

2nd SIP-adus Workshop on Connected and Automated Driving Systems 2015

innovation of Automated Driving for Universal Services (SIP-adus)
-mobility bringing everyone a smile-



「SIP(戦略的イノベーション創造プログラム)・自動走行システム」

自動走行システムの実現に向けた諸課題とその解決の方向性に関する調査・検討
における自動走行システムにおける国際協調活動の推進に係る調査検討

業務成果報告書

平成28年3月4日



本報告書は、内閣府の自動走行システムの実現に向けた諸課題とその解決の方向性に関する調査・検討における自動走行システムにおける国際協調活動の推進に係る調査検討委託費による委託業務として、(株)コングレが実施した平成26年度「自動走行システムの実現に向けた諸課題とその解決の方向性に関する調査・検討における自動走行システムにおける国際協調活動の推進に係る調査検討」の成果を取りまとめたものです。

従って、本報告書の著作権は、内閣府に帰属しており、本報告書の全部又は一部の無断複製等の行為は、法律で認められたときを除き、著作権の侵害にあたるので、これらの利用行為を行うときは、内閣府の承認手続きが必要です。

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自動走行システムの実現に向けた諸課題と その解決の方向性に関する調査・検討に関して

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第二部

自動走行システムの実現に向けた諸課題と その解決の方向性に関する調査・検討のための国際会議に関して

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- 別紙資料
- 1.メディアミーティング資料
 - 2.議事サマリー
 - 3.アンケートの集計・分析結果
 - 4.発表資料集
 - 5.登壇者リスト
 - 6.参加者リスト
 - 7.電子データ一式（映像・音声・写真）

該当する別添資料がある場合は以下
表記をしております。ご参照ください。

例

データ1 ホームページデータ

第一部

自動走行システムの実現に向けた諸課題と
その解決の方向性に関する調査・検討に関して

1.調査目的

「SIP(戦略的イノベーション創造プログラム)・自動走行システム」

自動走行システムの実現に向けた諸課題とその解決の方向性に関する調査・検討において、自動走行システムの開発、導入における国際協調活動に着目し、SIPにおいて取り組む研究開発テーマにおける国内外の最新動向を一元的に集約し、SIPにおける研究開発の推進、方向性検討等に資することを目的とする。

具体的調査内容として

1)走行環境のモデル化

地図情報の高度化に関する技術調査

2)通信による走行環境情報の取得

ITSによる先読み情報生成に関する技術として、歩車間を含む
V to X通信の技術とその応用等に関する調査

3)人と走行システムの関係

ドライバーモデルの生成に関する技術として、自動運転(運転支援)
技術の限界と走行シーンごとの運転行動の分析や、人と走行システム
の間での運転操作主体の推移と自動運転のレベル定義等を中心に調査

4)自動運転技術による交通事故の抑止

交通事故死者の低減・渋滞低減のための基盤技術や、地域マネジメント
の高度化による総合的交通事故対策等の調査

5)自動走行による都市交通の革新

次世代交通システムの開発に資する、諸外国の都市交通の課題やその
対応等の調査

6)情報セキュリティ

自動走行システムにおける情報セキュリティ技術を中心に調査する。

以上の6項目としました。

2.調査方法

平成27年10月27日～29日に東京国際交流館プラザ平成においてワークショップおよび試乗体験会を開催し、議論および参加者からのアンケート等を取りまとめる。

1)事前準備

(1)平成27年9月1日よりワークショップのホームページを立ち上げ、会議スケジュール概要の告知と参加登録受付を実施しました。

(2)内閣府及びITS Japanと会議運営等に関して、複数回の打ち合わせを重ね、運営マニュアルと進行台本を準備しました。

ホームページ トップページ



2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015

DATE : October 27-29, 2015
Venue: Tokyo International Exchange Center

Innovation of Automated Driving for Universal Services (SIP-adus)
-mobility bringing everyone a smile-

HOME About SIP-adus Registration info Program Travel Onsite Service & FAQ Archive (SIP-adus2014) Link

Experts from Europe, Americas, and Asia-Pacific will share progress of related projects and discuss technical and non-technical challenges for deployment of Connected and Automated Driving System.

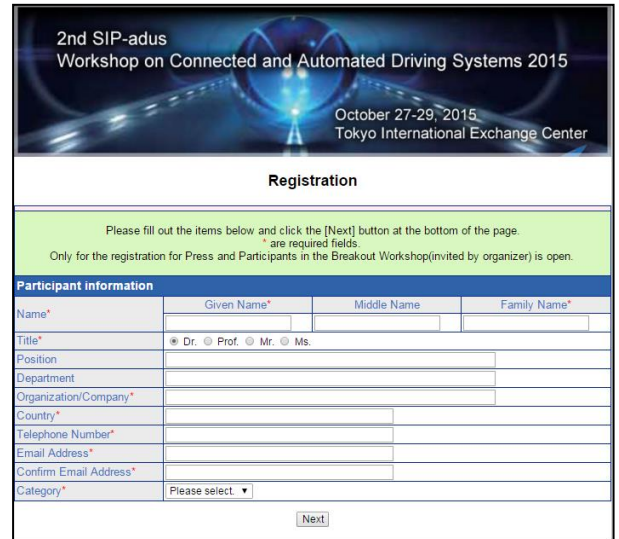
What's New

- 2015.10.28 The Presentation Materials of the Day 2 are uploaded.
- 2015.10.27 The Presentation Materials of the Day 1 are uploaded.
- 2015.10.23 New speaker announced
- 2015.10.19 Speakers page is opened.
- 2015.10.14 Pre-registration is closed
- 2015.10.01 New speakers announced
- 2015.09.10 The speaker's list is updated.

Organizer
Cross-Ministerial Strategic Innovation Promotion Program, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan

Cabinet Office

ホームページ 参加登録ページ



2nd SIP-adus
Workshop on Connected and Automated Driving Systems 2015

October 27-29, 2015
Tokyo International Exchange Center

Registration

Please fill out the items below and click the [Next] button at the bottom of the page.
* are required fields.
Only for the registration for Press and Participants in the Breakout Workshop(invited by organizer) is open.

Participant information

| | | | |
|------------------------|---------------------------|-------------|--------------|
| Name* | Given Name* | Middle Name | Family Name* |
| Title* | * Dr. * Prof. * Mr. * Ms. | | |
| Position | | | |
| Department | | | |
| Organization/Company* | | | |
| Country* | | | |
| Telephone Number* | | | |
| Email Address* | | | |
| Confirm Email Address* | | | |
| Category* | Please select. ▾ | | |

Next

データ1 ホームページデータ

2)ワークショップ開催に向けた広報活動

(1) 2015年10月5日(月)～9日(金)フランス・ボルドーで開催されたITS 世界会議2015 の展示会場にて本ワークショップの開催周知、およびSIP-adusの取り組み紹介を目的としたポスター展示を行いました。

- 会期: 2015年10月5日(月)～9日(金)
- 場所: フランス Bordeaux Convention Centre
- 展示規模: ジャパンパビリオン内のうち 1小間(9㎡)
- 展示内容: ポスター展示 A1サイズ 4枚
映像上映 「SIP-adus ワークショップの紹介映像」
2nd SIP-adus Workshop フライヤーの配架

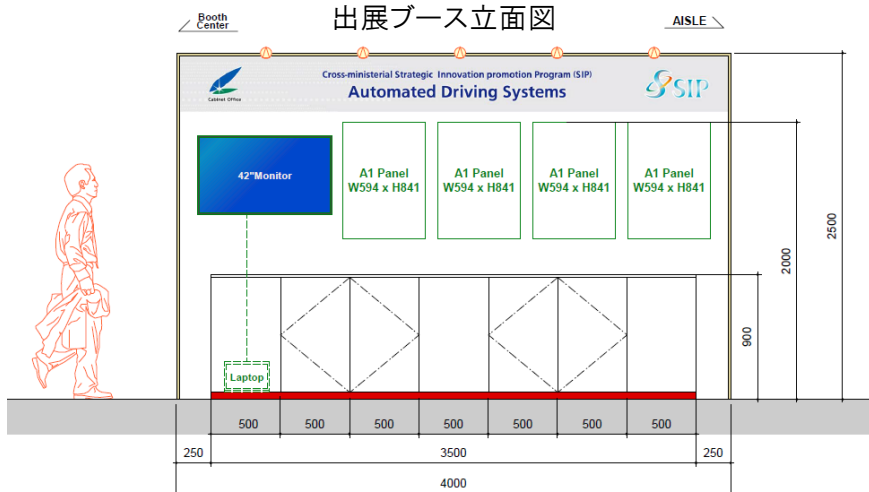
出展ブース写真1



出展ブース写真1



出展ブース立面図



データ2
ITS 世界会議 ボルドーでの
展示関係データ

ポスター展示の内容（フライヤー 表面は下記①、裏面④の構図を使用し配架）

①

2nd SIP-adus Workshop on Connected and Automated Driving Systems 2015

Innovation of Automated Driving for Universal Services (SIP-adus)
- Mobility Bringing Everyone a Smile -

Date : October 27 ▶ 29, 2015
*Oct 29 : A Day Event

Venue : Tokyo International Exchange Center, Tokyo, JAPAN

<http://www.sip-adus.jp>

②

Cross-ministerial Strategic Innovation promotion Program (SIP)
— Project Overview —

Cross-Ministerial Strategic Innovation Promotion Program

Automated Driving System in SIP

Roadmap of Automated Driving System

Scope of Automated Driving System

Organization structure

Name and Message of Project

③

Cross-ministerial Strategic Innovation promotion Program (SIP)
— Results from FY2014 activities —

Dynamic Map

Framework for Dynamic Map

Multiple Global Navigation Satellite Systems

Multiple GNSS and Accuracy Enhancement

ART (Advanced Rapid Transit)

④

1st SIP-adus Workshop 2014

Date : November 17-18, 2014
Venue : United Nations University, Tokyo, Japan
Participant : 372 Experts from 9 countries

Program

Monday, November 17

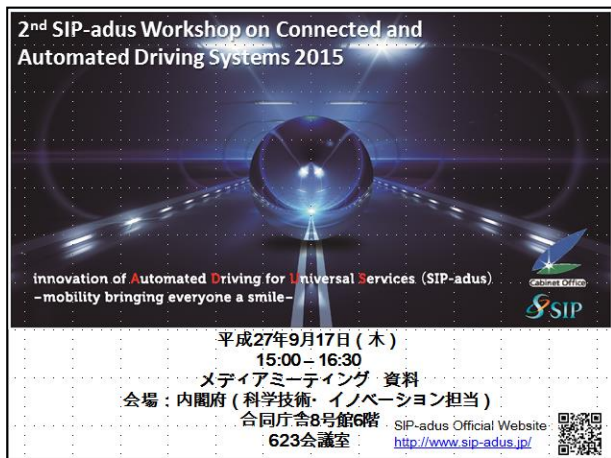
Tuesday, November 18

Snapshot from Breakout Workshop

International speakers

3)メディアミーティングにおける報道関係者へのワークショップ開催の情報提供

SIP・自動走行システムのプログラムにて定期開催されるメディアミーティングにて本ワークショップ開催に関する資料を提供し、開催に向けた情報発信を行いました。



2nd SIP-adus Workshop on Connected and Automated Driving Systems 2015

innovation of Automated Driving for Universal Services (SIP-adus)
-mobility bringing everyone a smile-

平成27年9月17日(木)
15:00 - 16:30
メディアミーティング 資料
会場：内閣府(科学技術・イノベーション担当)
合同庁舎8号館6階 623会議室
SIP-adus Official Website
<http://www.sip-adus.jp/>

SIP

QRコード

データ3
メディアミーティング資料

3.調査・検討結果

10月27日、28日の全体セッションおよびBreakout Workshopを通じて、前述の6項目に関して、議論がとり行われました。
それぞれの主な論点は以下の通りです。

