



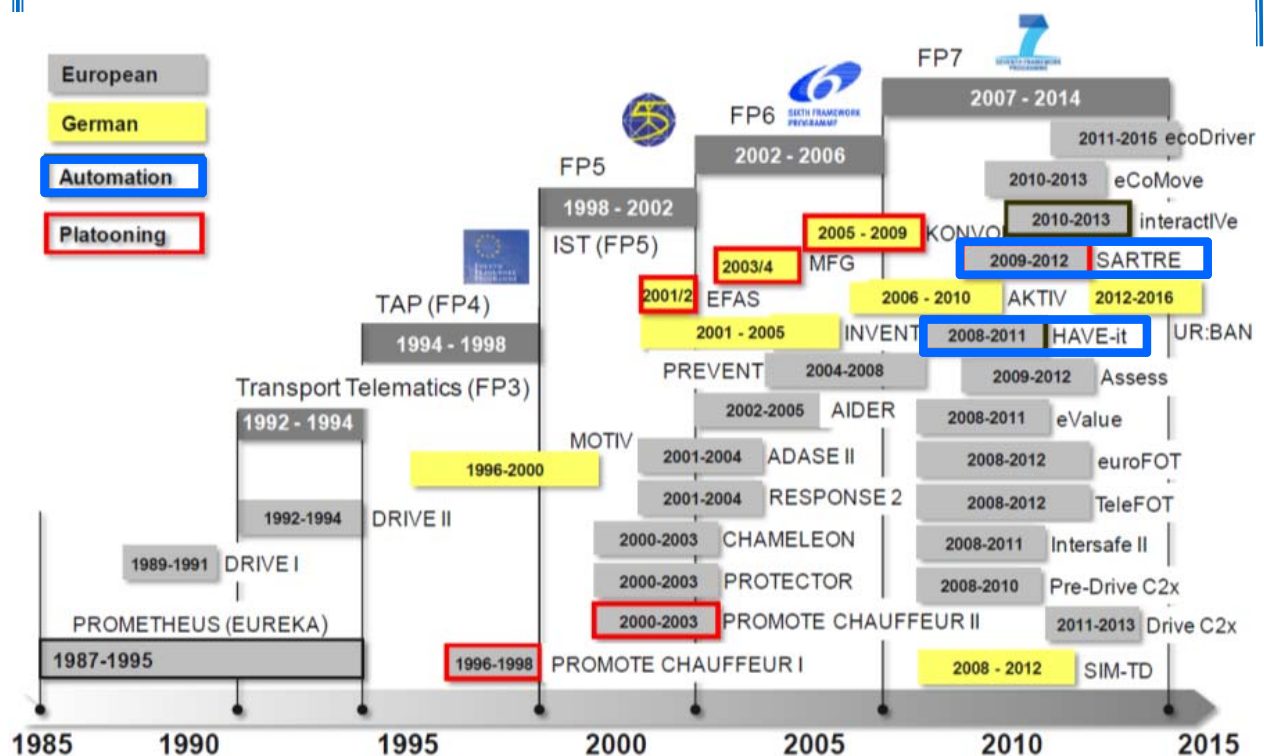
欧米の自動運転関連研究開発

2014年9月26日

SIP自動走行システム推進委員会
国際連携WG



欧州の自動運転関連プロジェクト



出典: Dr.-Ing. Adrian Zlocki, Road Vehicle Automation Workshop, 2012



欧州: Horizon 2020 (2014-2020)

成長戦略 Europe 2020

- スマートな成長 (情報通信技術、イノベーション、若者の支援)
- 持続可能な成長 (資源効率の高い社会、国際化に対応した産業政策)
- 包括的な成長 (新しいスキルと仕事、貧困対策)

科学技術・イノベーション政策 Horizon 2020 (2014-2020)

重点分野

- 卓越した科学技術
- 産業界のリーダーシップ確保
- 社会的課題への取り組み

総予算 約€80 billion (11兆3千億円)

交通分野 (社会的課題への取り組みの一部)

Smart, Green and Integrated Transport

- Mobility for Growth
- Green Vehicles
- Small Business and Fast Track Innovation for Transport

総予算 約€6.3 billion (8,900億円)

2



欧州: Horizon 2020 ITS分野2014年度計画

欧州連合 Horizon2020
交通分野 2014年度予算
€ 63 million (約89億円)



