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(出國類別:其他)

出席世界資通訊科技與運輸服務
應用之相關研討會議 -
第 17 屆 ITS 世界年會出國報告

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出國地區:韓國
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報告日期:99 年 12 月 31 日

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內容摘要：

「第 17 屆 ITS 世界年會」於 99 年 10 月 24 日至 31 日於韓國釜山 BEXCO 國際會議展場舉辦，本次年會主題為「Ubiquitous Society with ITS」，強調一個重要的願景：即透過智慧型運輸系統技術，創造一個能夠提供民眾無所不在行動數位化服務的社會，使運輸系統達到安全（safety）、便利（convenience）、綠色機動性（Green Mobility）運輸的目標。本次年會內容除舉辦近 240 場各型會議（全體會員會議、執行會議、專案會議、科學報告會議、技術報告會議、媒體互動會議，以及部長及圓桌會談等），以促進各國 ITS 發展經驗之交流外，為展現各國及韓國推動 ITS 之成果，本次年會特安排 3 項現場展示活動(Showcase)、7 項技術參訪行程(Technical Visits)及各國 ITS 廠商的技術展覽(Exhibition)。由於年會有多項研究成果發表，並展示最新 ITS 技術與產品，參與此會可以瞭解未來 ITS 的發展趨勢，對於國內推展 ITS 有很大的幫助。此外，亦檢視及實地查訪韓國 ITS 發展歷程、現況及成功經驗可知，除了車輛及資通訊產業等私部門全力投入外，政府在組織、預算、法案及人力等方面之支援與協助，亦是不可或缺之重要因素，此點可提供未來我國廣續推動 ITS 之參考。

本文電子檔已上傳至公務出國報告資訊網

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壹、前 言

一、緣起與目的

我國近年來積極推動智慧型運輸系統（Intelligent Transportation Systems，以下簡稱 ITS）相關建置計畫，包括「e化交通」與正執行中之「智慧臺灣—交通管理及資訊服務系統建置與推廣計畫」等，應用資通訊科技提昇運輸服務品質與效率，已頗具成果，而出席世界資通訊科技與運輸服務應用之相關研討會議，可充分瞭解及掌握國際最新有關 ITS 與交通資訊應用與推動之趨勢，並與國際交流有關國內發展概況，以作為國內持續發展先進用路人資訊服務(ATIS)之參考，並賡續有效提昇施政績效。本所今（99）年度出國計畫出席之會議為「2010 年韓國釜山第 17 屆智慧型運輸系統世界年會（ITS World Congress）」。

為推廣 ITS 的應用及介紹相關領域之技術，由亞太、歐洲、美洲等地區智慧型交通組織發起的智慧型運輸系統世界年會（ITS World Congress）是 ITS 領域中規模最大，各國與會人數最多的科技盛會，每年由亞洲、歐洲以及美洲不同國家輪流召開選定主辦城市舉辦一屆，世界大會主要目的係集合全世界產、官、學、研各界研討過去一年各國在 ITS 的研究成果及未來挑戰與展望。從 1994 年於法國巴黎舉辦第 1 屆世界年會開始，今年為第 17 屆，係由亞洲主辦，並以韓國釜山（Busan）為主辦城市於 BEXCO 世界展覽中心舉辦，會議期程為 10 月 25 日至 10 月 29 日，共計 5 天。

有鑑於我國 ITS 技術的發展已自研發測試、示範評估推廣到建置應用階段，因此為能增進我國 ITS 發展與世界各國相互交流觀摩之機會，同時進行經驗交流與學習，本所歷年均會派員參與 ITS 世界年會。今年奉派出席者為運輸資訊組張研究員贊育、運安組黃研究員明正及綜技組朱研究員珮芸等 3 人。

本次出國主要目的包括：

1. 參加第 17 屆 ITS 世界年會，瞭解世界各國 ITS 發展現況；
2. 考察韓國釜山發展先進用路人資訊服務(ATIS)發展現況與未來計畫；
3. 考察韓國釜山、慶州等地相關 ITS 規劃。

二、行程概述

本次出國行程自民國 99 年 10 月 24 日至 31 日，共 8 天。主要行程除參加 ITS 世界年會以及參觀相關科技展示活動，以進行經驗交流與學習外，亦順道考察釜山、慶州等地之 ITS 相關建設。行程如表 1 所示。

表 1、出國行程表

日期	行程
10/24(日)	搭機前往韓國釜山
10/25(一)	1. 參加「2010 年 ITS 世界年會」 2. 蒐集資料、參加會議、技術參訪、參觀各國技術展覽
10/26(二)	1. 參加「2010 年 ITS 世界年會」 2. 蒐集資料、參加會議、技術參訪、參觀各國技術展覽
10/27(三)	1. 參加「2010 年 ITS 世界年會」 2. 蒐集資料、參加會議、技術參訪、參觀各國技術展覽
10/28(四)	1. 參加「2010 年 ITS 世界年會」 2. 蒐集資料、參加會議、技術參訪、參觀各國技術展覽
10/29(五)	1. 參加「2010 年 ITS 世界年會」 2. 蒐集資料、參加會議、技術參訪、參觀各國技術展覽
10/30(六)	前往慶州參訪 ITS 相關設施
10/31(日)	參訪慶州、釜山有關 ITS 建設 自韓國釜山返回台北

貳、年會內容

第 17 屆 ITS World Congress 係於 2010 年 10 月 25 日至 29 日在韓國釜山市 BEXCO 世界展覽中心 (Busan EXhibition & CONvention center, BEXCO) 召開 (如圖 1 所示), 年會內容除各項會議及研討會 (全體會員大會、執行會議、專題研討會議、科學性論文發表會、技術性論文發表會、媒體互動會議、部長及圓桌會談等) 外, 並安排現場展示 (Showcase)、技術參訪 (Technical visits)、各國 ITS 技術展覽等, 讓與會者了解韓國及世界各國 ITS 建設各項成果。



圖 1、第 17 屆 ITS 世界年會會場-韓國釜山市 BEXCO 展覽中心

一、會議主題-Ubiquitous Society with ITS

本次年會主題為「Ubiquitous Society with ITS」, 強調一個重要的願景: 即透過智慧型運輸系統技術, 創造一個能夠提供民眾無所不在行動數位化服務的社會, 使運輸系統達到安全 (safety)、便利 (convenience)、綠色、機動性 (Green Mobility) 運輸的目標, 而其策略有三:

1. 提供「無所不在 (Ubiquity)」之 ITS 服務-不管任何人或物, 從任何時間、到任何地點, 都能獲得適當之運輸服務。
2. 提供「透通性 (Transparency)」資訊之運輸服務-不管是駕駛、乘客、行人或貨物托運人, 都能隨時、隨地獲得即時性之交通資訊。
3. 提供「可信賴 (Trustability)」之運輸服務-提供所有用路人適時、準確及有用之運輸資訊與服務。

有關本次年會之LOGO及理念，如圖 2 及圖 3 所示。



圖 2、第 17 屆 ITS 世界年會 LOGO



圖 3、第 17 屆 ITS 世界年會宣導理念

二、各項會議內容

本次年會除開幕及閉幕外，在年會期間舉辦各種會議共500餘場，今年出席研討會人數超過6,000人，另有世界各國1,158篇論文投稿，包括272篇科學論文以及886篇技術論文，打破世界年會紀錄，國內亦有投稿35篇論文，是去年近4倍之多，且多篇獲得年會之論文獎。此次年會議題內容環繞各國在智慧型運輸系統推動發展之成果及所面臨之挑戰，會議依性質區分為全體會員會議、執行會議、專案會議、科學報告會議、技術報告會議、媒體互動會議，以及部長及圓桌會談等項。(各會議討論議程表如附錄一)

(一)全體會員會議 (Plenary Sessions)

本次年會共舉辦 2 場全體會員會議 (如圖 4 所示)，主要係邀請各國推動 ITS 之重要人士就本次年會之目標及策略作專題報告，讓與會者瞭解本屆 ITS 年會的重點，並吸取各國推動上述目標及策略所面臨挑戰與機會的經驗，以及目前各國 ITS 的發展政策及策略。其主要議題如下：

1.Integrated Goal for ITS Paradigm Shift - Safe, Convenient and Green Mobility

由於目前各國ITS技術已成功整合車輛與資通訊技術，如車與車間 (vehicle-to-vehicle) 及車與路測設施間 (vehicle-to-infrastructure)通訊系統，因此透過ITS解決方案，可協助運輸系統解決所面臨安全、效率及氣候變遷的挑戰。本專題報告強調這些創新之ITS解決方案如何建立一個連接人、車、能源與運輸系統之永續運輸路網。

2.Strategies for Ubiquitous Society with ITS - Ubiquity, Transparency, Trustability

下一代的ITS就像網際網路之Web 2.0一樣，為了迎合上述ITS典範之轉移，未來運輸系統之發展趨勢將是不論在人和地方、任何時間、任何設施，運輸系統都要提供適當的、無縫的及準確的運輸資訊。本專題報告將說明如何透過ITS之「無所不在性」、「資訊透通性」、「可性賴性」的策略，協助各國ITS相關者 (stakeholders) 達到上述目標。



圖4、全體會員會議會場

(二)執行會議 (Executive Sessions)

本次年會共舉辦 12 場執行會議 (如圖 5 所示)，邀請各國產、官、學各界重要人士探討目前各國正在進行或未來計劃進行之 ITS 計畫所面臨問題、挑戰及衝擊，以及如何達成年會之目標及策略分享其見解，提供與會人士參考。相關議題如下：

ES 01 Cooperation on Co-operative Mobility Services - Telecom Serving Transport

ES 02 ITS Initiatives in Environmental Issues

- ES 03 Benefits from Having Smarter Cities
- ES 04 The Role of ITS in Decarbonisation of Transport
- ES 05 Emergence of the ‘iCar’
- ES 06 Information and Communications Technology Enabling Ubiquitous ITS Society
- ES 07 National and Supranational Policies, What are the Driving Forces for ITSD employment?
- ES 08 Return on Investments - Public & Private Business Models for ITS
- ES 09 Global Safety
- ES 10 Intermodal Freight
- ES 11 International Harmonization
- ES 12 Public-private Partnerships: Is it Acceptable for Private Entities to Make Money Investing in Public Infrastructure?



圖5、執行會議會場

(三) 專題研討會議 (Special Sessions)

本次年會共舉辦 72 場專題研討會（如圖 6 所示），就各國產、官、學各界目前進行有關 ITS 發展或建置之特定議題、研究或計畫進行研討。相關議題詳如附錄二。



圖 6、專題研討會會場

(四)科學性論文發表會 (Scientific Paper Sessions)

本次年會共舉辦 31 場科學性論文發表會 (如圖 7 所示)，由亞太、歐洲及美洲地區 ITS 方面之專家及學者就 31 項議題，發表 119 篇 ITS 相關科學性論文。相關議題詳如附錄三。



圖 7、科學性論文發表會會場

(五)技術性論文報告會議 (Technical Paper Sessions)

本次年會共舉辦 123 場技術性論文報告會議 (如圖 8 所示)，由亞太、歐洲及美洲地區 ITS 方面之專家及學者就 123 項議題發表 514 篇論文 ITS 相關技術性論文，詳如附錄四。



圖 8、技術性論文發表會會場

(六)媒體互動會議 (Media Interactive Sessions)

這是本次年會首創以電漿顯示器 (Plasma Display Panel, PDP) 提供簡報者與聽眾直接互動的方式 (以往是透過海報或現場展示方式)，考量以往研討會受限於時間，每個場次簡報者簡報完畢後，聽眾發問時間所剩不多，無法達到互相切磋、交流的效果，故大會特別設置媒體互動區 (如圖9所示)，區內擺設多台電漿電視放映各簡報者之簡報，與會人員在每日特定時間內 (10:30 ~ 12:30、13:30 ~ 15:20及15:30 ~ 17:30)，可透過電漿顯示器選擇有興趣之特定議題，直接與簡報者互動，達到知識與經驗分享之目的。相關議題詳如附錄五。



圖9、媒體互動區

(七)部長級圓桌會談 (Ministerial Round Table)

本次年會據稱有 16 位各國部長受邀參加，因此大會特別安排部長級之圓桌會議，讓各國部長針對大會之目標-安全、便利、綠色機動性，互相交流與分享經驗與訊息。本部毛部長因需參加 10 月底的 APEC 電信部長會議不克參加，甚為可惜。

參、現場展示、技術參訪與各國 ITS 技術展覽

本次年會除舉辦近 240 場各型會議，以促進各國 ITS 發展經驗之交流外，為展現各國及韓國推動 ITS 之成果，本次年會特安排 3 項現場展示活動(Showcase)、7 項技術參訪行程(Technical Visits)及各國 ITS 廠商的技術展覽(Exhibition)。

一、現場展示活動(showcase)

本次年會在會場四周設置 3 個現場展示區，讓與會者親身體驗韓國這幾年積極推動「無所不在」的 ITS 服務：

1. ITS 技術提供之機動及網路生活體驗區(Mobile & Network based ITS Technologies)

本展區主要展示未來的智慧運輸系統，大會在會場旁設置 ITS 體驗區，以濃縮簡化的交通生活環境，由工作人員開著智慧車載著有興趣者循著規劃路線，親身體驗 ITS 所能提供的各項服務（詳如圖 10 所示），車上提供的設備包括：

- (1) 透過多點視訊電視 (IPTV) 提供 CCTV 之路況資訊及公車到達、替代路線資訊(Traffic information Provision utilizing IPTV)；
- (2) 智慧型自動駕駛(無人駕駛)及停車(自動停入停車位)系統(Intelligent Auto-Parking System)；
- (3) 透過 DGPS & WAVE 提供號誌預警系統（預告到下一個燈號剩餘時間及超速等違規行駛之警告）(Signal Violation Warning System utilizing DGPS&WAVE)；
- (4) 透過 WAVE 提供車對車間之通訊(Vehicle to Vehicle Communication)；
- (5) 透過 DGPS & WAVE 提供車輛偏離車道之警告訊息(Lane Departure Warning System based on WAVE)；
- (6) 透過 WAVE 提供路口安全建議資訊(Intersection Safety Advisory Service based on WAVE)；
- (7) 透過 WAVE 提供附近主要區域內之 CCTV 影像資料(CCTV Image Provision based on WAVE)；
- (8) 透過 DSRC RSE 蒐集、處理及提供每個區域即時之交通資訊(Traffic Information Service based on DSRC)；
- (9) 透過智慧型手機提供年會資訊、個人行程規劃、大眾運輸服務及觀光資訊 (Smart Planner and DSRC WC Information Service using Smartphone)；
- (10) 透過 DSRC 獲得交通資訊中心相關緊急交通事故通知資訊(Traffic

Incident Notification Service based on DSRC) ;

- (11) 透過智慧型手機提供相關緊急交通事故之隨選視訊(VOD)(Traffic Incident VOD based on Smartphone) ;
- (12) 透過 WAVE 提供相關緊急交通事故之隨選視訊(VOD)(Traffic Incident VOD based on WAVE) ;
- (13) 透過 WAVE 提供行人橫越道路之警告訊息(Pedestrian Crossing Warning Service based on WAVE) ;
- (14) 透過 WAVE 及車上單元 提供車籍及能源消耗訊息(Vehicle Information Service based on WAVE) ;
- (15) 多媒體資訊柱 (含大型螢幕及 KIOSK, 提供交通資訊、上網、觀光及娛樂資訊) (Multi Media-Pole Service) ;



圖 10、ITS 技術提供之機動及網路生活體驗園區示意圖

2. 使用者導向之大眾運輸服務(User Oriented Transit Service)

本展區主要展示公車資訊站 (Bus Information Terminal) 之智慧型站牌及視障者自動導引系統 (詳如圖 11、12 所示)。智慧型站牌上方螢幕為單向公車即時資訊 (如公車預估到達時間、目前位置、公車站牌資訊), 下方則為雙向觸控式螢幕, 提供公車路線搜尋、即時新聞、天氣、當地文化及附近觀光、景點等多媒體視訊。此外, 使用者可透過小型智慧遙控器, 選取螢幕上所需要資訊。自動導盲系統則是在捷運車站內, 於規劃路線上佈設導盲設施 (貼有 FRID 標籤), 視障乘客可透過聲控機及拐杖上之感應器指引前進, 遇有轉彎處, 則會語音告知。



(1) 展示內容說明



(2) 候車亭內公車資訊顯示版



(3) 候車亭內使用遙控器查詢公車資訊



(4) 候車亭內智慧型站牌示範

圖 11、公車資訊站之智慧型站牌展示



(1) 視障者自動導引系統展示版



(2) 捷運車站動線導盲顯示版



(3) 捷運車站導盲道上之 RFID 標籤



(4) 捷運車站導盲示範

圖 12、捷運車站視障者自動導引系統

3. 環保車體驗(Green Vehicle Experience-Test Driving Course & Location)

本展區主要展示四款最新型環保車之功能及耗能狀況（詳如圖 13 所示），包括：韓國現代汽車公司(Model Hyundai Motors)的 BlueON 高速電動車(最大時速 130 公里、5 門、充電 1 次可跑 140 公里)與加拿大 Model AD Motors 之 Change(最大時速 60 公里、2 門、充電 1 次可跑 70 公里)及韓國 Model CT&T 之 eZONE(最大時速 60 公里、2 門、充電 1 次可跑 120 公里)的低速電動車，以及日本 Model Honda Motors 的 Insight 油電混合車(每公升可跑 23 公里、排氣量 1,339cc) 可供與會者試乘。



(1)Model AD Motors/change



(2)Model CT&T/eZONE



(3)車上充電孔



(4)充電柱

圖 13、環保車展示

二、技術參訪(Technical Visits)

為展現韓國釜山近年來推動 ITS 之成果，本次年會特別安排 7 項技術參訪行程，包括：

1. 釜山交通資訊中心 (Busan Transportation Information Center) ；
2. 釜山至鳩吉固定連接計畫 (Busan-Geoje Fixed Link Project) ；
3. 韓進新港 (Hanjin New Port) ；
4. 雷諾三星汽車廠 (Renault Samsung Motors Plant) ；
5. 無線通訊服務展示計畫 (WAVE-Communication Service Demonstration) ；
6. 釜山捷運 4 號線 (Busan Metro Line4) ；
7. 蔚山交通管理中心 (Ulsan Transportation Management Center) ；

其中與資通訊有關者有下列 3 項，分別說明如下：

(一) 技術參訪 1：釜山市交通資訊中心

釜山交通資訊中心主要負責整合整個釜山市之路況、大眾運輸及自行車等運具之資訊，以提供所有用路人即時、準確之交通資訊 (詳如圖 14 所示)



圖 14、釜山交通資訊中心及控制室(一)



