

Paradigm shift drives ICT growth

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Platform companies grow in market capitalization

Market capitalizations of global IT companies

2002		2007		2012		2013		2014	
Name	Market cap (\$bn)	Name	Market cap (\$bn)	Name	Market cap (\$bn)	Name	Market cap (\$bn)	Name	Market cap (\$bn)
Microsoft	269.9	Microsoft	292.2	Apple	500.6	Apple	504.8	Apple	613.8
NTT Docomo	206.0	AT&T	241.8	Google	232.2	Google	374.4	Google	390.0
Intel	189.0	Cisco Systems	164.0	Microsoft	224.8	Microsoft	312.3	Microsoft	374.3
IBM	146.0	IBM	155.5	IBM	216.4	IBM	203.7	Facebook	193.6
Nokia	115.4	Google	151.7	Samsung Electronics	210.1	Samsung Electronics	191.6	IBM	191.8
AT&T	104.5	Intel	129.8	AT&T	189.4	Vodafone	190.3	Oracle	185.0
Cisco Systems	101.9	NTT Docomo	118.0	Oracle	178.4	AT&T	185.6	AT&T	181.3
NTT	101.6	NTT	115.4	Vodafone	140.3	Amazon	182.5	Samsung Electronics	179.0
Sony	81.3	HP	113.3	Cisco Systems	117.1	Oracle	172.1	Intel	172.9
Siemens	78.7	Canon	109.9	Qualcomm	105.4	Facebook	138.8	Amazon	156.6
Dell	70.0	Siemens	109.7	Siemens	103.2	Comcast	134.9	Comcast	141.6
Canon	56.9	Oracle	100.4	Intel	102.6	Intel	129.0	Cisco Systems	128.0
Oracle	55.2	Nokia	94.8	Amazon	102.5	Qualcomm	125.4	Qualcomm	127.5
Samsung Electronics	54.6	Apple	93.3	Comcast	84.0	Siemens	120.7	Siemens	110.2
Panasonic	44.6	Comcast	83.4	NTT Docomo	73.7	Cisco Systems	119.9	Vodafone	90.9
Hitachi	39.9	Sony	80.4	NTT	60.9	Softbank	105.1	Softbank	86.6
Applied Materials	39.3	Samsung Electronics	77.4	E-bay	56.3	NTT Docomo	71.7	NTT	76.3
HP	32.3	Qualcomm	74.9	Softbank	53.3	E-bay	71.0	NTT Docomo	75.5
Fujitsu	27.2	Panasonic	70.8	Canon	51.7	Baidu	62.2	Baidu	75.2
Sun Microsystems	25.8	Dell	58.1	HP	50.2	NTT	61.2	HP	71.1
Comcast	24.9	Telefonaktiebolaget LM Ericsson	56.7	Texas Instruments	36.7	KDDI	55.2	E-bay	68.9
Sharp	24.7	KDDI	53.1	Telefonaktiebolaget LM Ericsson	32.9	HP	53.4	KDDI	51.7
Toshiba	24.7	E-bay	45.8	Infosys	26.6	Texas Instruments	48.1	Texas Instruments	51.4
Qualcomm	24.0	Yahoo	38.5	Yahoo	22.7	Canon	42.3	Canon	43.6
Telefonos Mexico	23.0	Toshiba	36.1	SK Hynix	21.6	ASML	41.9	ASML	42.8
IAC	23.2	Softbank	34.2	Yahoo Japan	21.3	Yahoo	41.0	Telefonaktiebolaget LM Ericsson	41.1
Ricoh	22.3	Telenote	33.8	Panasonic	20.3	Telefonaktiebolaget LM Ericsson	40.3	Yahoo	38.3
Tokyo Electron	21.0	Telefonos Mexico	33.8	Broadcom	19.6	Hitachi	36.6	Hitachi	36.5
NEC	21.1	Yahoo Japan	30.7	Toshiba	19.5	Yahoo Japan	32.0	Adobe Systems	35.8
Kyocera	21.0	Sharp	30.2	Dell	17.6	Nokia	30.1	Micron	34.9