1)走行環境のモデル化 セッション名:Dynamic Map

セッション

- 日本:SIP-adusでのDynamic Map(DM)の構想、取り組み状況を報告
- 欧州:iMobility Forum Digital Infrastructure(DI)SWG活動での、自動運転に対するDIの役割、センサーとしての活用等の取り組み状況を報告
- 米国:USDOT専門家サーベイ結果から、DI, DMの必要性、ポリシーの策定、データの共有、標準化等政府への期待を報告

Mapベンダーによる取組状況が報告されたが、自動運転でのDynamic Map活用の有効性に疑問を呈する意見も聞かれ、活発な賛否議論が展開された

Breakout workshop

- 正確な情報の取得方法、データの統合性、信頼性、セキュリティの課題、関係者の責任等と今後の取り組みを議論

2)通信による走行環境情報の取得 セッション名:Connected Vehicles

セッション

Connected vehicleに関する最近の取り組み状況を共有

- 米国:USDOTから、NYC, タンパ、ワイオミング州で開始するConnected Vehicle Pilotプログラム、MDOTからミシガン州でのConnected Vehicle開発の進捗状況
- 日本:SIP-adus総務省施策の取り組み状況
- 欧州:C-ITS Corridor等オランダのConnected Vehicleに関する情報

Breakout workshop

- 現在の各地の取り組み状況と、2016年に計画されているプロジェクトの状況を共有し、実用化の拡大に向けた課題を議論
- ライフサイクルの異なる関連業界の連携の難しさ
- 各地域の課題の共有
- 税金、保険などのインセンティブ活用による導入拡大
- ビジネスモデルの構築

3) 自動走行による都市交通の革新 セッション名:Next Generation Transport

セッション

- イタリア:CityMobil2プロジェクトを通じ、大都市圏での共用自動運転車両の有効性と、ビジネス化の難しさを報告
- シンガポール:2015年末より2か所で開始されるAV Shuttle Service(小型無人運転バス)の概要、トラック隊列走行、V2Xイニシャティブ等の自動運転関連プロジェクトの概要を報告
- フランス:車の所有から利用への変革、Mobility as a Serviceを実現するための
- 自動運転車両の必要性、課題を提起
- 米国:DOTで実施しているAccessibilityに関するプロジェクトATTRI(Accessible Transport Technology Initiative)の概要を報告
- 日本:地方での自動運転への期待、東京オリンピックに向けた取り組み状況を報告

Breakout workshop

次世代都市交通としての自動運転技術を活用、モビリティの提供者、運営業者の役割、ユニバーサルサービスとしての活用等幅広い議論を行った

4)人と走行システムの関係 セッション名:Human Factors

セッション

○米国:Human Factorsの評価状況とバージニア州のAutomated Corridorの概要、自動化による利用者の理解、社会的コンセンサスの必要性などの課題を報告

○英国:欧州プロジェクト(FP7等)で実施しているHuman Factors関連プロジェクトの紹介と自動運転の利用者と、非利用者の受容性評価などの各プロジェクトの特徴を報告

○日本:自動運転における運転責任の移行における課題、SIP-adusでの取り組み内容を報告

専門メーカーから、ドライバーモニタリングなど自動運転実現に必要な技術を紹介

Breakout workshop

クルマとドライバー、クルマと他の道路利用者、クルマと社会について課題の明確化、運転責任を安全に運転者に復帰させるための設計、利用者の利益について議論

5)自動運転技術による交通事項の抑止 セッション名:Impact Assessment

セッション

○米国:DOTで検討しているEvaluationの進め方を報告

オランダ:今後実施するトラックの隊列走行による効果の期待と、C-ACCの導入による渋滞の削減効果の見通しを報告

○日本:死傷者低減効果を検討するシュミレーション開発計画、自動運転技術の投入による死者低減効果、CO2の削減効果見積理方法を報告

Breakout workshop

○自動運転により、安全、CO2排出低減など効果が期待される

○歩行者事故死者の削減は、欧日では重要な課題であり、削減効果の見積は共通な単位で測定したい

○トラックの隊列走行では、CO2の削減が主要であるが、交通渋滞の削減、安全性向上の期待もある

○効果測定の方法の調和を行いたい

○自動運転への移行期の評価は継続議論が必要

6)情報セキュリティ セッション名:Security

セッション

○欧州: 専門サプライヤとしての自動車用システムに対する取り組み状況、統合認証や国際連携の重要性を報告

○日本: NICT(National Institute of Information and Communications Technology)、CCDS(Connected Consumer Device Security Council)により、セキュリティの課題、専門組織の取り組みを報告

○欧州調査会社によるセキュリティの課題への自動車会社の責任、課題の共有と国際的連携の重要性を報告

Breakout workshop

○USDOTから提供されたセキュリティの取り組みを含め、セキュリティの認証の進め方、最小セキュリティ要件の設定、車両のセキュリティに関する責任の所在、技術的課題、基準、標準の設定、法的課題、倫理や受容性の課題を確認

○今後の連携の強化、最小セキュリティ基準の策定に向け、書面の作成、実行組織の選定を行う必要等を議論

※議事詳細に関しては、添付資料「議事サマリー」をご参照ください。

データ4 議事サマリー

4.アンケート

一般参加者とBreakout Workshop参加者を対象としたアンケートを準備・配布し、会期終了後集計・分析を行いました。

※アンケートの詳細に関しては、添付資料2「アンケートの集計・分析結果」をご参照ください。

アンケート実施方法と回答状況

回答数:268名 回答率:67%(回答対象者398名中)

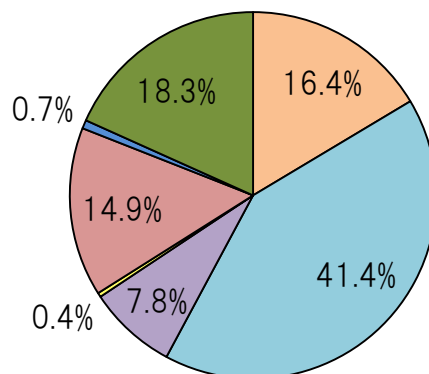
内訳:一般参加者197名/Breakout Workshop 参加者:71名

【参考】
2014年度
最終回答

| 2015年 | アンケート対象者 | 回答数 | 回答率 |
|-------|----------|------|-----|
| BW参加者 | 112名 | 71名 | 63% |
| 一般 | 286名 | 197名 | 69% |
| 合計 | 398名 | 268名 | 67% |
| 2014年 | アンケート対象者 | 回答数 | 回答率 |
| BW参加者 | 92名 | 68名 | 74% |
| 一般 | 257名 | 172名 | 67% |
| 合計 | 349名 | 240名 | 69% |

参加者の業種

| 参加者全体 | | |
|--------------|-----|------|
| 全参加者業種内訳 | (名) | (%) |
| 車両メーカー | 44 | 16.4 |
| 自動車部品・電機メーカー | 111 | 41.4 |
| 公共機関 | 21 | 7.8 |
| 学生 | 1 | 0.4 |
| 調査・研究機関 | 40 | 14.9 |
| 保険・法律 | 2 | 0.7 |
| その他 | 49 | 18.3 |
| 計 | 268 | |



データ5 アンケートの集計・分析結果

5.ホームページに関して

ワークショップへの参加者の募集、「自動走行」に関する情報発信、また、終了後の講演者資料集の掲載による情報共有化のため、公式ホームページを立ち上げました。

※作成したページの全電子データは別途メディアにて提出いたします。

トップページ



The screenshot shows the homepage for the 2nd SIP-adus Workshop. The main header features the event title: "2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015". Below this, the date "October 27-29, 2015" and venue "Tokyo International Exchange Center" are listed. A tagline reads "Innovation of Automated Driving for Universal Services (SIP-adus) -mobility bringing everyone a smile-". The Cabinet Office logo is in the bottom right of the header.

A navigation menu is located below the header, with the following items: HOME, About SIP - adus, Registration info, Program, Travel, Onsite Service & FAQ, Archive (SIP-adus2014), and Link.

The main content area contains a summary: "Experts from Europe, Americas, and Asia-Pacific will share progress of related projects and discuss technical and non-technical challenges for deployment of Connected and Automated Driving System."

There are two columns of updates:

- What's New:**
 - 2015.10.28 [The Presentation Materials of the Day 2](#) are uploaded.
 - 2015.10.27 [The Presentation Materials of the Day 1](#) are uploaded.
 - 2015.10.23 [New speakers](#) announced
 - 2015.10.19 [Speakers page](#) is opened.
 - 2015.10.14 [Pre-registration](#) is closed
 - 2015.10.01 [New speakers](#) announced
 - 2015.09.10 [The speaker's list](#) is updated.
- Organizer:**
 - Cross-Ministerial Strategic Innovation Promotion Program, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan

The Cabinet Office logo is also present at the bottom right of the main content area.

データ1 ホームページデータ

2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015



HOME

About SIP - adus

Registration info

Program

Travel

Onsite Service & FAQ

Archive (SIP-adus2014)

Link

About SIP - adus

Framework of Japanese project on automated driving systems:

Cross-ministerial Innovation Promotion Program (SIP)

SIP is aiming to realize innovation through promoting R&D at all stages by enhancing cross-ministerial cooperation. Council for Science, Technology and Innovation (CSTI) designates research themes based on the expected extent of impact to solve societal issues and enhance economic growth. CSTI appoints Program Director (PD) for each research theme and allocates the budget.

The project

◆ Innovation of Automated Driving for Universal Services (SIP-adus) - Mobility Bringing Everyone a Smile -

Inclusive society, where diverse people in diverse communities actively participate in generating values, will enhance both wellness of individuals and economic development. Automated driving technologies integrated with social innovations should provide everyone with mobility to fully exercise his or her capacity, enabling sustainable development of the society.

About Working Group

System Implementation WG

Next Generation Urban Transportation WG

International cooperation WG


Organizer

Cross-Ministerial Strategic Innovation Promotion Program, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan



事前参加登録に関するページ①

2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015



| | | | | | | | |
|------|------------------|-------------------|---------|--------|----------------------|------------------------|------|
| HOME | About SIP - adus | Registration info | Program | Travel | Onsite Service & FAQ | Archive (SIP-adus2014) | Link |
|------|------------------|-------------------|---------|--------|----------------------|------------------------|------|

Registration Information

Pre-Registration

The pre-registraion for general participants is closed. Thank you for your application.
However, the pre-registraton for press and participants in the Breakout Workshop (invited by the organizer) is still open.

[> JUMP to pre-registraton for press and participants in the Breakout Workshop](#)

CONTACT


SIP-adus Workshop 2015 Secretariat Office C/O Congress Corporation
sip-adus2015@congre.co.jp Contact Person Hideki ISHII (Mr.) & Satoru FUKUDA (Mr.)

Onsite Registration

- The reception desk will be located at the 3F Foyer of Plaza Heisei at the Tokyo International Exchange Center on the days of the event.
- You will be given a name badge at the reception desk.
- Please bring your business card, to exchange your name badge.
- Please print out the confirmation e-mail, which is sent from SIP-adus2015, and bring it to the reception desk.

Organizer

Cross-Ministerial Strategic Innovation Promotion Program, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan



事前参加登録に関するページ②



Registration

Please fill out the items below and click the [Next] button at the bottom of the page.
* are required fields.

Only for the registration for Press and Participants in the Breakout Workshop(invited by organizer) is open.

