The Trustworthy Automated Driving Provider

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The Victor "Flyer" of 1893.
Facebook said in a comment to The Verge: ‘People often use Facebook to make plans with friends. So, we’re running a very small test in the Facebook app to make that easier. We look forward to hearing people’s feedback.’ The test appears to be running in New Zealand and Toronto.”
Thanks. Point of calling it "beta" was to emphasize to those who chose to use it that it wasn't perfect.

10:44 AM - 10 Jul 2016

„Wenn mit der Bezeichnung ‚Beta-Version‘ ein ‚unfertiger‘ Stand der Software gemeint ist, würde das KBA eine Funktionalität mit einer derartigen Software nicht genehmigen“

“Contrary to what Tesla represented to them, buyers of affected vehicles have become beta testers of half-baked software that renders Tesla vehicles dangerous if engaged.”
The trustworthy company

- Markets only what it believes reasonably safe
- Bases its belief on compelling evidence
- Updates that evidence over entire lifecycle
- Acts in response to those updates
- Mitigates harm in the case of failure
- Communicates candidly with the public
The challenge

- **Product characteristics**
  - Diverse, complex, dynamic, part of larger systems, and service-oriented

- **Regulatory capacity**
  - Limited resources, legacy expertise, slow processes

- **Public expectations**
  - Fickle and misinformed....
Why do we regulate?

To correct market failures

• Safety: System developers lack incentives to act reasonably safely

• Trust: Public lacks resources to decide if something is reasonably safe
Regulation is imperfect

<table>
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<tr>
<th>Imperfection advantages innovation</th>
<th>Imperfection disadvantages innovation</th>
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<td>Innovation ameliorates imperfection</td>
<td>Innovation exacerbates imperfection</td>
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How safe?

• We don’t actually know – and this is normal
• No system is absolutely safe
• No system that encompasses a human user is functionally deterministic
• We expect a product to be safer than the one that just caused harm
Space for *technical* innovation

- Technologies, applications, business cases
- Governments don’t design motor vehicles
- Governments shouldn’t pick technological winners and losers
Space for *regulatory* innovation

- Safety assessment is also a subject of innovation!
- Empirics may not resolve philosophical debates
- Cost of safety assessment offers economic incentives for innovation
- Not as sexy as innovation in consumer products – but as important and potentially as diverse
How do we get there?

• Goal: Deserved trust!
• My public safety case
• NHTSA’s exemption process
• NHTSA’s safety assessment letters
• Congress’s safety evaluation reports
• What about the states?
Toward a model state law

• Necessary? Useful? Timely?
• Do something / Do nothing / Do only this
• Be thoughtful!
• Uniform Law Commission’s Highly Automated Vehicle Drafting Committee: 
  Meeting on December 1-2, 2017 in Chicago
Automated driving provider

- The legal subject of the vehicle code
- Self-identifies as a condition of vehicle registration
- Could be the manufacturer, developer, retrofitter, owner, operator, insurer....
- The person that *expressly warrants* the automated operation of an automated vehicle to be reasonably safe
The promise

Registration of an automated vehicle may be granted, maintained, and renewed only if, by means of a current electronic record automatically retrievable by any participating agency, an automated driving provider:

• describes the capabilities and limitations of the vehicle’s automated driving system;
• provides proof of automated operation insurance for the vehicle;
• represents to each participating agency that it believes the automated operation of such vehicle to be reasonably safe;
• represents to each participating agency that clear and convincing evidence supports such belief;
• warrants to the public that the automated operation of such vehicle is reasonably safe....
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