圖 14、釜山交通資訊中心及控制室（二）

1. 資訊蒐集：交通資訊中心透過 DSRC、CCTV、公車資訊管理系統及探針車（計程車）蒐集道路交通資訊。（詳如圖 15 所示）。

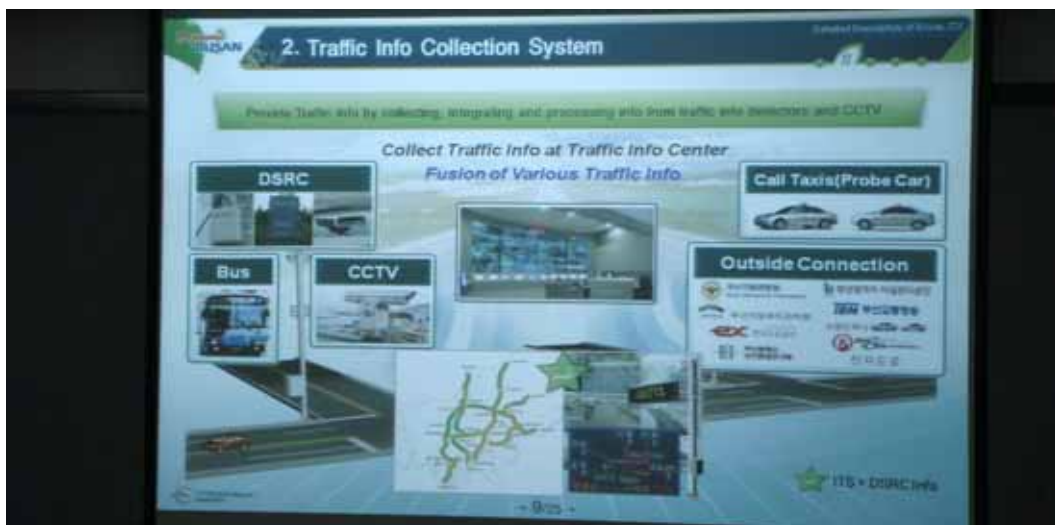


圖 15、交通資訊蒐集

2. 資料融合與分析：交通資訊中心除透過上述方式蒐集道路交通資訊，尚與其他單位合作及相關資訊（詳如圖 16、17 所示），包括：
- (1) 釜山都會區警察局（Busan Metropolitan Police Agency）：路況及交通控制資訊；
 - (2) 釜山高速公路管理公司（Busan Expressway Corporation）：高速公路路況資訊；
 - (3) 釜山交通廣播網（Busan Transportation Broadcasting Network）：交通新聞及宣導資訊；
 - (4) 釜山健康與環境研究中心（Busan Health and Environment Research Center）：環境資訊（如空氣污染、噪音、天氣狀況等）；
 - (5) 釜山區域建設管理處（Busan Regional Construction Management Administration）：道路施工或維修訊息；
 - (6) 釜山基礎建設公司（Busan Infrastructure Corporation）：停車資訊；
 - (7) 計程車管理中心（Taxi BnG Rotis）：路況資訊；
 - (8) 私人道路管理單位（Private roads）：路況資訊；

交通資訊中心需將本身蒐集之交通資訊與上述各單位提供之資訊加以融合，俾利對外發佈，提供用路人完整道路交通資訊，其功能類似本所「交通服務 e 網通」網站，但其為實體之交通資訊中心，且本身有直接蒐集交通資訊之設備，而本所網站僅為虛擬之資訊平台，且資訊均來自其他相關單位之提供。但兩單位同樣不具備交通控制及管理功能，此功能仍由警政或交通主管機關負責。

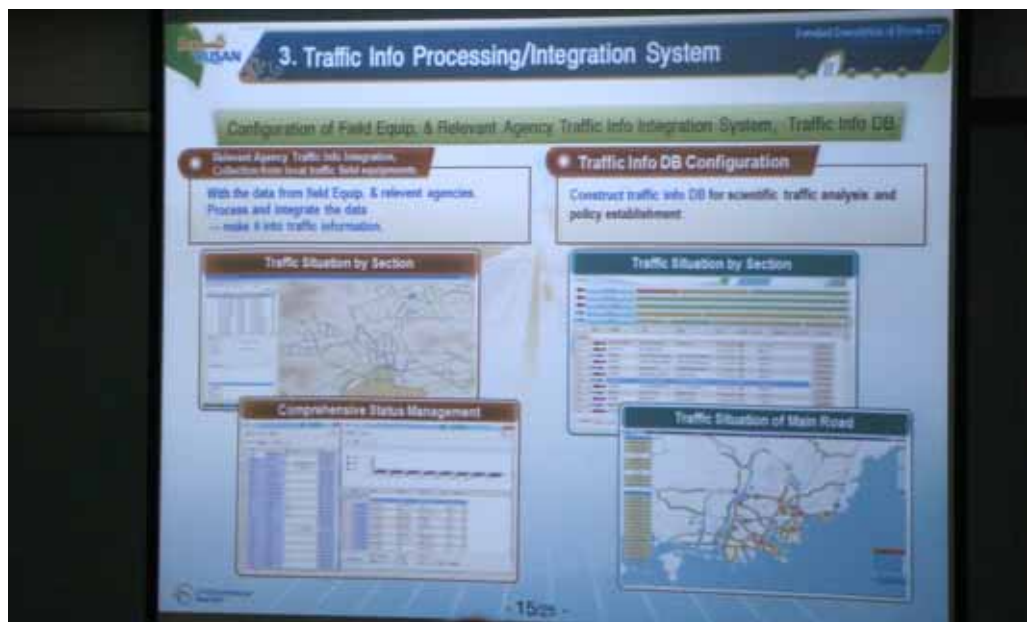


圖 16、交通資訊之處理與融合



圖 17、相關單位資訊之融合

3. 資訊發佈管道：交通資訊中心透過下列資訊發佈管道，提供民眾無論是在家中、辦公室或道路上，均能獲得所需之交通資訊，以提供「無所不在」之 I T S 服務（詳如圖 18、19 所示）。
- (1) 行動通訊系統 (Mobile)：民眾只要上交通資訊中心網站登記申請，即可透過手機依使用者需求提供特定道路交通資訊、公車時刻表及 CCTV 影像等資訊。
 - (2) 網際網路：民眾只要上交通資訊中心所屬網站 (<http://its.busan.go.kr>)，即可獲得所有交通資訊，包括：路況、CCTV、公車及路線導引（避開擁擠路段）等資訊（詳如圖 20 所示）。
 - (3) 公車資訊站 (Bus Information Terminal)：在每一個主要車站均設有公車資訊站，提供即時之公車資訊，包括路線、公車目前位置、時刻表、預估到站時間、交通宣導等資訊。
 - (4) 交通資訊站 (Traffic Information Terminal)：交通資訊站提供多元資訊，包括：公車時刻表、交通狀況、觀光資訊及重要活動訊息（詳如圖 21 所示）。
 - (5) 有線電視 (Cable TV)：3 家有線電視公車提供頻道，播放各主要路段之時現場交通路況資訊。
 - (6) 網路電視 (IPTV)：預計明 (2011) 年 1 月開始，釜山網路電視公司亦將提供所有交通資訊。

- (7) 電話服務中心 (Call Center)：釜山設有 120 個電話服務中心，供民眾打電話詢問相關交通資訊。
- (8) 語音自動答覆系統 (Automated Response System)：透過語音辨識設備，提供民眾詢問市區道路路況及其他交通訊息。
- (9) 資訊可變標示 (Variable Message Sign)：於市區主要道路，包括十字路口、瓶頸路段及隧道內，設有 91 處電子看板，提供文字之路況資訊及預估旅行時間。

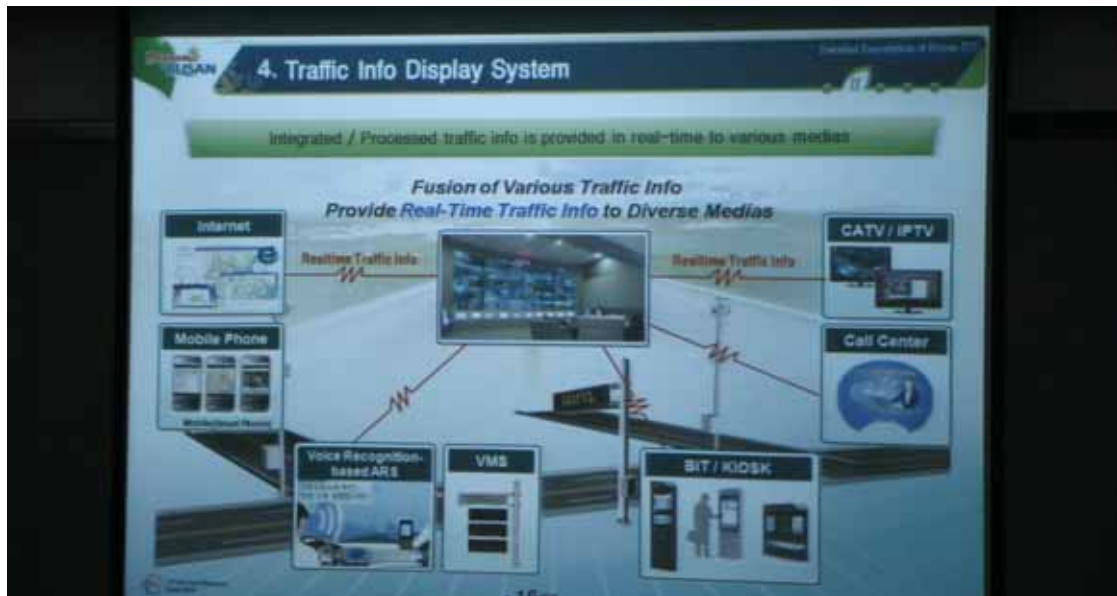


圖 18、交通資訊之發佈



圖 19、無所不在 -- 交通資訊服務



圖 20、交通資訊中心 CCTV 影像



圖 21、觀光與公車資訊站台

(二) 技術參訪 3：韓進新港

釜山港位於朝鮮半島的東南端，連接太平洋和歐亞大陸，是2009年世界貨櫃吞吐量排名第五位的港口，每年約處理1,300萬TEU，由於貨櫃量每年持續增長，韓國於1995年開始興建釜山新港，預計需耗資11.7996萬億韓元，直到2015年完工。屆時，新港將是配備30個船席規模的貨櫃集散站，能夠同時停靠30艘貨櫃船，每年處理貨櫃能力為1,085萬TEU。目前，釜山新港共有3個貨櫃碼頭，18個船席，每年可處理600萬TEU。

此次技術參訪的地點是由韓國韓進海運集團下的子公司-新韓進港公司所經營之釜山新港 2-1 期碼頭(如圖 22)，該碼頭於今(2010)年 6 月 22 日正式營運，佔地 68.76 萬平方公尺，擁有一個水深 18 米的船席，可同時容納 3 艘 1.2 萬 TEU 大型貨櫃船。目前該碼頭共有 18 條航線掛靠，其中包括 CKYH 聯盟(中遠集運、川崎汽船、陽明、韓進)的 14 條航線和世騰船務、高麗海運、興亞海運等公司的 4 條航線。

韓進新港碼頭最大的特色，在於引進世界上第一台全自動水平閘式起重機系統，包括 22 排兩部起重機和一流的 IT 系統，是最尖端 100% 的自動裝卸貨系統(如圖 23)，以提供最好的港口物流服務。從貨櫃船停靠碼頭開始，至起重機卸貨，全程由控制中心負責操作，現場無須派員，且卸貨區域設有 2.92 公里長的貨運鐵路(電力)，直接連接釜山新港和綠山站外的港口區的地面運輸，而裝貨卡車均裝有 F R I D 電子標籤，可確實掌控車輛及貨物之流動，使整個港區成為無污染及最少 CO₂ 排放量的綠色港口(如圖 24)。整個 I T 系統稱為 OPUS (優化功能強大的終極解決方案)，可大幅提昇港口裝卸能力，在過去 3 個月以來，已處理 200 艘 20 萬 T E U 的貨物，預計每年可處理超過 200 萬 T E U 的貨物，有助於促進釜山新港成為遠東及韓國最先進的樞紐港及物流中心。



圖 22、釜山(韓進)新港



圖 23、全自動水平開式起重機系統

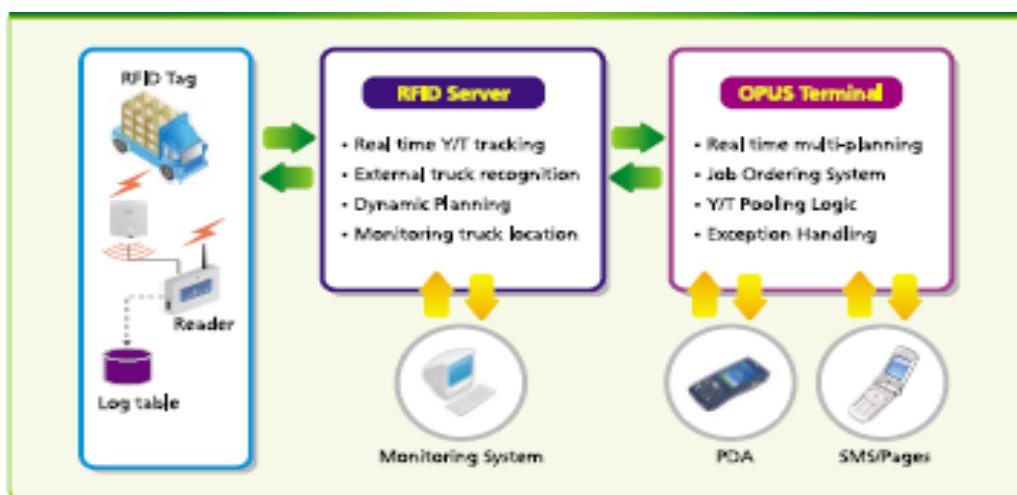


圖 24、RFID 全程掌控貨況

(三) 技術參訪 5：無線通訊服務展示計畫

韓國從 2007 年起開始推動「智慧公路 (SMART Highway Project) 計畫」，為期 7 年 (2007-2014)，希望透過先進的資通訊 (IT) 技術，打造一條車、路智慧化之道路系統，提供用路人無縫的「車對設施 (vehicle to infrastructure, V2I)」及「車對車 (vehicle to vehicle, V2V)」之無線通訊服務(如圖 25)。此次技術參訪主要參觀此計畫在釜山至蔚山間高速公路所佈設的一條示範性路段，示範項目包括 2 項「車對交通管理中心」無線通訊服務 (包括透過車上螢幕，顯示網路瀏覽功能及收視行駛路段之 CCTV 影像)，以及 3 項「車對車」無線通訊服務 (包括車對多車傳送緊急事故訊息、兩車間對談 (如利用 MSN) 及傳送車輛狀況之訊息)。這些展示已證明智慧公路技術是可行的，韓國將繼續擴大示範地區至全國，以提供用路人「無所不在」的道路資訊。

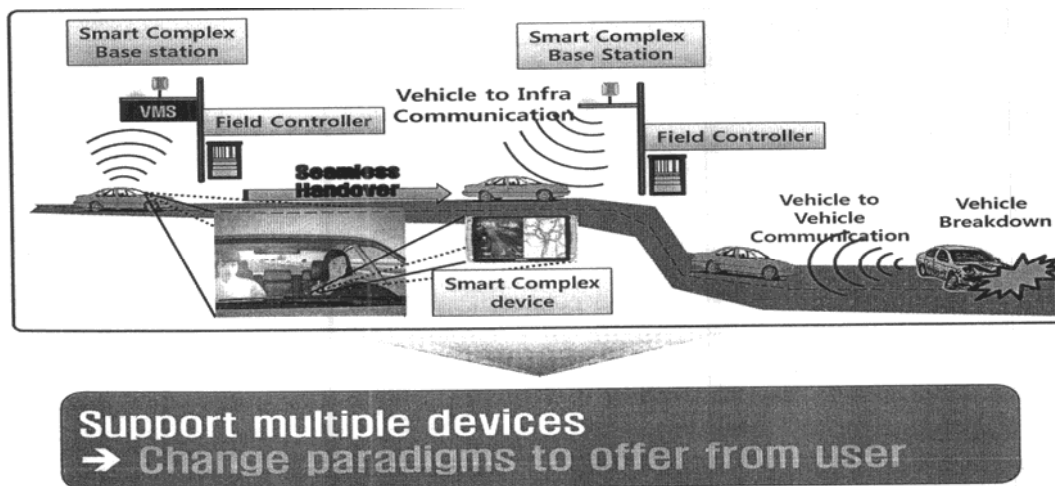
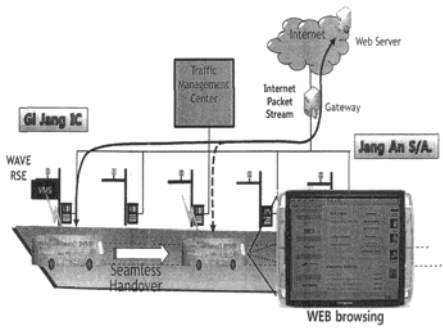


圖 25、智慧公路示意圖



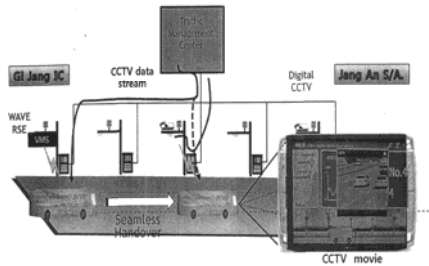
Service case 1. Web Browsing Service

- Web browsing service demonstration
- IP-based WAVE communication (using WAVE service channel)



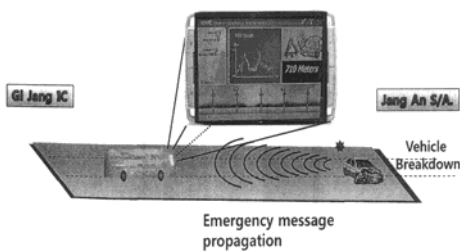
Service case 2. Seamless Digital CCTV Video Transmission

- Providing CCTV images to vehicle
- IP-based Seamless CCTV traffic transmission



Service case 3. V2V Emergency Message Propagation

- WAVE Short Message (WSM) transmission
- Transmitting emergency warning on the road (vehicle breakdown)



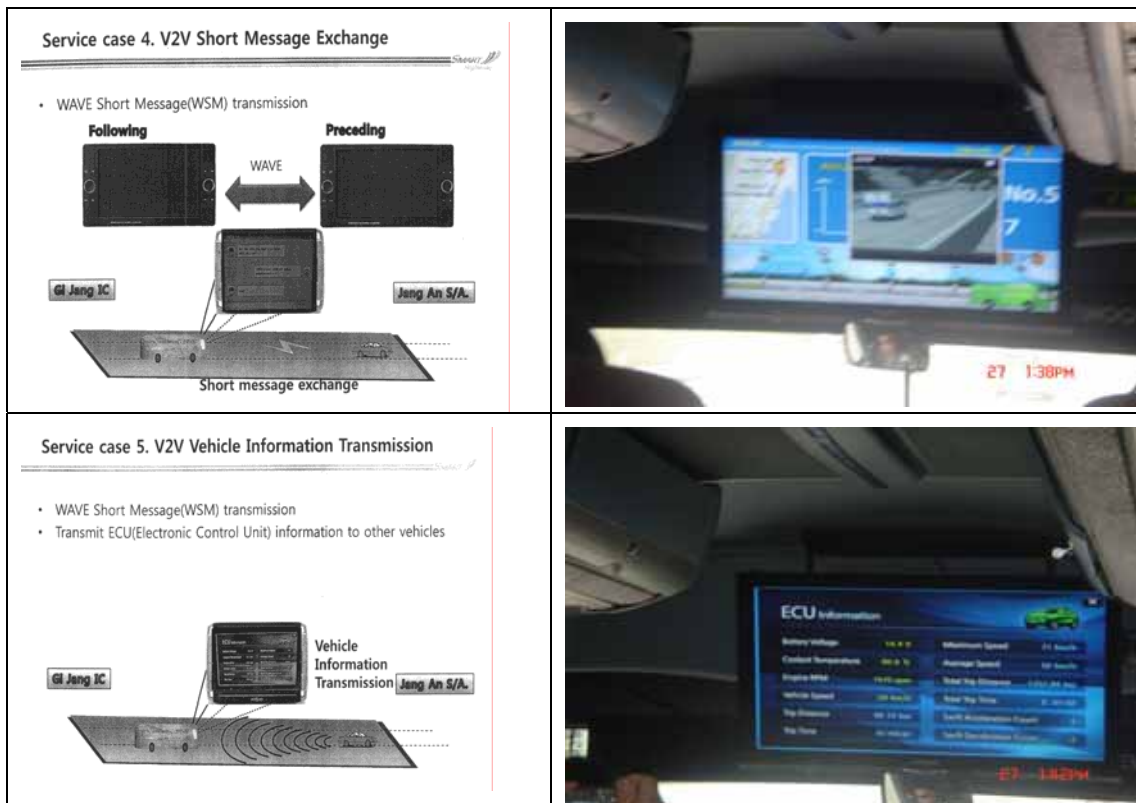


圖 26、智慧公路示範項目

三、各國 ITS 技術展覽 (Exhibition)