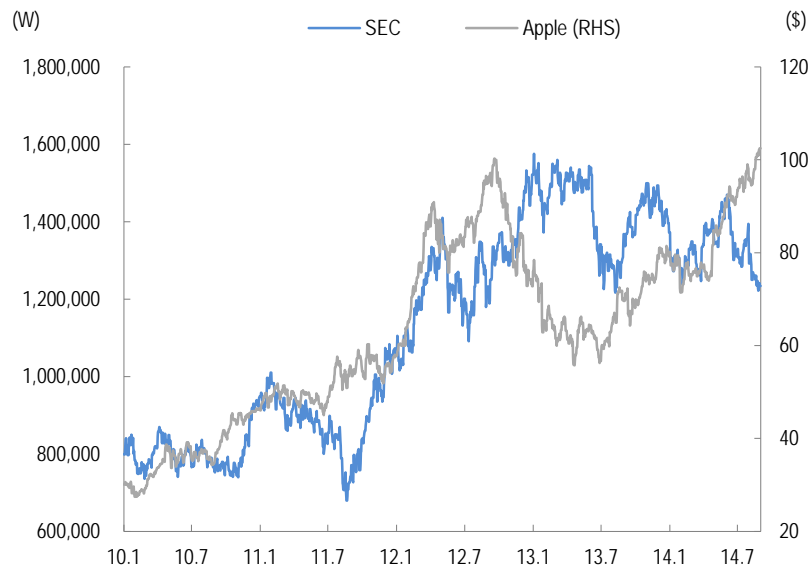
Note: Based on the last trading day of each year until 2013 and August 31 for 2014.

Source: Bloomberg, Daishin Securities Research Center

Share price trends (1)

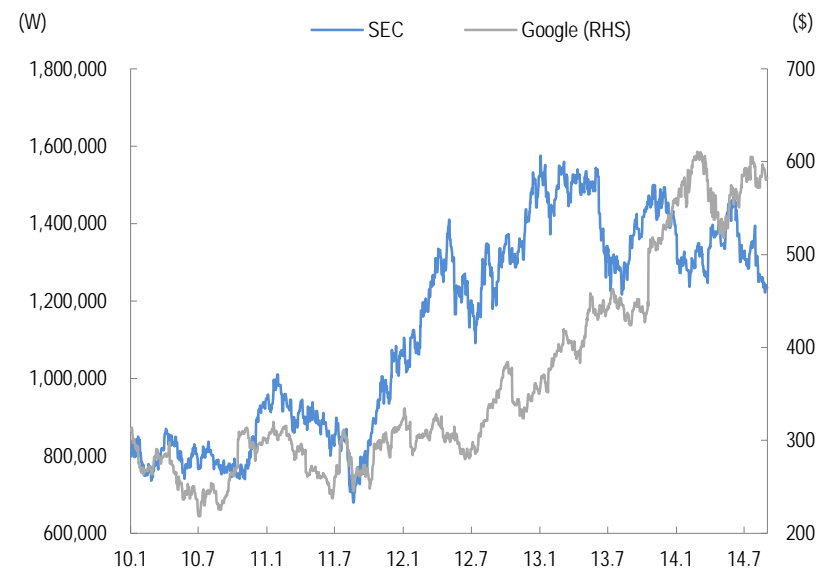
- Samsung Electronics: OP is down from its 2013 peak, dragged down by slowing growth in premium smartphones
- Apple: OS-based business model takes off