Participant information

| | | | |
|------------------------|---|----------------------|----------------------|
| Name* | Given Name* | Middle Name | Family Name* |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Title* | <input type="radio"/> Dr. <input type="radio"/> Prof. <input type="radio"/> Mr. <input type="radio"/> Ms. | | |
| Position | <input type="text"/> | | |
| Department | <input type="text"/> | | |
| Organization/Company* | <input type="text"/> | | |
| Country* | <input type="text"/> | | |
| Telephone Number* | <input type="text"/> | | |
| Email Address* | <input type="text"/> | | |
| Confirm Email Address* | <input type="text"/> | | |
| Category* | Please select. ▼ | | |

Next

2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015



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[About SIP - adus](#)

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[Program](#)

[Travel](#)

[Onsite Service & FAQ](#)

[Archive \(SIP-adus2014\)](#)

[Link](#)

Speaker

Opening Session



Aiko Shimajiri



Jessica Webster



Jonathan Hatwell



Tom Alkim



Kazuo Kyuma



Seigo Kuzumaki

Organizer


Cross-Ministerial Strategic Innovation Promotion Program, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan



Dynamic Map



2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015





| | | | | | | | |
|------|------------------|-------------------|---------|--------|----------------------|------------------------|------|
| HOME | About SIP - adus | Registration info | Program | Travel | Onsite Service & FAQ | Archive (SIP-adus2014) | Link |
|------|------------------|-------------------|---------|--------|----------------------|------------------------|------|

Venue

| | | |
|-------|--------|--------------------------|
| Venue | Access | Other Travel Information |
|-------|--------|--------------------------|

Venue
Tokyo International Exchange Center
Plaza Heisei
Tokyo Academic Park, 2-2-1 Aomi, Koto-ku, Tokyo
135-8630 Japan
35°37'14.5"N 139°46'32.5"E
TEL:+81-3-5564-3030
FAX:+81-3-5564-3033

東京国際
東京都
国際研究交流大学村内




Access to Tokyo International Exchange Center

By Train


3 minutes from Fune-no-Kagakukan Station on the New Transit [Yurikamome line](#)
(Shimbashi Station <-> Toyosu Station)
15 minutes from Tokyo Teleport Station on the [Rinkai Line](#)

Organizer

Cross-Ministerial Strategic Innovation Promotion Program,
Council for Science, Technology and Innovation,
Cabinet Office, Government of Japan



2nd SIP-adus WORKSHOP ON CONNECTED AND AUTOMATED DRIVING SYSTEMS 2015



| | | | | | | | |
|------|------------------|-------------------|---------|--------|----------------------|------------------------|------|
| HOME | About SIP - adus | Registration info | Program | Travel | Onsite Service & FAQ | Archive (SIP-adus2014) | Link |
|------|------------------|-------------------|---------|--------|----------------------|------------------------|------|

Onsite Services & FAQ

If you have questions or need assistance, contact us at sip-adus2015@congre.co.jp

Accessibility

Participants who use wheelchairs should contact the Organizing Secretariat for 2nd SIP-adus Workshop on Connected and Automated Driving Systems (sip-adus2015@congre.co.jp) in advance. We will provide information about dedicated parking spaces and elevators.

Lunch

There are no dining facilities inside the venue. There are restaurants in the Telecom Center Building, which is located around 10 minutes by foot from the venue.

Telecom Center Building

<http://www.tokyo-teleport.co.jp/b/tel/service.html>


* All participants can attend the Welcome Reception (venue: Entrance Hall 1F) on the evening of October 27 (Tuesday).

FAQs

1. How do I register to participate?
2. How much does it cost to participate?
3. Can workshop participants take part in the test drives?

Organizer

Cross-Ministerial Strategic Innovation Promotion Program, Council for Science, Technology and Innovation, Cabinet Office, Government of Japan



第二部

自動走行システムの実現に向けた諸課題と
その解決の方向性に関する調査・検討のための国際会議
に関して

1.開催概要



- 主催 内閣府
総合科学技術・イノベーション会議
戦略的イノベーション創造プログラム
自動走行システム推進委員会
- 日時 平成27年10月27日(火)～29日(木)
- 会場 東京国際交流館 プラザ平成
〒135-8630 東京都江東区青海2-2-1
国際研究交流大学村内

- 参加者
総数 420名
内訳 講演者・招待者・分科会議論参加者 104名
一般参加者 304名 プレス 12名

データ6 一般参加者リスト
データ7 登壇者リスト

■スケジュール

| Tuesday, October 27 | Wednesday, October 28 |
|---|---|
| Welcome | Welcome |
| 9:00-10:00 Opening Session | 9:00-10:30 Human Factors |
| 10:15-11:45 Dynamic Map | 11:00-12:30 Next Generation Transport |
| 11:45-13:00 Lunch (Speakers, moderators) | 12:30-13:30 Lunch |
| 13:00-14:30 Connected Vehicles | 13:30-17:00 Breakout Workshop (BW) |
| 14:45-16:15 Security | 17:30-18:30 Presentation from each BW Closing Session |
| 16:30-18:00 Impact Assessment | 19:00-21:00 Dinner |
| 18:00-19:30 Reception | |
| 19:15-21:00 Guest Dinner | |

-  全体セッション: 一般参加者 + 招待者
-  招待者限定

※10月29日(木)は海外講演者を対象に試乗会を実施

2.セッション紹介

1) Opening Session 10月27日(火)9:00～10:00

■ Welcome speech

島尻 安伊子 内閣府特命担当大臣(科学技術政策担当)

■ Keynote speech

North America

Ms. Jessica Webster
Minister Counselor, Economic and Scientific Affairs,
Embassy of the United States of America

Europe

Mr. Jonathan Hatwell
Minister,
Deputy Head of Delegation the Delegation of the European Union to Japan

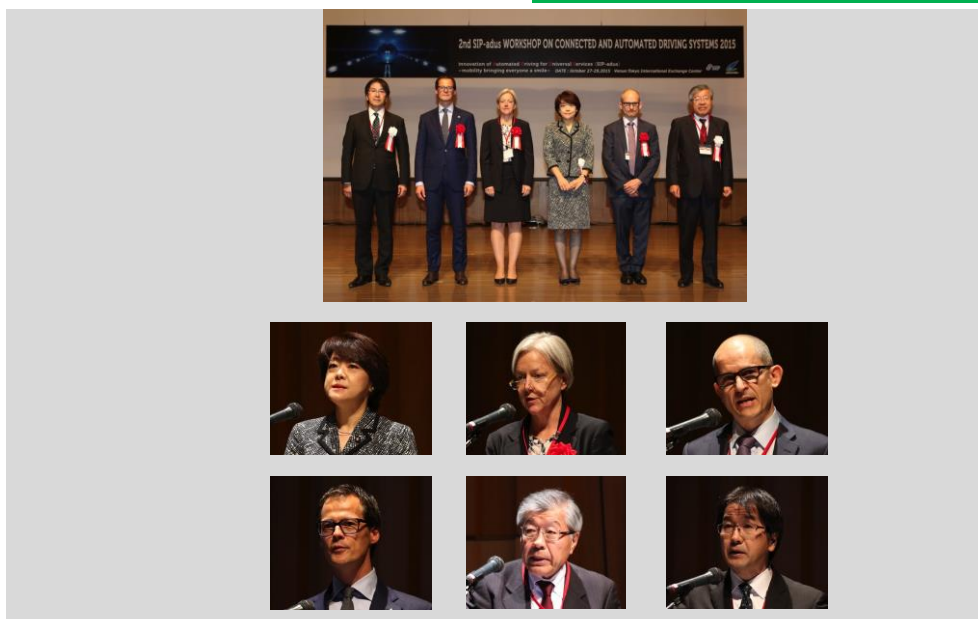
Mr. Tom Alkim
Senior Advisor C-ITS and Automated Driving Rijkswaterstaat,
Ministry of Infrastructure and the Environment, The Netherlands

Japan

久間 和生 内閣府 総合科学技術・イノベーション会議議員
葛巻 清吾 プログラムディレクター代理, SIP-adus

データ8 講演資料集

データ9 音声データ



2) Session: Dynamic Map 10月27日(火)10:15~11:45

■ モデレーター

Dr. Jun Shibata
SIP-adus, Japan Digital Road Map Association, Japan

■ 講演者

Dr. Maxime Flament
Head of Sector SafeMobility, ERTICO-ITS Europe, Belgium

Ms. Elizabeth Machek
Volpe Center, U.S. Department of Transportation, USA

Mr. Russell Shields
Chair, Ygomi LLC USA

Mr. Ryota Shirato
SIP-adus, Nissan, Japan

Ms. Mako Matsumoto
Senior Strategic Program Manager, HERE, USA

Dr. Hiroshi Koyama
Mitsubishi Electric Corporation, Japan

Mr. Harald Kraaij
Cadastre, Land Registry & Mapping Agency, Netherlands



3) Session: Connected Vehicles 10月27日(火)13:00~14:30

■ モデレーター

Mr. Hideki Hada
Toyota Motor Engineering & Manufacturing North America
Toyota Technical Center, USA

■ 講演者

Ms. Elizabeth Machek
Volpe Center, U.S. Department of Transportation, USA

Mr. Matt Smith
ITS Program Manager, Michigan Department of Transportation, USA

Mr. Hideaki Nanba Denso, Japan

Mr. Joop Veenis Consultant, The Netherlands



4) Session: Security 10月27日(火)14:45~16:15

■ モデレーター

Mr. Satoru Taniguchi
Toyota Info Technology Center Co., Ltd

■ 講演者

Dr. Stefan Røemmele
Continental Automotive GmbH, Germany

Dr. Masashi Eto
National Institute of Information and Communication Technology, Japan

Mr. Kosuke Ito
Connected Consumer Device Security Council, Japan

Mr. Michael E. Parris JP
SBD (Secured By Design) Ltd, UK



5) Session: Impact Assessment 10月27日(火)16:30~18:00

■ モデレーター

Richard Bishop
Bishop Consulting, USA

■ 講演者

Ms. Elizabeth Machek
Volpe Center, U.S. Department of Transportation, USA

Mr. Tom Alkim
Senior Advisor C-ITS and Automated Driving, Rijkswaterstaat,
Ministry of Infrastructure and the Environment, The Netherlands

Dr. Genya Abe
Japan Automobile Research Institute, Japan

Dr. Yasushi Nishida
Institute of Traffic Accident Research and Data Analysis (ITARDA), Japan

Dr. Takashi Oguchi
Institute of Industrial Science, The University of Tokyo, Japan

Mr. L.J.J. (Leo) Kusters
TNO, Netherlands



6) Session: Human Factors 10月28日(水)9:00~10:30

■ モデレーター

Dr. Satoshi Kitazaki
National Institute of Advanced Industrial Science and Technology, Japan

■ 講演者

Dr. Myra Blanco
Virginia Tech Transportation Institute, USA

Mr. Tyron Linton Louw
Leeds University, UK

Dr. Makoto Itoh
Faculty of Engineering, Information and Systems,
University of Tsukuba, Japan

Mr. Eckard Steiger
Robert Bosch, Germany

Dr. Motoyuki Akamatsu
National Institute of Advanced Industrial Science and Technology, Japan

Dr. Steven Shladover
California PATH Program, University of California, Berkeley, USA

Mr. Kiyozumi Unoura Honda, Japan



7) Session: Next Generation Transport 10月28日(水)11:00～12:30

■ モデレーター

Dr. Steven Shladover

California PATH Program, University of California, Berkeley, USA

■ 講演者

Dr. Adriano Alessandrini

Centre for Transport and Logistics, the University of Rome La Sapienza, Italy

Dr. Chin Kian Keong

Group Director for Transportation and Road Operation, Land Transport Authority, Singapore

Mr. Christian Rousseau

RENAULT SAS, France

Ms. Elizabeth Machek

Volpe Center, U.S. Department of Transportation, USA

Dr. Takahiro Suzuki

Tohoku University, Japan

Mr. Nobuo Sato

Tokyo Metropolitan Government, Japan



3.Breakout Workshop 紹介

2日目(28日)の13:30～17:00にて6つのテーマについて海外招聘者・有識者・業界関係者を中心に15～25名の規模で議論を行うBreakout Workshop が開催されました。

