Legal and regulatory Framework regarding operations of unmanned aerial and vehicular systems :

Status of AV in Korea

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Current Status of AV Commercialization Policy in Korea

Global Trend of AV

EXHIBIT 10 | The Global Market for Autonomous Vehicles Should Grow from $42 Billion to $77 Billion

In 2025, AV sales will account for 25 percent of the market.

Sales of AV features are expected to grow from about $42 billion in 2025 to around $77 billion in 2035.


Sales of fully autonomous features are expected to reach 112 million in 2035 and 122 million in 2035.
Korea, Not a Leader in AV Market

**Technical Level**
- [Image: Person using a device]
- [Image: Car driving]
- [Image: Two people using a device]

**Institutional Level**
- [Image: Person using a device]
- [Image: Car driving]
- [Image: Two people using a device]

**Global Leaders**
- [Image: Person using a device]
- [Image: Car driving]
- [Image: Two people using a device]

**Korea**
- [Image: Person using a device]
- [Image: Car driving]
- [Image: Two people using a device]

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Korean Government Organization for AV Supporting Policy

**THE PRESIDENT**

**THE PRIME MINISTER**

**AV Industry Promotion**
- Ministry of Trade, Industry and Energy

**AV Institution & Infra**
- Ministry of Land, Infrastructure and Transport

**ICT Based AV R&D**
- Ministry of Science, ICT and Future Planning

**Digital Map (Dynamic Map) for AV**
- National Geographic Information Institute

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UN-GGIM
United Nations Initiative on Global Geospatial Information Management
ggim.un.org
AV Commercialization Support Policy in Korea

**Vision**
AV for Safety Improvement & A New Growth Source

<table>
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<tr>
<th>Stage 1</th>
<th>Partial Commercialization of Level 3 AV Technology by 2020</th>
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<tr>
<td>Stage 2</td>
<td>Leading the Trend toward Level 4 AV Technology by 2025</td>
</tr>
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</table>

**Institution**
- Introduce AV Test Driving System
- Overhaul Existing Institution for Commercialization

**Infrastructure**
- Build Precise Map
- Improve GPS Accuracy
- Expand AV Road Infrastructure

**Technology**
- Expand AV Testing Area
- Strengthen Cyber Security Measures

**Industry**
- Train Experts
- Build Long-term R&D Strategy
- Hold Test Driving Event and Contest

**UN-GGIM**
United Nations Initiative on Global Geospatial Information Management

**AV Commercialization Support Roadmap**

**AV for Safety Improvement & A New Growth Source**

**Stage 1**
- AV Policy Improvement
- Task Based on AV

**Stage 2**
- Establish System Center for AV
- Task Based on AV

**Stage 3**
- Commercialization of Level 3 AV Technology

**Stage 4**
- Leading the Trend toward Level 4 AV Technology

**UN-GGIM**
United Nations Initiative on Global Geospatial Information Management

**C-ITS Pilot Project**
Self-driving for Bus Rapid Transit
Self-driving for Common Transit
Last One Simile Service
V2X Dissemination and Expansion
V2X Support and Security in Telecommunication Tech.

**Core AV Safety Evaluation Technologies**
- Core Parts and System Technology
- Core Parts Upgrading

**Demonstration and Pilot Project**
Efficient Infrastructure Support and Data Acquisition for Social Acceptance

**The National strategic project**
Traffic Optimization in Road Congestions by Increasing the number of vehicles and individual car (MOLIT, MSIP, MOTIE)
Fusion Technology (Electric and Self-driving car, AI) (MOLIT, MSIP, MOTIE)
Physical Infrastructure Construction for K-City (‘16 - ’18) & Regulation Freezone
Precise digital Map for AV and GPS Accuracy Improvement
Road Transport Law (National Police Agency)
Traffic Information Updates based on Car, Supporting Technology for Junction and Interchange of Road (MOLIT, MSIP, MOTIE)
Temporary Operation License for AV
Chapter

Major Issues for AV Commercialization in Laws & Ethics

Many Accidents related AV reported

Tesla Fatal Accident
(Autopilot Problem)

http://gas2.org/2016/07/02/new-details-fatal-tesla-crash-emerge/

Google Car Crashed
(by man-driving car)

https://twitter.com/grommet
Ron van Zulyen
4 Major AV Promoting Motivation:
- **Safety / Welfare / Economy / Environment**

1. **Safety Regulation... HOW? (ex: Nevada or California)**
   - Switching Equipment to be able to change manually (Disengagement of Autonomous mode)
   - Insurance Duty (more than $5 million)
   - Duty for recording Self-Driving test results and Submit it to Gov.
   - Driver’s License for testing AV or Commercialized AV

2. **Safety Secure... HOW?**
   - Safety problem during the transition period (Man Driven -> ADAS -> AV)
   - Insufficiency of Infrastructure (V2I, V2V, V2X, Dynamic map...)

