

Industry briefing

Telematics in Asia: Development and impact

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Telematics in Asia: Development and impact



Why Telematics matters	3
Telematics overview	14
Industry drivers & obstacles	18
Telematics development	23
Appendix: Information sources	37
About Fusion Consulting	40

This report provides an overview of the development of Telematics in Asia, and its impact on related sectors including automotive, telecom, media and technology.

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Other whitepapers available to selected industry participants include **China in Transition**, **Electronics in Southeast Asia**, and **RFID - Contactless Payments in Asia**. Email more@fusionc.com to request your free copy.

Abbreviations, acronyms and definitions



B2B	business to business
B2C	business to consumer
CAGR	compound annual growth rate
GIS	geographic information system
GPS	global positioning system
ITS	intelligent transport system
M-commerce	mobile commerce
RFID	radio frequency identification



Why Telematics matters

Telematics overview

Industry drivers & obstacles

Telematics development

Appendix: Information sources

About Fusion Consulting

Telematics' impact goes beyond the automotive industry, with most potential in Northeast Asia



Key research findings

- It is not only the automotive industry that needs to work out a business strategy related to Telematics.
- Telematics has an impact on other industries too:
 - Financial services.
 - Telecom.
 - Media.
 - Logistics.
- Increasing car ownership and economic activity, high penetration of mobile technology and growing traffic density help drive Telematics development.
- The best potential markets for Telematics in Asia are: Japan, Korea and China.

Telematics gives access to affluent consumers, and is becoming a part of the Internet economy



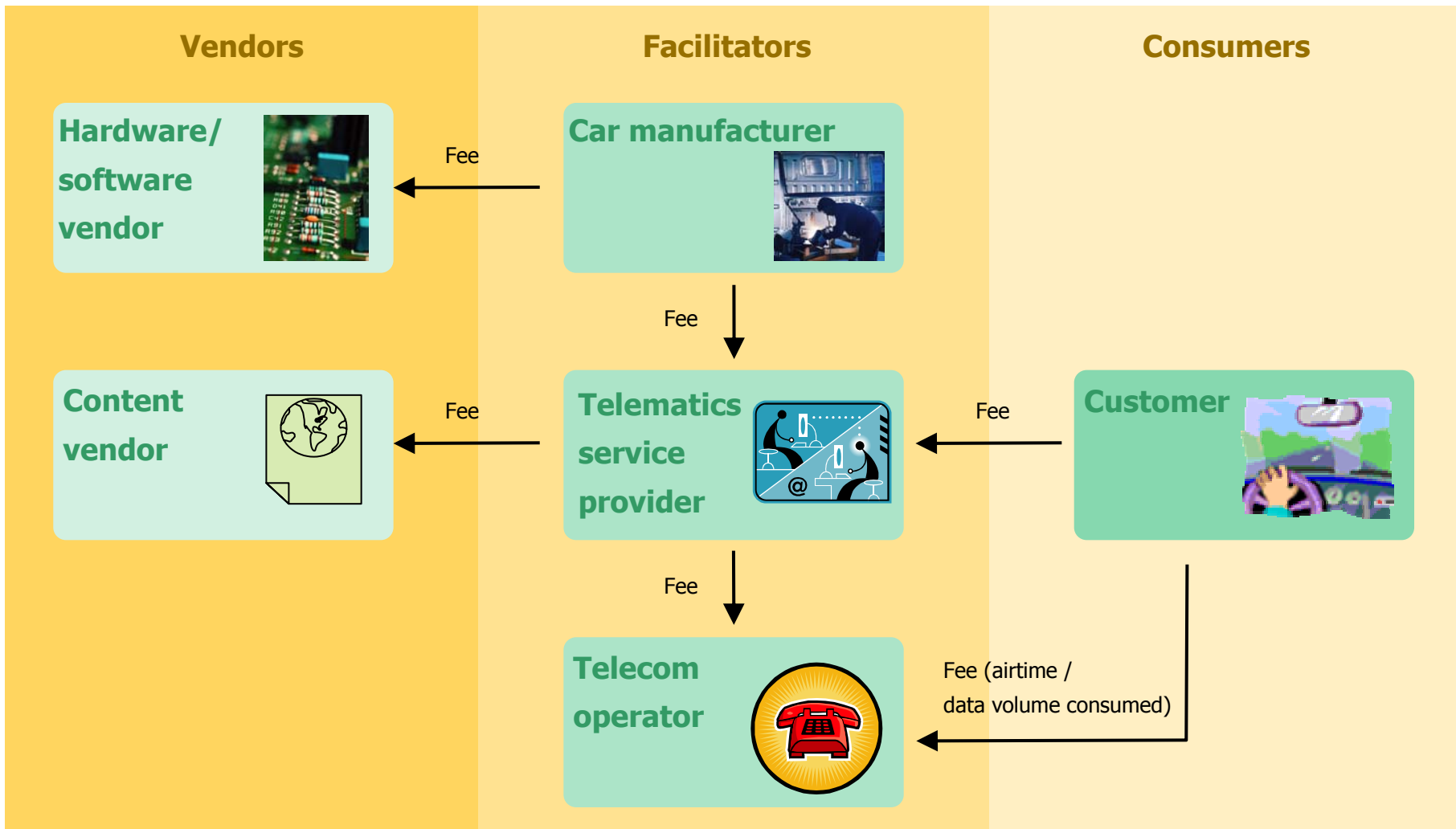
Car-owning consumers are generally more affluent; a consumer group that marketers want to reach out to

Telematics devices will become significant as Internet-enabled equipment in the future

Number of vehicles on the rise in Asia as economies develop

Telematics uptake is impacting not just the auto industry but others including telecom, media, logistics, etc.