1) Dynamic Map

〔参加者一覧〕

名前・順不同

1. Mr. Ryota Shirato, SIP-adus, Nissan, Japan 【リーダー】
2. Dr. Jun Shibata, Japan Digital Road Map Association, Japan
3. Dr. Maxime Flament, ERTICO-ITS Europe, Belgium
4. Mr. Russell Shields, Ygomi LLC, USA
5. Ms. Yuka Gomi, Ygomi LLC, USA
6. Ms. Mako Matsumoto, HERE, USA
7. Mr. Mandali Khalesi, HERE, Japan
8. Dr. Hiroaki Takada, SIP-adus, Nagoya University, Japan
9. Mr. Takahiko Hamada, ITS Japan, Japan
10. Mr. Yasuhide Kuroda, Mazda Technical Research Center, Japan
11. Mr. Eiji Shibata, SIP-adus, Subaru, Japan
12. Mr. Keiichiro Yoshida, SIP-adus, METI, Japan
13. Dr. Hiroshi Koyama, Mitsubishi Electronics Corporation, Japan
14. Mr. Harald Kraaij, Cadastre, Land Registry & Mapping Agency, Netherlands
15. Mr. Masao Fukushima, SIP-adus, Nissan, Japan
16. Mr. Katsuya Taguchi, Toyota, Japan
17. Mr. Kiyohiro Yamauchi, ZENRIN, Japan
18. Mr. Kohei Yamamoto, PASCO, Japan
19. Mr. Kazuo Seo, Mitsubishi Electronics Corporation, Japan
20. Mr. Yasuhide Shibata, Mitsubishi Electronics Corporation, Japan
21. Mr. Mr. Hiroki Sakai, Mitsubishi Research Institute, Japan
22. Mr. Masayuki Kannan, SIP-adus, Road Bureau, MLIT, Japan
23. Mr. Yoshihiro Nakao, SIP-adus, Road Bureau, MLIT, Japan
24. Mr. Hiroshi Taniguchi, Japan Institute of Country-ology and Engineering, Japan
25. Mr. Hidehiko Anzai, Honda, Japan

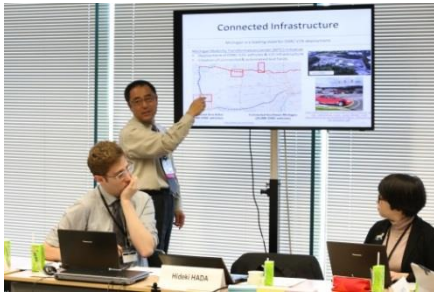


2) Connected Vehicles

[参加者一覧]

名前・順不同

1. Mr. Hideki Hada, Toyota Motor Engineering & Manufacturing North America, USA 【リーダー】
2. Mr. Matt Smith, Michigan DOT, USA
3. Mr. Yuji Nakamura, SIP-adus Ministry of International Affairs and Communications, Japan
4. Mr. Joop Veenis, Consultant, Netherlands
5. Mr. Hideaki Nanba, DENSO, Japan
6. Mr. Hideyuki Kanoshima, National Institute for Land and Infrastructure Management, Japan
7. Mr. Takeshi Ikeda, SIP-adus, Road Bureau, MLIT, Japan
8. Mr. Yuji Nakajima, SIP-adus, Nissan, Japan
9. Mr. Yasushi Domae, National Police Agency, Japan
10. Mr. Isamu Hayashi, SIP-adus, Mitsubishi Motors, Japan
11. Mr. Toru Saito, SIP-adus, Honda, Japan
12. Mr. Norifumi Ogawa, SIP-adus, Mazda, Japan



3) Security

〔参加者一覧〕

名前・順不同

1. Mr. Atsushi Ohba, Japan Automobile Research Institute, Japan 【リーダー】
2. Dr. Stefan R emmele, Continental Automotive GmbH, Germany
3. Dr. Tsukasa Ogino, Connected Consumer Device Security Council, Japan
4. Mr. Kosuke Ito, Connected Consumer Device Security Council, Japan
5. Mr. Satoru Taniguchi, Toyota Info Technology Center Co., Ltd
6. Mr. Michael E. Parris JP, SBD(Security By Design) Ltd, UK
7. Mr. Katsumi Murakami, Mazda Integrated Control System Development Division, Japan
8. Mr. Masayuki Satoh, ITS Japan
9. Mr. Manabu Misawa, Mitsubishi Electronics Corporation, Japan
10. Mr. Akinori Sato, NEC, Japan
11. Mr. Kikuo Muramatsu, e-SYN, Japan
12. Mr. Koji Hirabayashi, TOYOTA, Japan
13. Mr. Yuki Sakai, Honda, Japan
14. Mr. Koichi Sakagawa, Continental, Japan
15. Dr. Lee Woolgar, Delegation of the European Union to Japan
16. Mr. Takafumi Kitajou, SIP-adus, Ministry of Inter Affairs and Communications, Japan



4) Impact Assessment

〔参加者一覧〕

名前・順不同

1. Dr. Nobuyuki Uchida, Japan Automobile Research Institute, Japan 【リーダー】
2. Dr. Genya Abe, Japan Automobile Research Institute, Japan
3. Dr. Takashi Oguchi, The University of Tokyo, Japan
4. Mr. Seigo Kuzumaki, SIP-adus, Toyota, Japan
5. Dr. Yasushi Nishida, ITARDA, Japan
6. Mr. Richard Bishop, Bishop Consulting, USA
7. Dr. Ching-Yao Chan, California Path UC Berkeley, USA
8. Mr. Tom Alkim, Ministry of Infrastructure and the Environment, The Netherlands
9. Dr. Masao Nagai, SIP-adus, Japan Automobile Research Institute, Japan
10. Mr. Hiroshi Tsuda, Virginia Tech Transportation Institute, USA
11. Mr. Hiroyuki Kanemitsu, SIP-adus, Toyota, Japan
12. Mr. L.J.J.(Leo) Kusters, TNO, Netherlands
13. Mr. Nobuhiro Kato, SIP-adus, National Police Agency, Japan
14. Mr. Hiroyuki Asada, SIP-adus, Mitsubishi Motors, Japan
15. Mr. Makoto Shiota, ITARTA , Japan
16. Dr.Pongsathorn Raksincharoensak, Tokyo University of Agriculture and Technology,Japan



5) Human Factors

[参加者一覧]

名前・順不同

1. Dr. Satoshi Kitazaki,

National Institute of Advanced Industrial Science and Technology, Japan 【リーダー】

2. Dr. Makoto Itoh, University of Tsukuba, Japan

3. Dr. Myra Blanco, Virginia Tech Transportation Institute, USA

4. Mr. Eckard Steiger, Robert Bosch, Germany

5. Dr. Motoyuki Akamatsu,

National Institute of Advanced Industrial Science and Technology, Japan

6. Mr. Hiroki Mori, SIP-adus, Toyota, Japan

7. Mr. Kiyozumi Unoura, SIP-adus, Honda, Japan

8. Mr. Atsushi Hagiwara, SIP-adus, Nissan, Japan

9. Mr. Mamoru Sekiguchi, SIP-adus, Subaru, Japan

10. Mr. Takashi Sugano, Mazda Technical Research Center, Japan

11. Dr. Takeyoshi Imai, Hosei University, Japan

12. Ms. Lebreton Caroline, Hosei University, Japan

13. Mr. Kazuo Shimizu, International journalist, Japan

14. Mr. Adam Clay, Journalist, Japan

15. Dr. Daisuke Emmanji, Continental Automotive Japan K.K., Japan

16. Mr. Tyron Linton Louw, Leeds University, UK

17. Dr. Hirofumi Aoki, Nagoya University, Japan

18. Dr. Shirou Nakano, JTEKT, Japan

19. Dr. Motoki Shino, The University of Tokyo, Japan

20. Mr. Akira Ohtani, Japan Automobile Research Institute, Japan

21. Mr. Hiroshi Hashimoto, Japan Automobile Research Institute, Japan



6) Next Generation Transport

〔参加者一覧〕

名前・順不同

1. Dr. Yoshihiro Suda, The University of Tokyo, Japan
2. Dr. Steven Shladover, University of California, Berkeley, USA
3. Dr. Adriano Alessandrini, The University of Rome La Sapienza, Italy
4. Mr. Christian Rousseau, RENAULT SAS, France
5. Dr. Takahiro Suzuki, Tohoku University, Japan
6. Mr. Nobuo Sato, Tokyo Metropolitan Government, Japan
7. Mr. Masayuki Kawamoto, SIP-adus, Toyota, Japan
8. Mr. Tomoaki Shida, Toyota, Japan
9. Mr. Hitoshi Watanabe, Yamaha, Japan
10. Dr. Kimihiko Nakano, The University of Tokyo, Japan
11. Dr. Toshiyuki Sugimachi, The University of Tokyo, Japan
12. Mr. Toshihiro Mori, ITS Japan, Japan
13. Ms. Elizabeth Machek, Volpe Center, U.S. DOT, USA
14. Dr. Chin Kian Keong,
Transportation and Road Operation Land Transport Authority, Singapore
15. Mr. Shigeru Yamaji, SIP-adus, Honda, Japan
16. Mr. Jan Hekkaker, LINDHOLMEN SCIENCE PARK, Sweden



4. Presentation from each Breakout Workshop 紹介

6つのテーマに分かれて開催されたBreakout Workshopの取りまとめとして、各Breakout Workshopのリーダーによるプレゼンテーションが行われました。
プレゼンテーション終了後、内閣府(科学技術・イノベーション)松本審議官、SIP・自動走行システム 国際連携WG天野主査 による総括がありました。

1) Dynamic Map

Mr. Ryota Shirato
Nissan Motor Co., Ltd

2) Connected Vehicles

Mr. Hideki Hada
Toyota Motor Engineering & Manufacturing North America

3) Human Factors

Dr. Satoshi Kitazaki
National Institute of Advanced Industrial Science and Technology

4) Impact Assessment

Dr. Nobuyuki Uchida
Japan Automobile Research Institute

5) Next generation Transport

Dr. Yoshihiro Suda
Institute of Industrial Science, The University of Tokyo

6) Security

Mr. Atsushi Ohba
Japan Automobile Research Institute



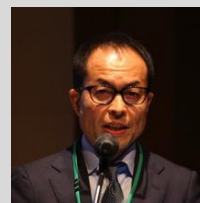
白土氏



波田氏



北崎氏



内田氏



須田氏



大場氏



Workshop総括
天野主査



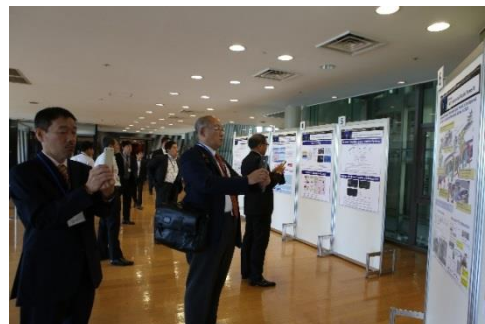
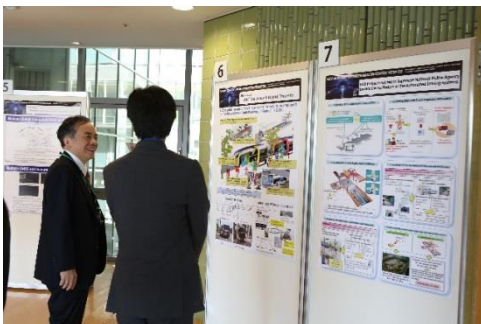
主催者閉会挨拶
松本審議官

5. Poster Session

関係省庁によるSIP-adus(戦略的イノベーション創造プログラム)における取り組みをポスターセッションとしてホワイトにて展示しました。会議の合間に多数の方が閲覧に訪れ、ポスター展示内容を写真に撮る海外参加者も見受けられました。