本次年會亦開闢 I T S 技術展覽會場(如圖 27 所示)，供世界各國廠商展示與 I T S 相關之技術產品，展示內容包括以下主要項目：

1. 交通資訊之蒐集及處理(Information Collection and Processing)；
2. 旅行者資訊系統(Traveller Information)；
3. 物流、緊急事故及意外事故之管理(Logistics, Emergency and Incident Management)；
4. 交通安全及管理(Traffic Safety and Management)；
5. 自動執法系統(Automatic Enforcement)；
6. 電子付費系統(Electronic Payment)；
7. V2I & V2V 通訊技術(V2I & V2V Communications)；
8. 公共運輸(Public Transportation)；
9. 漫遊設施(Nomadic Device)；
10. 複合智慧型運輸系統(Multimodal ITS)；
11. 車上智慧型運輸系統及生態駕駛(In-vehicle ITS & Eco-driving)。

此次參展廠商不僅有各國公部門或協會組織參展，也不乏國際知名大廠，如：Alcatel-Lucent、DENSO、TOMTOM、TOYOTA、PANASONIC、SCANIA、SAAB、ERICSSON、IBM 等產業龍頭皆於展會中發表最新產品(如圖 27 所示)，其中韓國廠商展示各種形式之多功能站牌(內容包括交通、公車、觀光、文化、休閒等多元資訊)，更是讓人印象深刻(如圖 28 所示)! 而各國代表以及展覽館參觀人潮超過兩萬人次。我國係由台灣智慧型運輸系統(ITS)協會與經濟部車載資通訊產業推動辦公室(TPO)共同設置「臺灣館」，參加人數近 100 名，人數之多歷年之最，而參加國內廠商數超過 40 家，包括華夏科技、即時運輸科技、中華電信、網通科技、圓桌公司、台灣世曦工程顧問公司以及由台灣大學、逢甲大學、成功大學組成之國科會雲端計程車產學研究團隊等，展出最新技術研發應用與產品，成功吸引全球目光。



(1) 展覽館入口



(2) 台灣館



(3) 中國館



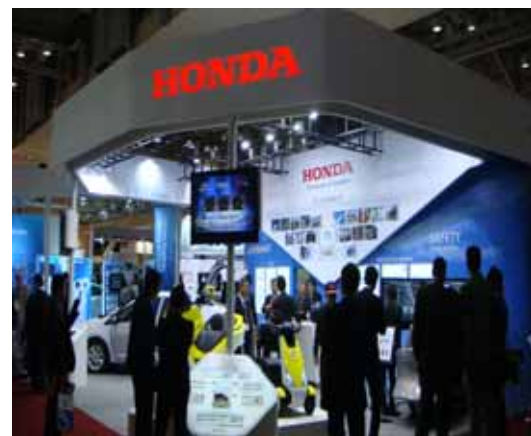
(4) 俄羅斯館



(5) 加拿大館



(6) 日本館



(7) 各國大廠展示館

圖 27、各國 ITS 展示館



圖 28、韓國「無所不在」的多功能展示站牌

肆、韓國 I T S 發展現況及未來展望

以往相關 ITS 文獻或報告在探討世界各國 ITS 發展時，多偏重在美國、歐盟、日本及中國大陸等國，惟近幾年來韓國挾其厚實的車輛與資通訊產業實力，全力推展 ITS 相關技術，成效顯著，並藉由此次世界年會向全世界各國展示其發展成果(由韓國在技術展覽館攤位占 1/2 可知)。而韓國在過去幾年 ITS 之發展歷程，亦值得我國在此時檢討及規畫未來 ITS 發展時作為借鏡。

一、發展現況

1. 沿革

韓國(指南韓)現有人口 4,800 萬人，領土面積 99,678 平方公里，全國登記的車輛數為 1,700 萬輛，公用道路(public roads)總長 100,600 公里，高速公路(Freeway or Expressway)總長 3,775 公里，一般道路(national highway)總長 13,550 公里，其他一般道路。1990 年代開始，由於經濟快速成長，國民所得提昇，造成小汽車使用大幅增加，各大都市同樣面臨交通擁塞、空氣污染及交通事故等嚴重惡化問題。為解決此一問題，韓國開始引進 ITS 相關技術及系統，希望在道路、車輛及貨物運送中，引進先進電子及資通訊技術，蒐集、處理及發佈即時之交通資訊，並使其使用效率最大化，以提供民眾便利、安全及節能之運輸。有關韓國對 ITS 所作的定義如圖 29 所示。

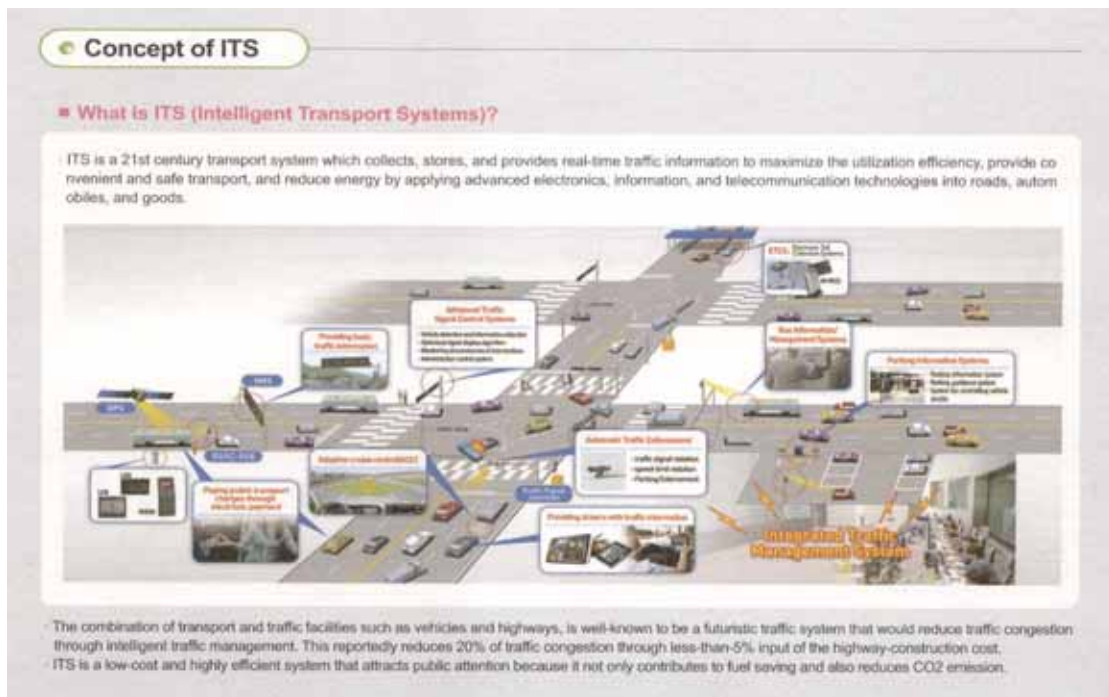


圖 29、韓國對 ITS 的定義

韓國 ITS 發展過程中幾個重要的里程碑(如圖 30 所示)：

- (1) 1991-1995-開始進行 ITS 先導計畫 (Pilot Project)，包括發展先進交通號誌系統及京仁高速公路(GyeongBu Expressway)交通管理系統 (Freeway Traffic Management System , FTMS) 先導計畫。
- (2) 1996-1998-推動國家級促進 ITS 建設計畫 (National Promotion Establishment Plan)，包括完成 ITS 先導計畫、訂定果川市(Gwaechon)第 1 版 ITS 綱要計畫 (Master Plan) 及在首爾舉辦第 5 屆 ITS 世界年會。
- (3) 1999-2000-制訂 ITS 相關法案，包括：運輸系統效率制度化法案 (Formulation of Transportation System Efficiency Act)、訂定第 2 版國家 ITS 綱要計畫。
- (4) 2001-2003-建置 ITS 現代化都市，包括：推動區域性及地方性 ITS 建置計畫及首爾都會區高速公路 ETC 先導計畫。
- (5) 2004-2010-ITS 計畫持續推展及成長，包括：ITS 在所有快速公路及國道上之應用、公車資訊系統 (Bus Information System,BIS) 在全國大小都市之建置及營運,以及電子收費系統之建置及推動。

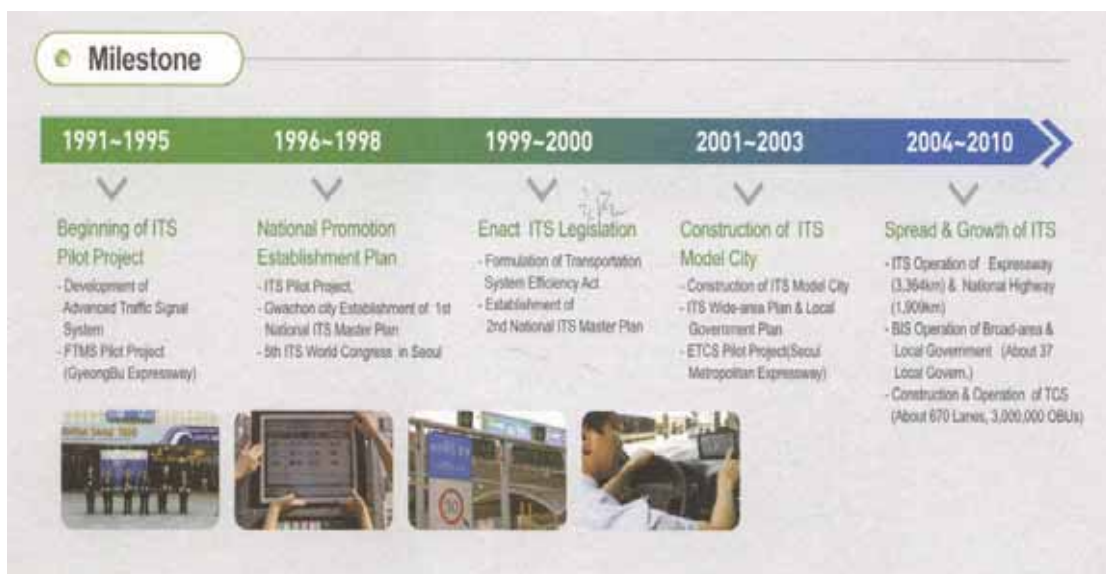


圖 30、韓國推動 ITS 的重要里程碑

2. 推動組織、重要法案及經費

韓國政府主要是由國土、交通及海運部 (Ministry of Land, Transportation and Maritime Affairs, MLTM) 結合公、私部門共同負責推動 ITS 相關計畫，公部門包括：韓國高速公路管理公司、建設及運輸技術評估與規劃所、國

家研究與發展所及各地方政府，私部門主要為韓國 ITS 協會結合交通運輸、車輛及資通訊等產業，如圖 31 所示。

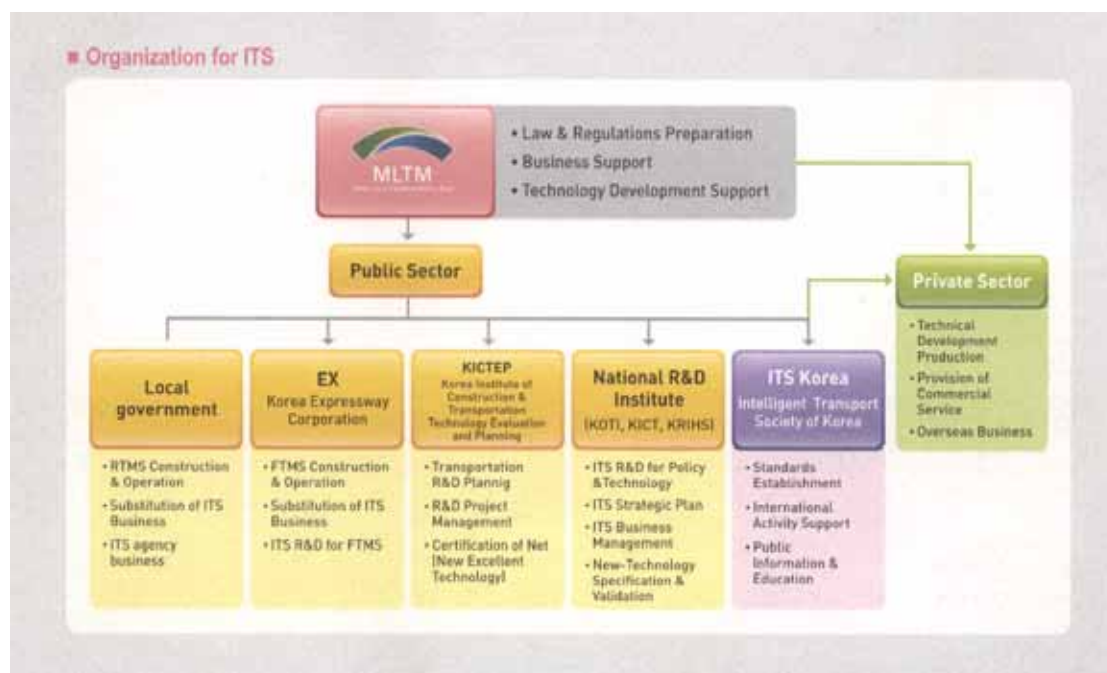


圖 31、韓國推動 ITS 公私部門組織圖

韓國自 1990 年代引進 ITS 後，為促進 ITS 有效率及組織化推動，政府於 1997 年 9 月訂頒第 1 版國家 ITS 綱要計畫（National Master Plan），明訂 ITS 國家發展架構（National ITS Architecture），其使用者服務包括 7 個服務領域、23 項服務單元及 46 項服務次單元(如圖 32 所示)。其次，政府於 1999 年 8 月訂定「國家運輸系統效率法案(national Transportation Efficient Act)」，做為推動 ITS 之依據。此外，政府於 2000 年 12 月訂頒第 2 版國家 ITS 綱要計畫，並於 2009 年 12 月重新修訂此一綱要計畫。

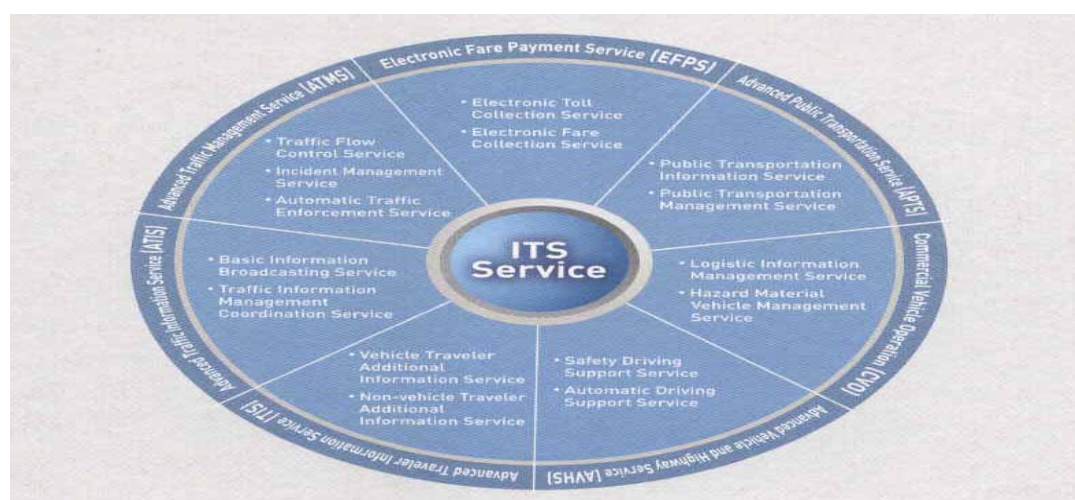


圖 32、韓國 ITS 國家發展架構

韓國為有效率推動 ITS 建置計畫，除訂定相關法案做為推動 ITS 之依據外，預計從 2001 年至 2020 年共 20 年間，分短、中及長期投入 34.48 億美元之龐大經費，投入 ITS 相關計畫(如圖 33 所示)：

- 第 1 階段 2001-2007 年 (短期-基礎建設)：7 年投入總經費 11.58 億美元，平均每年 1.65 億美元；其中，中央政府占 48%，地方政府占 37%，民間產業占 15%；
- 第 2 階段 2008-2012 年 (中期-穩定發展)：預計 5 年投入總經費為 11.39 億美元，平均每年 2.3 億美元；
- 第 3 階段 2013-2020 年 (長期-躍升、領航)：預計 8 年投入總經費為 11.52 億美元，平均每年 1.44 億美元；