The Telematics business model comprises three tiers: Consumers, facilitators and vendors



Source: Fusion Consulting

Future Telematics adoption will be lead by driver assistance and relationship management



Asia: Telematics development stages

Main directions

Late 1990s Early stage

- To use Intelligent Transport Systems (ITS) to better manage city traffic
- To provide essential traffic news and information

Telematics usage

- Traffic alerts and news
- Traffic congestion reduction

2000-05 Developing stage

- To improve driving experience
- To make content available to dashboard

- Navigation
- Car positioning
- Information and entertainment

2006-10 Maturing stage

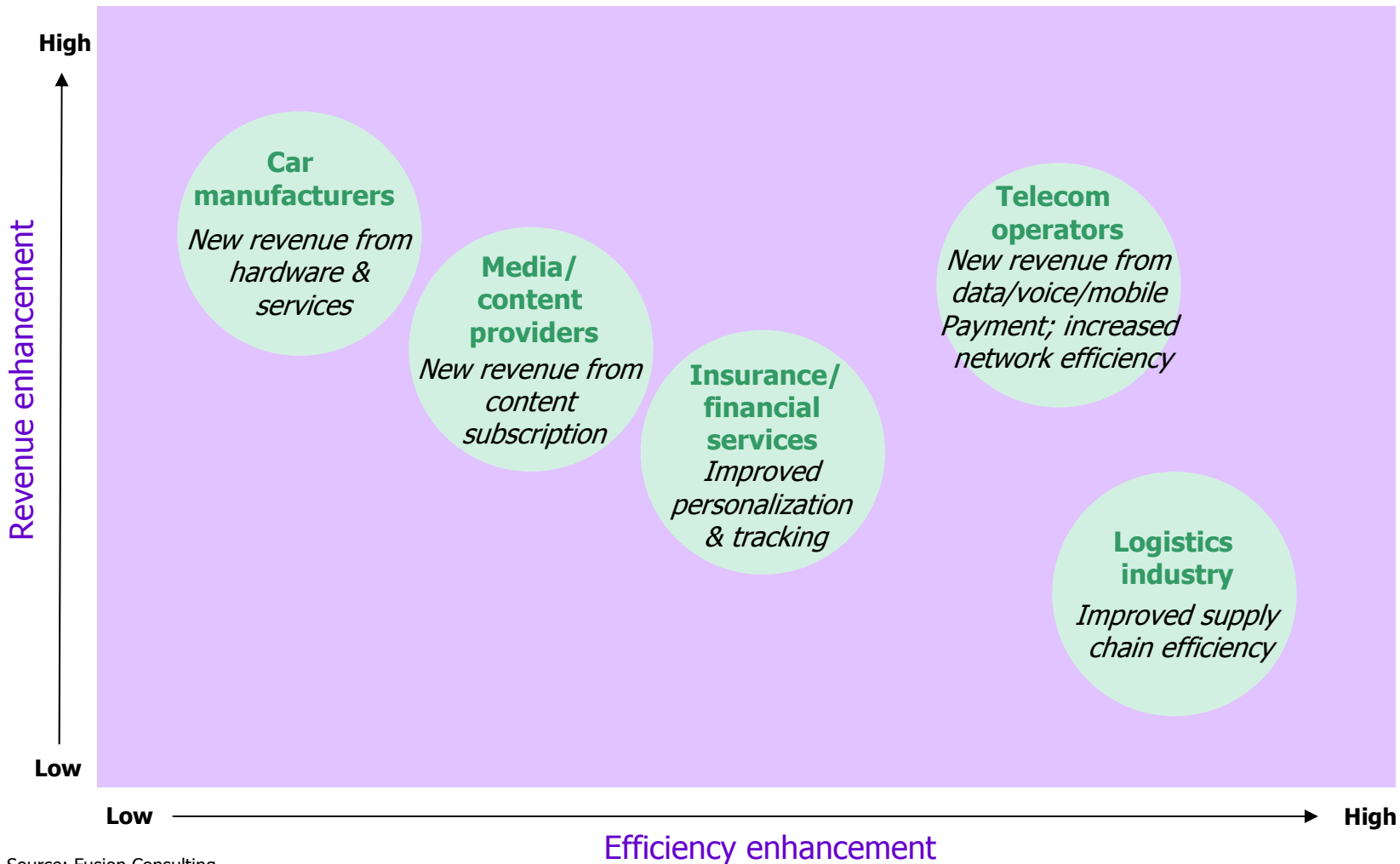
- To integrate Telematics with other wireless technology
- To manage relationships with cars/drivers

- Driver assistance
- Remote car diagnostics
- Vehicle relationship management

Telematics brings improvements in revenue and efficiency to several industries



Impact of Telematics on value propositions of various industries



Source: Fusion Consulting

For car manufacturers: Telematics services as a differentiator



Strategic impact

- Telematics will be a value-added item and offer higher margins for car manufacturers.
- New revenue streams in the format of:
 - Hardware sales e.g. navigation devices.
 - Subscription plans e.g. traffic alerts.

Brand impact

- Telematics creates new consumer experiences that make driving simpler and safer.
- Telematics offers a new branding platform, shifting from functionality-based branding to lifestyle-based branding for car manufacturers.

Over time, car manufacturers have moved their focus of business downstream in the value chain.

Services and customer experience are the focus, rather than parts and functionalities.

For insurance/financial services: Better customer knowledge via improved tracking



Better customer knowledge

- Car insurance companies and financial institutions will be able to:
 - Track the risk associated with driving.
 - Offer individually priced insurance based on drivers' profile and driving patterns.

Better use of knowledge

- This paradigm shift in the car insurance industry is enabled by the use of telematics technology e.g. GPS.
- Data streams are constantly feeding back to the insurer's database about:
 - Road conditions.
 - Traffic conditions, e.g. congested areas.
 - Speed conditions.
 - Travel patterns.

With telematics technology, car insurers will be able to track driving behaviour and car movements.

New types of auto insurance products, e.g. pay-as-you-drive, will emerge.

For telecom operators: Enhanced revenue from B2B and B2C Telematics services



B2B telematics revenue generators

- Telematics service providers pay for network transport and service delivery.
- Corporate customers and logistics companies pay for fleet management applications and data/voice traffic.
- Car manufacturers pay for installing SIM cards in vehicles.

B2C telematics revenue generators

- Phone subscribers pay for time- or data-based usage of Telematics services, e.g. personal navigation/positioning through a mobile phone screen.
- Telematics subscribers pay for miscellaneous mobile vending, e.g. parking fees, etc..

China Unicom works with Beijing Ancai Cstarcom Technology, a Telematics service provider specializing in positioning.

Users with Cstarcom's vehicle monitoring services receive location updates from China Unicom, paying China Unicom for data usage.

For media/content providers: A new content distribution and consumption platform



New distribution channel

- Telematics delivery of content represents a new distribution channel for media/content providers, although there might be some overlap with content delivered to other mobile devices.

Revenue opportunities

- Revenue opportunities exist in premium content such as geography-specific information, location-based shopping guides, etc..

Economies of scale

- As the installed base of Telematics users grows, media/content providers will enjoy economies of scale and better returns.

One of the challenges for media or content providers in Telematics is the need for frequent content updates and serving geography-relevant content as the end-user is on the move.