データ10 各関係省庁の展示ポスター

| No. | Ministries and Agencies | Title |
|-----|--|---|
| 1 | Cabinet Secretariat | Public-Private ITS Initiative/Roadmaps 2015 - Strategies on Automated Driving Systems and the Utilization of Road Transport Data to Build a Society with the World's Safest and Smoothest Road Transport - |
| 2 | Cabinet Office | SIP The National Program for Innovation |
| 3 | Cabinet Office | SIP-Automated Driving System Innovation of Automated Driving for Universal Services (SIP-adus) - Mobility Bringing Everyone a Smile - |
| 4 | Cabinet Office | SIP-adus Dynamic Map Structuring Task Force |
| 5 | Cabinet Office | SIP-adus Multiple Global Navigation Satellite System |
| 6 | Cabinet Office | SIP-adus ART (Advanced Rapid Transit) |
| 7 | National Police Agency | R&D Projects related to Japanese National Police Agency toward the realization of the Automated Driving systems |
| 8 | Ministry of Internal Affairs and Communications | Next-Generation Intelligent Transport Systems (ITS) utilizing Information and Communication Technology (ICT) Theme 1 : Vehicle-to-Vehicle / Infrastructure (V2V, V2I) Communication |
| 9 | Ministry of Internal Affairs and Communications | Next-Generation Intelligent Transport Systems (ITS) utilizing Information and Communication Technology (ICT) Theme 2 : Vehicle-to-Pedestrian (V2P) Communication |
| 10 | Ministry of Economy, Trade and Industry | R&D Projects (METI) toward the realization of the Automated Driving systems *METI : Ministry of Economy, Trade and Industry |
| 11 | Ministry of Land, Infrastructure, Transport and Tourism | MLIT R&D Task Force "For the Realization of Automated Driving Systems" (Excluding projects coordinated with MIC and NPA) |





SIP

The National Program for Innovation

Cross-ministerial Strategic Innovation promotion Program (SIP)



Automated Driving System



Program Director
Dr. Hiroyuki Watanabe
Advisor,
Toyota Motor Corporation

- ◆ Aiming to realize Science, Technology and Innovation through promoting R&D overlooking from basic research to application and commercialization by cross-ministerial cooperation.
- ◆ CSTI defined the themes to solve societal issues and achieve economic growth
- ◆ CSTI appoints Program Directors (PDs) for each project and allocates the budget.
- ◆ Under those strategies, a new R&D program was created named 'Cross-Ministerial Innovation Promotion Program' or SIP in short. Then projects started last year under SIP.

Automated Driving System in SIP

One of ten SIP projects

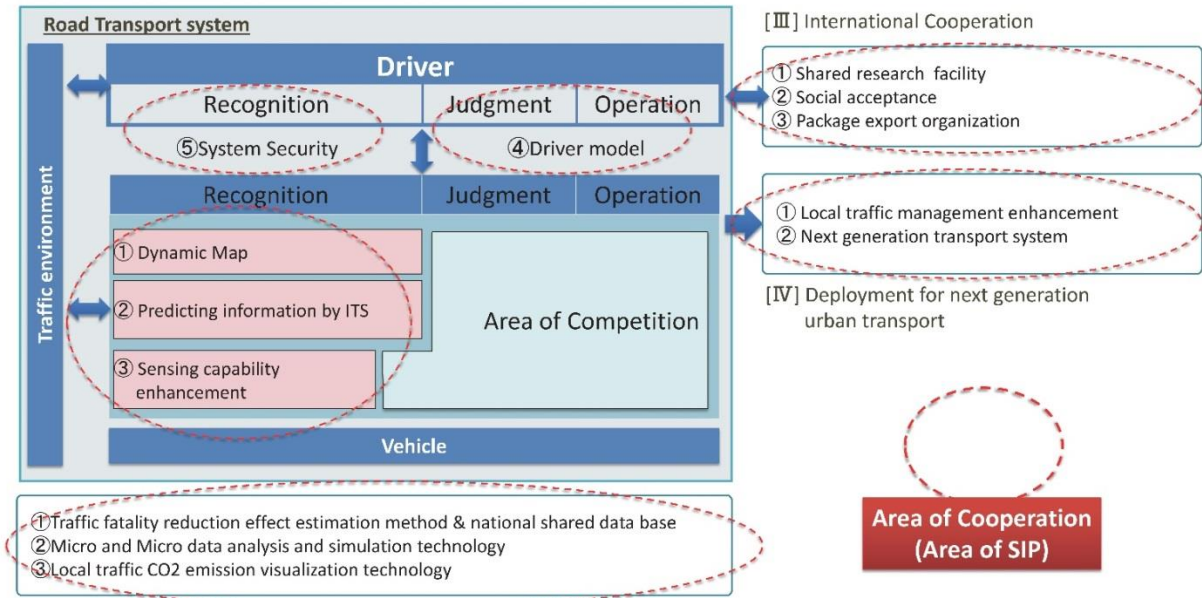
| Priority policy issues | Prospective subject | Description |
|--|---|---|
| Energy | Innovative combustion technology | Improving fuel efficiency of automobile engines |
| | Next-generation power electronics | Integrating new semiconductor materials into highly efficient power electronics system |
| | Innovative structural materials | Developing ultra-strong and -light materials such as magnesium-, titanium-alloys and carbon fibers |
| | Energy carrier | Promoting R&D to contribute to the efficient and cost-effective technologies for utilizing hydrogen |
| | Next-generation ocean resources development technologies | Establishing technologies for efficiently exploring submarine hydrothermal polymetallic ore |
| Next-generation infrastructures | Automated Driving System | Developing new transportation system including technologies for avoidance accidents and alleviating congestion |
| | Technologies for maintenance/upgrading/management of infrastructures | Developing low-cost operation & maintenance system and long life materials for infrastructures |
| | Reinforcement of resilient function for preventing and mitigating disasters | Developing technologies for observation, forecast and prediction of natural disasters |
| Local resources | Technologies for creating next-generation agriculture, forestry and fisheries | Realizing evolutionary high-yield and high-profit models by utilization of advanced IT etc. |
| | Innovative design/manufacturing technologies | Establishing new styles of innovations arising from regions using new technologies such as Additive Manufacturing |



SIP-Automated Driving System
Innovation of Automated Driving for Universal Services (SIP-adus)
- Mobility Bringing Everyone a Smile -

Automated Driving System Major Development Themes

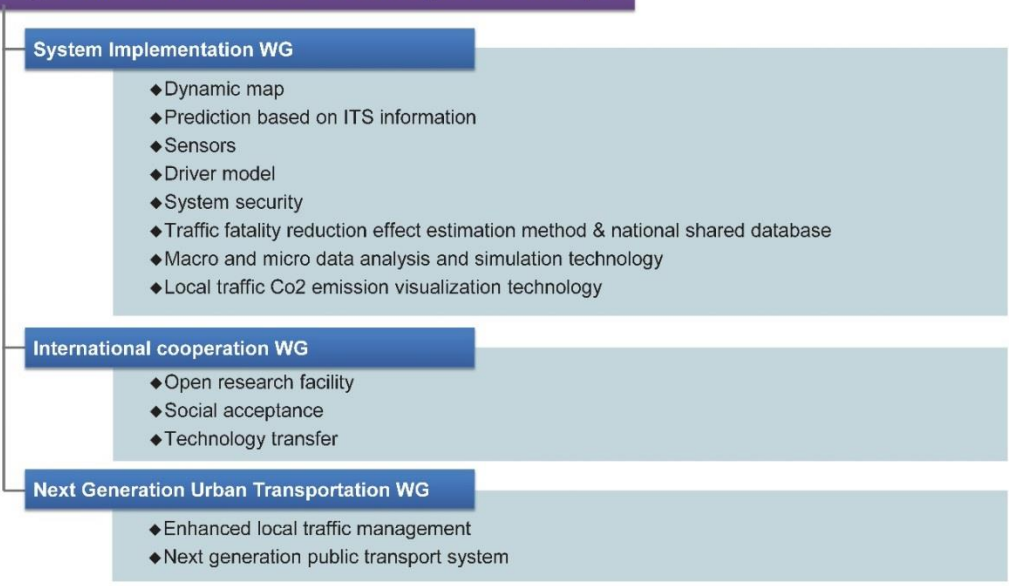
[I] Development and verification of automated driving systems



[II] Basic technologies to reduce traffic fatalities and congestion

Automated Driving System Development Structure

Steering Committee for SIP Automated Driving Research Project

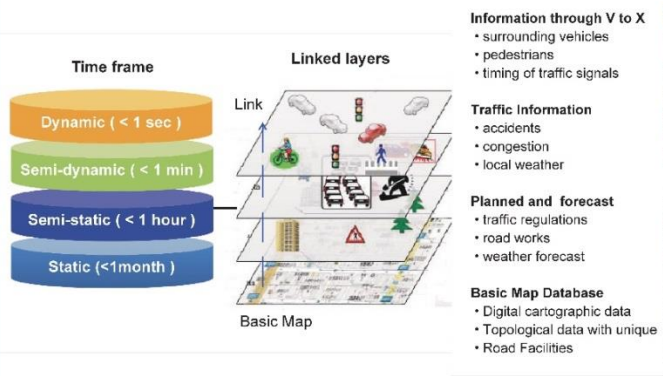




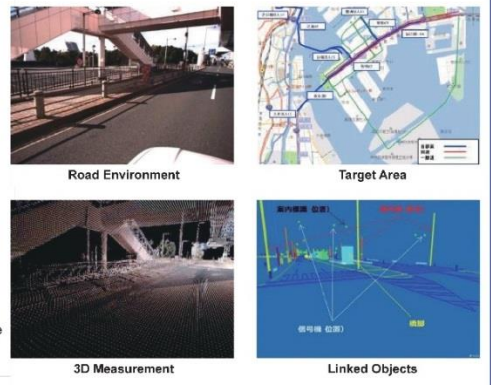
SIP-adus Dynamic Map Structuring Task Force

Dynamic Map

Hierarchical structure of digital 'Map' layered by time frame



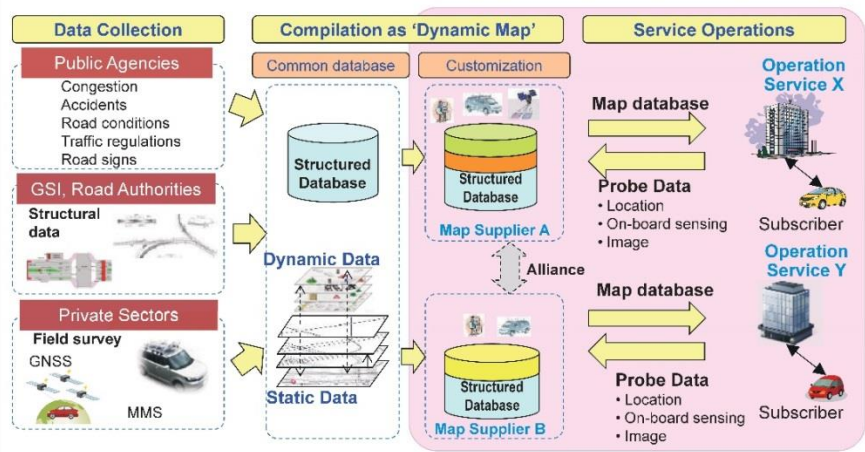
Prototyping Dynamic Map



- Searching for structure of dynamic map built on shared map database
- Discussing layers with different time frame; static, semi-static, semi-dynamic and dynamic

- SIP-adus developed a prototype of basic map layer in the target area of early deployment, Tokyo bay area. The data are shared among the project members and being evaluated. SIP-adus is going to build prototype of upper layers with semi-dynamic data as the next step.