協調型システム



自動運転



電気自動車と スマートグリッドの融合



3



欧州 : AdaptiveIVe

Adapt**IVe**

Automated Driving Applications & Technologies for Intelligent Vehicles



Budget: EUR 25 Million
 European Commission: EUR 14,3 Million
 Duration: 42 months (January 2014 – June 2017)
 Coordinator: Aria Etemad,
 Volkswagen Group Research
 8 Countries: France, Germany, Greece, Italy, Spain, Sweden,
 The Netherlands, UK

出典: Aria Etemad, Volkswagen Group Research,
 17th International Task Force on Vehicle Highway Automation, October 13, 2013

4



欧州 : AdaptiveIVe - Consortium



VOLKSWAGEN
AGTIFORTELLUSCHART

BMW Group
 Research and Technology



CENTRO
 RICERCHE
 FIAT

DAIMLER



VOLVO

PSA PEUGEOT CITROËN



RENAULT



BOSCH

Continental

DELPHI

best



Deutsches Zentrum
 für Luft- und Raumfahrt e.V.
 in der Helmholtz-Gemeinschaft
 Institut für Verkehrssystemtechnik

CHALMERS



TNO



UNIVERSITY
 OF TRENTO - Italy

UNIVERSITY OF LEEDS

IZVW

alcor
consulenza innovazione

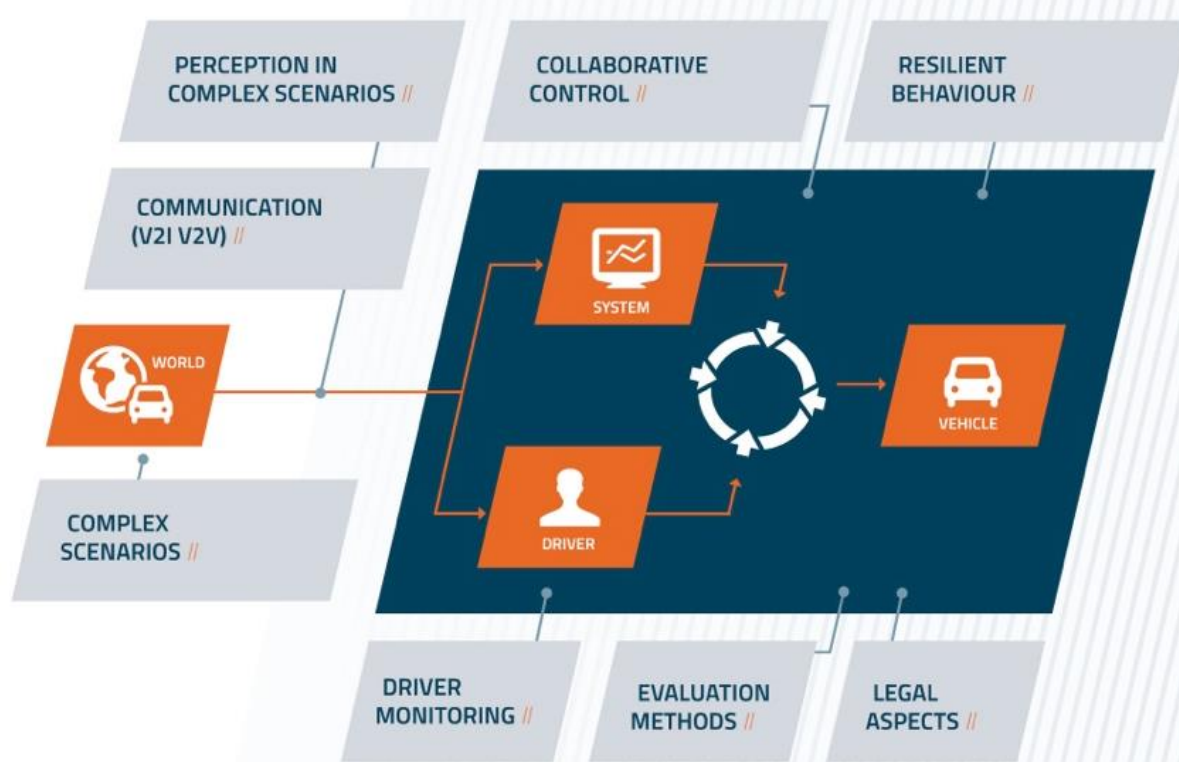
eict
European Center for Information
 and Communication Technologies
 EICT GmbH