3. **Liability... WHO? WHICH?**
   - Driver .vs. AV Company / SW .vs. Sensor
     - Can the AV SW algorithm be a Driver in legal terms?
     - In accident case, Whose liability is more heavily? AV Owner or AV Company?

4. **Privacy & Security**
   - Needs of Compromise with Privacy and Security

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4 Major AV Promoting Motivation:
- **Safety / Welfare / Economy / Environment**

1. **Public Transportation .vs. AV (Private Car)**
   - Welfare for the aged and disabled people
   - Which way is more effective and efficient to Social Welfare?

- **Safety / Welfare / Economy / Environment**

1. **Labor Market Change**
   - Decrease of traditional Jobs (Taxi, Bus Driver ...)
   - New Sharing Economy Growth (Uber, Car Sharing ...)

2. **Infrastructure**
   - Power Station/V2X Infra/ Telecommunication Tech. (5G)/Dynamic amp
   - New City Plan (Smart City Plan) for AV

- **Safety / Welfare / Economy / Environment**

1. **Energy Zero Emission**
   - Reduction of fuel consumption & CO2 emission by optimizing traffic flow
Effective Counterplan of the Ethical Issues

(1) Social Corresponding Strategy 1 : Various Ethical Criterion
   - Communication and Persuasion : Formation of Social Consensus

(2) Social Corresponding Strategy 2 : Joint Response System
   - Establishment of Common Fund for supporting accident victims

(3) Individual Corresponding Strategy : Robotics Ethic Committee
   - Managing and Reviewing the Occasional Robotics Ethic Problem
     (Manufacturing Company, Operating Company, Authorities …)

(4) Legal Corresponding Strategy : Revision various Laws and Regulations
   - Clarification of Liability, Insurance Duty, Liability on Criminal/Civil Law ..
   - Revision of Administrative Law and Regulations

Revision of related Laws in Korea

<table>
<thead>
<tr>
<th>Date of legislation</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Legislation</td>
<td>Motor Vehicle Management Act/Enforcement Decree of the Automobile Management Act/Enforcement Rule of the Automobile Management Act/Delegate Administrative Rule</td>
<td></td>
</tr>
<tr>
<td>2015.05.26</td>
<td>Pre-announcement of legislation of revision of rule with regard to the performance and standard of motor vehicle and motor vehicle part</td>
<td>In order to develop AV and support supply, the government approved the installment of autonomous steering system during the temporary period.</td>
</tr>
<tr>
<td>2015.08.05</td>
<td>Pre-announcement of legislation of revision of the enforcement decree and enforcement rule of the automobile management act</td>
<td>To support the development of motor vehicle industries, it inclines to improve &amp; compensate loopholes that indicated from the operation system by compensating the temporary operation system of green &amp; advanced future technology vehicle such as AV and micro car.</td>
</tr>
<tr>
<td>2015.08.07</td>
<td>Administrative notice of regulation bill concerning the safety operation requirements of AV and test operation</td>
<td>A bill for Revision of the Enforcement Rule of the Automobile Management Act (Ministry of Land, Infrastructure and Transport Offical Notice 2015-965) authorizes a temporary operation license for AV where it inclines to determine the detail requirements and evaluation methods for safety operation of AV.</td>
</tr>
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</table>
## Revision of related Laws in Korea

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<tr>
<td>2015.10.22</td>
<td>Pre-announcement of legislation of revision of rule with regard to the performance and standard of motor vehicle and motor vehicle part</td>
<td>Enforcement Decree of the Automobile Management Act Temporary Operation Permitted Period of AV Regulation(Bill 7) When Minister of Land, Infrastructure and Transport allows temporary operation of AV for testing and researching purposes, it inclines to prescribe regulations that such period shall not exceed 5 years.</td>
</tr>
<tr>
<td>2016.02.04</td>
<td>Enacted the regulation of the safety operation requirements of AV and test operation</td>
<td>Revision of Motor Vehicle Management Act(Act 13486, 2015. 8. 11. Proclaimed, 2016. 2. 12. Enforced) and Enforcement Rule of Automobile Management Act(Decree of Ministry of Land, Infrastructure and Transport 284, 2016. 2. 11 Proclaimed, 2016. 2. 12 Enforced) shall establish detail requirements and confirmation methods for safety operation which are delegated by the Rules.</td>
</tr>
<tr>
<td>2016.03.29</td>
<td>Pre-announcement of legislation of revision of rule with regard to the performance and standard of motor vehicle and motor vehicle part</td>
<td>Application of special safety standard for AV(Bill attachment 6.2). In order to develop AV and support supply, it applied the special safety standard on the steering technology among the standard of automotive steering system in relation to temporary operation of AV for testing and researching purposes.</td>
</tr>
</tbody>
</table>

http://autonomousvehiclelaws.com/w/index.php/Main_Page#Trends
Thank you