Framework for Dynamic Map



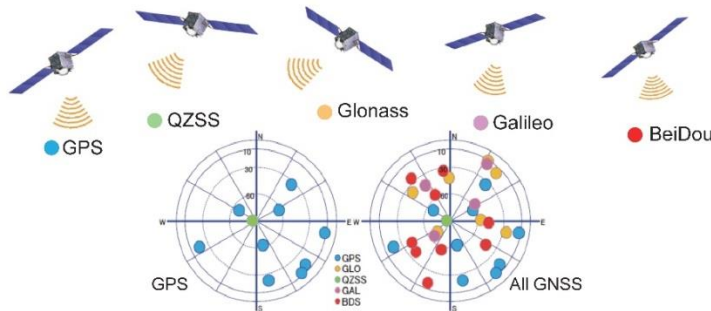
- It is important to consider feasibility of developing and maintaining such Dynamic Map and establish business model.
- With our experiences in car navigation map, SIP-adus is discussing combination of cooperation to build shared common Database and competition in the service operations with additional proprietary data.



SIP-adus Multiple Global Navigation Satellite System

Multiple Global Navigation Satellite Systems

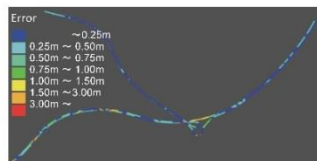
More satellites for urban canyon



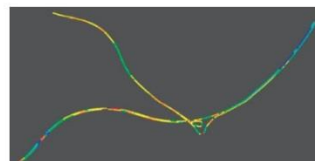
Satellites over Tokyo on September 30, 2013 at 18:20

- An automated vehicle will make decision, which way to go, matching dynamic map, on-board sensor outputs and global positioning system readings.
- However, sufficient number of GPS satellites are not always visible. Its accuracy is not as good as we expect.
- SIP-adus is evaluating technology options; combination of other sets of GNSS satellites and accuracy enhancement using additional signals.

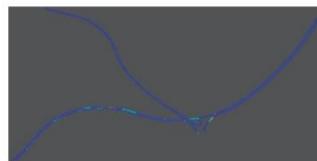
Multiple GNSS and Accuracy Enhancement



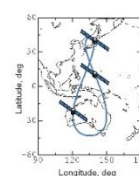
GPS: Global Positioning System



GPS + QZSS with (L1-SAIF) enhancement



GPS + QZSS with (CMAS) enhancement



QZSS:
Quasi-Zenith Satellite System

- SIP-adus collected data while driving a car with monitoring equipment.
- On some sections of road, we obtained lower accuracy, as shown colored in yellow and red, with GPS alone.
If we combine data with those from other set of satellites, such as Quasi-Zenith Satellite System, and enhancement, we obtain better result.
- SIP-adus will continue searching for right balance of accuracy requirements for dynamic map, on-board sensor and global positioning system.

SIP-adus ART(Advanced Rapid Transit)

A conceptual image of Advanced Rapid Transit, to be deployed by the Tokyo Olympic and Paralympic Games in 2020.

Advanced PTPS (Public Transportation Priority System)

*Rapid and On-time operation

Automated acceleration control

*Smooth & Comfortable ride

Automated pull-over control

*Accessibility
*Short time safety boarding

Advanced Driver Assistance

*Traffic accidents prevention
*Driver burden reduction

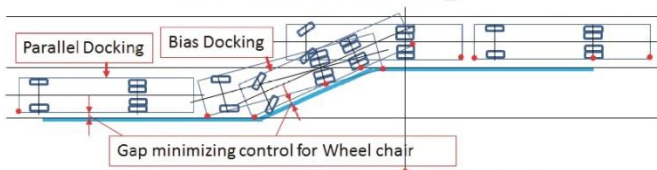
Universal built-in seats
Contactless electronic charging
*Cabin Safety and Convenience

Cooperative ACC

*Traffic congestion/CO2 reduction

ART is new public transportation based on automatic control bus
Object : On-Time and Quick-Transportability, Higher Safety, Barrier-Free

Precision Docking



-Manual operation-

-Automatic control-

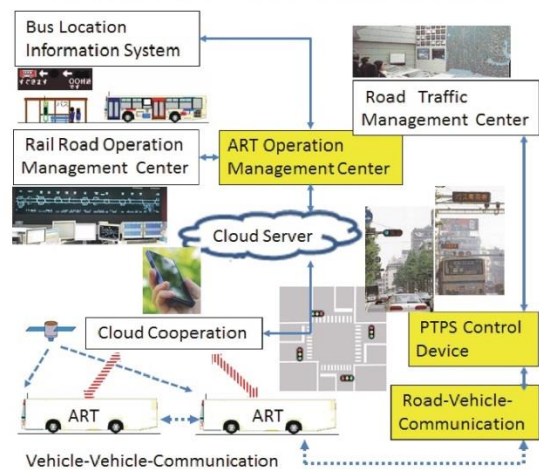


Gap



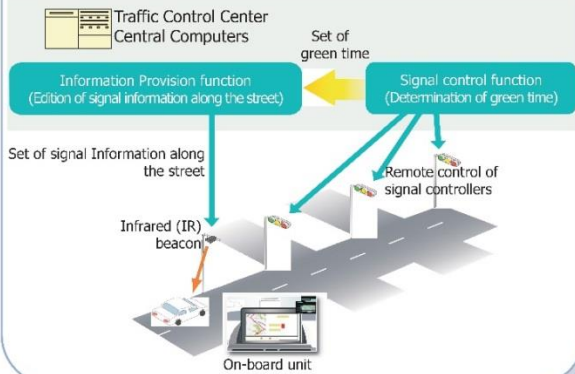
Minimized gap

Advanced PTPS collaboration

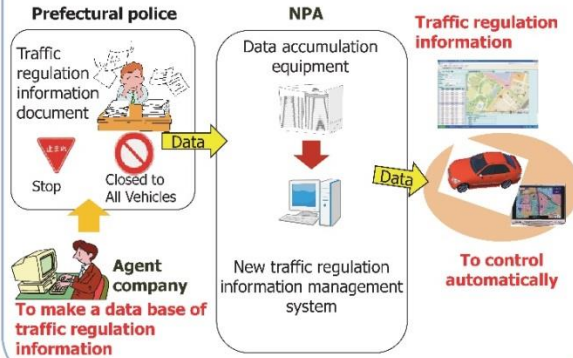


R&D Projects related to Japanese National Police Agency toward the realization of the Automated Driving systems

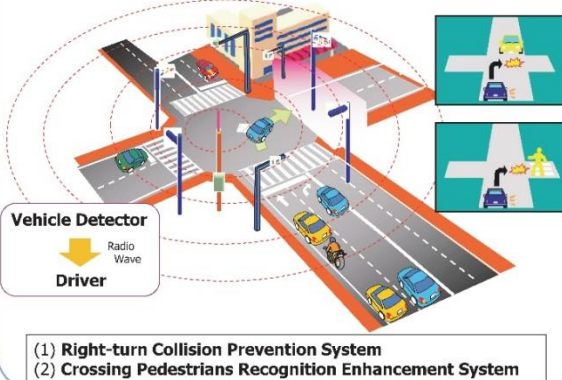
Upgrading DSSS with Signal Information



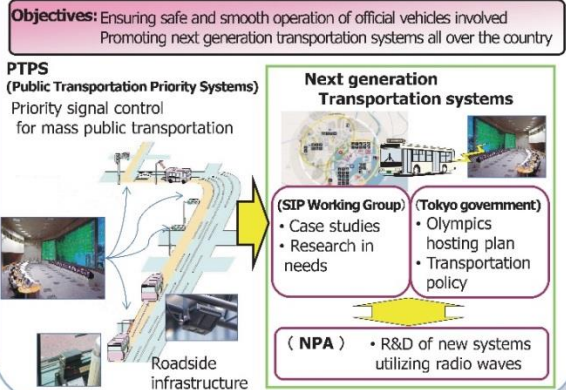
Upgrading DSSS with Traffic Regulation Information



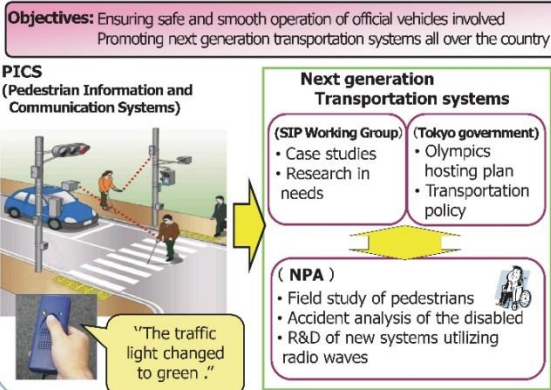
Upgrading DSSS with Radio Wave(700MHz)



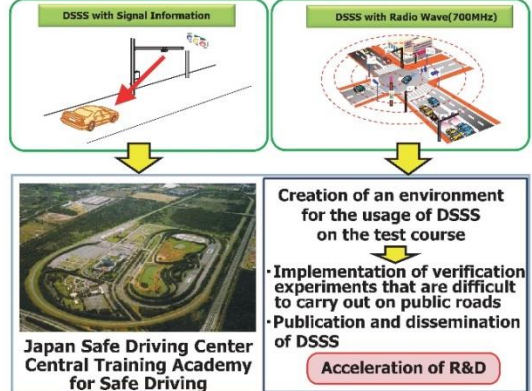
Upgrading PTPS for the Tokyo 2020 Olympics and Paralympics



Upgrading PICS for the Tokyo 2020 Olympics and Paralympics



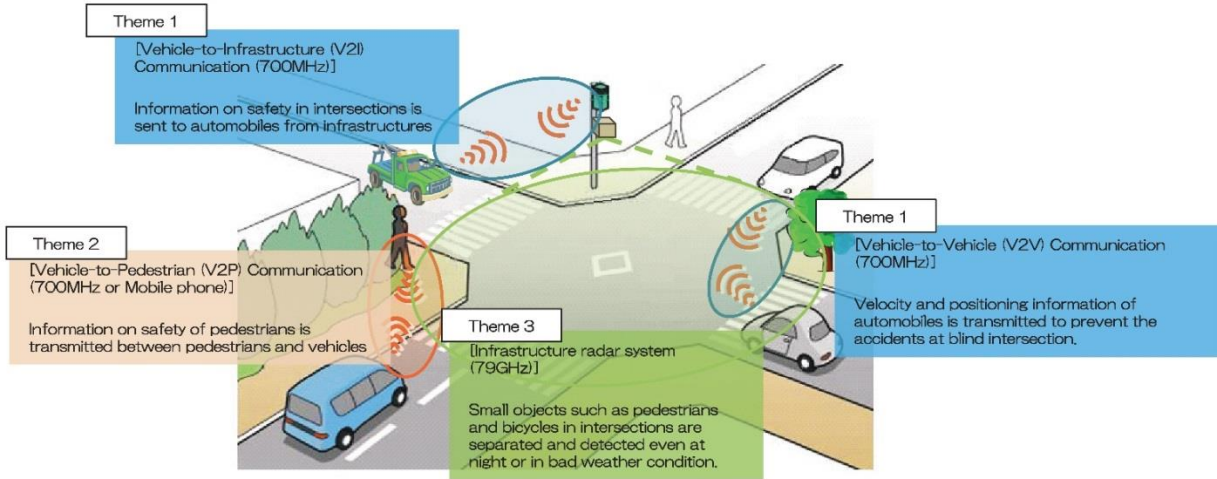
Creation of R&D environment open to the rest of the world



Next-Generation Intelligent Transport Systems (ITS) utilizing Information and Communication Technology (ICT)

Next-Generation Intelligent Transport Systems (ITS) utilizing Information and Communication Technology (ICT)

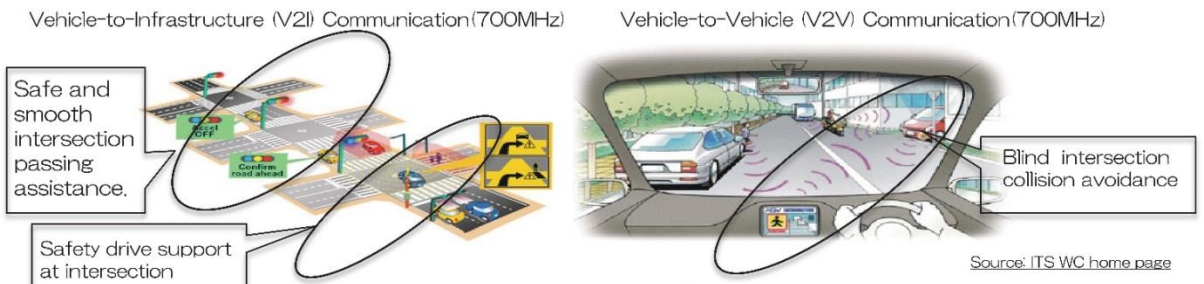
Ministry of Internal Affairs and Communications (MIC) in Japan plans to realize an advanced safety driving support system utilizing ICT. With the system, traffic accidents can be avoided on the basis of information transmitted by V2V, V2I, V2P communication, as well as information collected from infrastructure radars. The system is going to be demonstrated on public roads, and a measurement data will be used for the construction of a technical guidelines.



