Disruptive Technologies – Opportunities for the Asphalt Industry

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Our Competitive Landscape

The movement of people and goods via roadways constructed and maintained with asphalt mixtures.

We provide mobility.
Figure 5. The shifting mobility landscape

Annual vehicle sales will likely begin to decline in the next five years and will likely not recover; however, as personal ownership of driver-driven vehicles becomes rare, the shared and autonomous vehicle categories should experience strong growth.

Introduction of shared (2020) and personally owned (2022) autonomous vehicles

Source: Deloitte preliminary future of mobility forecast. See appendix for details.
Figure 4. People miles driven, by future state

As the population grows and new population segments gain access to mobility, miles driven will likely increase by up to 35 percent, with shared mobility accounting for the vast majority of them.

Source: Deloitte preliminary future of mobility forecast. See appendix for details.
As much as 65% of roadways need work
- The US Department of Transportation estimate

“If fewer than 5% of roads are ready for navigation by autonomous vehicles.”
- John Riccardi, Vice President & General Manager, Transportation Safety Division at 3M

“As of now, there are no federal funds specifically committed to getting public roads prepared for self-driving cars.”
- Richard Truett in Automotive News
National Efforts for Autonomous & Connected Vehicles

- U.S. Department of Transportation
- National Highway Traffic Safety Administration
- FHWA – Office of Operations
- Federal Transit Administration
- Federal Motor Carrier Safety Administration
- AASHTO
- TRB/NCHRP
Estimated Lane Curvature: 2300.0 m
Estimated Vehicle Offset: -0.45 m
Why highways should isolate self-driving cars in special smart lanes

Umberto Malessi, Fluidmesh
April 25, 2017 2:50 PM

The race is on. Tech giants like Google, Tesla and most car makers — from Toyota to Ford and Volvo — are betting billions to get intelligent self-driving cars on the road as soon as possible. Earlier this month, Apple became the 30th
Critical Commerce Corridors
An existing highway where a barrier physically separates commerce lanes from those lanes dedicated to passenger vehicles.
The Rise of Electric Cars

By 2022 electric vehicles will cost the same as their internal-combustion counterparts. That’s the point of liftoff for sales.

Electric vehicles would account for 35% of all new vehicle sales.

Sources: Data compiled by Bloomberg New Energy Finance, Marklines
Beyond Carrying Traffic

FAQ

What sets Wattway apart from its competitors?

Is Wattway all-weather?

Can Wattway be installed on any type of road? Are there any constraints (roadway condition, tight curves, etc.)?

Wattway can be installed on any road with asphalt pavement that is recent, with no cracks, ruts, deformation, or asbestos. The road must comply with stipulated technical and commercial specifications.

What is the minimum/maximum surface area for one order?
Asphalt is a key player in mobility opportunities for freight and people...

- Provide clear, distinguishable pavement markings for vehicle sensors,
- The ability to minimize travel time and maintain high speeds by providing a safe, smooth driving surface, and
- Asphalt pavement’s ability to be quickly and easily maintained and accommodate technologies.
Leveraging Disruptive Technologies in Infrastructure for Competitive Advantage
Globally, labor-productivity growth in **construction** lags far behind that of **manufacturing** or the total economy.

Real gross value added per hour worked, index of 2005 $: 100 = 1995

Source: GGCD-10; national statistical agencies of Turkey, Malaysia, and Singapore; OECD, Rosstat; US Bureau of Economic Affairs; US Bureau of Labor Statistics; WIOD; World Bank; McKinsey Global Institute analysis

McKinsey&Company
The Transformation of Transportation

Smart Cities

Shared and Autonomous Vehicles

Seamless integration between transportation modes and high speed travel
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Depends on...

Connectivity – sensors, Internet of Things

Digitization – data analytics

Virtualization – automation, workforce productivity
Unprecedented Connectivity

• Expectation is 24/7 connectivity – everything we use

• Leveraging connectivity to improve lives & enable enterprises to operate more efficiently

Safety       Mobility
In Virginia, 80 miles of roads with sensors to help better manage and control the flow of traffic.
• New technologies such as drones, telematics, bots with capabilities to collect vast amounts of data – Big Data
• With software advancement and Artificial Intelligence this data can be used for insightful and actionable information for stakeholders

• Harnessing data for marketing and customer preferences

• Asset Management and Performance Rulemaking

From Big Data to Project Intelligence
“The innovative solutions provided by our Virtual Design + Construction team are transforming the way we approach planning, design, and construction on our projects today and the way we think about tomorrow.”

– Jeff Stone, Executive Vice President
Civil Integrated Management (CIM)
4D Modeling
Laser Scanning
UAVs/Drones
Virtual Reality
Asphalt pavement is well over 90% of the US pavement infrastructure. The most cost-effective path to implementing vehicle technologies, such as autonomous vehicles, is to maintain this infrastructure.

Asphalt pavements is and will continue to be a key player in mobility of freight and people.
The Pavement of the Future

We must be the disruptors for our pavement structures and our work zones to generate data that can be used for project intelligence & predictive maintenance – a service we can help provide to our customers, the road owners, road users, and mobility companies – who will demand it.
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