For logistics industry: Improved supply chain efficiency



Better management

- Better commercial fleet management – Telematics provides two-way wireless communication between vehicles/drivers and trucking company locations.
- With GPS tracking, drivers on the road can be deployed and diverted at short notice to take on new assignments, resulting in:
 - Flexibility in route planning.
 - Increased vehicle usage rate.
 - More efficient usage of capacity.
 - Reduced fuel consumption.

Better communication

- Better delivery of instructions – in addition to voice-based messages, text- and graphic-based messages can be delivered and shown properly on the truck dashboard.
- Benefits are:
 - Improved data accuracy and reduced confusion.
 - Better shipment and location information.
 - Clearer instructions for cargo pick-up and delivery.

RFID and Telematics Combo:

The two main components of supply chain costs are inventories and transportation.

RFID improves the inventory management process while Telematics improves the transportation process.

By employing both technologies, overall supply chain efficiency is improved.



Why Telematics matters

Telematics overview

Industry drivers & obstacles

Telematics development

Appendix: Information sources

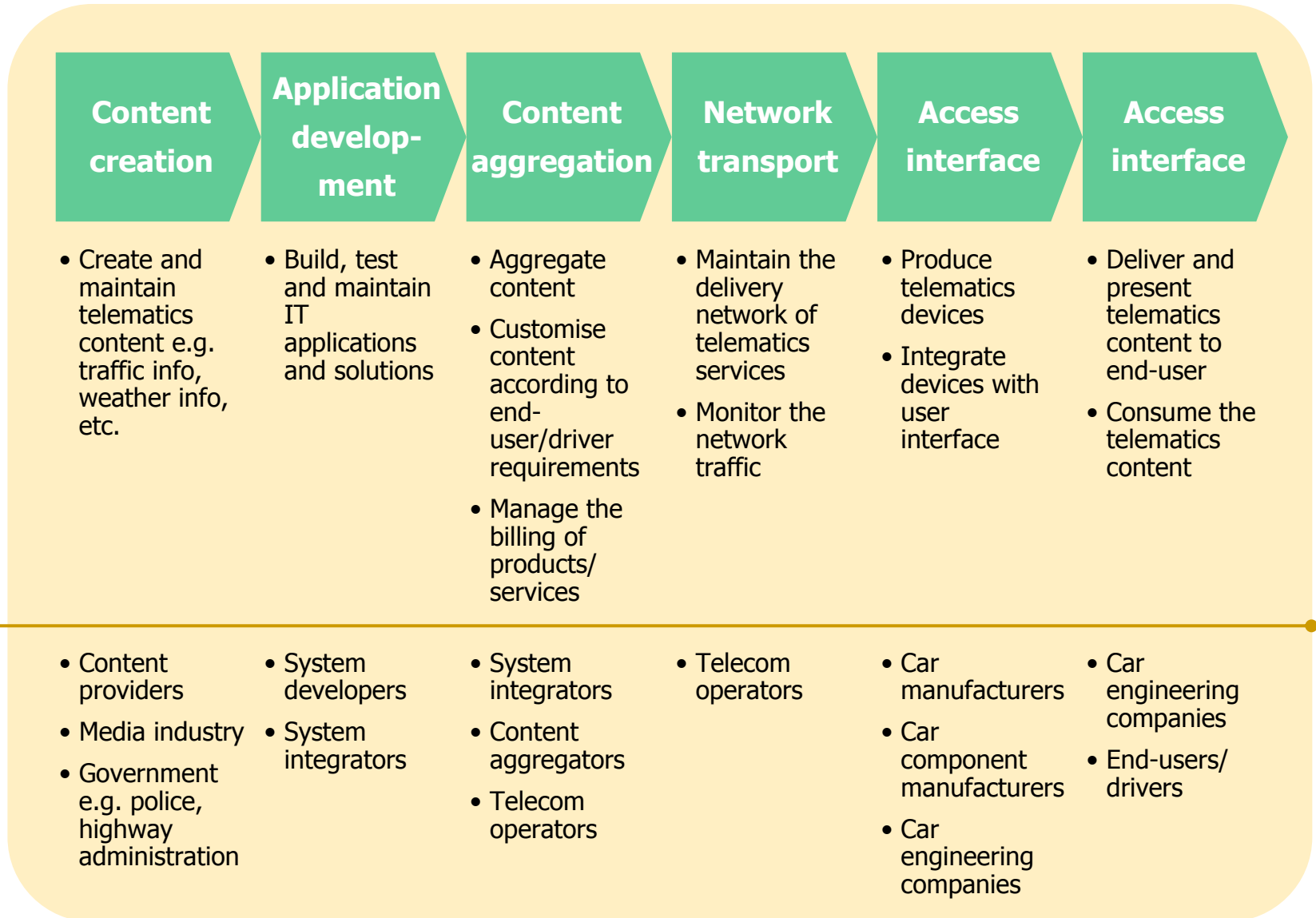
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Telematics = communication + location



- Telematics is a communication technology for the automobiles based on information flowing to and generated from vehicles via wireless networks.
- Telematics has two major features:
 - Two-way communication through wireless technology
 - Location-sensitive technology
- Devices are installed on vehicles. Broadly speaking, there are two major market segments:
 - Systems market – telematics devices pre-installed by car manufacturers
 - After market – telematics devices installed by car owners as separate purchases
- Telematics adoption requires joint industry collaboration between car manufacturers, telecom operators, media companies, government, public service agencies and technology companies

Telematics value chain encompasses devices, content and delivery



Uses of Telematics range widely from navigation through safety to entertainment



Navigation/Traffic

- Positioning
- Traffic information

Information/Entertainment

- News or location-sensitive updates
- Stock quotes
- Video-on-demand
- Music-on-demand