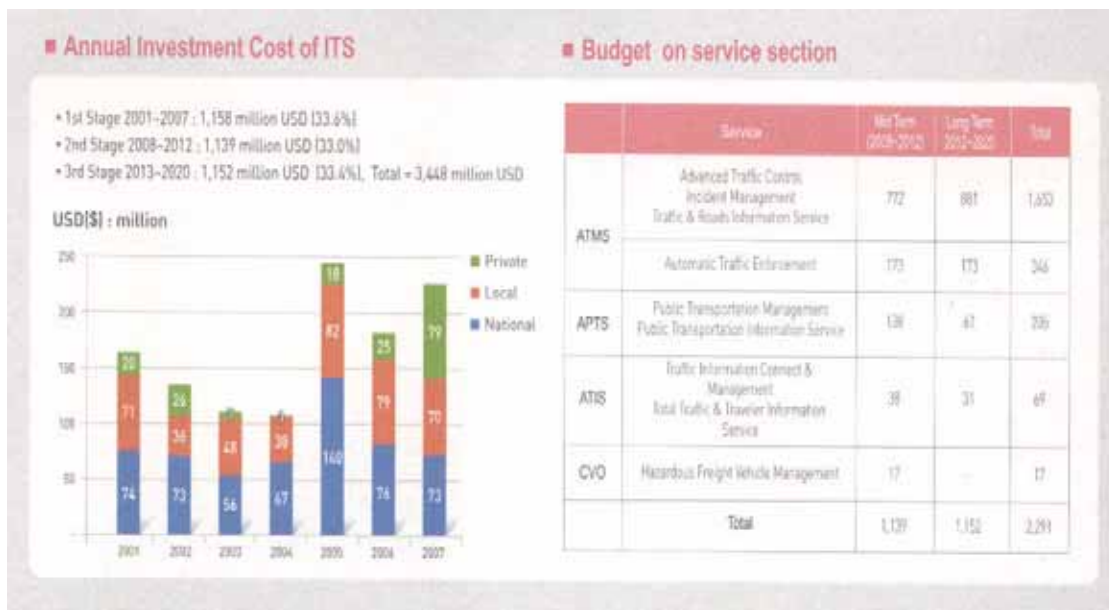


圖 33、韓國在 ITS 公私部門的投資經費

3. 推動成果

近 10 年來，韓國在 ITS 推動成果包括：

- (1)在高速公路交通管理系統 (Freeway Traffic Management System, FTMS) 方面-完成所有高速公路 (共 3,775 公里) 建置 ITS，包括：交通資訊蒐集及發佈、交通車流管理及緊急事故處理等系統。
- (2)在一般道路交通管理系統 (Rural Traffic Management System, RTMS) 方面-完成 18.3% 一般道路建置 ITS 及建置 5 個交通管理中心。
- (3)在公車資訊及管理系統 (Bus Information/ Management Systems, BIS/BMS) 方面-各級政府均已分別建置及營運公車資訊系統，其中 60 個地方政府可提供民眾即時之公車資訊。
- (4)在電子收費系統及卡系統 (Electronic Fare Collect & Card, EFC) 方面-全國共發行 4,466 萬張交通電子卡，每月平均服務 4,781 萬個持用交通

電子卡乘客。

二、未來展望

韓國認為具有未來性之交通系統(Futuristic Traffic System)，將是結合車與路智慧化之運輸系統，不僅可以有效舒緩交通擁擠問題，同時可以達到環保之目標-節能與降低CO₂之排放量。近年來韓國致力於推動u-KOREA，期望將已具數位化服務普及應用的e化社會(e-Society)透過e化城市(u-City)發展成為u化社會(u-Society)，進一步提供韓國民眾無所不在(ubiquitous)的行動數位化服務，因此，韓國未來ITS發展目標亦是此次年會之主題：建設一個「Ubiquitous Society with ITS」，韓國未來各年ITS策略性計畫如圖 34 所示。

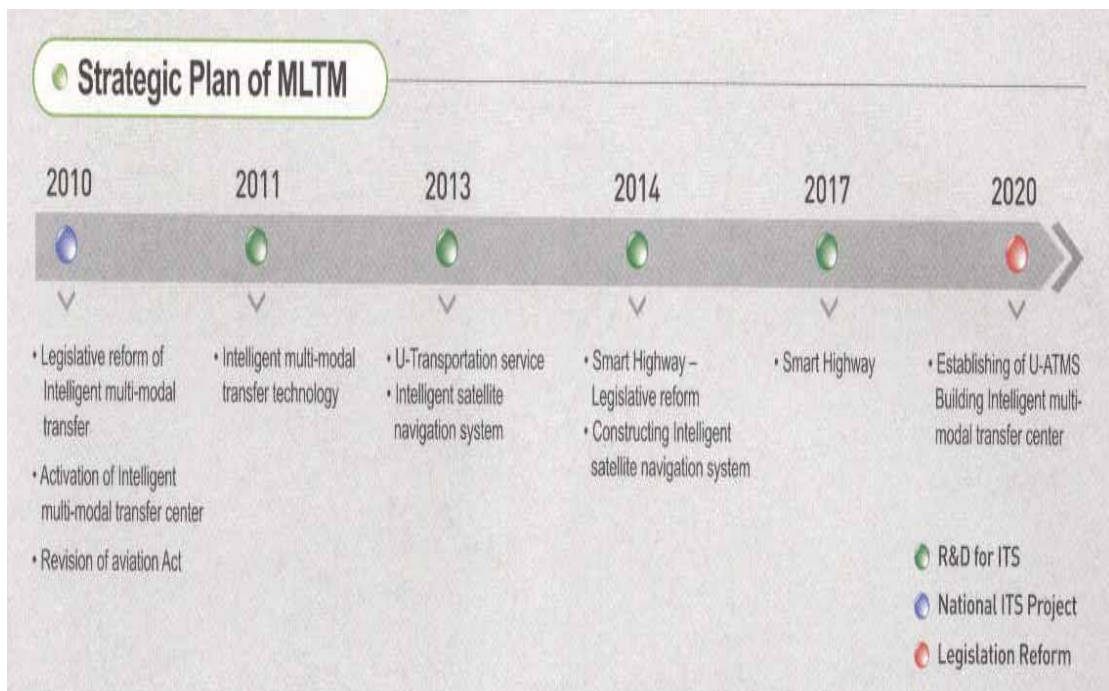


圖 34、韓國未來發展 ITS 之策略規劃

伍、心得與建議

一、心得

本次出國行程主要參加第 17 屆 ITS 世界年會，藉以瞭解世界各國產、官、學、研各界在 ITS 技術領域的最新發展狀況與未來趨勢，俾作為我國規劃未來 ITS 發展之參據。以下幾點為個人此次參訪之心得：

1. 本次年會主題為「Ubiquitous Society with ITS」，即透過 ITS 技術，創造一個能夠提供民眾無所不在行動數位化服務的社會，亦凸顯主辦國韓國在過去幾年及未來發展 ITS 之重點，其定位與目標非常明確，值得目前陷入 ITS 發展困境的我國作為參考。
2. 相較世界各國推動 ITS 之歷史與成果，我國 ITS 發展時程與技術成果並不遜於其他國家，但相對在整合應用與生活行銷方面則明顯不足歐美各國，其原因可能在於政府部門缺乏統合 ITS 相關技術之單位及穩定的計畫經費，因此如何整合國內有限資源，在公部門中確定 ITS 發展政策及主政單位，應是國內後續推動 ITS 計畫的首要作為。
3. 韓國釜山交通資訊中心的功能及資訊蒐集、處理、分析及發布之機制上，與本所「全國路況資訊中心」並無太大差異。惟其中心為實體組織，且透過各種先進偵測及發布技術，可掌握第一手之交通資訊，再融合其他單位提供之資訊，以提供民眾「無所不在」之交通資訊服務。但反觀「全國路況資訊中心」僅為一虛擬資訊平台，資料來源需仰賴各交通道路主管機關或用路人提供，很難掌握其正確性與即時性，以致遭到上級長官及民眾質疑，在道路主管機關及各縣市政府陸續成立交通管理中心或交通資訊網站的同時，「全國路況資訊中心」可能將面對存續或轉型之難題。
4. 世界先進國家擁有厚實的資通訊及車輛產業基礎，因此發展 ITS 多以提升私人運具之效率、便利、安全及環保為主要考量，較少著墨於如何提升大眾(或公共)運輸系統之效率及使用率，而我國資通訊技術雖然不輸先進國家，但缺乏車輛產業，因此，在 ITS 技術研發上很難趕上歐美日等先進國家(如智慧化車、路)，而且「發展大眾運輸，管制私人運具使用」是我國目前主要運輸政策，因此，未來我國 ITS 之發展，似應著重在 ITS 之運用，尤其是在大眾運輸之應用上，此亦符合部長「不為 ITS 而 ITS」之宣示。

二、建議

綜合本次出國考察心得，建議國內後續 ITS 發展可朝向下列幾項目標發展：

1. 為宣示政府積極推動 ITS 之政策與決心，建議交通部應鼓勵相關業單

位每年組團參加 ITS 世界年會

ITS 世界年會是 ITS 領域中規模最大，各國與會人數最多的科技盛會，集合全世界產、官、學、研各界研討過去一年各國在 ITS 的研究成果及未來挑戰與展望。為增進我國 ITS 發展與世界各國相互交流觀摩之機會，本所歷年均會派員參與 ITS 世界年會進行經驗交流與學習(今年即有 3 名之多)。惟因今年年會期間適逢立法院開議審查政府各部門 99 年度預算，以致不僅部長不克出席此次年會特別安排之「部長級圓桌論壇」，交通部亦僅能派科技顧問室一名新進科員與會，殊為可惜!也引起與會之我國學者及業者有政府不重視 ITS 發展之疑義。故建議交通部能多鼓勵相關業務單位(如路政司、航政司、道安會等)每年均能派員參加，甚至由次長組團參與此盛會，以增廣見聞，俾有利於相關業務之推動，亦顯示政府重視及推動 ITS 發展之決心。

2. 資通訊為推動「Ubiquitous Society with ITS」重要之一環，建議交通部審慎評估「全國路況資訊中心」永續維運之必要性

由世界各國 ATIS(先進旅行者資訊系統)之發展，以及韓國釜山「交通資訊中心」及日本「VICS」之設立可知，建立一個交通資訊單一窗口或平臺是有其必要性，而且在推動 ITS 發展過程中，亦扮演非常重要之角色。因此，本所「全國路況資訊中心」確有存在之必要，故建議目前交通部正在規劃之「交通資訊服務雲基礎建設與服務計畫」將此一資訊中心之存續、轉型及資料正確性等議題納入，使此一中心能夠永續維運。

3. 「組織與預算」為政府推動 ITS 最基本條件，建議交通部審慎評估 ITS 未來主政單位

檢視韓國 ITS 發展歷程及成功經驗可知，除了車輛及資通訊產業等私部門全力投入外，政府在組織、預算、法案及人力等方面之支援與協助，亦是不可或缺之重要因素。我國雖早已頒布 ITS 綱要計畫、發展架構等，作為我國推動 ITS 之依據，但國內過去各項 ITS 計畫大多是以各單位之需求為考量，各自發展，較少以「區域或整體最佳化」考量之建置計畫，以致無法凸顯 ITS 推動之成效。其主要原因在於交通部尚無推動 ITS 之專責單位，而目前督導 ITS 相關計畫推動之科技顧問室，在政府「組織改造」計畫中又將縮編，對於未來 ITS 之推動影響甚大，建議交通部應正視此一問題，及早因應。

附錄 1、第 17 屆 ITS 世界年會大會議程

Time	Oct. 25 (Mon)	Oct. 26 (Tue)	Oct. 27 (Wed)	Oct. 28 (Thu)	Oct. 29 (Fri)
08:00					
08:30					
09:00					
09:30		Plenary Session I	SS SP TP	SS SP TP	SS SP TP
10:00					
10:30		Break	Break	Break	Break
11:00					
11:30		Plenary Session II	IS ES SP TP	IS ES SP TP	IS ES SP TP
12:00					
12:30					
13:00		Lunch	Lunch	Lunch	Lunch
13:30					
14:00	Registration	IS ES SP TP	IS ES SP TP	IS ES SP TP	
14:30	Ministerial Round Table	Break	Break	Break	
15:00		SS SP TP	SS SP TP	SS SP TP	Closing Ceremony
15:30					
16:00					
16:30	Opening Ceremony				
17:00					
17:30	Welcome Reception				
18:00					
18:30					
19:00					
19:30					
20:00			Gala Dinner		
20:30					

- ES : Executive Session
- SS : Special Session
- SP : Scientific Paper Session
- TP : Technical Paper Session
- IS : Media Interactive Session

附錄 2、第 17 屆 ITS 世界年會大會議程 - 專題研討會議 (Special Sessions)

- SS 01 A Pan European Architecture for Cooperative Mobility: Enabling the Future Deployment
- SS 02 Imminent Traffic Challenges in Asia Pacific Megacities vol. 1
- SS 03 Achieving Best Practice in Demand Management
- SS 04 Representative ITS-focused Technical Activities of the TRB Vehicle Highway Automation Committee
- SS 05 IntelliDrive, Connectivity and the Future of Surface Transportation
- SS 06 Highly Automated Vehicles and Applications for Intelligent Transport: Tools, Systems and Applications
- SS 07 Technical Trend of New ITS Wireless System
- SS 08 Smart Card Applications
- SS 09 Deployment of Green Transport Operations in New Transportation Systems
- SS 10 Inter-jurisdictional Traffic Data Requirements for ATM and ICM
- SS 11 An International Perspective on FOTs for Nomadic Devices in Vehicles
- SS 12 Energy ITS
- SS 13 Imminent Traffic Challenges in Asia Pacific Megacities vol.2
- SS 14 Global environmental challenges by utilizing Cooperative Systems - The First Deployment of Vehicle-Highway Cooperative System in the World: "Smartway"
- SS 15 GNSS-enabled Applications
- SS 16 From Crash Statistics to Active Safety Systems and Impact on Future Cash Data
- SS 17 Cellular Communication for Vehicle Safety - from eCall to Wireless Hazard Warnings
- SS 18 "GOTO EV & ITS Island" Driving Tours of the Future
- SS 19 Connected Vehicle through the Total Integration of In-vehicle System
- SS 20 Standardised and Paperless Solutions for the Exchanges between the Supply Chain Operators
- SS 21 Automakers and the State of the Connected Vehicle
- SS 22 Nomadic & Smart Mobile Devices for Ubiquitous Society with ITS
- SS 23 National ITS Associations Providing an Essential Service to Policy

Makers

- SS 24 Energy and CO2 Flow with ITS Development and Deployment
- SS 25 Application of an Image Recording Type Drive Recorder for Preventive Safety in Road Traffic
- SS 26 City Mobility Project
- SS 28 V2X Cooperative System
- SS 29 Stakeholder Views and Examples on Co-operative Systems in Rural Environment
- SS 30 Intelligent Bus Computing System
- SS 31 International Challenges of Transport Planning and Traveller Information Services in Fast Developing Megacities
- SS 32 A New Generation of Demand-Response Transport Technology: Making Services More Efficient and Accessible
- SS 33 Cooperative Safety & Mobility Developments in Europe
- SS 34 Making the Best Use of Emerging Information Technologies by ITS Managers
- SS 35 Cooperative Systems for Energy Efficient Mobility
- SS36 Realtime C&R Service Based on Seamless Two-way Communication
- SS 37 The Benefits of ADAS Connected to Navigation - How Digital Maps Bring Value for Safe, Clean and Smart Vehicles
- SS 38 Verification to Practical Use of Vehicle-Infrastructure Cooperation Systems
- SS 39 Methodology for Vehicular Control Network Optimization
- SS 40 Intelligent Vehicle for Driver Assistance and Vehicle Safety
- SS 42 Secure and Efficient Goods Movement In and Out of Ports
- SS 43 Operation and Maintenance of TMC
- SS 44 TISA Looks after all Issues in TMC and TPEG Domains - On a Worldwide Basis: Is that Really Possible from a European Base?
- SS 45 Evaluating Policy that Affects Automated Traffic Control Using Simulation
- SS 46 Automotive Platform
- SS 47 New Market Generation through Utilization of "Internet ITS"
- SS 48 Roles of ITS in Forming Integrated Transport System
- SS 49 Cooperative Systems: Will Field Operational Tests Show Us the Deployment Path?
- SS 50 Safety Maps: A Public-private Data Exchange Challenge

- SS 51 Vehicle Safety through Ubiquitous Traffic Information
- SS 52 Green Ubiquitous City, a New Core of Urban Innovation
- SS 53 Port and Logistics
- SS 54 Grass-roots ITS - Regional ITS through Grass-root Movement
- SS 55 Social Networking and Google: An Update on Their Use in Public Transport
- SS 56 18th ITS World Congress in Orlando
- SS 57 Updates of ITS in China
- SS 58 Applications will Open the Door to a New World of Connected Cars
- SS 59 Quality Improvement for Next-Generation Car Telematics
- SS 61 Intelligent Vehicle Field Operational Tests around the World
- SS 62 Use of Mobile Devices to Provide Public Transport Information
- SS 63 Intelligent Management of Transport Systems for Large Events
- SS 64 Telematics - An Enabler for Fleet-based Data Driven Methods for Improved Uptime
- SS 65 Development of Simulation Systems for Port and Logistics
- SS 67 Increasing the Number of Women in the Profession of ITS - How and Why?
- SS 68 IBEC 1. Corridor Performance Measures for ITS, Operations and Demand Management
- SS 69 IBEC 2. Amy Polk Session on International Cooperation to Promote ITS Understanding and Deployment
- SS 70 IBEC 3. Benefits of Co-operative Systems
- SS 71 IBEC 4. ITS Contributing to Network Optimization: A New Look at Asset Management
- SS 72 Cooperative Vehicle-highway Systems: Collaboration between the Automotive Industry and Road Operators

附錄 3、第 17 屆 ITS 世界年會大會議程

- 科學性論文發表會 (Scientific Paper Sessions)

SP01-Intelligent Vehicle Safety: Advanced Driver Assistance Systems (I)

1. Panoramic Vision System for an Intelligent Vehicle Using a Laser Sensor and Cameras
2. Pedestrian Detection Using Local Pedestrian Classifiers
3. Real-time Recognition of Blue Traffic Signs from Blue Sky Background
4. Towards 3D Automotive LIDAR Processing - How to Deal with Vehicle Dynamics
5. The Analysis of Potential Cost Saving for Large Trucks with Rearview Video System (RVS)

SP02-Traveller Information Services

1. Connected Traveler - Toward the Field Testing of a Mobile Multi-modal Traveler Information System
2. Freeway Dynamic Message Sign Evaluation Using Bluetooth Sensors: A Case Study
3. Development of a Hybrid Model for Freeway Incident Duration: A Case Study in Maryland
4. Empirical Analysis and Modeling of Drivers' Response to Variable Message Signs in Shanghai
5. Development of User Satisfaction Models for Traffic Information Devices

SP03-Simulation & Planning

1. Traffic Modeling within the Interactive Spatial Planning Tool Urban Strategy
2. Smart Transportation System to Support the Freight Transportation Related Information
3. Simulation of Mixed Traffic Using Embedded Neural Network Based Vehicle Following Models
4. Railway Safety Development in Thailand : An Initiative Concept

SP04-Traffic Control & Congestion Management (I)

1. Estimation of Non-recurrent Traffic Congestion Caused by Precipitation Using Archived Weather and ITS Traffic Data
2. A Novel Approach of Dynamic Time Warping for Traffic Congestion Detection and Short term Prediction
3. Examining the Effect of Connecting Auxiliary Lanes on Mitigation of Expressway Traffic Congestion
4. Travel Times, Congestion Levels, and Delays at Intersections Calculated on the Basis of Floating Car Data

SP05-Intelligent Vehicle Safety and Electronics

1. Multiple Representation Database Model for Real-time Synchronization of Road Networks
2. Evaluation of the Applicability of High-speed Camera Data to Full-scale Vehicle Crash Tests
3. Wireless Black Box for Real Time Accidental Monitoring of Vehicle
4. SAFERIDER HMI Strategies for Motorcycles' ARAS and OBIS

SP06-Green Mobility

1. Sustainability Verification of Eco-driving Behavior Based on Driving Simulator Experiments
2. A Methodology for Quantification of Fuel Reduction Potential for Different Driving Strategies
3. User Needs in Green ITS: The Results of a Questionnaire Survey on Dutch and Japanese Drivers

SP07-Vehicle-infrastructure Cooperation (I)