出典: Aria Etemad, Volkswagen Group Research,
 17th International Task Force on Vehicle Highway Automation, October 13, 2013

5



欧州 : AdaptiveIVe - Overview

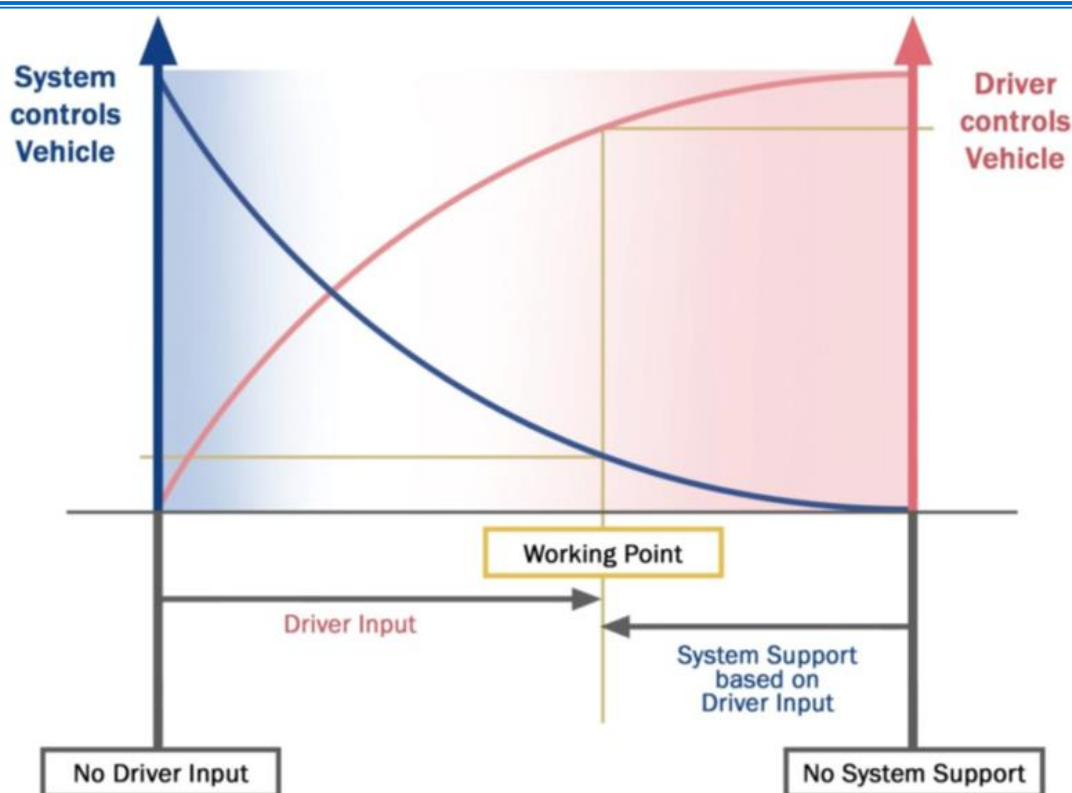


出典: Aria Etemad, Volkswagen Group Research,
17th International Task Force on Vehicle Highway Automation, October 13, 2013

6



欧州 : AdaptiveIVe - Human factors



出典: Aria Etemad, Volkswagen Group Research,
17th International Task Force on Vehicle Highway Automation, October 13, 2013

7



米国：Strategic Research Plan

<戦略的開発計画>

USDOTのRITA(Research and Innovative Technology Administration)が
5-Year ITS Strategic Research Plan を発表(2009.12.8)

期間:2010年-2014年

本プランの核となるのは、



(出典:USDOT)

Connected Vehicle Research

DSRCを利用し開発・実用化を加速

Vision:

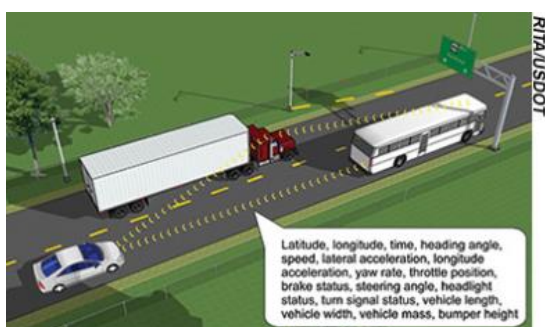
National, multi-modal surface transportation system that features a connected transportation environment among vehicles (cars, trucks, buses, fleets of all kinds), the infrastructure, and mobile devices to serve the public good by leveraging technology to maximize **safety, mobility and environmental performance**. Connectivity is achieved **through dedicated short range communications (DSRC)**.