Communication

- Voice call
- Data call

Safety/Monitoring

- Emergency alerts
- Anti-theft

Driver assistance

- Remote diagnostics
- Service registration
- Technical help



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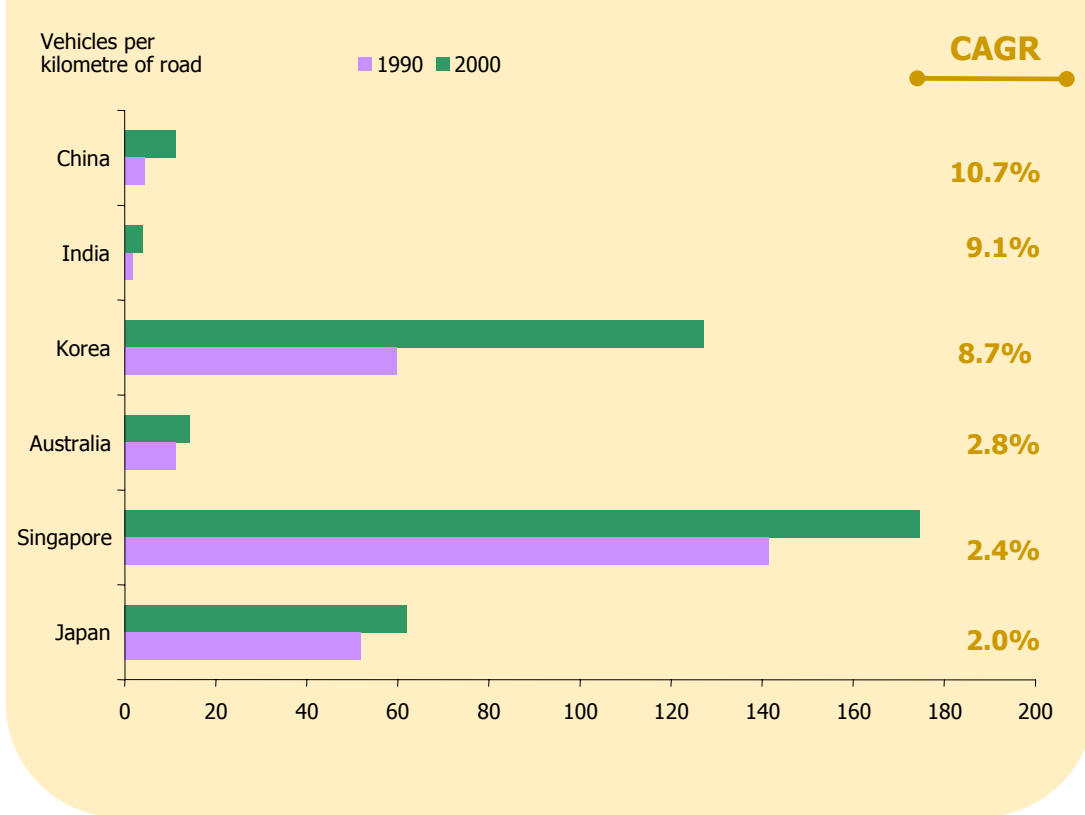
Appendix: Information sources

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Growing vehicle density & congestion creates need for traffic information



Vehicle density growth in Asia



Key dynamics

- Vehicle density on the rise in major Asian countries.
- Vehicle density growth in the 90s ranged from 2 % to 10.7 % in Asia, while it was only 1.6 % in United States.
- Increasing vehicle density and traffic congestion help trigger the need for better driving route planning and demand for real-time traffic information.

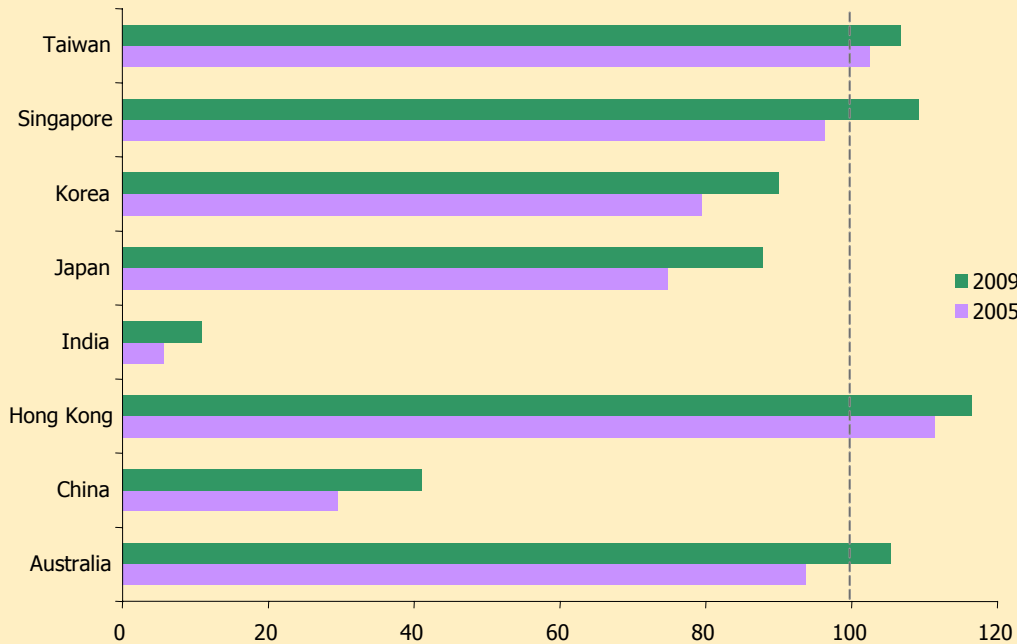
Source: United Nations Economic and Social Commission for Asia and the Pacific; Fusion Consulting analysis

