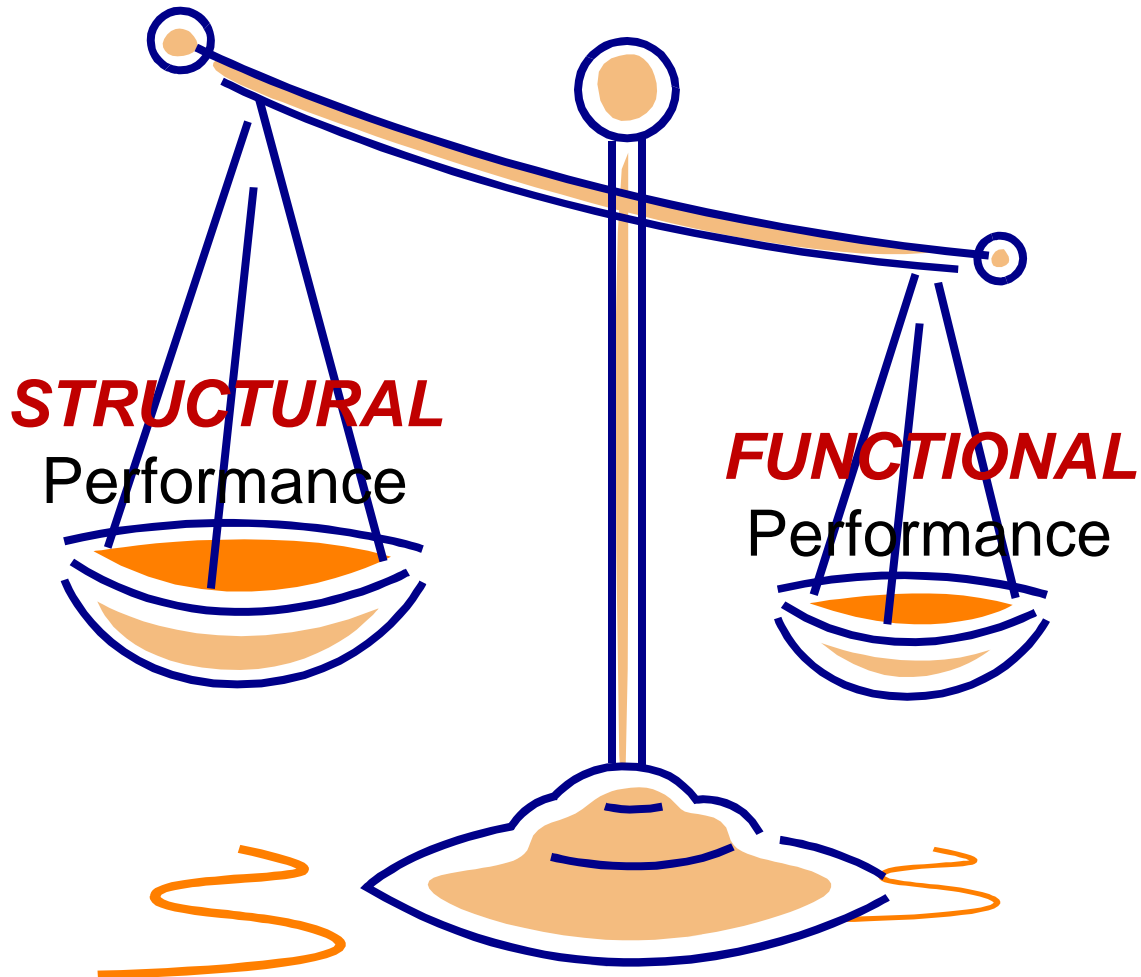
“Life” ??

How do YOU define a pavement’s “life” ?