対応分野 : **Safety Mobility Environment**

8



米国：Connected Vehicle Research



(出典:USDOT)

9



米国：新たな長期陸上交通予算

2014年4月29日、連邦運輸省は、新たな長期陸上交通予算案を議会に提出。

GROW AMERICA Act

(The Generating Renewal, Opportunity, and Work with Accelerated Mobility, Efficiency, and Rebuilding of Infrastructure and Communities throughout America Act)

総額 3,020 億ドル / 4年 (約30兆円)

通常の財源に加えて成長のための法人税改革に伴う 1,500億ドルを原資とする。
4年間にわたりHighway Trust Fund の破綻を防ぐとともに、成長目標を達成するために必要な公共投資を支える。

12 の重点領域

- Supporting a healthy environment
- Expanding our ability to move freight
- Growing investment in transportation
- Making critical investments in highways and bridges
- Promoting innovative financing
- Building ladders of opportunity
- Empowering local decision makers
- Creating more efficient project delivery
- Investing in rural America
- Improving transportation safety
- Supporting safe, reliable public transit
- Shaping a pathway to transportation careers

出典: Grow America, U.S. Department of Transportation

10



米国： Strategic Research Plan (2015-2019)

1. Interoperability

機器、車両、インフラ、アプリケーションの互換性確保

2. Automation

安全、効率、モビリティ向上などのための自動運転技術開発

3. Big Data / Data Management

車両、移動端末、インフラからのデータ融合による交通管理と効果評価

4. Smart Cities / Digital Society

持続可能な交通システムのためのスマート・モビリティの研究

5. Resilience

大規模災害への備えと発災時の交通システムの対応能力

6. Cyber Physical Systems (CPS)

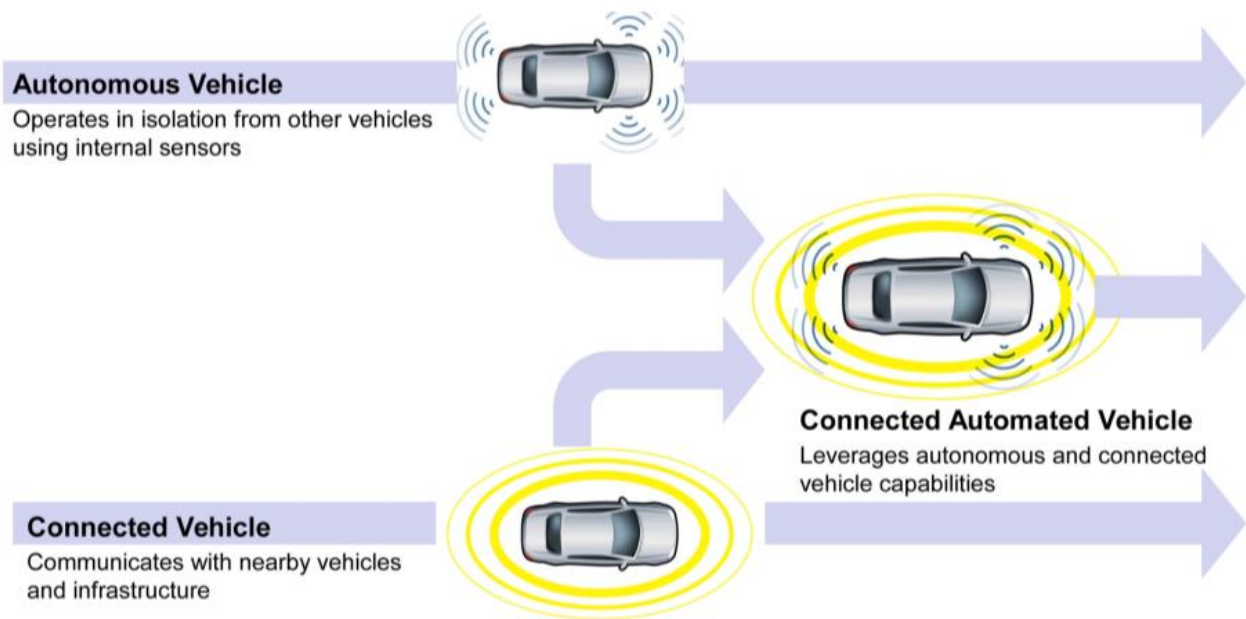
協調システムを中心とした、車両などの実体と情報技術の融合

出典: Research and Innovative Technology Administration,
U.S. Department of Transportation, at Connected Vehicle Public Meeting, September 26, 2013

