

Supplementary information

Table S1. Indicators Data.

NAME	INDICATORS	JAPAN	KOREA	SINGAPOR	SAUDI ARABIA
MAAS	UE_MaaS	A	A	A	NA
SMART PARKING	UE_SmPark	FC	FC	FC	PC
ADVANCED TICKETING AND PAYMENTS	UE_epay	FC	FC	FC	FC
REAL TIME COMMUNICATION TO PASSENGERS	UE_realtime_comm	FC	FC	FC	TP
ACTIVE MOBILITY	EM_amob	FC	FC	FC	PC
SHARED MOBILITY	EM_smob	67.40%	102.30%	104.40%	53.70%
CONNECTED VEHICLES	EM_cveh	A	A	A	A
DRIVERLESS TRAINS	EM_DLtrain	68	161	126	176
HELI-TAXI	EM_Htaxi	18.349	19.42	21.88	13.414
DETECTION	PV_detect	FC	FC	FC	FC
TRAFFIC SIGNAL CONTROL	PV_signal	FC	FC	FC	PC
SPEED LIMIT CONTROL	PV_Splimit	FC	FC	FC	FC
ACCESS CONTROL	PV_Acontrol	FC	FC	NA	NA
ELECTRONIC PAYMENT	PV_epay	FC	FC	FC	FC
REAL TIME COMMUNICATION	PV_realcomm	FC	FC	FC	PC
TRAFFIC FORECASTING	PV_trforecast	FC	FC	FC	NA
DEMAND AND SUPPLY MANAGEMENT	PV_D&Smgt	FC	FC	FC	NA
SMART CARD	PV_Smcard	FC	FC	FC	PC
BUS LANES	PT_Blanes	FC	FC	FC	TP
PRIORITY SIGNAL	PT_Psignal	FC	FC	FC	NA
AUTONOMOUS TRANSIT	PT_Atransit	A	A	A	NA
EXPRESS TRANSIT SERVICE	PT_ExpTransit	A	A	A	A
ELECTRONIC PAYMENT	PT_ExpTransit	A	A	A	A
REAL TIME COMMUNICATION	PT_epay	A	A	A	PC
REAL TIME COMMUNICATION	PT_realcomm_pass	FC	FC	FC	TP
INTEGRATED TRANSPORT TERMINALS	PT_realcomm_para	FC	FC	FC	PC
AUTONOMOUS MODES	PT_Imobhubs	FC	FC	FC	NA

HYPERLOOP	ETech_Drobots	TP	TP	TP	NA
DELIVERY ROBOTS	ETech_Ddrones	TP	TP	TP	NA
DELIVERY DRONES	Etech_Automode	20.88	22.71	24.45	5
DATA MANAGEMENT AND SHARING PLATFORMS	Etech_Hloop	NA	NA	NA	NA
ANALYTICS	ETech_Drobots	TP	TP	TP	TP
DATA SHARING PLATFORMS	Etech_Ddrones	TP	TP	TP	TP
MOBILE APPS	DA_datamgt	FC	FC	FC	TP
REGULATIONS	DA_analytics	YES	YES	YES	NO
CYBER SECURITY AND PRIVACY	DA_Platforms	0.691	0.766	0.411	0
SURVEILLANCE AND CRISIS MANAGEMENT	DA_mobapp	FC	FC	FC	PC
INNOVATION AND ENGAGEMENT	GR_regulations	FC	FC	FC	PC
POLICY	GR_cybersec	97.82	98.52	98.52	99.54
PILOT PROJECT	GR_Surveillance	FC	FC	FC	PC
STANDARD AND FRAMEWORK	GR_innovengage	0.808	0.826	0.738	NA
COLLABORATIONS	GR_policy	FC	FC	FC	PC
(R&D)	GR_pilotproj	0.857	1	1	0.2
EMERGENCY PRIORITY SIGNAL	GR_stand&fram	YES	YES	YES	NO
EMERGENCY DRIVER COMMUNICATION	GR_collabo	YES	YES	YES	NA
ROAD NETWORK	GR_R&D	YES	YES	YES	YES
ELECTRIC VEHICLE CHARGING	EM_Priosignal	FC	FC	FC	NA
SMART MOTORWAYS	EM_drivComm	FC	FC	FC	NA
SMART PARKING FACILITIES	INF_roadnet	1.13	3.23	4.79	10.3
TRAFFIC SIGNS AND SIGNALS	INF_Evcharge	44	50	42	20
INTERMODAL MOBILITY HUBS	INF_sm_motoways	YES	YES	YES	NO
INTERNET-OF-THINGS (IOT)	INF_Smparking	FC	FC	FC	PC
INTERNET COVERAGE	INF_signs&signal	FC	FC	FC	FC
LABORATORIES	INF_mobhobs	YES	YES	YES	NO
TEST BEDS	INF_IoT	FC	FC	FC	PC
CONNECTED AND AUTONOMOUS VEHICLES	INF_intcov	92.70%	96.50%	89.73%	92.50%
SURVEILLANCE	INF_Lab	YES	YES	YES	NO
GIS	INF_testbed	YES	YES	YES	NO

ITS TRAFFIC MANAGEMENT CENTER	INF_CAV	3.233	3.525	3.379	1
USER EXPERIENCE	INF_surveillance	A	A	A	A
EXISTING SMART MOBILITY MODES	INF_GIS	A	A	A	A
PRIVATE TRANSPORT	INF_ITStrmgt_centre	FC	FC	FC	TP

Table S2. The set of indicators used for this study.