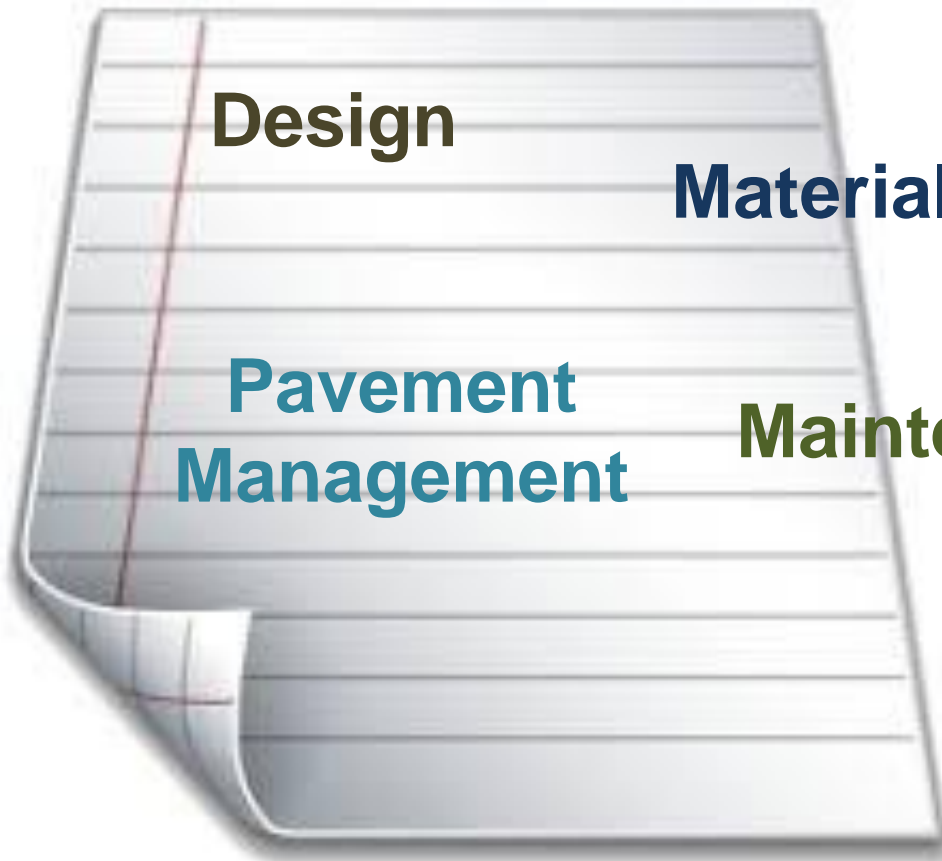


“Life” ??





Are all your folks on the same page when defining “life”?



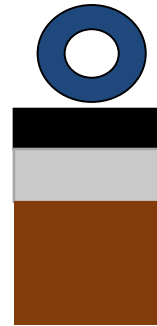
Construction



The Pavement Life Cycle (simplified)



Rehabilitation



Structural Design

Preservation



Which of these stages is the MOST important to pavement performance?

Materials/Mix Design



Construction



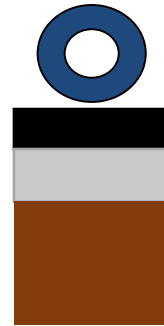
Maintenance





Opportunities

Rehabilitation



Structural Design

Preservation



Materials/Mix Design



What are our opportunities to extend the life-cycle here?

Construction



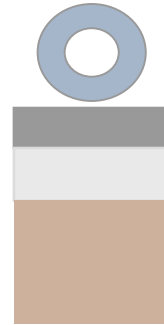
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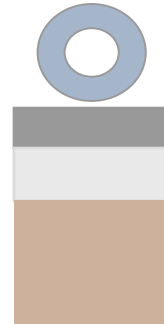
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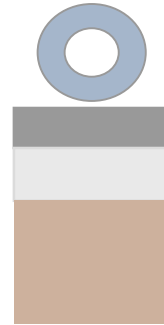
Maintenance





Opportunities

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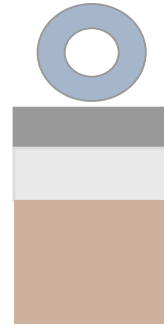
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Opportunities

Rehabilitation



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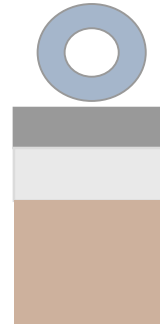
Maintenance





Opportunities

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What are our opportunities to extend the life-cycle here?