11



Connected and Automated Vehicles



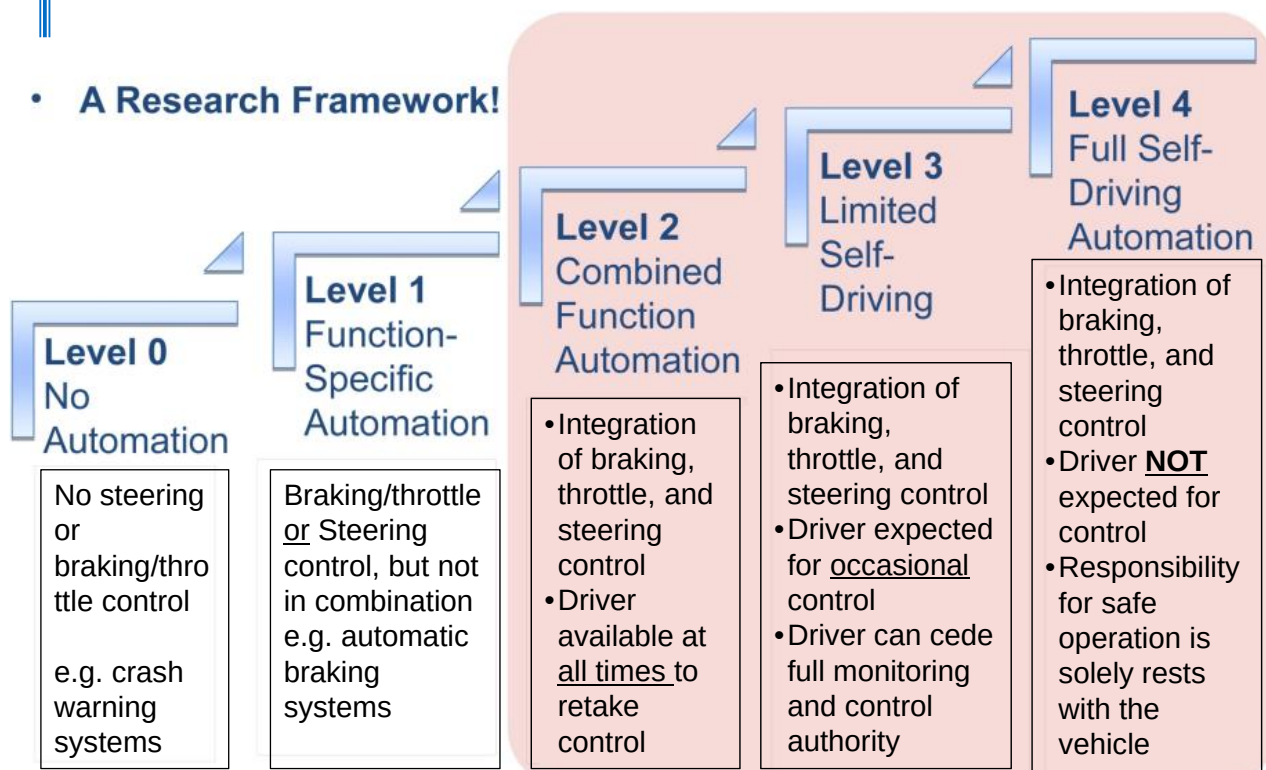
出典: Kevin Doherty, ITS Joint Program Office, U.S. Department of Transportation, Automated Vehicle Symposium 2014, July 17, 2014

12



USDOT-NHTSAの自動運転レベル定義

• A Research Framework!