High mobile phone penetration serves as a strong base for Telematics



Mobile phone density in Asia

Subscribers per 100 population

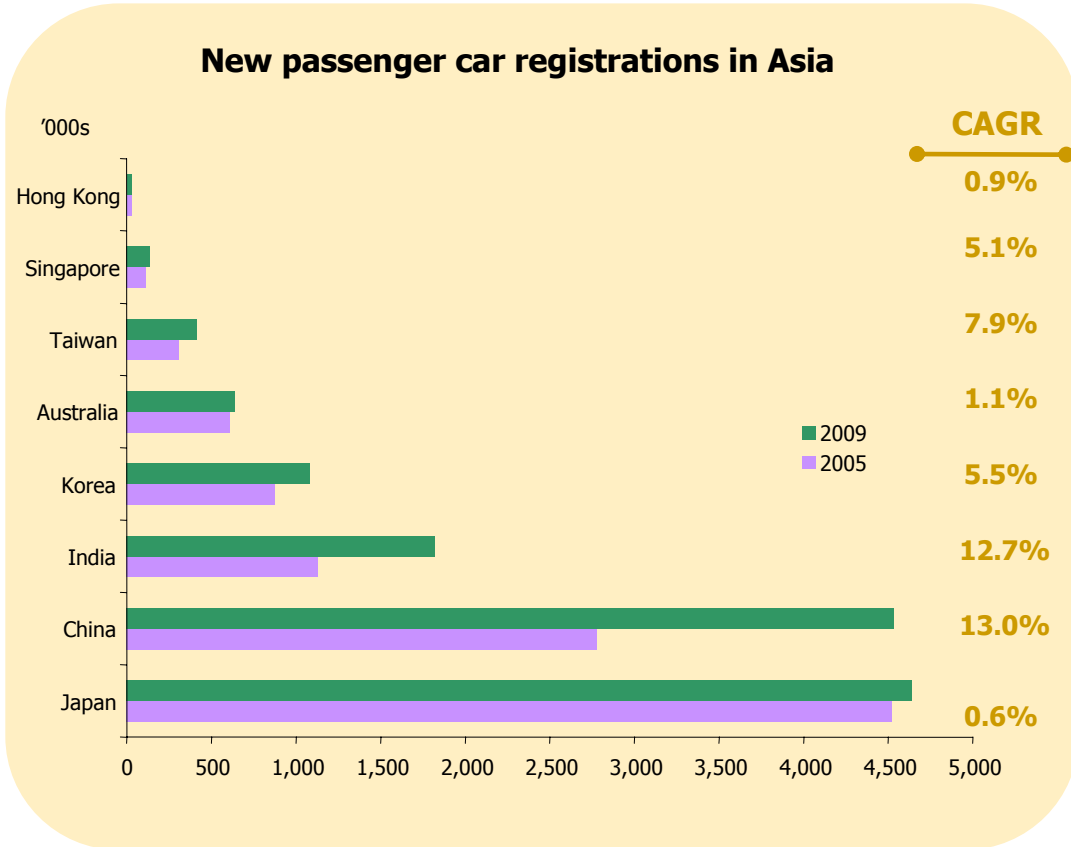


Source: Pyramid Research, IDC, Economist Intelligence Unit

Key dynamics

- Strong mobile phone penetration in Asia.
- This large base of mobile phone subscribers will be significant to the growth of telematics, especially in the aftermarket telematics, where mobile phone integration with cars will be the main value proposition.
- 100% or above mobile phone penetration is expected in Australia, Hong Kong, Singapore and Taiwan in year 2009.
- 80% or above mobile phone penetration is expected in Korea and Japan in year 2009.

Increasing car ownership represents a growing potential user base in Asia



Source: Economist Intelligence Unit

Key dynamics

- Car ownership in Asia will increase as the Asian economy grows. This provides a strong growing base for telematics services.
- Between year 2005 and 2009, new passenger car registration is expected to grow in Asia, ranging from 0.6% to 13% per annum.
- China and India are the fastest growing countries in terms of new passenger car registration.
- Japan is and will continue to be the largest market for new passenger car in terms of volume.

Varied language, culture and technology in Asia complicates Telematics development



Main obstacles to Telematics development

- Heterogeneous language and culture
 - In Asia, multiple languages are in use, very unlike the United States, where English is the default language.
 - Telematics services providers need to carry out product/ content localization as well as customized user interface design to accommodate the diversity in language and culture in Asia.
- Fragmented market with different telecom standards
 - Telematics involves integration with various telecom systems and standards.
 - In Asia, various mobile communication standards are used, making it difficult to achieve the economies of scale.
- Varied availability of geo-information
 - Collecting and managing raw data like real-time traffic information does not come cheaply.
 - A few countries, e.g. China, have concerns about making detailed mapping data available as there will be risk exposure and national security issues.



Why Telematics matters

Telematics overview

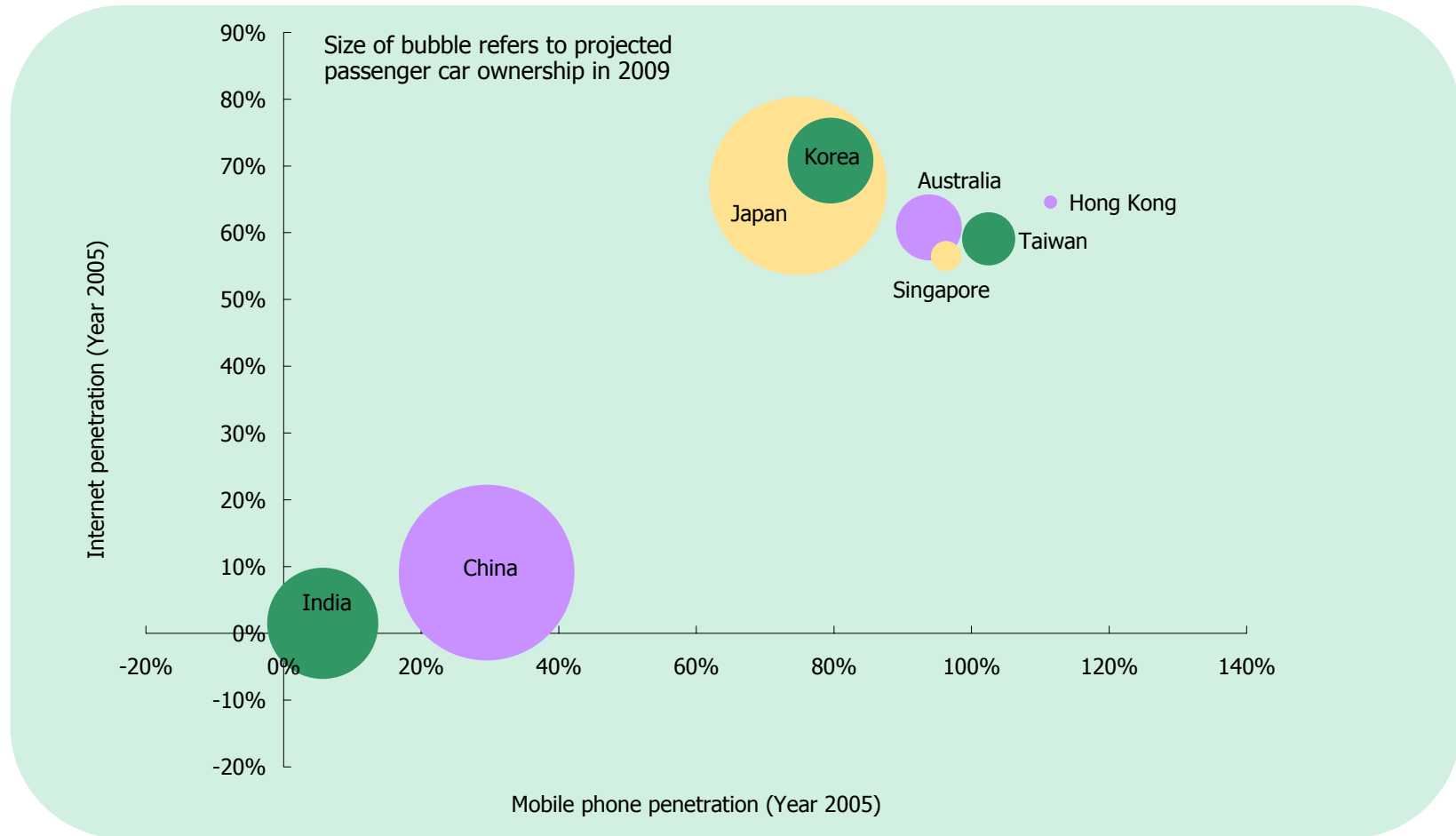
Industry drivers & obstacles

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Appendix: Information sources