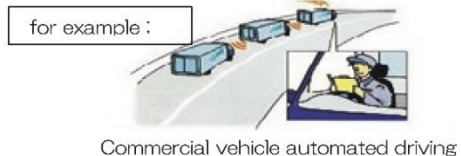
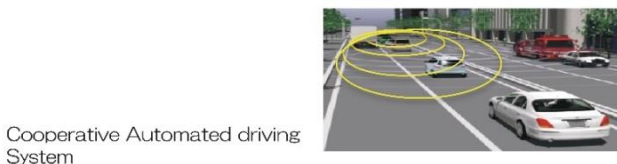
Theme1 : Vehicle-to-Vehicle / Infrastructure (V2V, V2I) Communication

Towards Cooperative Automated Driving System using Communication Technology

- Sophisticated V2V, V2I contributes the realization of the cooperative automated driving system.
- Highly-reliable communication technology, Low-latency communication protocol is needed.



Highly-reliable communication Low-latency communication



Next-Generation Intelligent Transport Systems (ITS) utilizing Information and Communication Technology (ICT)

Theme2 : Vehicle-to-Pedestrian (V2P) Communication

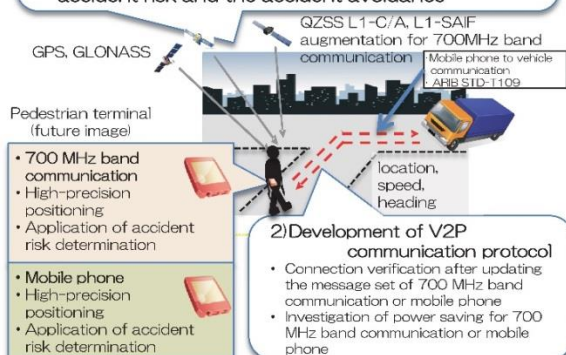
[700MHz] or [Mobile phone]

Scope : To realize a V2P communication system using dedicated terminal that can activate an appropriate information or caution to pedestrian, and to realize this terminal small in size and reduced in consumption.

1-1) Development of high-precision positioning

Utilization of QZSS L1-SAIF augmentation signal, multipath mitigation, improvement of pedestrian dead-reckoning (PDR) and map matching algorithm

1-2) Establishment of method for the determination of accident risk and the accident avoidance



- 700 MHz band communication
- High-precision positioning
- Application of accident risk determination

- Mobile phone
- High-precision positioning
- Application of accident risk determination

2) Development of V2P communication protocol

- Connection verification after updating the message set of 700 MHz band communication or mobile phone
- Investigation of power saving for 700 MHz band communication or mobile phone

3) Experiment on public roads and clarification of problems

Positioning, V2P communication, appropriate activation of alarm



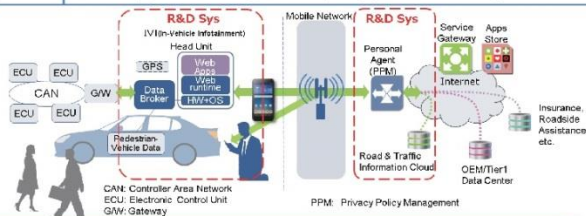
[mobile phone]

Realizing a high-accuracy detection system between an electric wheelchair and a pedestrian (or moving object) on a sidewalk/roadway.

- To build a detection system between moving objects
 - Relative position measuring using field intensity
- To build a detection system with network information
 - Absolute position measuring using GPS and Juntencho satellite (L1-SAIF)



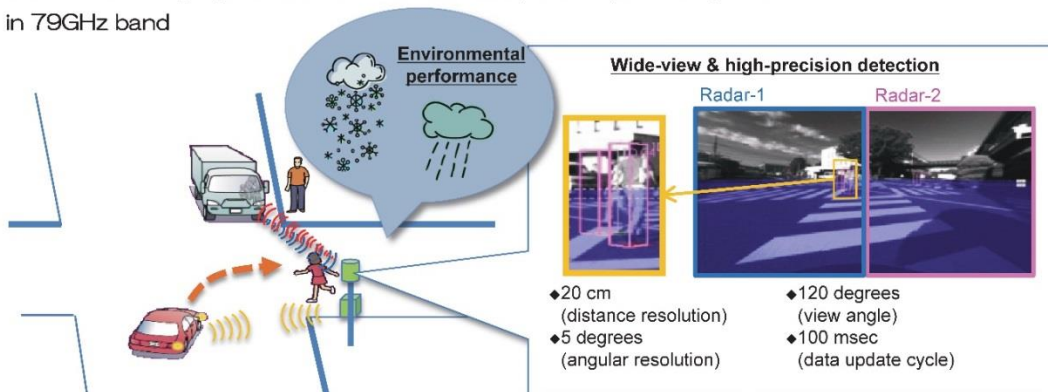
| | |
|---------|---|
| Goals | To Collect and Distribute Driving-Context & Warning Information using Web Technologies |
| Purpose | 1) To contribute to the international standardization activities (W3C, etc.) 2) To promote establishing a Social-based ITS platform |
| Actions | -To develop technologies which collect and analyze the next generation probe data such as pedestrian recognition information, road environment, driver's context, etc. -To develop pedestrian recognition and privacy protection technologies. |



Theme3 : Infrastructure radar system (high-resolution radar)

Advanced millimeter-wave sensing

- Robust to poor visible conditions [night / fog / snow]
- Separating pedestrians and bicycles by using novel coded pulse radar techniques
- Wide-view and high-precision detection with compact adaptive array antennas in 79GHz band



R&D Projects (METI) toward the realization of the Automated Driving systems

※METI: Ministry of Economy, Trade and Industry

Development and Verification of Construction Technology of Driving Video Recognition Database

[Objective]

This project establishes the technology for building the image database which contributes efficient development and evaluation of the circumference environment recognition technology which is useful for an automated driving.

[Outline]

- To equip 5 high-resolution cameras and 5 laser radars to the front, rear, left and right of the vehicle, and passenger compartment in the measuring vehicle. They are also equipped with a GPS and navigation, etc.. These sensor information (distance, position) and vehicles information, (GPS data, the degree of acceleration and deceleration, etc.), are collected together.
- To develop the Automated technologies of the work of filtering and tagging to the collected video data.
- To develop an efficient low-cost compression accumulated technology and search technology of ultra-large-scale video database.



- ① side camera: Resolution:1920x1200, Frame rate :60fps, Angular Field of View :180°
- ② side laser radar: Measurement layer:1, Scanning angle:190°
- ③ front laser radar radar: Measurement layers:4, Scanning angle:85°
- ④ front camera: Resolution:1920x1200, Frame rate :60fps, Angular Field of View :90°

Development and Verification of Lane Marker Detection System in All-weather Condition

[Objective]

- In automated driving (Lev.3 and higher), driving authority is on the system side.
- Even if it is necessary to transition the driving authority to the driver by the sudden change of natural environment (performance limitation), margin time is necessary.
- Robustness against detection for sudden change of natural environments is necessary.
- This project ascertains the feasibility of performance improvement and adaption to automated driving system by ingenuity of the vehicle sensor and the lane marker.

[Outline]

- 79GHz ultra-wideband Millimeter Wave Rader
 - High resolution
 - High shape recognition performance
 - High resistance to water
- Lane marker with Rib
 - High reflectance
 - Hard to flooding



Verification

Quantification of relationship between detection and lane-keeping performance

Evaluation of the lane marker detection performance



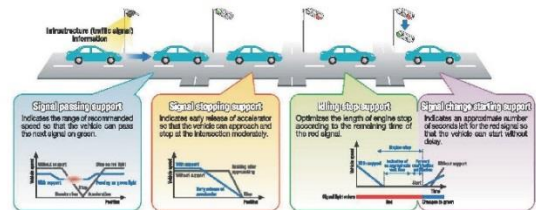
Development and FOT of Traffic Signal prediction Systems

[Objective]

Traffic Signal prediction Systems aim to encourage drivers to practice safe and eco-friendly driving through Signal passing support, Idling stop support and Signal change starting support by providing driving support information based on the phase schedule of each traffic signal ahead of vehicles.

[Outline]

Infrastructure provides information to the vehicle's on-board unit, such as signal information of intersection through which the vehicle is going to pass and the distance to the intersections. The on-board unit provides the following four support via HMI based on the information obtained from the infrastructure and the information on its own vehicle.



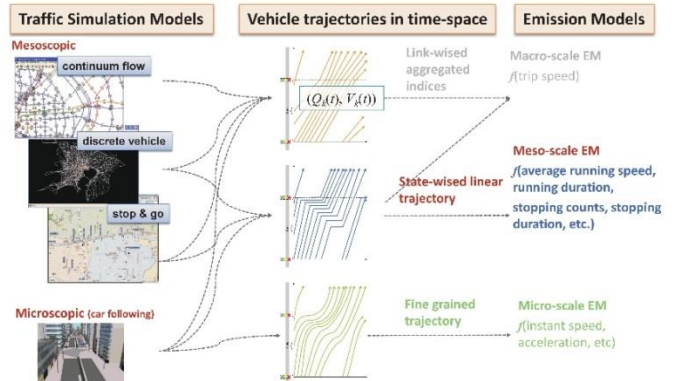
Local Traffic CO2 Emission Visualization Technology

[Objective]

Automated Driving System raise exception for contribution to reduce energy consumption and CO2 emissions from vehicular highway traffic. This project establishes Local Traffic CO2 Emission Visualization Technology which can estimate CO2 emission reduction by Automated Driving System quantitatively to promote popularization of the system.

[Outline]

Local Traffic CO2 Emission Visualization Technology will be developed in accordance with the international joint report "Guidelines for assessing the effects of ITS on CO2 emissions" published under international cooperation between Japan, Europe and the U.S. in 2013. The visualization technology will consist of a traffic simulation and a CO2 emission model. CO2 emission reduction effect by improvement of traffic flow and reduction of traffic accident by Automated Driving System will be quantified and visualized.



Mesoscopic model: Model with intermediate resolution between macroscale and microscale.

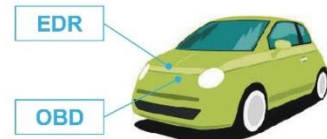


MLIT R&D Task Force “For the Realization of Automated Driving Systems”

(Excluding projects coordinated with MIC and NPA)

Basic Research on Requirements for Safety and Reliability of Automated Driving System

- Research methods for ensuring the safety and reliability of advanced technologies or automated driving systems using real vehicles.
- Research on system failure recording devices such as the Event Data Recorder (EDR) or the On-Board Diagnosis (OBD) for automated driving through testing on real vehicles.
- Selection of an automated driving system from existing advanced systems (e.g. Advanced Emergency Braking System (AEBS), Lane Keep Assistance System (LKAS)) and research on the minimum requirements for automated driving vehicle system's diagnosis to maintain safety simulating malfunctioning conditions.