1. Accuracy Assessment for Traffic Information Derived from Floating Phone Data
2. An Empirical Study of Inter-vehicle Communication Performance Using NS-2
3. How to Study the Variability of the Impact of Intelligent Speed Adaptation (The French LAVIA Project) among Drivers: A Data Mining Approach
4. Directions for Next Generation Microscopic Traffic Simulation Modeling Tool under the IntelliDrive Environment

SP08-Intelligent Demand Management

1. Utilizing Taxi Empty Cruise Time to Solve the Short Distance Trip Problem
2. City Planning with Using the Adjusted On-demand Bus Log Data
3. Multi-tier Multi-hop Routing in Large-scale Wireless Sensor Networks for Freight-train Monitoring
4. An Efficient Implementation of Origin-Destination Demand Adjustment Problem Using Column Generation

SP09-Policy & Planning

1. A New Traffic Counting Program for Intercity Roads Based on Integer Linear Optimization
2. Impact of Green House Gas Tax on Reducing Green House Gas Emission: A Case Study in Metropolitan Area of Seoul, Korea
3. Access to Transportation's Data Cloud
4. Proposition of Solutions with Low-cost and Fast Profits to the Continental Gateway and Trade Corridor Quebec-Ontario (CGTCQO): a Benefit-Cost Analysis and a National Planning Methodology
5. Building Value in ITS Services

SP10-Traffic Control & Congestion Management (II)

1. Combination Method and Multiple Interval Freeway Volume Forecasting
2. An Optimal Control Model for Traffic Corridor Management

3. Data Fusion Concept to Estimate Vehicle Trajectories on Urban Arterials
4. Highway Network Analysis and Detection Assessment Framework
5. Identifying Promising Segments for Safety Improvement through Speed Management
6. Integrated Route Guidance and Ramp Metering System Consistent with Drivers' Dynamic Diversion Behavior

SP11-Traveler Information: Forecasting and Information Service

1. Data Fusion Algorithm for Travel Time Prediction Improvement
2. A Spatial Correlation Determining Method for Space-time Traffic Prediction
3. Utilisation of Really Simple Syndication for Real-time Traffic Information Distribution
4. The Effects of VMS on Driver Detours and Identification of Influencing Factors
5. The Impact of Information on Travel Mode Choice: Some Preliminary Results
6. The Modification of Logit Model for Traffic Mode Split under the Information Supplying Condition
7. Relationship of Vehicle Kilometers Traveled and Social Economic Status - Using Panel Data Analysis

SP12-Modeling and Simulation

1. Rule-based Information Extraction from Long Distance Travel Data
2. Improvement of Microscopic Traffic Simulation with Driver's Parameter Variation Using Travel Time Estimation
3. Microscopic Freeway Traffic Simulation Model Calibration Using Latin Hypercube Experimental Design Approach
4. Development of Dynamic Multi-Interval Traffic Volume Prediction Based on System Approach Using Historical and Real-time Data
5. Development of SIDRA-TRIP Integrated GPS Model to Evaluate Fuel Consumption/Emission on Expressway and Alternative Road
6. A Statistical Method for Assessing the Periodicity of Traffic Flow Time Series
7. Introduction to Modeling Experimental Design When Operating SCATS within Simulation

SP16-Intelligent Vehicle Safety: Advanced Driver Assistance Systems (II)

1. Development of a New Drowsy Driving Monitoring System
2. Research on Pre-Warning Experimental System of Driving Fatigue
3. Analysis of Fault Detection and Identification for Heading Control of a Four Wheel Vehicle
4. An Inter-Vehicle Geocasting Algorithm for Vehicular Cooperative Collision Warning System Using DSRC
5. Advantages of Friction Estimation in Collision Avoidance and Mitigation Calculations

SP17-Intelligent Vehicle Safety: Autonomous Driving & GIS

1. Lane Detection System for Vehicle Platooning
2. Autonomous Driving Based on LQ Path Following Control and Platooning with Front and Rear Information
3. Digital Lane Marking for Geo-Information Dissemination
4. A Real-time Robust Slam for Large-Scale Outdoor Environments
5. Enhanced Radar-based Target Identification and Tracking on Curved Road

SP18-Public Transport: Operations, Services and Scheduling

1. The Influences of Real Time Information Provided On-board Rail Services
2. Study on the Optimal Detector Location for the Active Bus Signal Priority of the Median Bus Lane
3. Monitoring Transit On-Time Performance Real Time Using a Web-Service Dataset
4. Analytical Evaluation of Innovative Taxi Operation and Service
5. Project Adapted Scheduling Algorithm for the On-demand Bus System

SP19-Vehicle-infrastructure Cooperation (II)

1. Performance of Cooperative Communication Scheme with Visible Streetlights for ITS Applications
2. Probe Vehicle Based Estimation of Parameters for Adapting Traffic Signal Control at Single Intersections
3. Field Tests for Cooperative Intersection Signal Violation Warning System (CISVWS)
4. Design and Evaluation of an I2V Based Algorithm for Intersection Traffic Light Assistance

SP20-Initiatives and Evaluation

1. Evaluation on Effectiveness of Intelligent Transport Systems in Suwon
2. Interface Protocol and Message Set Definition between Traffic Signal Controllers and Detectors
3. A Case Study of 'Continuous Risk Profile' Approach for Hotspots Identification on Korean Expressways

SP21-Vulnerable Users: Cyclists & Pedestrians

1. Advanced Traffic Devices for Bicycles and Pedestrians to Friendly Cross Interchanges
2. Identifying and Analyzing Reference Scenarios for the Development and Evaluation of Preventive Pedestrian Safety Systems
3. Predicting the Injury Severity of Pedestrians in Frontal Car Crashes Based on Empirical, Indepth Accident Data

SP22-Traffic Control & Congestion Management (III)

1. Development of Left-turn Actuated Traffic Control Strategy for T-intersections Using Image Detection Technology
2. Inconsistency of Optimal Signal Timing Plans at Design and Evaluation Stages in ITS Management
3. Intelligent Decision Support for Traffic Management

4. Adaptive Traffic Control System for Developing Countries

SP23-Traveller Information: Route Guidance and Navigation

1. GuideWeb: An Introductory Solution for v2v-communication
2. A Shortest Path Algorithm Considering Turn Penalty in Urban Road Networks
3. Dynamic Programming Approach for a Concierge Service Problem in Location-Based Services
4. New MPEG-2 Compression Method for the Streaming Video Service
5. The Analysis of Drivers' Route Changing Factors in Car Navigation System

SP24-Payment Systems

1. Vehicle License Plate Tilt Correction Based on the Straight Line Fitting Method
2. Development of a Standard Purchase SAM for Nationwide Interoperable Transportation Card System in Korea
3. Trust and Privacy in Interoperable Autonomous Tolling
4. Modeling the Reduction of Traffic and Air Pollution by Dynamic Tolling

SP25-Traffic Control & Congestion Management (IV)

1. Impact of One-way Divided Highway Scheme
2. Simulation-based Optimal Time-dependent Evacuation Planning Framework Using Genetic Algorithm
3. Intermodal Traffic Management Networks- Methods for Converting Bilateral Data Exchange to Service-oriented Architecture
4. Development of Vessel Traffic System for Small Ship

SP26-Traveller Information: Trip Planning

1. Travel Time Prediction for School Bus
2. A Multi-modal Trip Planning System with Real-time Traffic and Transit Information: Design, Implementation and Evaluation
3. High Performance Multiagent Interpolation System by Probe Car Data
4. Travel Time Prediction for Urban Networks: The Comparisons of Simulation-based and Time-series Models

SP27-Traffic Surveillance & Incident Management

1. Prediction Method for the Occurrence Probability of Freeway Traffic Collisions
2. Development of Integrated Data Collection and Enforcement System
3. Evaluation of Traffic Data Accuracy Using Korea Detector Testbed

SP28-Intelligent Vehicle Safety: Advanced Driver Assistance Systems (III)

1. Securing Vehicular Communication in Ubiquitous-transportation Sensor Network
2. Safety Message Transmission in Vehicular Communication Networks
3. Toward a Safer Ecological Driver Assistant System

SP29-Intelligent Vehicle Safety: Human Machine Interface

1. Specification and Development of a HMI for ADAS, Based in Usability and Accessibility Principles
2. Effects on Eye-fixation-related Potential of a Driver's Conversation and Visual Search
3. Comparison of Mental Workload Levels of Eleven Tasks to Reveal Driver Distraction

SP30-Privacy, Security & Positioning in Communication

1. Short-lived, Unlinked Certificates for Privacy-preserving Secure Vehicular Communications
2. Verifying Mobility Data under Privacy Considerations in Car-to-X Communication
3. The Potential of Cellular Phone Positioning Technology in Travel Behavior and Traffic Impact Study

SP31-Intelligent Road Infrastructure and Safety

1. Enhancing Safety through Advanced Proactive Traffic Management
2. Design of Filtering Process to Provide Real-time Instant Information for City Telematics Service
3. Design of GPS-based Floating Vehicle Data Using Data Fusion to Provide Instant Traffic Information for City Instant Traffic Service

附錄 4、第 17 屆 ITS 世界年會大會議程

-技術性論文發表會(Technical Paper Sessions)

TP001-Traffic Management

1. EGNOS-on-the-road: What Can Be Expected from EGNOS Compared to GPS for Road Traffic Management Services
2. Roadside Unit as a Service Based on a Model for the IT Integration into the ITS
3. Large Scale Urban Traffic Management Using a Wireless Network Lessons Learned during Implementation
4. Wireless Communication System for Public Transport Management as Part of Bucharest Traffic Management System

TP002-Traffic Control and Congestion Management

1. INTEL VIA- An Integral System for Safe and Intelligent Traffic Operational Management
2. The SafeTRIP Project: Improving Road Safety for Passenger Vehicles Using 2-way Satellite Communications
3. Advanced Testing Techniques in Speed Enforcement Technology

TP003-Traffic Management: Smoothing Use of Expressways

1. Introduction and Effect of Expressway Lane Control System in Gyeongnam Province
2. Design and Implement of a Variable Speed Limit System with Travel Time Display - A Case Study in MD, USA
3. The Use of VSL for Traffic Control
4. Proving Test to Develop a Practical Service to Optimize Lane Utilization Rates at Sag Sections of Expressways
5. The Methods to Solve the Congestion of Express way
6. Analysis and Control Strategy Development of the Lane Control System by divided Merging Area in Highway

TP004-Management

1. Compatibility of Network Management Systems for Road Traffic
2. Innovative Traffic Signal Solutions That Can Relief Emerging Urban Traffic Congestion
3. Benefits and Costs from the Caltrans IRIS Open Traffic Management System Demonstration Study for ITS World Congress BUSAN 2010
4. How ITS is Making Georgia DOT a Leaner, More Efficient Machine
5. ITS and Travel Time Reliability in the Second Strategic Highway Research Program

TP005-Modeling and Simulation (I)

1. The Need of Combining Different Traffic Modelling Levels for Effectively Assess ITS Applications
2. Re-estimating Free-flow Speeds on Rural Expressways using Archived ITS Data
3. Environmental Evaluation of Non-stop Driving Assistance Service by a High-spatiotemporal Resolution Traffic Simulator
4. A Novel Behavior Model Based Estimation Method for the Traffic Capacity of Signalized Intersections
5. Comparing Calibration Methods for Microscopic Traffic Simulation Models

TP006-Regional and National Initiatives

1. Updates on the Australian Intelligent Access Program
2. Future Transport - A Multimodal Challenge: ITS Supporting More Environmentally Friendly Transport
3. Implementation of the Fully Networked Car Based Transportation Connectivity Systems

TP007-Experiences

1. ITS FOT Plan in Kashiwa City, Japan
2. CityMobil, Advanced Road Transport for the Urban Environment First Results
3. Result of the Galileo Speed Warning Project: Incentivizing Drivers to Improve the Adoption Rates of Intelligent Speed Adaptation (ISA) Technology
4. Lessons Learnt from the Showcase in Amsterdam - A User Experience of Worldclass
5. Tampere Region ITS - Status and Results of the TRITS Network in Finland
6. Nomadic Devices in the Vehicle Environment: Planning of Field Operation Tests in Greece

TP008-Business Models and Cases - Part (I)

1. PASTORI Project Defines the Future ITS Services Portfolio
2. Innovation Trends in Vehicle Technologies Related to ITS, as Seen from the World of Patents
3. Methodology for the Implementation of the Safe Logistic Chain Process
4. Challenges and Opportunities of Brazil's Traffic Services

TP009-A Speedier Society with Travel Information

1. Modeling Optimal Parking Route Guidance System
2. The Research for USN Applications of Parking Guidance Information System
3. Analysis of Basic Characteristics for Providing Parking Information
4. E-Adept a Complete Support and Guidance System for Elderly and Disabled People

TP010-Vehicle to Infrastructure Communication (I)

1. Location Aware Fast Handover between WiMAX and WiFi Networks
2. Trajectory Information-based Routing Protocol for Wireless Mesh Networks with Mobile Mesh Router
3. A Study on Seamless Handover Algorithm in the U-TSN Environment
4. V2I Data Exchange Architecture for Enhanced Vehicle-road Cooperation
5. Design of Tapped-line Bandpass Filter for Harmonic Rejection with Meander Spurline
6. Propagation Characteristics for Vehicle-to-Infrastructure Communication System in UHF Band
7. A Wireless Mesh Network with TDMA Scheme for u-TSN System

TP011-Vehicle Systems

1. Comparison of Crossing Incidents Gathered from Drive Recorders in Three Regions
2. The Development of Parking Support System Considering Driving Characteristics
3. Studying the Effect of Using Vehicular Ad-hoc Networks on Vehicles' Average Speed

TP012-Upcoming Technologies in Sensors and Detectors

1. Vehicle Segmentation from Video Using Color and Edges
2. A Study on the Detecting Method of Intercept Violation Vehicles Using an Image Detector
3. Use of Video Analytics for Turning Movement Counts
4. Employing Intelligent Algorithms with New Generation Radars
5. Intelligent Pavement for Traffic Flow Detection
6. Fiber Optic Pavement Roughness Monitoring

TP013-E-Payment Systems: Evaluation and GNSS Evaluation

1. Development of Methodology to Estimate Reduced CO₂ Emissions Through ETC (Electronic Toll Collection) System
2. Electronic Toll Collection Systems to Improve Road Safety
3. The Applications by Electronic Toll System in Traffic Data Collection Support System
3. The Experimental Verification of Energy-saving Effect by ETC Technology
4. Merging GNSS Tolling from Truck to Passenger Cars- The OBU Model
5. GNSS/CN-Based Smart Client Applicable Both for Road Charging and Telematics Services
5. An Analysis of Navigation and Communication Aspects for GNSS-based Electronic Fee Collection

TP014-Safer Travel with Travel Information

1. SAFERIDER-Advanced Telematics for Enhancing the Safety and Comfort of Motorcycle Riders
2. A Study on the Implementation of Transfer Pedestrian Concierge Service Based on Context-Awareness

3. A Study on Analysis of Driver's Visual Behavior on the VMS Message Display Form
4. Validation of a Taxi-FCD System by GPS-Testdrives
5. Effect Analysis and Activation Plans of Telematics for Vehicles

TP015-Sustainability

1. A Snowplow Driver Assistance System Based on Magnetic, Radar and GPS
2. Reduced Emissions with Dynamic Speed Limits
3. Development of Clean Development Mechanism(CDM) Approach for Advanced Safety Vehicle
4. Fuel Consumption for Vehicle Speed, Engine Size and Road Surface Roughness
5. An Evaluation of Effectiveness of Ramp Metering by Focusing on CO2 Reduction

TP017-Advanced Driver Assistance Systems (I)

1. Vision-based Safe Maneuvers with Detection of 10cm Height Obstacles
2. Evaluation of Pedestrian/Child Recognition by Stereovision System
3. Traffic Signs Recognition for Detailed Digital Maps Development and Driver Assistance Systems
4. Large-scale FOT for Analyzing the Impacts of Advanced Driver Assistance Systems
5. Multi Angle Vision System to Supplement Driver's Visual Field
6. Data Transmission Performance of DSRC (5.8GHz) typed Pedestrian-Vehicle Communication to Avoid Conflict between Right-turn Vehicles and Pedestrians

TP018-On-board Sensors

1. Discrimination of Traffic Lane Departure Based on GIS Using DGPS
2. Improvement of Distant Approaching Vehicle Detection Based on Perspective Transformation Using On-board Rear View Camera
3. Pedestrian Tracking and Detection with On-board Multi View Angle Cameras
4. A Study on Combined GPS/GLONASS RTK Receiver using Embedded Platform and Field Test Results in Urban Area

TP020-Safer Travel with Vehicle Communication Systems

1. Fog Warning System in Venice Region
2. A Comparison between TETRA and DMR for New ITS Projects
3. Redefining the Paths to ITS Standards Training
4. Iterative Design and Assessment of an Audio Visual Warning Concept for Car2x Communication Systems
5. Developing Travel Time Estimation Algorithms in the Wireless Vehicle to Vehicle Communication Network

TP021-Vehicle to Infrastructure Communication (II)

1. Technological Model for Application of Optical Character Recognition

Technology to Monitor Vehicles

2. Network Coding Scheme for Enhanced Data Throughput in VANET
3. Toward the Realization of Smartway Service
4. Fuel Economy Benefit of Traffic Signal to Vehicle Communication System
5. Remote Freight Information

TP022-Advanced Driver Assistance Systems (II)

1. Effect of Combined Stimuli to Raise Driver Vigilance - Using Vibration and Auditory Stimulus
2. Human Physiological Signals Extraction and Estimation Using a Car Seat Built-in Piezo-film Sensors
3. Cooperative Adaptive Cruise Control: Driver Selection of Car-following Gaps
4. Joint Interpretation of On-board Vision and Static GPS Cartography for Determination of Correct Speed Limit
5. Bio-signal Indices to Evaluate Driver Stress of Automatic Platooning
6. Enhanced Perception Suitable for Active Intervention in Automotive Safety Applications- The InteractIVE Project

TP023-Road Hazard Detection, Reporting and Clearance

1. Measures to Raise the Sophistication of Expressway Snow and Ice Management
2. The Introduction of the Snow Vehicle Position Monitoring System and Its Effectiveness
3. A Discussion of Advancements in Data Collection and Provision Using Next-generation ITS

Technology in Regions of Cold and Heavy Snow

4. A Study on Provide Road Surface Information Through Road Surface Hazard Grade Assessment
5. Extensional Smartphone Probe for Road Bump Detection

TP024-E-Payment Systems: Principle and Strategies

1. Finding Fairness in Tolling Schemes
2. New Flexible Toll Measures and Handling of the System
3. Experimental Test of Mobile Enforcement of Oncoming Vehicles Using DSRC
4. GNSS Road Pricing: The Six Pillars of Acceptance
5. Ensuring Trust in Autonomous EFC Systems

TP025-Architectural Design for Various ITS Services

1. GNSS-enabled Services Convergence - The Role Model
2. Design of Large Volume Traffic Information Service Based on U-TIS
3. Freeway Intelligent Transportation System Architecture Planning of Beijing
4. The Development of an Indoor and Outdoor Navigation System

TP026-Traffic Management: Adaptive Traffic Signal Control (I)

1. A Review of the Adaption of Balance System in Korea

2. St. Louis Avoids “Apocalypse” Using Wireless Vehicle Detection
3. Neuro-fuzzy Traffic Signal Control for Queue Length Management
4. Priority of Commercial Trucks within Coordinated Signalling
5. Development of Traffic Signal Control System for Airside