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Japan and Korea emerge as the top opportunity markets; China and India have potential



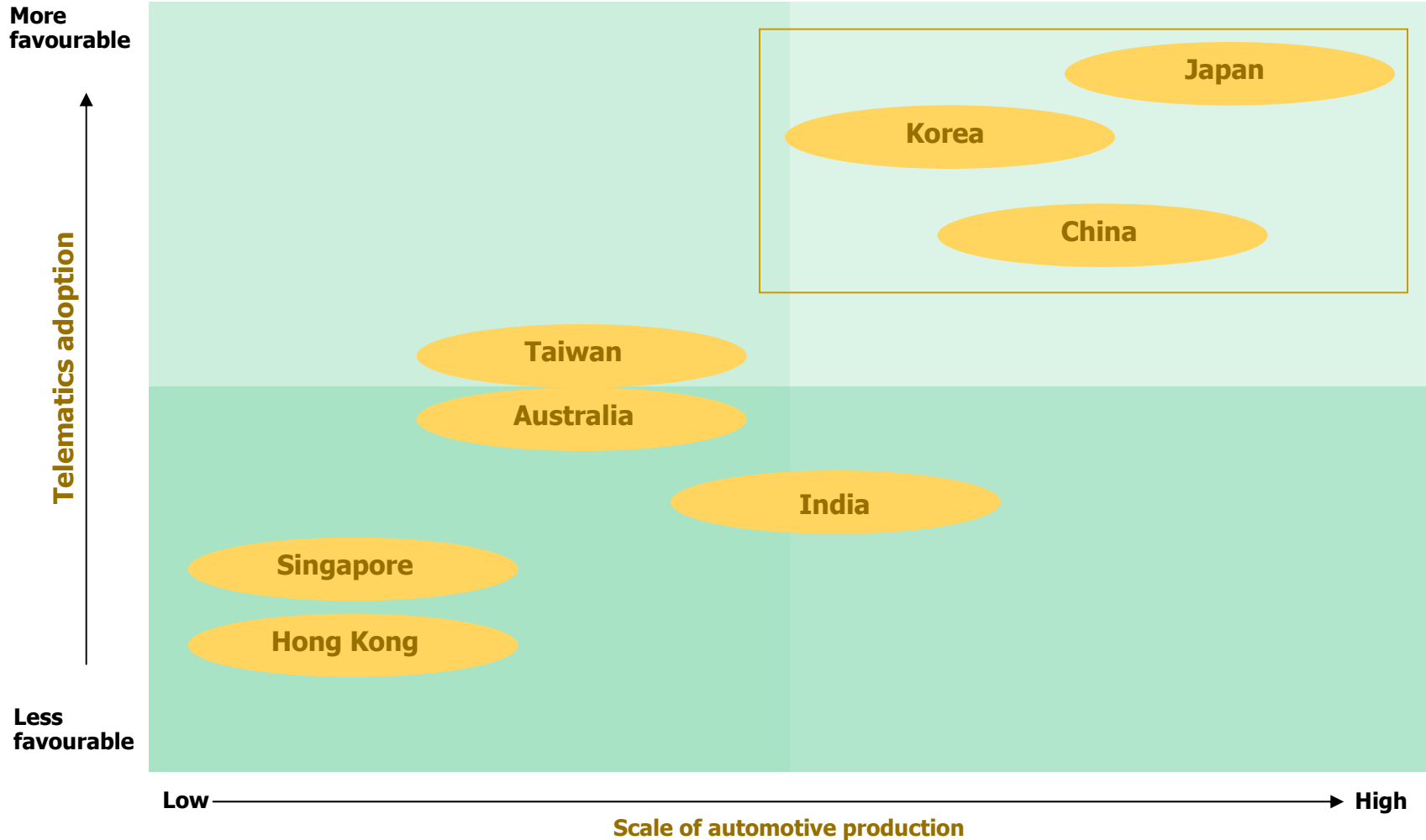
Source: Fusion Consulting, Pyramid Research, IDC, Economist Intelligence Unit

- Japan and Korea emerge as the top potential markets for Telematics based on technology (mobile and Internet).
- China and India look to have potential once future car ownership is factored in, especially considering that urban mobile and Internet penetration is much higher than the country average.

Japan, Korea and China are the preferred markets by Telematics players



Preferred Telematics markets in Asia



Source: Fusion Consulting

Japan, Korea and China offer the best potential for Telematics



Best Telematics potential

	Australia	China	Hong Kong	India	Japan	Korea	Singapore	Taiwan
Car production scale	Low	High	Low	Medium	High	High	Low	Low
Vehicle density	Low	Low	High	Low	High	High	High	Medium
Car industry sophistication	Medium	High	Low	Low	High	High	Low	Medium
Electronics industry sophistication	Medium	Medium	Low	Low	High	High	Medium	High

Source: Fusion Consulting

Government support is strong in Korea and Japan; the industry is nascent in China



- Car manufacturers are active in Telematics.
- Good government support and infrastructure.



- Strong collaboration between Telematics players.
- Good government support and infrastructure.



- Telematics market still in early stage.
- Strong growth in car ownership and vehicle density.

In Japan, Telematics activity is being lead by car manufacturers



Background

- The automotive telematics industry in Japan arose from a governmental initiative begun in 1996 to build Intelligent Transport Systems (ITS).
- ITS aims to improve driving comfort, efficiency, safety and security, and reduce environmental costs resulting from traffic congestion.
- This initiative is called VICS (Vehicle Information and Communication Systems), allowing drivers to receive real-time road traffic information about congestion and regulation.

Current landscape


- Current Telematics development in Japan is mainly driven by car manufacturers e.g. Toyota, Honda, etc.
- Major car manufacturers are offering their own branded telematics devices installed on the vehicles.
- Traffic information and navigation are the major application of Telematics currently.

Outlook

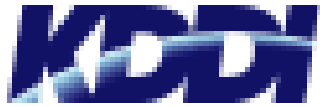
- More sophisticated application of Telematics e.g. remote car diagnostics is expected.
- Telematics will be a useful tool for car manufacturers to do CRM (Customer Relationship Management) as it gathers various information about the car usage and drivers' driving pattern.