Expected Results

- Clarification of the minimum requirements for the diagnosis system to ensure the proper activation of automated driving systems.

Research on Technical Requirements for Human Machine Interface (HMI) Related to Safety of Automated Driving System

- Selection of an automated driving technology for this research.
- Selection of typical driving scenarios to consider minimum requirements of the HMI to maintain safety in automated driving systems.
- Research on the HMI between an automated driving system and a driver in a critical situation.
- Research on minimum requirements for a safe transition from automated driving to manual driving in the above selected automated driving system using a driving simulator.

Expected Results

- Clarification of the requirements on the HMI
 - ✓ Minimum time requirement to a safe transition from automated driving to manual driving.
 - ✓ Clarification of the safety concept during a malfunction of the automated driving system.



Driving Simulator
(Ex: National Traffic Safety and Environment Laboratory (NTSEL))

6. Welcome Reception

一般参加者を対象にしたウェルカムレセプションが10月27日に開催され、海外参加者のスピーチ等、有意義な情報交換・交流が行われました。

データ11 記録写真



7. Pre-meeting for Breakout Workshop

Breakout Workshop参加者を対象に、翌日の分科会ごとに分かれ事前の検討会を開催しました。



8. Dinner

2日目 10月28日の Presentation from each Breakout Workshop の終了後、各Breakout Workshop ごとにテーブル分けを行い、夕食会を開催しました。



9. 試乗会

海外招聘者と国内の関係省庁幹部を対象に、OEMメーカーの自動走行システムを体験する、試乗会が開催されました。

日時

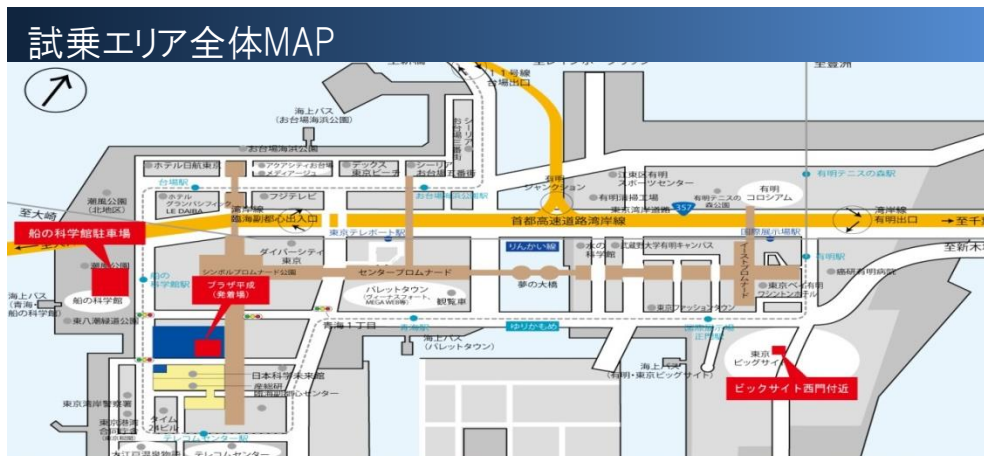
2015年10月29日(木)

会場

会場(1)東京国際交流館 プラザ平成
【試乗実施者】トヨタ自動車・富士重工業

会場(2)船の科学館駐車場(東京都品川区東八潮3-1)
【試乗実施者】三菱自動車工業

会場(3)東京ビッグサイト (東京都江東区有明3-11-1)
【試乗実施者】日産自動車・本田技研工業



試乗参加者数

海外招待スピーカーと、政府関係省庁幹部を対象に実施

総数 86名 *延べ人数(試乗カウント数)で計上

内訳: 海外招待者等 47名 関係省庁からの試乗体験者 39名

プログラム

下記の通りに行われました。

| 10月29日(木) | |
|-----------|---|
| AM | 9:00~試乗会式典 ◆松本文明内閣府副大臣開会挨拶 ◆海外来賓によるスピーチ ◆試乗体験内容の説明 |
| | 10:00~試乗会・ 各実施者による自動走行システムに関する「技術展示」 |
| PM | 引き続き試乗会・各実施者による自動走行システムに関する「技術展示」 ~15:00 終了 |

1) 試乗会式典



松本副大臣



Mr. Alkim



Mr. Smith



2) 試乗会



3)試乗実施各者の自動走行システム説明 および技術展示内容
 各試乗実施者の自動走行システムに関する説明を展示する「技術展示会」を開催いたしました。

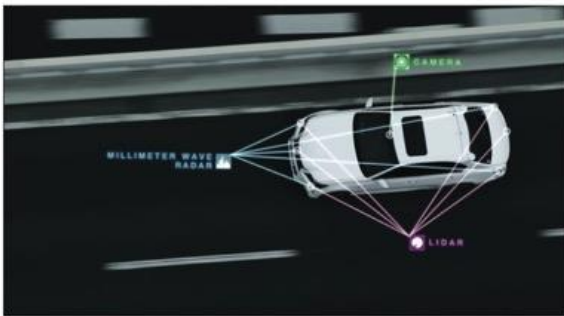
TOYOTA

データ12 試乗実施者技術展示ポスター

HIGHWAY TEAMMATE

Highway Teammate

Highway Teammate features equipment that enables automated driving on highways from the on-ramp all the way through to the off-ramp.
 Toyota is ramping up its research into and development of automated driving technologies, with the goal of launching products based on Highway Teammate by around 2020.

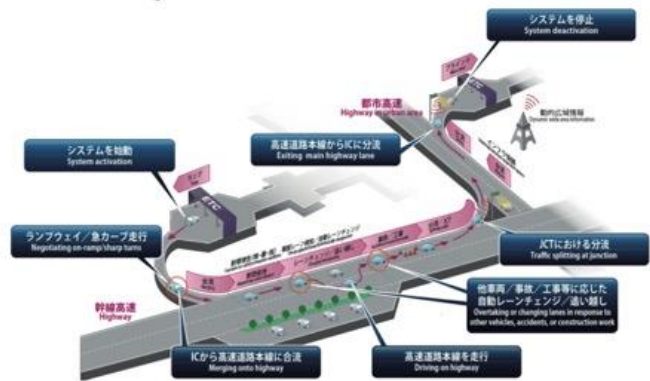


Mobility Teammate Concept

Toyota believes that interactions between drivers and cars should mirror those between close friends who share a common purpose, sometimes watching over each other and sometimes helping each other out.

Toyota refers to this approach as the Mobility Teammate Concept. This approach acknowledges the utility of automated driving technologies while maintaining the fun experience of driving itself.

Through the **Mobility Teammate Concept**, Toyota aims to achieve a society where mobility means safety, efficiency and freedom.



Merging onto or exiting highways



Changing lanes and overtaking



Driving on highway on-ramps/off-ramps

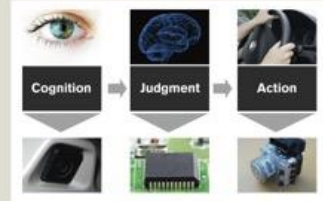


Running Autonomous Drive

Nissan is aiming to have Autonomous Drive technology phased into practical application by the year 2020.

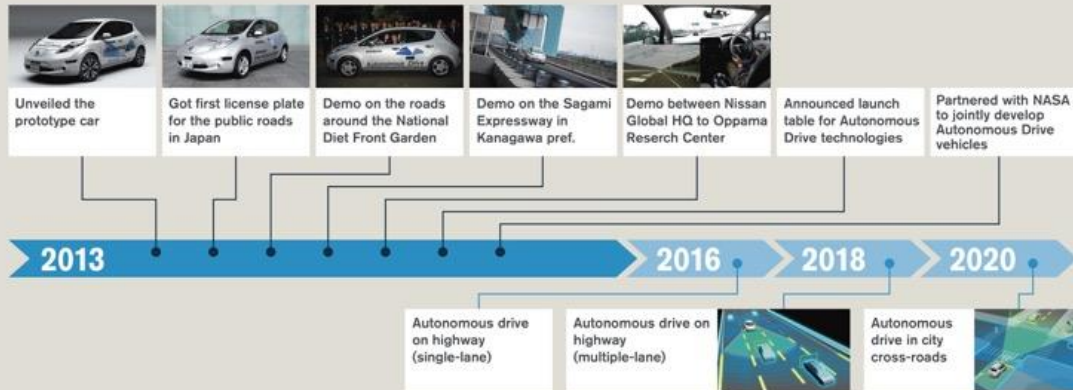
Replacing Human Driving with Machines

By taking responsibility for the various elements required for driving, such as cognition, judgment and action, away from people and using machines to carry out these functions instead we will be able to detect risks earlier and increase the likelihood of risks being avoided.



Promoting Autonomous Drive

Plans are to adopt the traffic-jam pilot, allowing safe autonomous drive on highways, by the end of 2016, multiple-lane autonomous drive technology, which autonomously conducts evasive actions and lane changing, by 2018, and intersection autonomous drive, allowing autonomous crossing of crossroads and intersections without driver intervention, by 2020.



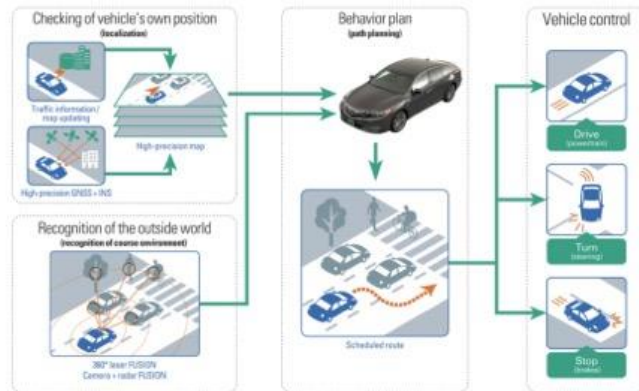
AUTOMATED DRIVE

Objective

Aiming to avoid dangerous situations brought upon by driver stress and fatigue during long distance highway driving, the system provides safe route guidance, driving support and shared driving duties.

- Automatically calculates drive route from highway entrance to exit.
- Automatically merges and exits at intersections.
- Maintains speed and lane while driving.

System Structure



Demonstration

The demonstration includes a map of the Metropolitan Expressway Wangan Route between Toyosu IC and Kasai IC, highlighting key driving scenarios:

- Approach to the main line
- Lane change
- Branching
- Merging
- Lane Keep (grade separation)
- Turning point (Manual driving)

Accompanying video thumbnails show:

- Lane change:** A car shifting between lanes on a highway.
- Merging:** A car merging into a main traffic flow.
- Branching:** A car exiting a highway.
- Lane keep:** A car maintaining its position within a lane.

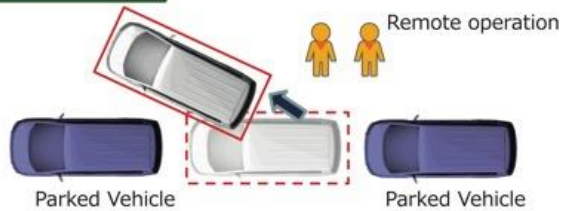
● Public road test of "merging", "branching", "lane keep", "lane change" on a highway
 ● Metropolitan Expressway Wangan Route Toyosu IC ⇄ Kasai IC
 Roughly 8km × 2 (Time taken roughly 45 min.)

Autonomous Vehicle Test Ride

Contents :

- Remote Automated Parking System
- Low Speed Following System

① You can observe the vehicle parking out automatically from the parallel parking outside of the vehicle.



② Enjoy the Low Speed Following System in the vehicle.



③ Coming back to the original spot, you get off the vehicle, and you can observe operation of Remote Automated Parking System (Parallel Parking) outside of the vehicle.