Materials/Mix Design



Construction



Maintenance

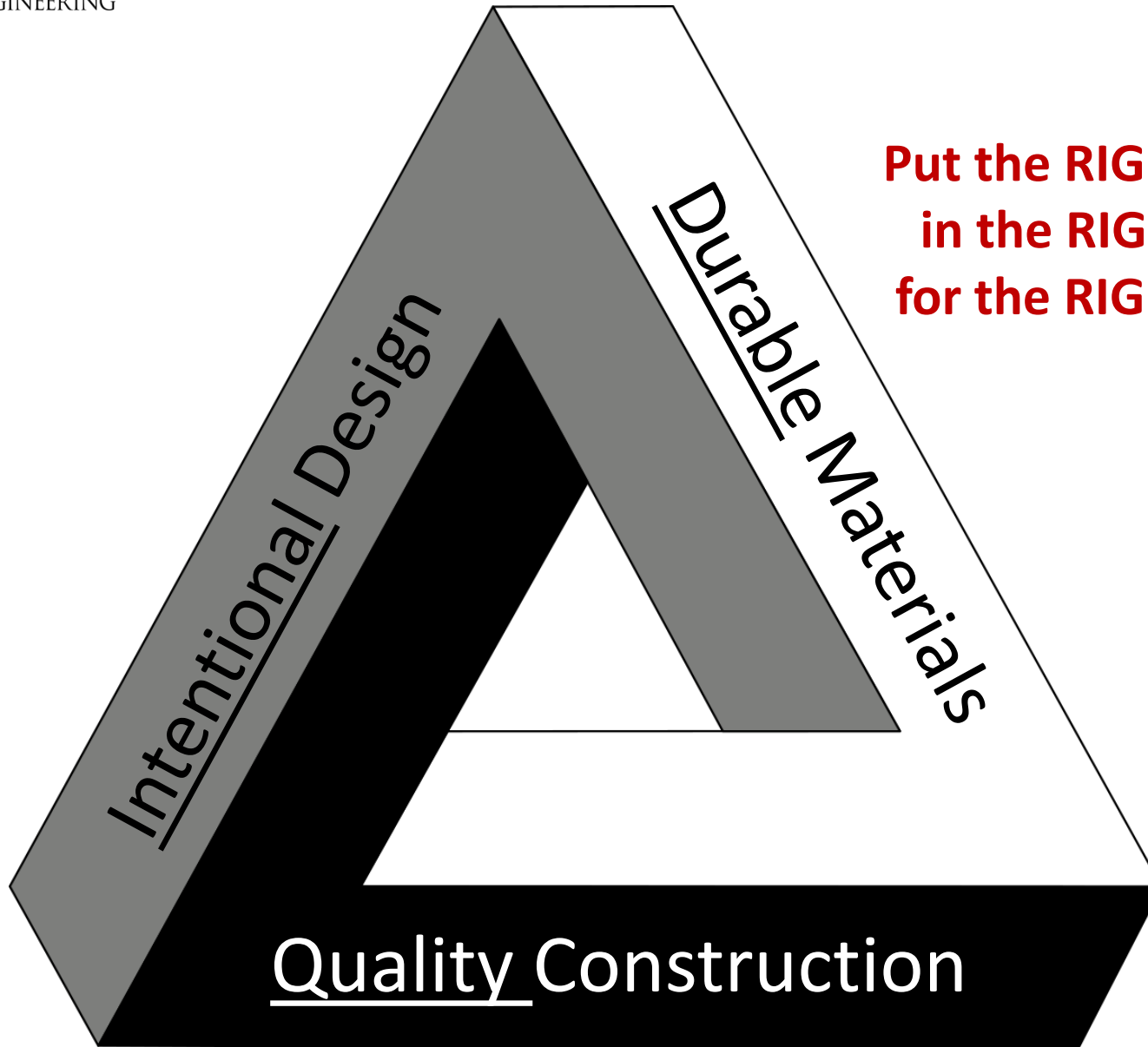




What if...

We **DESIGNED** the Life Cycle – *intentionally?*





**Put the RIGHT materials
in the RIGHT place
for the RIGHT purpose**



*Nice theory – but future maintenance, preservation, and rehab treatments **depend on how the pavement actually performs!***