Toyota, Nissan and Honda have been the major Telematics players in Japan since 2002



Provider/ company	<ul style="list-style-type: none"> • Toyota 	<ul style="list-style-type: none"> • Nissan 	<ul style="list-style-type: none"> • Honda
Project/ initiative			
Year launched	<ul style="list-style-type: none"> • 2002 	<ul style="list-style-type: none"> • 2002 	<ul style="list-style-type: none"> • 2002
Services/ features	<ul style="list-style-type: none"> • Traffic information • Navigation • Email • Web • Emergency assistance • Removable SD (Secure Digital) card media reader 	<ul style="list-style-type: none"> • Traffic information • Navigation • Maps • Restaurant information • Telephone operator assistance 	<ul style="list-style-type: none"> • Traffic information • Navigation • Internet • Helpdesk

KDDI and NTT are the major Japanese telecom operators in Telematics



- KDDI's EZweb service provides drivers with driving direction assistance and information from VICS (Vehicle Information and Communication System)
- KDDI mobile phone subscribers can also access traffic information via the mobile phones.
- In end 2006, they plan to launch three-dimensional mapping with images of buildings and other objects within a radius of 50 meters from major intersections in Japan's 12 major cities.



- Its popular i-mode services provide comprehensive information to mobile users and drivers.
- Under i-mode, "i-area" is a service that automatically selects and displays i-mode content related to the location of the i-mode user. Users do not select service areas since the base stations automatically recognize their locations.
- It has a joint service with Nissan called Okutto-Keitai, allowing drivers to receive i-mode digital maps and restaurant information corresponding to the area in which their car is located.



Strong collaboration between Telematics players in Korea



Background

- The Ministry of Information and Communication of Korea's Government has a master plan entitled "IT 8.3.9 project" to trigger a growth momentum in the ICT industry by designating 8 services, 3 infrastructures and 9 industries as Korea's new growth engines. Telematics is one of the industries designated.
- In 2003, KOTBA (Korea Telematics Business Association) was founded jointly by players in the mobile telecommunication, automotive maker and device industries.

Current landscape




- A Telematics Information Center (TELIC) is established to provide an "one-stop" platform to provide core information e.g. traffic, accident alerts to the Telematics users.
- A "Jeju Telematics Model City" project is in place on Jeju city, one of the most famous tourist attractions with highest rate of rental car in Korea. This provides a real city-scale ground for testing and launching Telematics services.
- KTSF (Korea Telematics Standardization Forum) is established to work with private sectors to work out standardization for Telematics content and hardware.

Outlook

- Telematics will be part of Korean Government's vision for "Ubiquitous Korea" (often known as "U-Korea"). This is the envisioned future in which people to have uninterrupted access to the Internet, via fixed lines or mobile networks, any time, anywhere.

Hyundai/KIA and Renault Samsung are the early Telematics players



Provider/ company	•Hyundai / KIA	•Ssangyong Motors	•Renault Samsung
Project/ initiative			
Year launched	•2003	•2005	•2003
Services/ features	<ul style="list-style-type: none"> •Traffic information •Navigation •Emergency assistance 	<ul style="list-style-type: none"> •Traffic information •Current location information •Maps •Golf course information •Weather •Vehicle control by mobile phone 	<ul style="list-style-type: none"> •Traffic information •Navigation •Rescue service

SK Telecom is the leading Korean telecom operator in Telematics



- Launched a Telematics service titled "Nate Drive".
- NATE Drive is a cutting-edge wireless Internet service that provides drivers with hands-free function and vital navigation information such as driving routing guidance, real-time traffic situations, facility location, emergency and rescue notification, as well as location and schedules of leisure and life, etc. through Global Positioning System (GPS) technology and cellular phone wireless network.



- "K-ways" is a Telematics service that offers convenient navigation service via mobile phone or in-car screen.
- It also provides safe driving service e.g. voice guidance on violations of speed limit and traffic signals etc.



- Launched a Telematics service "ez Drive," enabling customers to find the fastest route to their destinations and provide traffic updates by voice and maps displayed on their mobile phones.
- Plans are on the way to connect the navigation services with location-based data on fueling stations, restaurants, public facilities and other venues.



The focus in China is on content and navigation



Background

- China's Telematics development is relatively "young", comparing to Korea and Japan.
- The concept of ITS was formally introduced in the year 2000, when General Motors China and the Ministry of Science and Technology in China co-sponsored China's first contest on intelligent transportation systems to promote research and applications in this area.

Current landscape

- China lacks the large-scale Telematics uptake driven by major car manufacturers, such as what the Korean and Japanese car manufacturers are doing in these countries.
- However, Japanese cars are more familiar brands in the mind of Chinese consumers. Certain Japanese brands e.g. Toyota, etc. are offering Telematics-enabled cars in China.
- Little effort is seen among the national or government level to drive the Telematics application in China.
- Telematics players are mainly centered around hardware and content e.g. mapping, navigation, etc.

Outlook

- The 2008 Beijing Olympics event is pushing the Chinese Government to improve city traffic management by installing ITS. Beijing is now developing an ITS as part of its preparations for the 2008 Olympics.

Positioning and navigation are the main Telematics applications in China



- China Mobile offers an industry-specific Telematics solutions for the transportation sector.
- It offers taxi fleet management solutions, allowing taxi operators to deploy vehicles, organize booking and monitor traffic situations.



- China Unicom works with third-party Telematics service providers to deliver regular location updates for vehicle monitoring purposes. China Unicom subscribers are able to receive short messages regarding their vehicle locations.
- Subscriber revenue is earned by the number of messages delivered or the amount of data consumed.

- Chinese car manufacturers are still new to the concept of Telematics, comparing to their counterparts in Japan and Korea.
- There is no large-scale Telematics activities in the car manufacturing stage.
- Telematics is still considered as something "optional".
- Currently, telematics is mainly used in:
 - Car positioning
 - Navigation

Other Asian markets are still in the early stages



India

- Despite the impressive growth and use of telecom services, telematics in transportation in India is still at a nascent stage.
- In the long term (circa 2009), the India's Telematics will be very sophisticated, as it capitalizes on its domain knowledge in automotive and technology, especially software technology.
- One of the active players is Tata Motors, part of the Tata group, India's largest private business group.

Taiwan

- In Taiwan, Yulon Nissan, the Taiwan arm of Nissan, launched the telematics services under the name of "TOBE".
- "TOBE" offers anti-theft feature, call center services as well as information services e.g. traffic report, weather forecast, etc.

Australia

- In 2004, Australian Government allocated a major grant worth \$300,000 Australian dollars to the Australian Electrical and Electronic Manufacturers' Association (AEEMA) to help drive the development of telematics in Australia.