TP027-Traffic Management: Traffic Incident Management (I)

1. Countermeasures against Traffic Accidents by Wrong Way Driving
2. The Conceptual Framework of Detection System for Emergency Situation Associated with SMART Highway
3. Portable Visibility Warning System for the Safety of Highways
4. Identification of Traffic Accident Propensity in Tunnel as a Strategy of Freeway Tunnel Incident Management
5. EGNOS Telematics Support Safety in HAZMAT

TP028-Traffic Management: Traffic Data Collection to Improve Traffic Flow

1. Study of CO2 Emission Estimation and Clarification of Congestion Length Using DSRC ProbeData
2. Application of Probe Data Collected via Infrared Beacons to Traffic Management
3. Crowd Sourcing as a Business Model for the Connected Vehicle

TP029-Test and Simulation (I)

1. eVALUE - A Test Program for Active Safety Systems
2. A Study on Correlation between Skid Distance and Pre-braking Speed
3. Simulating Cooperative Intelligent Driver Safety Systems with a Micro-simulation Model
4. Probabilistic Situation Assessment for Intelligent Transportation Systems

TP030-Modeling and Simulation (II)

1. Macro-Micro Integration in Traffic Simulation Models: An Oregon Highway Case Study
2. Heat Transfer Analysis on Road Surface Temperature Near a Traffic Light
3. On-line Freeway Corridor Analysis System for Advanced Traffic Control and Management
4. An Exploration of Capacity of Dual-right-turn Lanes at Signalized Intersections under Mixed Traffic Conditions
5. A Simulation Study for the Effect of Dynamic Route Guidance with Embedded Drivers' Behavior
6. Development of a Statistical Framework to Guide Traffic Simulation Studies
7. Study on Effect of DSRC Evaluation Utilizing Traffic Simulation(VISSIM)

TP031-Organizational Issues

1. Development Plan for Assessment Technology of Advanced Safety Vehicle
2. Traffic Management / Competition on Governmental Organisation
3. A Master Plan for Kimpo-City's Intelligent Transportation Systems(ITS) based on Ubiquitous Paradigm

4. AHP - Promethee Based Model for Decision Making in Road Construction Projects

TP032-Field Operations Test - Vehicle to Infrastructure (I)

1. Field Operational Tests in the New Tomei Expressway
2. Field Operational Test toward the Practical Use of Vehicle-infrastructure Cooperation Systems(DSSS)
3. Evaluation of Connectivity Quality for V2V Communication System
4. Application of V-I Cooperative Experiment for Safe Driving in Kanagawa
5. The Conformance Test of Communication for Seamless Services under High Speed Environment

TP033-Business Models and Cases - Part (II)

1. How ITS Can Assist to Bridge the Gap between Existing Road Networks and Expensive New Builds
2. Market Introduction of Cooperative Vehicle Safety Systems - Knowledge, Acceptance & Willingness-to-pay of Potential Customers
3. The Study on Improvement Measures with regard to Bidding System for Korea's Intelligent Transport System
4. Market Model for a GNSS-enabled Service Converged Platform
5. New Strategies to Design IT Resources under Future Traffic Environments

TP034-Public Transport: Information and Intermodalism

1. A Study on Ubiquitous Based Public Transportation Information Service
2. GPS-Based Estimated Time of Arrival (ETA) for Buses - Chennai's Investment into the Future
3. A Mobile Transit Information System Using Smart Phone
4. The Role of ITS for Implementing Intermodalism
5. Intelligent Green Travel Service (I-GTS) Based on Context Awareness Intermodal Connectivity
6. Characterizing the Type of Transfer Center Using Intermodal Time and Entropy
7. Development Passengers Transfer Procedure for City Transport in Riga
8. A Study on the Effect of Establishing BIS in the Integrated Conurbation (Focusing on Southwest Capital Area)

TP035-Vehicle to Vehicle Communication (I)

1. IPv6 GeoNetworking for ITS: Lessons of the GeoNet Project
2. Inter-vehicle Communication for Truck Platooning(2nd Report)
3. Methods to Improve DSRC NLOS Link Reliability Using Commercial
4. Comparison of CSMA/CA and CDMA Based Inter-vehicle Communication for Collision Warnings in Large Scale Road Systems
5. Challenges of Platooning on Public Motorways

TP036-Autonomous Vehicle (I)

1. Look-ahead-Distance for Lateral Control of Vision-based Vehicles
2. The Trajectory Generation Method for Autonomous Vehicle Driving System

3. Defining the Operating Performance Envelope of an Intelligent Vehicle
4. Automatic Guidance Control of an Articulated - All Wheel Steered Vehicle
5. Operational Concepts for Truck Automation Systems

TP037-Intelligent Road Infrastructure - Roadside Devices

1. Fibre Technology to the Roadside End Device Service Delivery Point in the England's 'All Purpose Trunk Roads'
2. Development of Breakaway Support for Small Signs in Korea
3. Improving Rural Work Zone Safety in California Using Augmented Speed Enforcement
4. Variable Message Signs: The State of Practice
5. Analysis of Accident Types for Intersection Install Red Light Cameras

TP038-E-Payment Systems: System Design

1. An Optimal Layout of Hi-Pass Lane in Expressway Toll Plaza Considering Traffic Flow
2. Practical Use of Active DSRC Battery Powered OBU
3. Attempts to Remote Operation of ETC Facility in Case of Unusual Incidents at ETC Lanes
4. Addressing Transport Policies through Application of Road User Charges

TP039-Integrated Highway Information Management

1. Study on the Missing Data Collected by Microwave Detectors of Beijing Urban Expressway
2. Video Based Highway Monitoring
3. Analysis and Measurement of Water Emissivity for the Monitoring of Road Surface State
4. Traffic Safety Augmented ITS for a Fog-prone Road

TP040-Fleets

1. Integrated Microsimulation to Evaluate Freight on Urban Network and Operation at Inner Port Area
2. Utilization of Tracking in Maintenance Resource Coordination
3. Innovative Use of Technology in Taxi Operation
4. The Application of Data Mining Technologies on Commercial Vehicle GPS Data - A Case Study on Formosa Plastics Transport Corp., Taiwan
5. Extending the Reach of Freight Transport Information with Google Android 2.0

TP041-Traffic Management: Adaptive Traffic Signal Control (II)

1. Evaluation of Phase Force-off Methods in Coordinated-actuated Arterial Operations
2. Evaluation of Adaptive Traffic Signal Control: Case Study of Cobb County SCATS
3. An Improved Method for Subsequent Offset Optimization of Traffic Lights
4. RTA and NICTA: Innovating on Successful Traffic Management
5. A Study on Operation Analysis of Permissive Left-Turn Signals in Korea

TP042-Traffic Management: Traffic Incident Management (II)

1. Incident Detection and Response Utilizing Traffic Responsive across Agency-jurisdictional Boundaries
2. Incident Management System Development for Croatian Tunnels
3. Maintaining 'Control Consoles' Responsible for Controlling Traffic across Metropolitan Tokyo
4. A Practical Perspective on the System Level Benefits of Combined Traffic Assignment and Control Method

TP043-Traffic Management: Vulnerable Road Users

1. The Research of Bi-directional Pedestrian Platoon Crossing Mechanism at Signalized Intersection
2. Effects of Indication of Pedestrian Traffic Lights on Drivers' Behavior in Dilemma Zone: Analysis via Driving Simulator
3. Measures to Improve the Traffic Environment of Pedestrians by Traffic Lights
4. Safety and Smooth Measures on the Traffic Flow with the Movement Control in Susono-city

TP044-Test and Simulation (II)

1. Analysis of Vehicle's Behavior in Intersections Reproduced Using a Survey Simulator to Evaluate Safety Systems (ASSESS)
2. Core European ITS Services from a National Perspective
3. The VisLab Intercontinental Autonomous Challenge: 13,000km, 3 months, ...No Driver
4. An Operational Perspective on the Organisation of Large Scale Field Operational Tests of Intelligent Vehicles
5. Development of VR and T-car Based Testbeds in KATECH for ASV and Telematics

TP046-Role of Government in Implementation and Training

1. The Role of Government in the Implementation of ITS in Pakistan
2. Developing an Integrate Transportation System in Beijing
3. The Mississippi DOT ITS Program - A Decade of Amazing Success
4. Improving Knowledge of ITS - Swedish ITS Training Program
5. Incorporating Technology Transfer into ITS Professional Capacity Building

TP047-Field Operations Test - Vehicle to Infrastructure (II)

1. COOPERS Field of Test on French Motorways
2. Assessing the Impact of In-vehicle Traffic Management Information in the Demonstration Phase of COOPERS
3. Study of a Method of Quantitatively Evaluating the Effectiveness of Advanced Cruise-assist Highway Systems
4. The Facility Layer for Cooperative Applications and Services

TP048-Evaluation - Is It Taking Us Where We Want to Go?

1. Long-term Plan with Evaluation of ITS Operation and Performance
2. The Effectiveness Analysis of Bus Information and Management Deployment on Busan Metropolitan City
3. Study on the Evaluation Method for CO2 Reduction Effectiveness of Bus Information System

TP050-Vehicle to Vehicle Communication (II)

1. An Integrated Simulator for Safe Drive Support Systems
2. Effect of Transmission Parameters on Efficiency and Reliability of V2V Networks
3. Cooperative Position Verification - Defending Against Roadside Attackers 2.0
4. A Consideration of Location Surveying for Vehicle-to-Vehicle Communication Using the UHFBand

TP051-Autonomous Vehicle (II)

1. Smart Car Algorithm Using Fuzzy Rules
2. Performance Evaluation of the 2D Positioning by M-CubITS in Plural Traffic Lane Roads
3. Road Environment Perception for Automated Vehicles
4. Development of Human Machine Interface for Platooning Systems - Fundamental Proposal of HMI for Risk Avoidance -

TP052-Safety: Intelligent Roads

1. Incident Detection Systems for Enhancing Traffic Safety on Existing and New Road Infrastructure
2. Operational and Crash Evaluation of Lighted Pavement Marker Stop Bars and Led Outlined Traffic Signal Backplates
3. The Application of 3D Visual Interactive Drive Simulation Technology to Safer Road Design
4. Impact Conditions of Performance Evaluation and Development of High-performance Roadside Barrier for Longitudinal Barriers of SMART Highway

TP053-E-Payment Systems: Trial and Development

1. Implementing GNSS/CN HGV Tolling in New Zealand
2. Swedish Distance Based Charging - Field Trials Results
3. EGNOS Evaluation Trial for Road User Charging
4. An Adaptive System Architecture for a Heterogeneous ETC System

TP054-Better Travel Information Systems

1. Quality Traffic Information
2. Road Administration Responsibility for Traffic Information from a Societal Perspective
3. Achieving Integrated Management on the Schuylkill Expressway Corridor in Southeastern Pennsylvania
4. Automatic Journey Replanning for Passengers in the Case of Incidents

5. Development of Car Speed Estimation Model by Using Route Bus Speed
6. Research on the Impact of New Variable Message Sign on Route Choice in Beijing
7. Teleport: Journey Time Measurement in Real Time

TP055-Freight and Commercial Transport

1. VTOL UAV for Postal and Parcel Services
2. Cargo Centric Approach for Supply Chain Design - Reference Architecture
3. Using GPS/GIS to Support an On-demand-type Parcel Collection and Delivery System
4. A Unified Multimodal Level of Service Definition for Cargo Transportation Based on Network Analysis
5. Supply Chain System through ITS Technology

TP056-Vehicle to Vehicle Communication (III)

1. A Study on Efficient Location Oriented PN Code Allocation in Multi-Code Sense CDMA at an Intersection
2. Simulation Evaluation of Random Access Control for Pedestrian ITS in Intersection Scenario
3. Implementation of Mobile MAC for V2V DSRC Communication
4. Vehicle Mobile Gateway for Provisioning and Support of ITS Services on Nomadic Devices
5. CoCarX - LTE as a Means of Providing Managed Vehicle Telematic Services

TP057-Intelligent Vehicle Safety - Advanced Driver Assistant Systems

1. Development of a Safe Driving Management System and its Application
2. Development of the Device to Prevent Wrong-way Driving
3. A Safety Evaluation and Design Method at Freeway Exit Ramp Based on Driving Behavior
4. Study on Eyes Movement of Drivers with Different Driving Experience on Perception of Traffic Signs
5. Applying Intelligent Transportation Systems to Decrease Hydroplane Related Traffic Crashes in Greenville County, South Carolina
6. CrossWatch™ - Real Time Accident Prevention
7. Clustering DSRC-Based Networks for Logistics Operations in Ports

TP058-Safety: Truck and Management

1. Development of Automated Platooning System Based on Heavy Duty Trucks
2. Prospect of Using Weigh-in-motion System for Enhancing Vehicle Weight Enforcement - A Case Study of Malaysian Roads
3. Vehicle Re-identification Using Weigh-in-motion Data for Truck Travel Time Measurement and Sensor Calibration
4. Study on Qualitative Standard of Driver Behavior Comfort

TP059-E-Payment Systems: Vehicles Recognitions

1. To Tag - or Not to Tag Vehicles for Electronic Toll Collection
2. ALPR as a Precondition for MLFF (ORT) Tolling Systems; Prospects and Challenges of Optical License Plate Recognition Systems
3. A Parallel License Plate Recognition System for Efficiency Improvement of ETC Enforcement
4. Plate Fingerprinting for Reliable Vehicle Identification in Tolling Applications
5. License Plate Recognition of Low Resolution Images

TP062-Vehicle to Vehicle Communication (IV)

1. Merging Assistance at a Non-signalized Intersection with Vehicle-to-Vehicle Communications
2. Dynamic Adaptations of LPG-based Vehicular Ad Hoc Networks
3. High Accurate Direction Finding of Target Objects in Intersection Using Cumulative Likelihood of DOA Estimation for Anti-collision Warning System
3. A Proposal of Autonomous Distributed Transmit Power Control in Vehicle-to-Vehicle Communication System
4. Performance of OFDM/MIMO Scheme for ITS Applications
5. Methods to Reduce DSRC Channel Congestion and Improve V2V Communication Reliability

TP063-Environment Issues - Case Study

1. CO2 Reduction by Fuel-cut Driving in the Downhill Part of Roads
2. Evaluating the Benefits of Reduced Fuel Consumption by Diffusion of 3-Media VICS Receivers on Board Commercial Vehicles
4. Smart Intersections for Green Cities: A Case Study in Paris, France
5. The Contents of Carbon Dioxide Emission on Public Transport Information Web Service in Korea

TP064-Smart Road Technology (I)

1. Wireless Communication Technologies for Smart Highway
2. Evaluation of Eco-driving Skill Using Traffic Signals Status Information
3. Cooperative Vehicle Localization for Efficient Urban Mobility
4. Development of Consecutive Vehicle Crash Prevention Using Multicast and Anycast Communication
5. Priority of Commercial Trucks through Dedicated Lane Assignment

TP65-E-Payment Systems: Case Study

1. On the Verge of Full Cashless Payment on Motorway Network
2. The Multilane System Activation Plan Using ETCS
3. Make Boring On-board Units for Road-pricing More Interesting
4. Toll Collection Service in Kansai
5. Enhancement of Hi-pass Reliability with Cooperative Sensing for ITS

TP066-Using Information to Help Travelers Navigate Different

Modes

1. Smart Traveler Service Experiences in U.S and Korea
2. WISETRIP: Wide Scale Multimodal and Intelligent Journey Planning
3. Learning User Perception to Traveler Situation Awareness Alerts on Mobile Devices
4. Personalised Multi-modal Commuter Services in a Middlesized Region of Sweden

TP067-International Cooperation and New Positioning Tools

1. The Strategic Plan of Intelligent Safety Bridge Model Based on Ubiquitous Sensor Networks
2. Automated Border Crossing - System for Handling Queues with Long Waiting Time
3. A Comparative Analysis of Face Recognition Performances for Advanced Immigration Services
4. A Study of a Positioning System Using Address Information on Web and Spot Information in Cityscape
5. Technical Analysis of AGORA-C[ISO17572-3] and OpenLRTM
6. Kernel-RLS Aided GPS/INS Integration with Application to Land Vehicle Navigation
7. Development on Next Generation Intelligent Airport System

TP068-Traffic Management: Traffic Signal Management

1. An Integrated Design for Lane Allocation and Signal Optimization at Signalized Intersections
2. Evaluation on Signal Coordination Effects on Arterial Travel Time - Case Study of City of Irvine
2. Promoting Smoother Road Traffic by Effective Maintenance and Operation of Vehicle Detectors
3. Advanced and Integrated New Traffic Control System on Tokyo Metropolitan Expressway
4. Real-time Traffic Management Pilot Study - Port of Long Beach Case Study
5. Development of a Real-time Traffic Control Evaluation System Using Hardware-in-the-Loop-Simulation
6. Intelligent Traffic Systems Deployment on SungNam City

TP069-Traffic Management and Incident Management Area Control

1. A Case Study on Local Accident Investigation by Means of Transport Safety Information Management and Analytical Processing (TSMAP)
2. Investigation of Attributes of Kinematic Waves Preceding Traffic Collisions
3. ITS Operation in Singapore
4. Developing Extensible Multi-use Traffic Management Software for Use Across Wide Regions
5. Advanced Traffic Control & Surveillance System for Hong Kong Route 8
6. An Analysis on the Operating Effects of Beijing Urban Intelligent

TP070-Traffic Management: Ways of Improving Traffic Flow

1. Ubiquitous Traffic System Together with Low Carbon Green Growth Dedicated to Busan City
2. Sustainable Effects of Increasing Queue Discharge Flow Rate by Using the Variable Message Signboard
3. The Traffic Flow Control Using Probe Vehicle Data
4. Evaluation of the Benefits of Route Guidance System Using Combined Traffic Assignment and Control Framework
5. A Development of Traffic Analysis Support System for Gyeonggi-Do Traffic Information Center

TP071-Traffic Surveillance and Enforcement (I)

1. Red Light Enforcement and Video Detection Technology - A Perfect Synergy
2. A Rule-based Vehicle Tracking with Multiple Video Sequences
3. Experiences and Next Step in Operating the Swedish Traffic Safety Camera System
4. USN-based Multivalent System Approach to Traffic and Road Weather Management
5. Monitoring Improvement for Restrictive Vehicle Enforcement System on Express Highways

TP072-Modeling and Simulation (III)

1. Analysis on the Running Safety and Investment Effect by Severity Model of Big Traffic Accidents
2. A Multi-Mode Variable Demand Traffic Assignment Problem for the Transportation Network Investment
3. A Transportation Evacuation Framework for Multi-Institutional Centers
4. Development of a Driving Simulator for Education of Safe Driving on Expressways
5. Roundabout Metering: Simulation and Reality
6. Development of Dynamic Lane Control Model Based on Multiple Merging Point in Highway
7. Quantitative Analysis of Traffic Conflicts in Traffic Impact Studies

TP073-Role of Government in Benchmarking Management Systems and Standardization

1. ITS - Present and Future in Brazilian Granted Federal Highway
2. The Study for ITS Establishment in Colombia - 4 Cities Case Study
3. A Study on Organizational Approach for Traffic Management Center Operation – Busan Matropolitan City Consideration