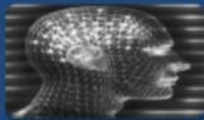


出典: Nat Beuse, National Highway Traffic Safety Administration, U.S. Department of Transportation, Automated Vehicle Symposium 2014, July 17, 2014

13



USDOT-NHTSA の自動運転関連開発テーマ



Human Factors Research

- Human factors evaluation of Level 2 and Level 3 automated driving concepts
- Initial human factors design principle for L2/L3



Electronic Control Systems Safety (including Cybersecurity)

- Functional safety of safety-critical automotive systems and extensions to L2-L4
- Cyber security threats, vulnerabilities, countermeasures assessment



Systems Performance Requirements

- System performance requirements framework
- Objective test procedures



Benefits Assessment

- Target crash population estimation for automated vehicles L2-L4
- Multi-modal benefits framework development



Testing and Evaluation

- Controlled test track studies
- Field operational tests

出典: Nat Beuse, National Highway Traffic Safety Administration,

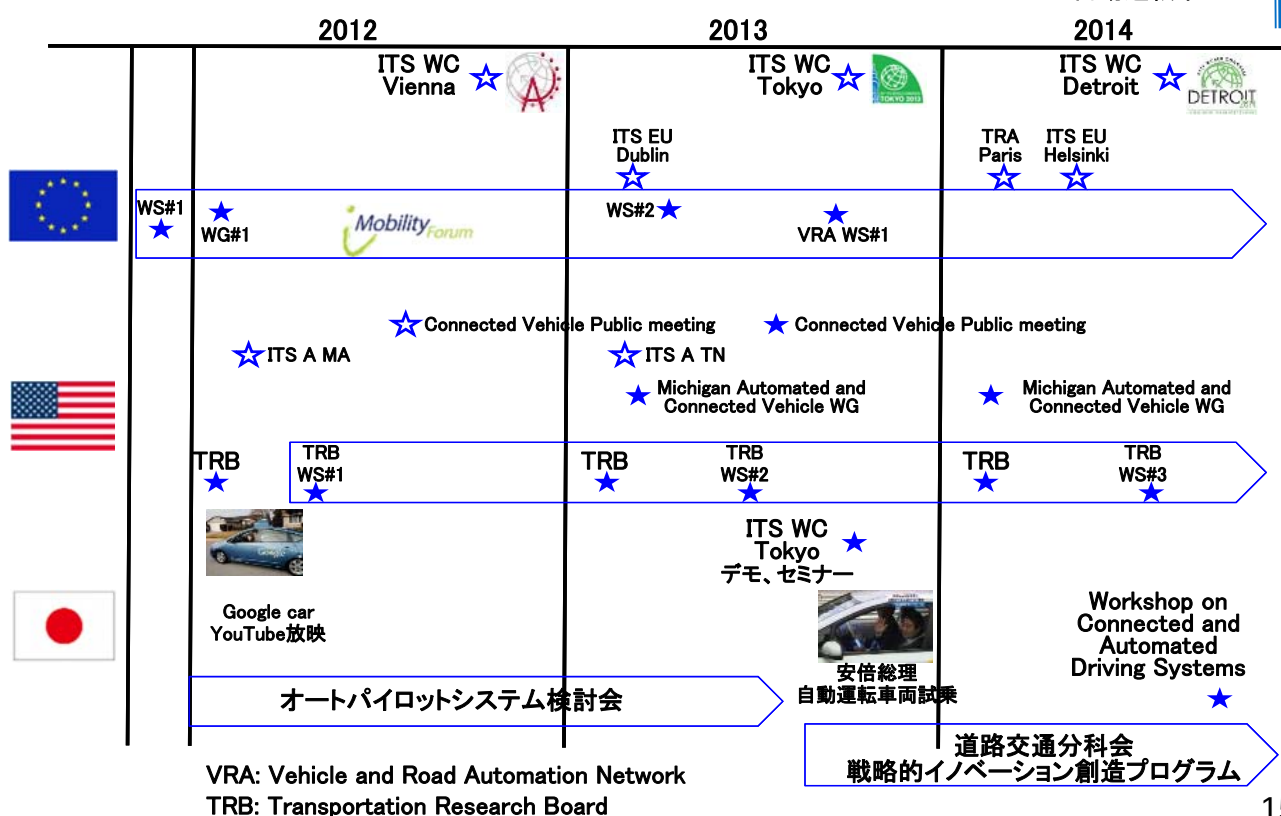
U.S. Department of Transportation, Automated Vehicle Symposium 2014, July 17, 2014

14



世界の自動運転関連の動き

★ 自動運転中心



15