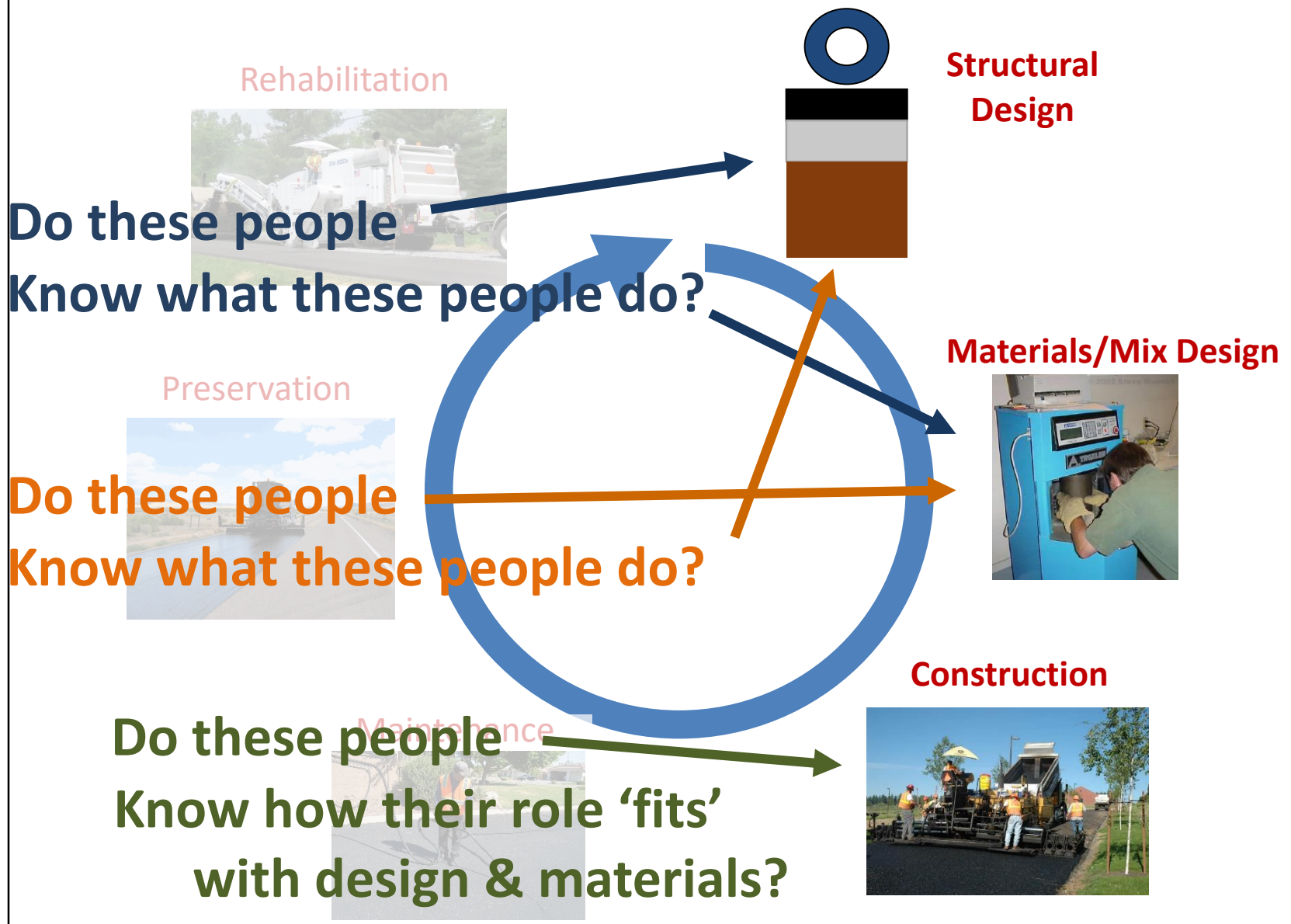


What if...

We PREVENTED distresses
rather than
simply **PREDICT** distress?



Making It Work...





Take-Aways for Today

(so far)...

the “duh” statements



1. Clearly define performance expectations.
Functional and structural
2. Discussions regarding pavement ‘life’ must start by defining terms;
 - a. A better (?) discussion relates to a pavement’s **life cycle**.
3. There are opportunities to extend a pavement’s life at every stage of the life cycle.
4. Specific *actions* for extending pavement life should be tied to specific performance *goals*.
5. A pavement’s life cycle represents a **system** - not a collection of unrelated activities.



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**The best way to predict the
future is to create it.**