Share price trends: Samsung Electronics vs. Apple



Source: Bloomberg, Daishin Securities Research Center

Share price trends: Samsung Electronics vs. Google

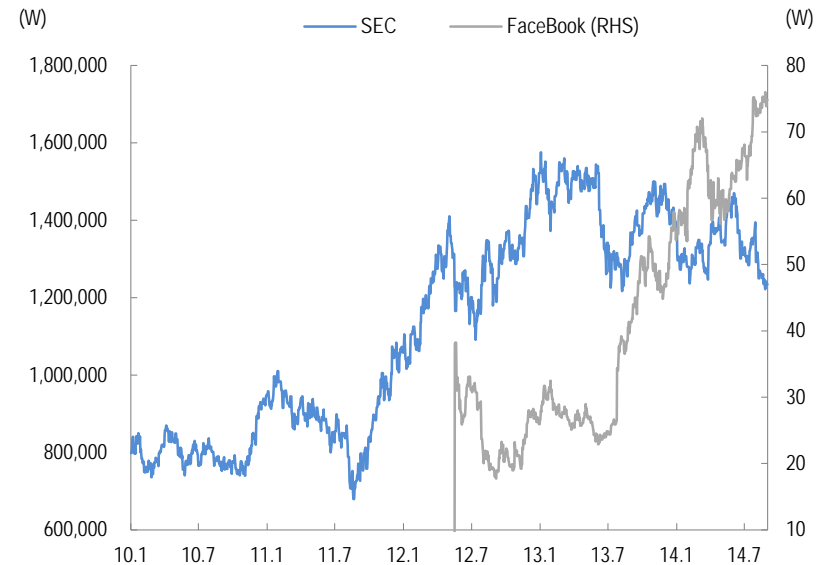


Source: Bloomberg, Daishin Securities Research Center

Share price trends (2)

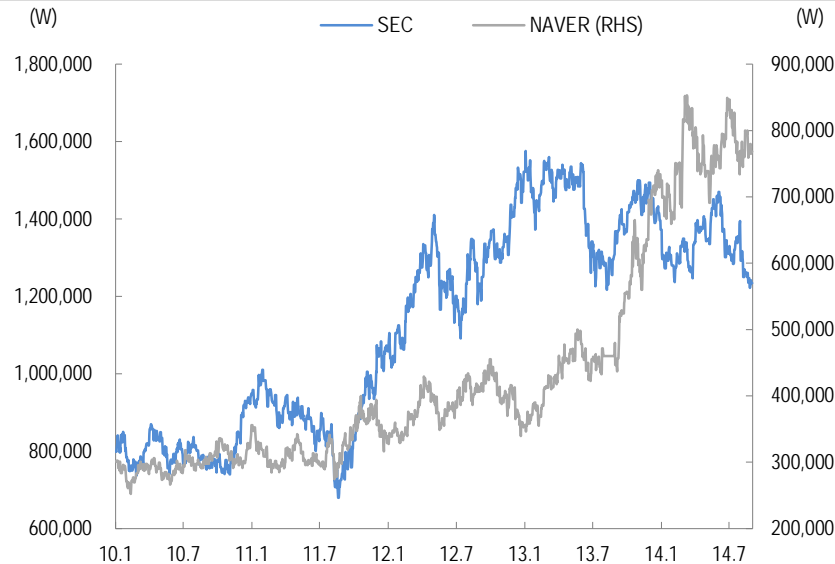
- Hardware: 1) slowing smartphone growth; 2) weakened tablet demand; and 3) low replacement demand for TV and PC
- Software: Operating systems, platforms, and the Internet of Things create a plethora of content business opportunities

Share price trends: Samsung Electronics vs. Facebook



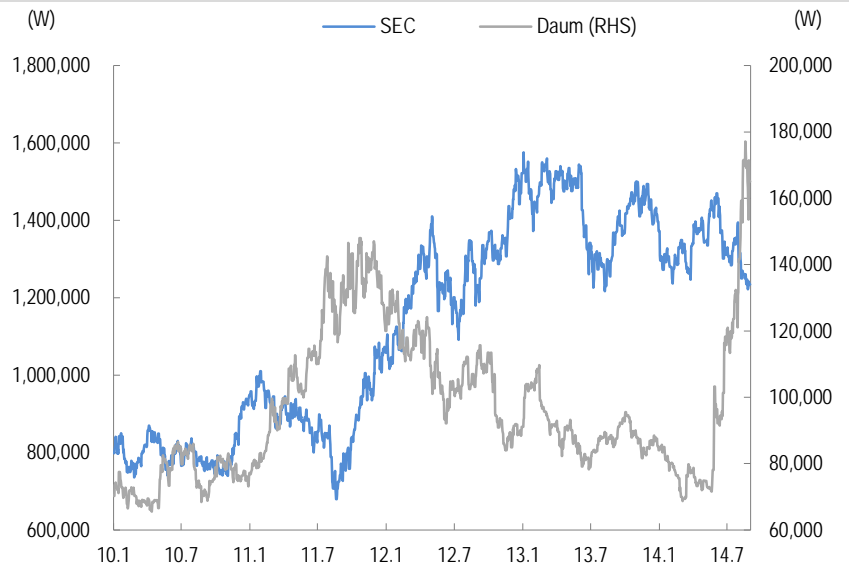
Source: Bloomberg, Daishin Securities Research Center