Why Telematics matters

Telematics overview

Industry drivers & obstacles

Telematics development

Appendix: Information sources

About Fusion Consulting

Desk research sources



AEEMA, www.aeema.asn.au

China Mobile, www.chinamobile.com

China Unicom, www.chinaunicom.com

CStarcom, www.cstarcom.com/index2.asp

Eyefortransport,
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www.nissan.co.jp/EN/index.html,
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VICS, www.vics.or.jp

World Bank, www.worldbank.org

Yulon, www.yulon-motor.com.tw

Interview sources



We are grateful to the following organisations for providing insights during our research:

Beijing Ancai

Continental Temic

Korea Telematics Business Association

Mapinfo

Navinfo China

Siemens VDO



Why Telematics matters

Telematics overview

Industry drivers & obstacles

Telematics development

Appendix: Information sources

About Fusion Consulting

Clear strategic advice in Asia Pacific

A business intelligence consultancy
providing clear strategic advice
on Asia Pacific markets

Our strategic advice

- Makes companies more successful
- Stems from business intelligence
- Is nurtured by experience

We help our clients

- Understand their markets
- Compete more effectively
- Grow into areas of opportunity

Our mission

- To be the partner of choice for pragmatic strategies in Asia Pacific

Industry experience in 14 countries

Strategy centres in Hong Kong, Singapore and Shanghai

Directors 10+ years research and consulting experience in Asia-Pacific

Strategy Directors developing recommendations for clients

Business Analysts gathering and analysing business intelligence

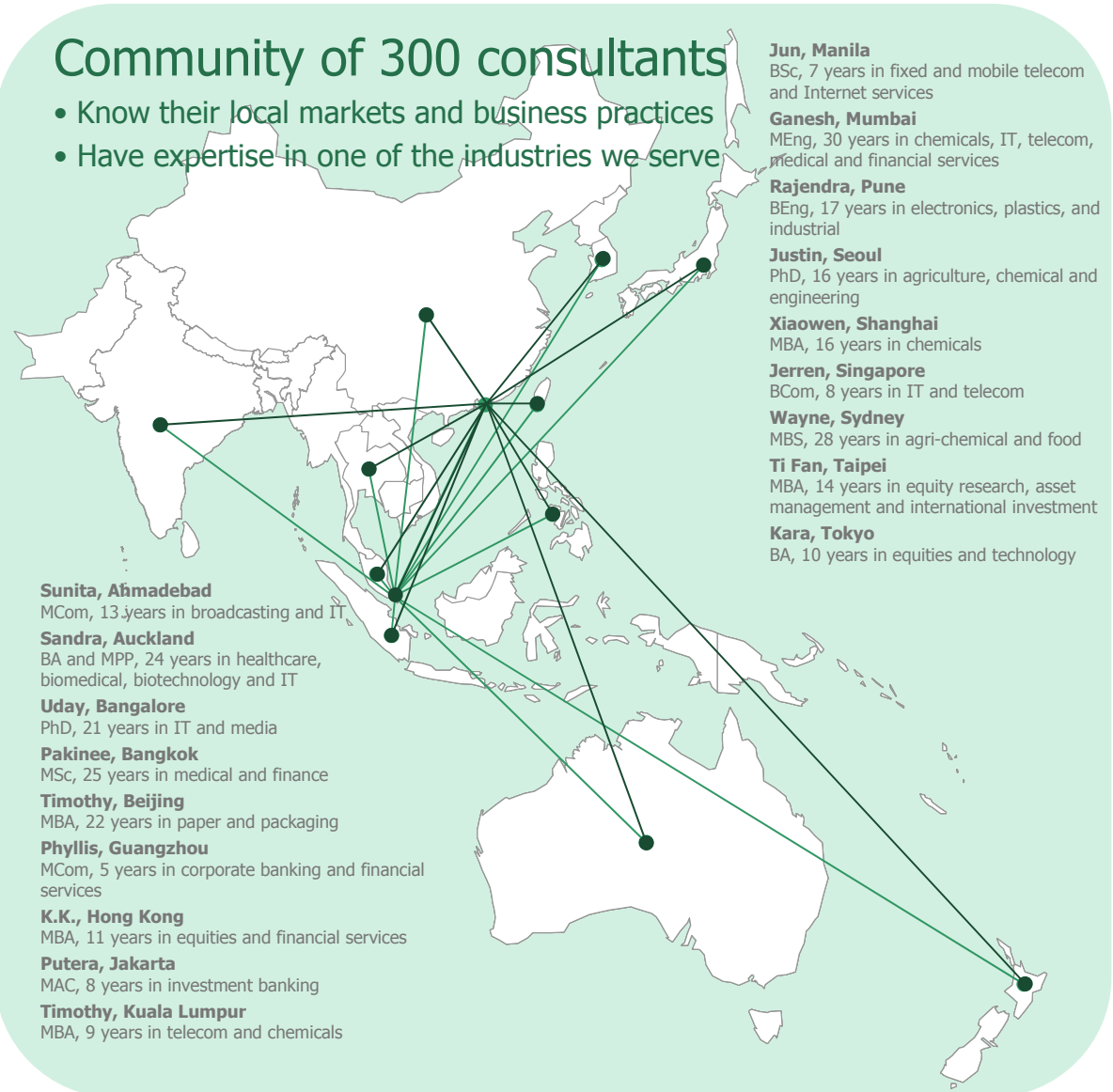
Knowledge Specialists tracking industries and economies

Industry practices

- Consumer & retail
- Chemical
- Financial services
- Industrial & logistics
- Information & communication technology
- Life science
- Media & leisure

Community of 300 consultants

- Know their local markets and business practices
- Have expertise in one of the industries we serve



Strategy from business intelligence

- We start by **understanding** more about your business, your strategic intentions and what you already know about the market
- Our consultants bring **practical expertise** rather than academic knowledge in the industry and their home market
- We apply knowledge from one industry to another so you benefit directly from the **best practices** we have identified
- Deep business intelligence underlies all our **recommendations**, which are delivered with evidence you can dissect and discuss



Range of services

Understand your markets

Monitor your markets and competitors. Benchmark your performance.

- Market profiles
- Customer intelligence
- Market update service



Compete more effectively

Size your competitive opportunities and make the most of them.

- Market sizing and modeling
- Competitive intelligence and strategy
- Value chain consulting



Grow into areas of opportunity

Prioritise your expansion options. See how to grow and who to partner with.

- Business expansion strategy
- Market entry strategy
- Partner evaluation and selection





a business intelligence consultancy
delivering clear strategic advice on
Asia-Pacific markets

www.fusionc.com