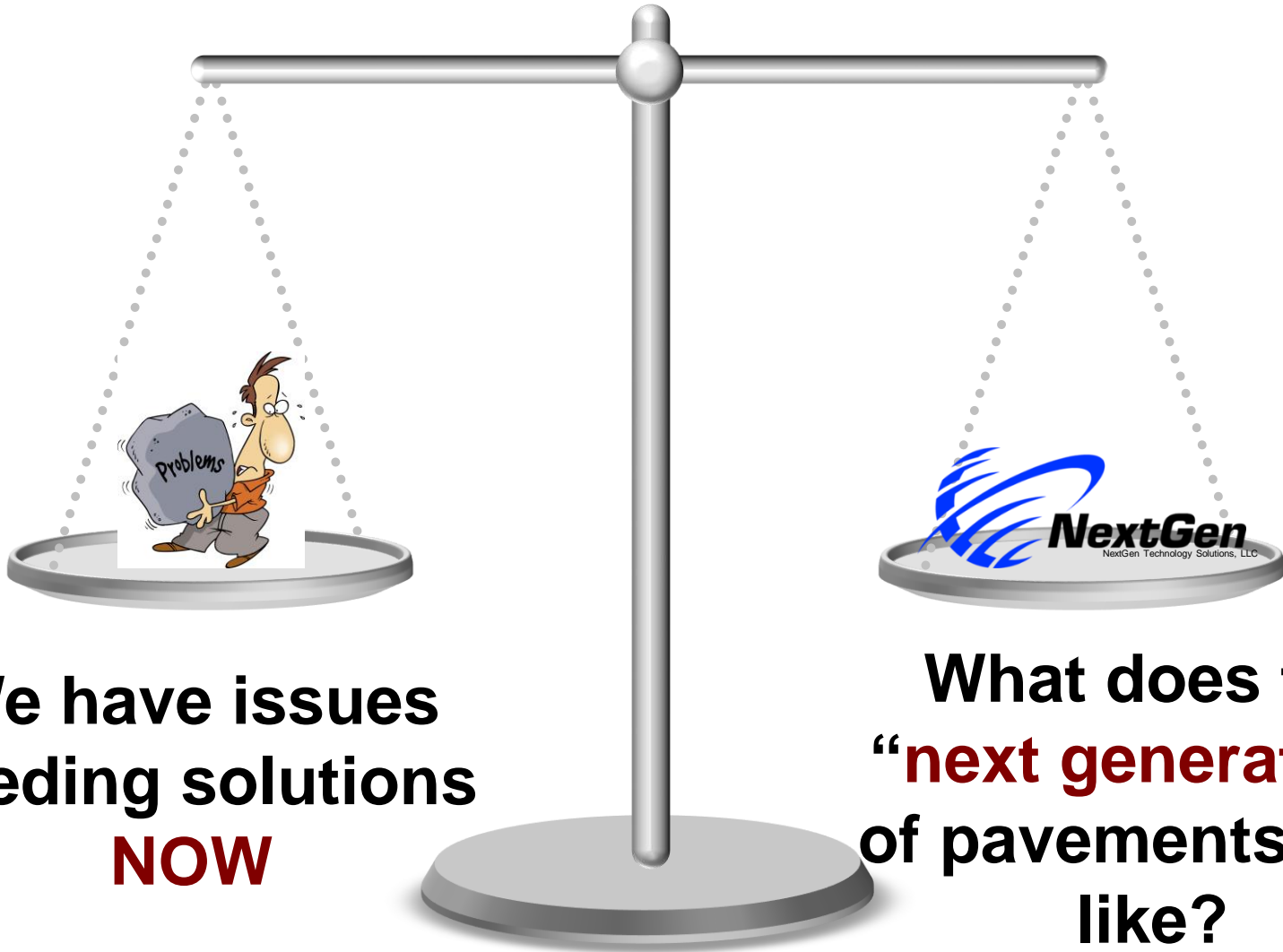
Peter Drucker

BrainyQuote

**The future belongs to those
who prepare for it today.**

Malcolm X

BrainyQuote



We have issues
needing solutions
NOW

What does the
“**next generation**”
of pavements look
like?



Where are we going?

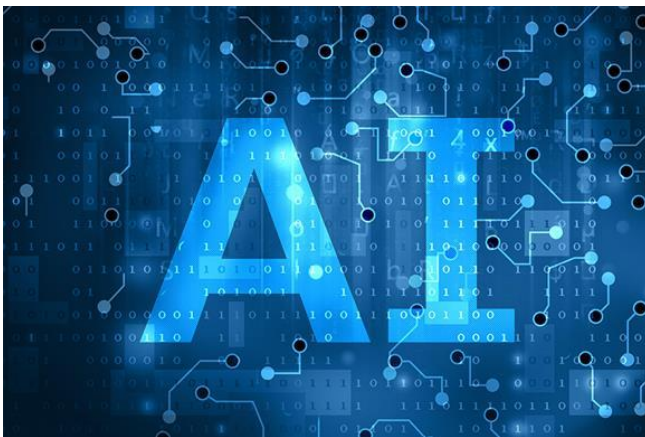


- **BALANCE:** not “*either...or*” – but “*and*”
- **INTEGRATION** of life stages
 - materials...and...structure...and...construction
...and...maintenance...and...preservation...and
...rehabilitation
- **R – D – *and* I**



*Do we actually **engineer**
the pavement? How
about the life-cycle?*

*Do we empower our people to make
judgements and decisions?*



*"We engineer our systems
so that it does not require
an engineer to use them."*

-- Kevin Hall, TRB 2018



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“There will be days...when you step out of the phone booth and try to fly, and the very people you want to save are the ones standing on your cape.”



Sarah Kay
TED 2011





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Questions?



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