TP074-Infrastructure Maintenance

1. Correlation between Surface Deterioration Degree and Electrochemical Impedance Spectroscopy Results for Epoxy Primer-coated Steel

2. Structural Monitoring System at Marine Section of the Incheon Bridge
3. The Study of a Safety Documents Assessment Program
4. Warning Grooving Design Guide Line for Cement Concrete Pavement under Dynamic Loading
5. A Study on Aircraft Rapid Arresting System Development

TP075-Evaluation Tools and Strategies - Part (I)

1. Toolkit for Sustainable Decision Making in ITS Deployment
2. Methodology for Determining Optimum Letter Spacing for Highway Signs Based on Driver's Legibility Performance
3. The ITS Test Beds Project
4. Needs for Cooperation on Field Operational Tests
5. The Conditions for Diffusion of Car Navigation System

TP076-Public Transport: Passengers

1. Estimating Passenger Origin-Destination Matrix of Fixed-fare Bus Routes with Smart Card Usage Information
2. Research of TSBToA Based Positioning Algorithms and Technology in Wi-Fi Environment
3. Development of the Purchase Terminal for Nationwide Interoperable Transportation Card System in Korea
4. Research on the BRT Priority Signal Optimization Methods Based on Actuated Control

TP077-Using Advanced Communication Technology (I)

1. Bio-inspired Neuromorphic Vision by CMOS Conductance for Intelligent Monitoring System of Passenger Emergency
2. Three-Tier Wireless Communication Network in Sugar Land, Texas
3. Discuss on the Application of 3G Web Video Processing Technology in Traffic Flow Analysis
4. Improving Performance of DS/SS IVC Based on Location Oriented PN Code Allocation

TP078-Emission/Climate/Weather Related Traffic Management

1. Low Emission Zone 2.0 Future Deployment Options
2. Travel Demand Management by Bonus Credits for Parking
3. Idling Reduction Using Intelligent Traffic Signal Controller Algorithms
4. Weather-based Intelligent Transportation Systems: A Key to Network Safety and Mobility
5. Weather Impact on Floating Car Data
6. The Dynamic Index Smart Access and Emergency Control of Highway Network Operational Status in Adverse Weather Conditions
7. Optimization of Speed Limit Impact Area in Highway Intersections
8. Research on Design Road Traffic Weather Laboratory
9. A Study on the Calculation Method of Greenhouse Gas in Road

TP079-Smart Road Technology (II)

1. An Introduction of On-line Electric Vehicle System and Its Pilot Application in the Seoul Grand Park
2. Wireless Traffic Safety Network between Cars - Real Time Road Weather, Incident and Accident Data to Vehicles
3. Mobile Virtual Synchronous Machine for V2G Applications
4. Freeway Flow Management Based on Vehicular Sensor Network
5. Proving Tests of Automatic Selection of Safe Driving Assistance Information According to Traffic Condition

TP080-Implementation

1. To Tag - or Not to Tag Vehicles for Electronic Toll Collection
2. Improvement of the Accuracy of Evaluating The Vehicle Detecting System
3. iCARS Thematic Network Project? ICT For Energy-Efficiency In Transport
4. Travel Demand Analysis Based on Land Use Factors in Incheon
5. Development of Integrated Road Traffic Information Infrastructures toward u-Korea

TP081-Using Travel Information Systems for Better Travel Planning

1. TeleFOT, Field Operational Tests of Aftermarket Nomadic Devices in Vehicles, Early Results
2. Conformance Test for TPEG Receivers
3. Wide-Area Route Information Provision Service For Urban Expressways
4. Travel Information Decision Support Systems
5. Methodology for Correcting Erroneous Individual Vehicle Speed Data Using Locally Weighted Regression

TP086-Traffic Surveillance and Enforcement (II)

1. Tolling Overweight Vehicles on Highways
2. Developing a Flexible Traffic Safety Camera System
3. Development and Application of the Non-stop Overweight Control System Using HS-WIM
4. Construction of Overhead-view Images Using Single Camera at a Road Intersection
5. Image Information Collection of CCTV Dead Zone Using Wireless AP

TP088-Role of Government and Organizational Issues

1. A Study on a New Transportation System for Seoul
2. Monitoring and Analysis of Bus-only lane Policy & Lane Control System on Gyeongbu Expressway
3. Parameters Determining Route Choice in Pedestrian Networks
4. Master Plan and Basic Design for ITS of Incheon Free Economic Zone
5. The Architecture for GNSS Enabled Service Converge
6. A Study on the World Geodetic System-84 Environment

TP090-Evaluation Tools and Strategies - Part (II)

1. Evaluating the Public Transport Priority System: Identifying Background

Data Impact

2. Development of the Safety Evaluation System for Korea Rural Highways
3. Data Collection Method Analysis for Evaluation of Public Transport System Performances
4. Quantitative Evaluation of Accidents due to a Complex Traffic Environment
5. Development of the Assurance Test System for the Nationwide Interoperable Transportation Card in Korea
6. Evaluation of Geofences Technology Using the Weighting for the Transit Time Method Considering Its Variability

TP091-Public Transport: Scheduling/Operations

1. Development of Bus Reliability Index Considering Bus User's Waiting Time
2. Cellular-based Location Tracking Using Decision Tree and Neural Networks Techniques
3. A Study on the Introduction of the Demand Responsive Headway for Urban Bus
4. Intelligent Bus Scheduling System with Real-time Optimization and Monitoring
5. PRONTO: Event Recognition for Public Transport

TP092-Using Advanced Communication Technology (II)

1. Sensor Network Infra Test for Monitoring of Hi-speed Railway
2. Internet ITS - IPv6 a Innovation for Future Transportations
3. Region Wide Interoperability for Electronic License Plates: A Utopia or Close Future Reality?
4. Next Generation of Automotive Security: Secure Hardware and Secure Open Platforms
5. UAV Controlling and Monitoring Workstation-UCMW

TP094-In-vehicle Networks

1. A Study on the Performance of Ultra Wideband Intra-Vehicle Networked Control System
2. A Study on Vehicle Wireless Communications with UWB in ITS System
3. Control Area Network Bus at Vehicle Diagnostic Interface
4. Design and Implementation of a Fiber Optic Transceiver for In-vehicle Networks

TP095-System Architecture and Advanced Travel Systems

1. Methodology of Architectural Project Applied in Systems for Supervision Operation and Information to the User of Highways
2. A Research on Methodology and Architecture for Logical Realization of Ubiquitous-ITS
3. Developing a Methodology for Choosing ITS Market Packages in Intercity Roads
4. El Segundo Area ITS Project Arterial Traveler Information ? Is It Possible?
5. ETC Data Based Freeway Traffic Information Mining Techniques

6. Traffic Data Platform as ITS Infrastructure for Intelligent Traffic Data Management

TP096-Road Weather Information

1. Road Weather Information System
2. Study on the Development of the Road Weather Information System in China
3. Comparison between Legibility of Guide Signs in Diverse Weather Conditions
4. Intelligent VMS Responding to Weather Information

TP098-Wireless Technologies in ITS (I)

1. Design of Harmonic Suppressed Stub Bandpass Filter in Tapped Line Geometry
2. Measuring and Using the RSSI of IEEE 802.11p
3. A 0.5 - 5.8 GHz Wideband Two-gain Mode Low Noise Amplifier
4. Implementation of Novel Automatic Gain Control in Vehicular Environments
5. Development of Multi Frequency Antenna with a Single Feeding Point In-vehicle Use
6. Signal Quality Improvement of in-Vehicle Telecommunication Equipment Using Digital Processing Technique

TP099-Environment Issues - Benefit Evaluation (I)

1. Assessing Air Quality Impacts of Managed Lanes
2. Validation Scheme for Traffic Simulation to Estimate Environmental Impacts in 'Energy-ITS Project'
3. Estimation and Analysis of GHG Emission on Expressway Construction

TP100-Influencing Driver Behavior with Better Data and Travel Information

1. Standardization of Message Sets for Exchange of Transfer Information at Transfer Center
2. Eco Routing for European Market
3. Driver Behavior Analysis Method for Improving Route Searching Results
4. Estimation of Coverage Area of VICS-FM Multiplex Broadcasting

TP101-Standardization Efforts for ITS Development

1. Brazilian Standardization for ITS Architecture
2. ITS SUB-Architectures Deployment Over IMS (4G NGN)
3. A Performance Standard Study on Public Transportation Communication System
4. Hybrid Telematics System Combining WAVE DSRC with WiMAX
5. CARS (Condition Acquisition Reporting System) and the CARS Group

TP102-Geographic Information Systems(GIS) in ITS

1. Benchmarking Evaluation Study of Personal Navigation Devices in TeleFOT

2. Discovering the Value of Three-dimensional Road Geometry in Advanced Intelligent Automotive Applications
3. Mapping Road Safety Attributes: A Public-private Partnership between Road Authorities and Map Providers
4. Navici AVL - Automatic Vehicle Location and Reporting Service
5. Visual Odometry for Accurate Vehicle Localization - An Assistant for GPS Based Navigation

TP103-Traveling Greater Distance More Often with Advanced Traveler Systems

1. Efficiency of Probe Data Acquisition through Vehicle-to-Vehicle Communication
2. Dynamic Freeway Path Travel Time Prediction Based on NPR Approach Using DSRC System Data
3. Efficient Traffic Data Collection - New Business Models for ITS Applications Connected to e-Freight
4. A Study on Improving Travel Time Prediction Method on Motorways

TP104-Evaluation Tools and Strategies - Part (III)

1. A Study on the Economic Effects of Expressways in Korea
2. Modeling Service Quality and Benefits of Multi-service Architectures in Road Transport Telematic Applications
3. Efficiency in Expressway Operation Agency in Korea
4. Integrating Ramp Signal, Intelligent Transport Systems & Network Performance Measurement
5. Estimating the Economic Impact of the Busan ITS World Congress
6. Perspective on Cost-Benefit Analysis for Intelligent Transport System Projects
7. Technological Model for Application of Bridge Weight in Motion Technology to Inspection of Goods

TP105-Public Transport: Use of ITS

1. Use of Systems Engineering for Public Transport ITS Projects: How Effective Is It?
2. ITS Deployment in Johannesburg
3. Cooperation between a Static Problem for Optimal Sequencing of Arrival Flights and a Linear Dynamic Model for Traffic Flow Estimation
4. Economic Feasibility of Public Transportation - Bus, OLEV, Subway
5. Flexible and Intelligent Tram
6. Intelligent Traffic Systems Deployment on AnSan City

TP106-Wireless Technologies in ITS (II)

1. 5.9 GHz Dedicated Short Range Communications (DSRC) Standards Overview and Status
2. DSRC for Safer Transport - Data and Radio Communication Architectures for ITS

3. Preliminary Study on Dynamic Bandwidth Reservation Using Road Layout and Bidirectional Navigator in Wireless Multimedia Networks
4. Multiple Base-station Antennas for SMART Highway

TP107-Environment Issues - Benefit Evaluation (II)

1. Evaluation of Feasibility for NEV (Neighborhood Electric Vehicle) Operation according to Classification of Roads
2. Available ITS Technology to Overcome Climate Change Risks, Nature Disasters
3. In-Time: Intelligent and Efficient Travel Management for European Cities

TP108-Cognition

1. Safe Road Trains for Environment: Human Factors' Aspects in Dual Mode Transport Systems
2. Information Computing of Driving Decision Support Information Environment in IV
3. Driver's Cognition of Human Presence in Far-infrared Images
4. Analysis of Cognitive Characteristics for Automotive Augmented Reality Interface Systems
5. The Assessment of Risky Driving Caused by the Amount of Time Focused on an In-vehicle Display System

TP109-Funding Models; Pricing, Payment, Priorities

1. ACTIF - A Tool for Conceptualizing Concrete Answers in the Challenge for Sustainable Mobility in Public Transportation
2. Economic Features of Safety-related Intelligent Transport Systems and Their Diffusion Dynamics in Urban Spaces
3. How to Toll a Country for Free
4. The Case for Fairness in Urban Congestion Mitigation and Emission Reduction Measures
5. ITS Policy Models Development - The Base for Legislation of ITS Schemes

TP110-Vulnerable Users (I)

1. Study on Introduction of Korean Bicycle New Signal System (Bicycle Priority Signal) and its Effectiveness
2. Study on Universal Design of the Bus Safety Zone for the Mobility-Handicapped
3. Survey on Pedestrian Network Data Collection for Vulnerable Road Users
4. Active Pedestrian Protection System, Project Review
5. ITS for Vulnerable Road Users: The Use of Digital Maps for the Evaluation and Improvement of a Bicycle_network and Infrastructure

TP111-Driver Capability

1. Real-time Estimation of Driver's Mental Workload Using Physiological Indexes
2. Implementation of a Driver Aware Vehicle Using Multimodal Information
3. Performance Based Specification for Heavy Vehicle Fatigue and Speed

Monitoring

4. Detecting Driver's Drowsiness Level Using Auto Adjust Scale
5. Estimating Probability of Automobile Accident from Driver's Reaction Time under Different Arousal States

TP113-Emergency Management & Access Control

1. Application of Navigation System on the Cut Slope Management System in Korea
2. Expressway Traffic Control System Reflecting the Risk of Large Scale Earthquakes
3. Traffic Control and Demand Management - Case Study of Bergamo, Bologna and Turin (Italy)
4. A Design of Low Power Operable Parking Guidance System for Green Building
5. Innovative Interagency Partnerships - The Mississippi MsTraffic-MED-COM Project

TP114-Mapping and Emerging Communication Technology

1. A Study on the Necessary Map Related Data for ADAS and Other Emerging ITS Services
2. eCoMove - Efficient Dynamics Approach to Sustainable CO2 Reduction
3. A Collision Avoidance System based on Galileo Satellite
4. A Knowledge Parallel Heuristic Search Algorithm in Ubiquitous Creativity System
5. Development of "DSRC Safety Mobile Phone" for Pedestrian Using 5.8GHz DSRC Inter-Vehicle Communication Technology
6. Recent Automatic Accident Recording System (AARS) in Korea

TP115-Modeling and Simulation (IV)

1. Simulation Study of Active Traffic Management to Improve Freeway Mobility
2. Analysis and Evaluation of Traffic Flow at Variable Speed Limit Using the Cell Transmission Model
3. Comparative Study of Port Passenger Demand Estimation Techniques
4. Improvement of Port Entrance System Using RFID

Tp116-Role of Government in Multi-modal Development Planning

1. Improvement on the Connection of Express Highways for the Preparation of Emergency Situation
2. Not in My Car! Political Perspectives on Intelligent Speed Adaptation
3. Co-modal ITS and ITS in Railways, Reflections from the Swedish Rail Administration after ITS World Congress in Stockholm 2009

Tp120-Environment and Sustainability: Management

1. Development of Monitoring System for Expressway Noise Management
2. Intelligent Infrastructure Testing and Evaluation of Electric Vehicle

Performance

3. Simulation for Effective Operation of NEV (Neighbor Electric Vehicle)
4. Global Intelligent Transportation System

TP121-Data Management and Traffic Information Integration

1. The ROADIDEA Data Mediation - Data Support for ITS Deployment
2. Making Accident Data Compatible with ITS-based Traffic Management: Turkish Case
3. Study on the Theoretical System of Experimental Traffic Engineering Method
4. Singapore Electronics Road Pricing System The new Dual-mode In-Vehicle Unit
5. Singapore Traffic Information Platform: Enabling Traffic-Aware Applications & Systems
6. Application of System Engineering to a Major Integrated Corridor Mobility Project

TP123-Vulnerable Users (II)

1. The Green Man Plus System
2. Navigation for Visually Impaired Persons
3. Facilities for the Elderly and Disabled
4. An Analysis of Segway Behavior Focusing on Safety Distance for Pedestrians and Gaze of Riders
5. A Study on the Visibility of the Colored Bike Lanes
6. Traffic Accident Prevention Using Image Processing Pedestrian Detectors

附錄 5、第 17 屆 ITS 世界年會大會議程

-媒體互動會議 (Media interactive Sessions)

IS01-Safety with Ubiquity

- S#01 Driver Workload in Simulated Roads and Tunnels and The Appropriateness of ITS Applications
- S#02 A Ubiquitous Structure Health Monitoring System of Seohae Bridge
- S#03 A Case of the Management of the Bridge under Flood Level Using the Mobile System
- S#04 Application of High Strength Concrete to Highway PSC Bridge
- S#05 Fog Detection by Scattering and Absorption Properties of Particles
- S#06 Road Condition Estimation by Optical Property of Water: Absorption of Infrared Ray Energy and Reflection of Visible Ray
- S#07 Development of Intelligence System for Accident Prevention at Railway Level Crossing
- S#08 Development of Road Assessment Program for Korea
- S#09 Design of a Large Bridge Maintenance, Management, Measurement and Monitoring System
- S#10 Road-side Multi-mode Radar System for Obstacle Detection on the Various Road Conditions in the Highway
- S#11 Road-side Multi-Mode Radar System Concept for Obstacle Detection on the Various Road Conditions in the Highway
- S#12 Driver's Perception Reaction Time for Road Design
- S#13 Improvement of Upper Structure to Prevent Falls from High Sky
- S#14 Integrated Bracket Development for Efficient Management of Various CCTV Pan/Tilt
- S#15 Improvement of CCTV Housing Which IS Robust to External Environment
- S#16 Core Reduction Plan for Optical Network of ITS Equipment
- S#17 Remote System Development for Monitoring Power Condition of VMS
- S#18 Improvement for Compatibility and Standard of ITS Transmission Equipment
- S#19 VDS Measurement Data Monitoring Plans through Wireless Transmission
- S#20 Improvement of Sensor Error Correction of WIM Systems
- S#21 Remote System Development on Automatic Recovery of ITS Equipments
- S#22 Monitoring System for Highway Slope and Debris Flow Disaster Prevention
- S#23 Improvement of Road Safety from Debris Flow Disaster by Risk Evaluation
- S#24 Using Thermal Images to Identify and Track Big Animals to Avoid

- Car-animal Crash
- S#25 Partial Replacement Repairing Method for Aged Steel Box-girder Bridge and ITS Applicability
- S#26 Expressway Disaster Management Utilizing IT
- S#27 Cooperative Safety Systems in 2020
- S#28 Effectiveness of Incident Response Service on V2V Wireless Communication Systems

IS02-Safety with Transparency

- S#01 An ITS Solution Integrated to the IRT Architecture in Cape Town within the FP7 Project Stadium
- S#02 The Wireless Communication Requirements and Performance for Infra Sensor Based Unmanned Vehicle
- S#03 Development of Advisory Safety Speed Model Using Real-time Vehicle Data on Smart Highway
- S#04 Infrastructure-Oriented IntelliDriveSM Applications – IntelliDrive SM Pooled Fund Study Overview
- S#05 Implementation of L2 Handover Scheme in Vehicle Environment
- S#06 Construction of Runaway Vehicle Capturing System Applying LPR(License Plate Recognition)
- S#07 The Design of a Wireless Access in Vehicle Environments (WAVE) MAC Scheduler (WMS)
- S#08 Development of Traffic Operation Strategies at Non-signalized Intersections on V2I Wireless Communication Systems
- S#09 Safety Information Providing System for Intersection Environment by Using WAVE
- S#10 Study on Improvement and Operation of Data Registry for Reflecting Users' Need
- S#11 The Analysis of Installation & Interface Test for Developed Single-phase MJ81 Switch Point Machine
- S#12 Performance of Adaptive Channel Coordination Mechanism in WAVE System
- S#13 An Adaptive Handover Prediction Technique for Next-generation Navigation Systems
- S#14 A High Efficient Doherty Amplifier for Digital TRS Repeater Applications
- S#15 Development of the New National ITS Architecture of Korea
- S#16 Effectiveness of Freeway Non-stop Tolling Service on V2I Wireless Communication Systems
- S#17 Smart Intersection for ITS
- S#18 Experiences on Requirements Analysis of Railway Signaling Systems Based on Formal Methods
- S#19 The Vision of Applications of V2I Communication Based on DSRC in ITS
- S#20 Research on the Trend of ITS Standard in Korea

