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# Issues and Approaches in Testing & Certification for Vehicle-Roadway Automation

## TRB 2014 Session #749

Ching-Yao Chan  
California PATH, UC Berkeley

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# Background

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- **TRB VA Workshop, July 2013, Stanford, CA**
  - Breakout Session on Testing, Certification, and Licensing
- **Subsequent Discussions**
  - Discussions with workshop participants
  - Review of Relevant Literature
  - California DMV project
  - Discussions with Colleagues at PATH, DMV OEMs and Technology Providers
  - SAE On-Road Automated Vehicle Safety Testing Task Force
- **Disclaimer**
  - Not official views of organizations listed above



# Breakout Session Summary

## - Testing, Certification, Licensing

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Participant Representation	Day One	Day Two	No. of Attendees for two days (not counting repetition)
Academia	12	12	14
Automakers	12	8	12
Technology Providers	3	5	6
Government Agencies	5	5	7
Consultants	6	6	8
Others	4	3	6
<b>TOTAL</b>	<b>42</b>	<b>42</b>	<b>53</b>

# What is this topic about?

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- **Emerging Forces**

- Exciting developments in industries
- Greater publicity and higher interests
- Legislations following the steps
- Automated Driving coming to town!



- **Focus**

- Discussions centered around regulations
- Upcoming regulations in California drawing attention (Public Hearing for first regulation package yesterday!)
- How to overcome technical, legal, and social challenges

# Stakeholders

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- **Government agencies**
  - Regulatory bodies
  - Roadway operators
  - Enforcement agents
- **Manufacturers**
  - OEMs
  - Technology Providers or Suppliers
  - Joe Smith's garage
- **Insurance industry**
- **Certification organizations**
- **Public Interest or advocacy groups**
- **Researchers**
- **Consultants**
- **Others ...**



# Common Interests of All Stakeholders

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- Technically robust to facilitate continuing advancements of technologies
- Socially responsible to ensure public safety, for testing as well as for market introduction
- Legally just, fair, and implementable



# Breakout Session Summary

## - Testing, Certification, Licensing

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- Most agree that regulations are to ensure public safety and not to stifle innovations and developments.
- Regulations typically are aligned with or follow state-of-the-art practices and technologies.

*Can we  
minimize this?*



# Issues and Approaches for Testing

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- **Can it be comprehensive technically?**
  - **Combination of laboratory, closed-track, on-road, and simulation**
- **How good a performance is socially acceptable and safe enough?**
  - **Expectations: as good as (average) good drivers?**
- **How much restrictions should be placed?**
  - **“Automated Vehicle” just another new thing that is being introduced into automobiles?**

# Issues and Approaches for Certification

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- **Diversity of operational concepts and system design**
  - Regulations ahead of standards?
  - Vehicles, applications, devices, and processes?
- **Who will be liable?**
  - Perception of due diligence and social justice?
- **Who should be given the tasks?**
  - Self-Certification? Independent Third-Party? Government Agencies?
  - Precedent and existing practices?
  - Discrepancies in various states or regions?

# Questions?

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## THANK YOU!

**Ching-Yao Chan**  
**California PATH, UC Berkeley**

**[cychan@path.berkeley.edu](mailto:cychan@path.berkeley.edu)**

**TEL: 510-665-3621**