Indicator Code	Indicator Name	Unit	Parent
<i>UE_MaaS</i>	MaaS	score	User Experience
<i>UE_SmPark</i>	Smart parking	score	User Experience
<i>UE_epay</i>	Advanced ticketing and payments	score	User Experience
<i>UE_realtime_comm</i>	Real-time communication with passengers	score	User Experience
<i>EM_amob</i>	Active mobility	score	Existing smart mobility modes
<i>EM_smob</i>	Shared mobility	percentage	Existing smart mobility modes
<i>EM_cveh</i>	Connected vehicles	Availability	Existing smart mobility modes
<i>EM_DLtrain</i>	Driverless trains	Length	Existing smart mobility modes
<i>EM_Htaxi</i>	Heli-taxi	score	Existing smart mobility modes
<i>PV_detect</i>	Detection	score	Private transport
<i>PV_signal</i>	Traffic signal control	score	Private transport
<i>PV_Splimit</i>	Speed limit control	score	Private transport
<i>PV_Acontrol</i>	Access control	score	Private transport
<i>PV_epay</i>	Electronic payment	score	Private transport
<i>PV_realcomm</i>	Real-time communication	score	Private transport
<i>PV_trforecast</i>	Traffic Forecasting	operations	Private transport
<i>PV_D&Smgt</i>	Demand and supply management	score	Private transport
<i>PV_Smcard</i>	Smart card	score	Private transport
<i>PT_Blanes</i>	Bus lanes	score	Public transport
<i>PT_Psignal</i>	Priority signal	score	Public transport
<i>PT_Atransit</i>	Autonomous transit	Availability	Public transport
<i>PT_ExpTransit</i>	Express transit service	availability	Public transport
<i>PT_epay</i>	Electronic payment	score	Public transport
<i>PT_realcomm_pass</i>	Real-time communication	score	Public transport
<i>PT_realcomm_para</i>	Real-time communication	score	Public transport
<i>PT_Imobhubs</i>	Integrated transport terminals	score	Public transport
<i>Etech_Automode</i>	Autonomous modes	Availability	Emerging technology

<i>Etech_Hloop</i>	Hyperloop	Availability	Emerging technology
<i>ETech_Drobots</i>	Delivery robots	Availability	Emerging technology
<i>Etech_Ddrones</i>	Delivery drones	score	Emerging technology
<i>DA_datamgt</i>	Data management and sharing platforms	Availability	Data and analytics
<i>DA_analytics</i>	Analytics	score	Data and analytics
<i>DA_Platforms</i>	Data sharing platforms	score	Data and analytics
<i>DA_mobapp</i>	Mobile apps	score	Data and analytics
<i>GR_regulations</i>	Regulations	score	Governance and Regulation
<i>GR_cybersec</i>	Cyber security and privacy	score	Governance and Regulation
<i>GR_Surveillance</i>	Surveillance and crisis management	score	Governance and Regulation
<i>GR_innovengage</i>	Innovation and engagement	score	Governance and Regulation
<i>GR_policy</i>	Policy	score	Governance and Regulation
<i>GR_pilotproj</i>	Pilot Project	availability	Governance and Regulation
<i>GR_stand&fram</i>	Standard and Framework	availability	Governance and Regulation
<i>GR_collabo</i>	Collaborations	availability	Governance and Regulation
<i>GR_R&D</i>	(R&D)	score	Governance and Regulation
<i>EM_Priosignal</i>	Emergency Priority signal	score	Emergency transport
<i>EM_drivComm</i>	Emergency driver communication	Length	Emergency transport
<i>INF_roadnet</i>	Road network	score	Infrastructure
<i>INF_Evcharge</i>	Electric vehicle charging	availability	Infrastructure
<i>INF_sm_motoways</i>	Smart motorways	score	Infrastructure
<i>INF_Smparking</i>	Smart parking facilities	score	Infrastructure
<i>INF_signs&signal</i>	Traffic signs and signals	score	Infrastructure
<i>INF_mobhobs</i>	Intermodal mobility hubs	score	Infrastructure
<i>INF_IoT</i>	Internet-of-Things (IoT)	percentage	Infrastructure
<i>INF_intcov</i>	Internet coverage	availability	Infrastructure
<i>INF_Lab</i>	Laboratories	availability	Infrastructure
<i>INF_testbed</i>	Testbeds	availability	Infrastructure
<i>INF_CAV</i>	Connected and Autonomous vehicles	availability	Infrastructure
<i>INF_surveillance</i>	Surveillance	availability	Infrastructure
<i>INF_GIS</i>	GIS	score	Infrastructure
<i>INF_ITStrmgt_centre</i>	ITS Traffic management center	score	Infrastructure

Where UE, EM, PV, PT INF, GR, DA and Etech are User experience, modes, Emerging technology, private transportation, public transportation, Governance and regulations, Data analytics and Infrastructure respectively.