- S#21 The Certificate Management System for Commercial Vehicles Based on DSRC
- S#22 Modeling Driver's Advanced Lane Selection Behavior under V2V Communication Technology
- S#23 Expressway Management System on Utilizing Cutting-edge IT
- S#24 Implementation of Road Control Radar Signal Processing in Smart Highway
- S#25 Optimal Vehicle Speed Using Fuzzy Rules
- S#26 An Architectural Design of an Integrated Platform for U-City
- S#27 Verification of Method of Individual Lane Level Analysis for Signalized Intersections: A Case Study

IS03-Safety with Trustability

- S#01 Pre-study for New Model of Winter Road Maintenance in IRAN
- S#02 Challenges to Deployment of Cooperative Systems: White Paper for Deployment
- S#03 An Analysis Method for Probe Car System
- S#04 iTransport - A Discussion Paper on Transport Technology in Victoria
- S#05 The Macroscopic Methodologies for Analyzing the Impact of Various Congestion Pricing Strategies for Urban Freeway
- S#06 Research on Installing Smart Interchange to Improve Expressway Accessibility
- S#07 A Remodeling Plan for the Osan-Yangjae Section on the Gyeongbu Expressway
- S#08 Development of a Signalized Intersection Safety Evaluation Model Using Backpropagation Algorithm
- S#09 Introduction to Toll-booth Metering on Expressway
- S#10 Expressway Tunnel Fire Case Analysis: Effective Safety Improvement Planning
- S#11 An Effect Analysis of SMART-HIGHWAY Construction for Low CO₂ & Green Growth
- S#12 Development of ITS Master Plans for Small and Medium-sized Cities: A Case Study of the City of Siheung
- S#13 A Complex Base Station Architecture Design for SMART-Highway
- S#14 Development of Web-based Flooding Evaluation System for Safe Operation of Bimodal Tram
- S#15 Development of High-tech Walking-aid system through unions of 2D barcode and braille block for the visually handicapped person
- S#16 Position and Orientation Estimations of Magnetically Guided-Articulated Vehicle
- S#17 A Hierarchical Framework for Taiwan's ITS Deployments Using Matrix Analysis
- S#18 Market Segmentation Modeling of Telematics Services for Urban Car Drivers Using Support Vector Machine Method
- S#19 A Study on the Improvement of Hi-pass Application Interface

- S#20 Effective Integration Strategy of Traffic Information: The Case of Seoul TOPIS
- S#21 A Link-based Label Correcting Multi-objective Shortest Paths Algorithm in Multimodal Transit Networks
- S#22 The Application of Risk Assessment for Railroad-tunnel Fire Incidents
- S#23 Study on Field Conditions for ITS Evaluation & Certification System for Vehicle Detecting System
- S#24 Safety Analysis of Toll Booth Operation at Osan Interchange
- S#25 Intelligent Transportation System (ITS) in Ulsan Metropolitan City
- S#26 Improving Ground Truth Measurement Using Microscopic Simulator for Urban Network
- S#27 Development of Simulation Test-bed of Uninterrupted Traffic Under Ubiquitous Transportation Environments
- S#28 Effective Ways for Quality Control and Performance Evaluation of VMS
- S#29 InteractIVe - High Precision Maps for Sustainable Accident Reduction with the Enhanced Dynamic Pass Predictor

IS04-Convenience with Ubiquity

- S#01 Smart Navigation - Potential and Real Benefits to Road Users and Society
- S#02 Computer System Expansion Scheme for Road Side Equipment
- S#03 Small AM Omni-directional Antenna for the Vehicle Radio
- S#04 Design of CAN Component for an Eco-driving Service
- S#05 A Study on the Fundamental Framework for the Railway IT Convergence
- S#06 Conceptualization of Ubiquitous Based Bicycle Services and its Adoptability
- S#07 A Novel ORTI Aware Debugging Environment for OSEK/VDX Systems
- S#08 Transportation Service by User Creative Contents
- S#09 Development of Multi-class Assignment for Real-time Transportation Information System
- S#10 Utilization of Road Data in Gear Shift Robot in Heavy Duty Vehicles
- S#11 A Study on the Connecting Methods of Traffic Information Using OPEN-API
- S#12 Relay Amplifier for and Method of Amplification for Actively Selecting Channels
- S#13 Performance Analysis of OFDM Based WAVE System in Vehicular Channel Environments
- S#14 A Study on the Security for a Vehicle Using TPM
- S#15 Concept Design of a Novel Park and Ride Service using 5.8GHz DSRC for ITS FOT in Kashiwa
- S#16 Energy Saving Route Guidance Using Altitude Information
- S#17 Proposal of MI WyNE Box for M-CubITS Pedestrian WYSIWYAS Navigation Environments
- S#18 The Development of Wave Modem Chip Supporting IEEE 802.11p
- S#19A Flexible Simulator for Cooperative Communication Systems in

Vehicular Environment

- S#20 DATEX II: What's New in Location Referencing?
- S#21 A Study Protection of the Surge in the ITS
- S#22 Study on Multi-sensor Data Fusion of Highway Traffic Flow Detection Based on WSN
- S#23 Open-API Based Traffic Information Recommendation System Using Ontology
- S#24 High Resolution Long Range Radar with Small Aperture
- S#25 Maintenance & Operation System of Road Facility in Combination of Measurement Information Using GPS/INS Equipments, GIS and Real-time Video Image Information
- S#26 A Combined Reader Selection Method for Positioning Accuracy Improvement in Indoor WLAN Environments
- S#27 Vehicular antennas for Intelligent Transportation System
- S#28 Bus Information System Deployment on Sun-Cheon City
- S#29 Monitoring of Road Surface Status Using a Passive Millimeter Wave Sensor

IS05-Convenience with Transparency

- S#01 Networking on the Internet - A Pilot is "Going Europe"
- S#02 Fraud & Manipulation
- S#03 Hot Origin-destination Area Estimation by Using Taxi GPS Data
- S#04 Categorization of Vehicles with New Specification Utilizing Vehicle Number Recognition of TCS
- S#05 GINA -GNSS for Innovative Road Applications- : The Adoption of EGNOS / GALILEO for Road User Charging and Value Added Services for the Road Sector
- S#06 Facility Management Using Remote Monitoring System
- S#07 A Study on the Electronic Parking Payment System by Applying ETC Technologies
- S#08 A Study on the Development of ETCS OBU for Toll-Discounted Vehicles
- S#09 Toll Discount System with ETC
- S#10 Research of Evaluation Method for Nomadic Device Application at Intermodal Connectivity and Transfer Service Center
- S#11 DBMS Development for the Utilization of Railway Safety R&D Results
- S#12 DAB Dynamic Traffic Information Broadcasting System of Hefei, China
- S#13 An Improvement of Toll Collection System by Classifying Micro Cars
- S#14 Forecast on the Demand of Ubiquitous Information Sensor Centering on Ubiquitous Vehicle Sensor (UVS)
- S#15 Improvement of Efficient Vehicle Monitoring on Hipass Lanes
- S#16 Improvement for Express Highway Hipass Use of Freight Transportation Vehicles
- S#19 On an Providing Additional Information for UTIS CNS
- S#20 Automatic Control Algorithm of Variable Message Sign for the Active

Detour Traffic Information

- S#21 Traffic Monitoring System and More in Jeju
- S#22 Analysis of Travel Time Characteristic of Multiple Vehicle Classes Based on License Plate Recognition System
- S#23 Construction of Chinese Highway Emergency Communication Support System
- S#24 The Importance of Electronic Toll Collection Lane Configuration Mode and Solution
- S#25 A necessity and concept of Tourism ITS from the NAGASAKI EV&ITS Project
- S#26 Analysis of DSRC-based Traffic Information Sample Size in Metropolitan Area
- S#27 Development of a Traffic Information Display System Using CCTV
- S#28 Technique for Automatically Issuing Tax Invoices for Using a Toll Road
- S#29 Definition of Requirements and Functions for SMART Tolling System
- S#30 A Study of Developing Integrated Management System for the Smart Tolling System
- S#31 A Study on the Application of Radio Frequency Identification (RFID) to an Air Cargo Terminal
- S#32 For Whom, the Road Tolls? Time to Put the Customer First
- S#33 A Study of Correction of National Highway ITS Decision Algorithm for Traffic Flow with Deteriorated Weather Considered

IS06-Convenience with Trustability

- S#01 Driving Assistance System Using Brake Control in Conjunction with Car Navigation System
- S#02 Offline Optimization of Curve Speed Warning Applications
- S#03 Operating Platoons on Public Motorways: An Introduction to the SARTRE Platooning Programme
- S#04 A Path Travel Time Estimation on Expressways Using TCS and VDS Link Data
- S#05 Platooning Control Based on Two-layer Controller
- S#06 An Unscented Kalman Filter based Motion Stereo Method for a Wide-Angle Camera
- S#07 Adaptive Forward Lighting System for Adverse Weathers
- S#08 Safety Supervision of Cross Wind for 3-car Intelligent Tram
- S#09 Planning and Developing of ITS Educational Program in Korea
- S#10 Design/Construction of New Green Transit System Bimodal Tram
- S#11 Evaluation of a Vehicle Mounted Stereo Camera System for Distance Measurement and Obstacle Detection
- S#12 A Study on Road Control Radar System in Smart Highway
- S#13 Real Time Lane-mark Detection System Based on Directional Edge-link Features
- S#14 Speed Control for Precision Stop of Bimodal-tram
- S#15 Security Upgrades on Turkish Card-based Toll Collection System

- S#16 Measurement on RCS Backscattering from the Scaled Road Surface and Obstacle Using 9.4 GHz Instrument Radar
- S#17 Improvement of Driver Recognition on Hipass Lanes
- S#18 Visualizing Knowledge Domains of Transportation: A case Study of Intelligent Transportation System in Taiwan
- S#19 Travel Time Estimation with Transfer Function Technique and Data Fusion
- S#20 SDU-APTSS: A Middleware-based Approach to Advanced Public Transportation System
- S#21 A Case Study of Fire Risk Analysis for Guide Way Transit Passenger Coach
- S#22 An Analysis of Saccadic Eye Movement Using FFT for Assessing Vigilance Levels during Simulated Driving
- S#23 Research on Fuzzy Logic Sliding Mode Variable Structure Control of Automated Vehicle Clutch
- S#24 Improving Legibility and Energy Efficiency of Variable Message Sign(VMS)
- S#25 A Research on Application of RFID to the Unified Tolling System of Publicly-Funded Expressways and Privately-Funded Ones
- S#26 A Meta-Heuristic Approach for On-line Travelling Repairman Problem - A Case Study of Signal Repair Problems
- S#27 A Study on the Effects of Driving Conditions and Preferred Media on Diversion
- S#28 Design of 5.8GHz Patch Array Antenna for Traffic Management Roadside Equipment (Based on the Expressway)
- S#29 A Study on Services for the Smart Information & Traffic Management System of a Smart Highway

IS07-Green Mobility with Ubiquity

- S#01 Implementing Road Maintenance Machineries Management System Based on GPS and GPRS Technologies in Iran
- S#02 Implementing Visual Monitoring System in Iran Roads Network
- S#03 Freeway Guidance System Design Based on Meteorological Information
- S#04 Traffic Accident Migration Depending on the Operation of Automatic Traffic Enforcement Equipment
- S#05 Video Image Control Apparatus with Integrated Controlling and Monitoring Means for ITS System
- S#06 Effective Ways to Build Image Incident Detection System in Tunnel
- S#07 Detection Improvement Strategy through Reforming Constructions of VDS Using Image Analysis
- S#08 A Case Study of Construction on ITS Evaluation & Certification System
- S#09 A Decision Support System for Winter Road Maintenance
- S#10 Developing a Decision Support System for Transportation Policy on Expressways Using Sketch Planning
- S#11 A Control Method of High Resolution CMOS Sensor for Multi-lanes

LPRS (License Plate Recognition System)

- S#12 Multi-lanes Traffic Information Collection by Extracting Multi-features of a Vehicle
- S#13 Development of Traffic Situation Map for Expressway
- S#14 Development of Mobile Device for Vehicle to Monitor GHGs Emission
- S#15 Development of ITS Countermeasures for Traffic Safety in Frequently Foggy Areas
- S#16 Approach to Estimate Vehicle Emission on Motorway Using Electronic Toll Collection System Data
- S#17 Research on Weather Detection Technology of Traffic Video
- S#18 Driver Behavior Under the Green Signal Countdown Information
- S#19 Advanced Low-carbon Traffic Management System Based on Ubiquitous Transportation Sensor Network (u-TSN)
- S#20 Construction of Traffic Management System for Incheon Bridge Using ITS
- S#21 Freeway Work Zone Simulation Model Development
- S#22 The Research of IC Card Certificate of Commercial Vehicle Enforcement Equipment Based on DSRC
- S#23 The Effect of FDWS(Fog Detect & Warning System) on Speed by Visibility Distance Level
- S#24 Development of a Visibility Meter Using Infrared LED
- S#25 A Case Study of Intelligent Traffic System Operation and Construction of Video System of Maintenance Vehicle
- S#26 Novel Parking Information Concepts Enrich Traffic Information Services
- S#27 Interoperability Requirements of Digitally Signed Videos in Traffic
- S#28 A Study on the Standardization Method of Layer7 Interface based on the 5.8GHz DSRC Transmission of Traffic Information
- S#29 A Study of Suitability Verification Method of Various Medium Wireless Communications via Vehicle Terminal and Test Environment Construction
- S#30 A Case Study of the Digital Image System for the Intelligent Transport Systems
- S#31 A Vehicle Recommend Speed Study Using RWIS(Road Weather Information System) at the Eulsukdo-Bridge in Busan

IS08-Green Mobility with Transparency

- S#01 Treatment of Metals from Expressway Stormwater Runoff Using Zeolite Filtration
- S#02 Minimizing Operation Error of ETCS through OBU Certification
- S#03 A Study on a Cell-based Location Determination System in Wireless LAN
- S#04 Research of Communication and Positioning Technology for Establishment of Intermodal Connectivity and Transfer Service Environment
- S#05 An Application of Smart Card Data for the Behaviour Analysis on Public

Transit Users

- S#06 A Development of Hybrid Position System Model for Nomadic Device at Indoors & Outdoors
- S#07 A Performance Analysis of WiFi-based Real Time Location Technology for Location-based Services
- S#08 Human Behaviors Analysis at or Near Public Transportation Asset
- S#09 Vision Based System for Pedestrian Detection and Crowd Congestion Analysis
- S#10 Accuracy Improvement of Estimated Bus Arrival Time based on the Seoul City BIS/BMS
- S#11 A Study on the Requirement Management System for the Railway Safety
- S#12 SMART FREIGHT: Smart Freight Transport in Urban Areas
- S#13 Public Transportation Information System Personalized by the Remote Control
- S#14 Study on Operation Control System of Bimodal Tram
- S#15 Satisfaction Survey of Dynamic Bus Information System in Tainan City
- S#16 Accuracy Improvement of Real-time Passenger Information Using the Zigbee Communication
- S#17 Bus Position Tracking Method through Link-based Map-matching
- S#18 Application of Green Traffic Technology Based on ITS
- S#19 Using Spatial Information and Wireless Technology to Develop Real Time Management System for Commercial Vehicle Operation
- S#20 An Integrated Material Management Information System for Bus Storage Industries
- S#21 A Study on the Development of Road Transport Sector GHG Emission Model as Road Type
- S#22 A Study on the CO2 Emissions Inventory Making from Road Freight Transport of Logistics Company
- S#23 A Study on the GHG Emissions Inventory Making From Road Transport Sector
- S#24 A Study on the Development of Driving Cycle Mode as Road Type and Class Using the Digital Tachometer Information
- S#25 A Study on the Analysis of GHG Reduction Effect from Road Transport Sector Using VIMS Data
- S#26 Investigation of Flow Behavior in the Railway Tunnel Mock-up Using PIV
- S#27 Proposed Demand Responsive Bus Services in the City of Gimhae
- S#28 Effect of Urban Road Design Depending of Road Heat Island
- S#29 ITS Trends and Directions for Advancement

IS09-Green Mobility with Trustability

- S#01 Implementing Iran's Road Information and Traffic Management Center (RITMC)
- S#02 Speed Management Using Real-Time Traffic Counting System to Improve Road Safety in Iran

- S#03 Development of Reference Standards for Evaluating Traffic Detectors
- S#04 Accelerated Delivery of Managed Motorways: Birminghambox Phrase 1.
- S#05 Car Following Behavioral Threshold in Long Tunnel
- S#06 A Policy for the Active Management of Freeways
- S#07 A Real Time Video Surveillance with Vehicle Tracking System for Measuring Traffic Parameters
- S#08 Using SITSA-C to Define Functionality and Organisation of National Traffic Management Centre
- S#09 Method of Registering a Time Sequence of Aerial Images and a Digital Map
- S#10 A Study on Application of Airship Traffic Collecting System
- S#11 Effective Ways to Build Image Incident Detection System in Tunnel
- S#12 Improving Space-mean Speed Information by using Hi-Pass(DSRC) Technology
- S#13 Necessity of Pedestrian Detection based on Images for Design and Management of Transit Center
- S#14 Initiatives for Simultaneous Setup of ETC/DSRC onboard Equipment
- S#15 A Coordinated Control Strategy Used for Relieving Traffic Congestion in the Scope of Exit-ramp of the Expressway
- S#16 Construction of Wireless Controlled PSD of Smart Station for Bimodal Tram
- S#17 Algorithms for Generation of Traveler-customized Trip Plan (based on Domestic Terminal in Gimpo Airport)
- S#18 A Study on Real-time Intermodal Transfer Information
- S#19 Design and Development of Urban Traffic Video Integrated Detector
- S#20 ITS Based Traffic Management Systems of the Incheon Bridge Expressway
- S#21 Development of Low Height Road Lighting
- S#22 Intelligent Transportation System in Jordan
- S#23 Effect of “Count-Down Timer Display” Application on Reduction of Start Delay at Signalized Intersections
- S#24 Expressway Monitoring System Utilizing Digital CCTV
- S#25 Comparative Assessment of Impacts Before and After Opening ITS Service
- S#26 Fundamental Study on Road Snow Melting and Tunnel Daylighting System
- S#27 A Study on Estimating the Benefits by Pedestrian Environment Improvements by Use of Contingent Valuation Method (CVM)
- S#28 A Study for Executive BMS - Case of Daegu Metropolitan City BMS
- S#29 Study on Traffic Information System Using DSRC (Based on Expressway)
- S#30 Green Traffic Information System in the Master Plan of ITS Development on Suncheon City