Share price trends: Samsung Electronics vs. NAVER



Source: Bloomberg, Daishin Securities Research Center

Share price trends: Samsung Electronics vs. Daum Communications

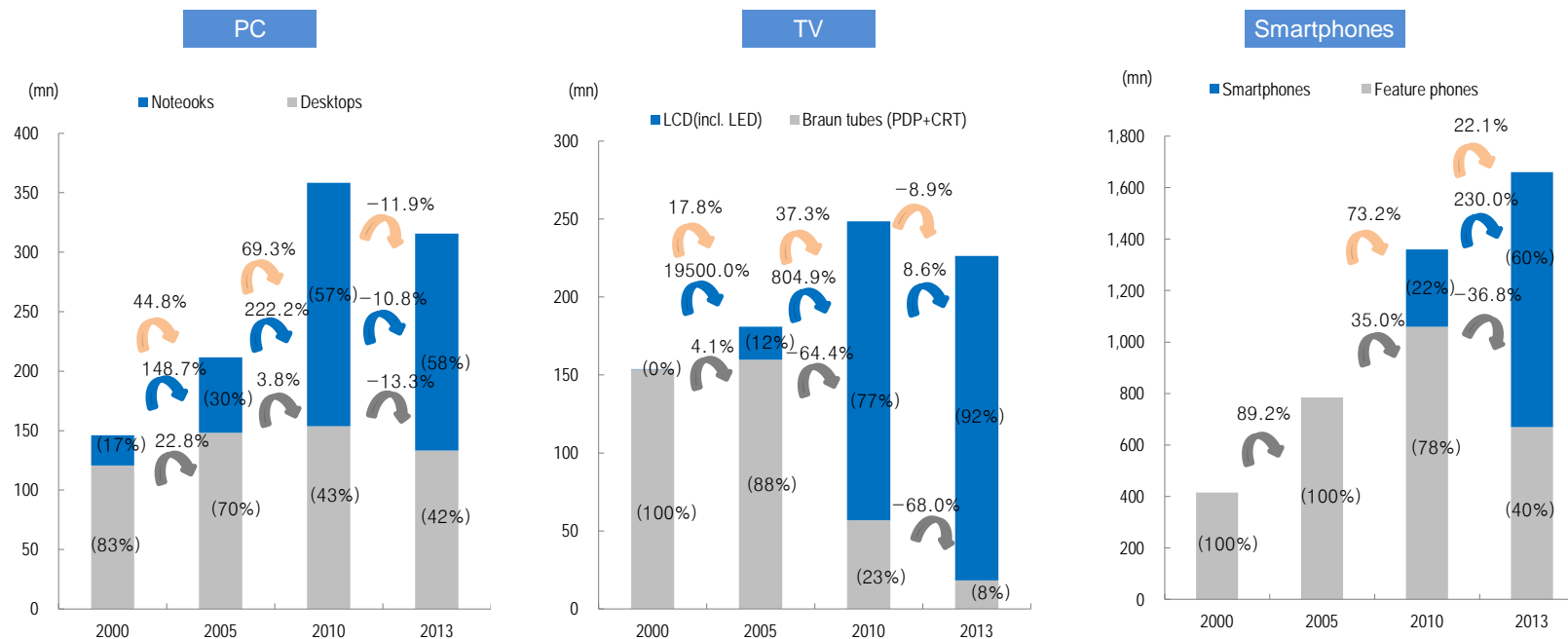


Source: Bloomberg, Daishin Securities Research Center

Taking stock: IT market (1)

- PC, TV, and feature phones drove IT market growth until 2010.
- Smartphones started taking over as the main growth driver in 2008 when the first iPhone arrived. IT market growth has been slowing since 2011 due to weakening demand for TV and PC.

Smartphones take over as the main IT market growth driver



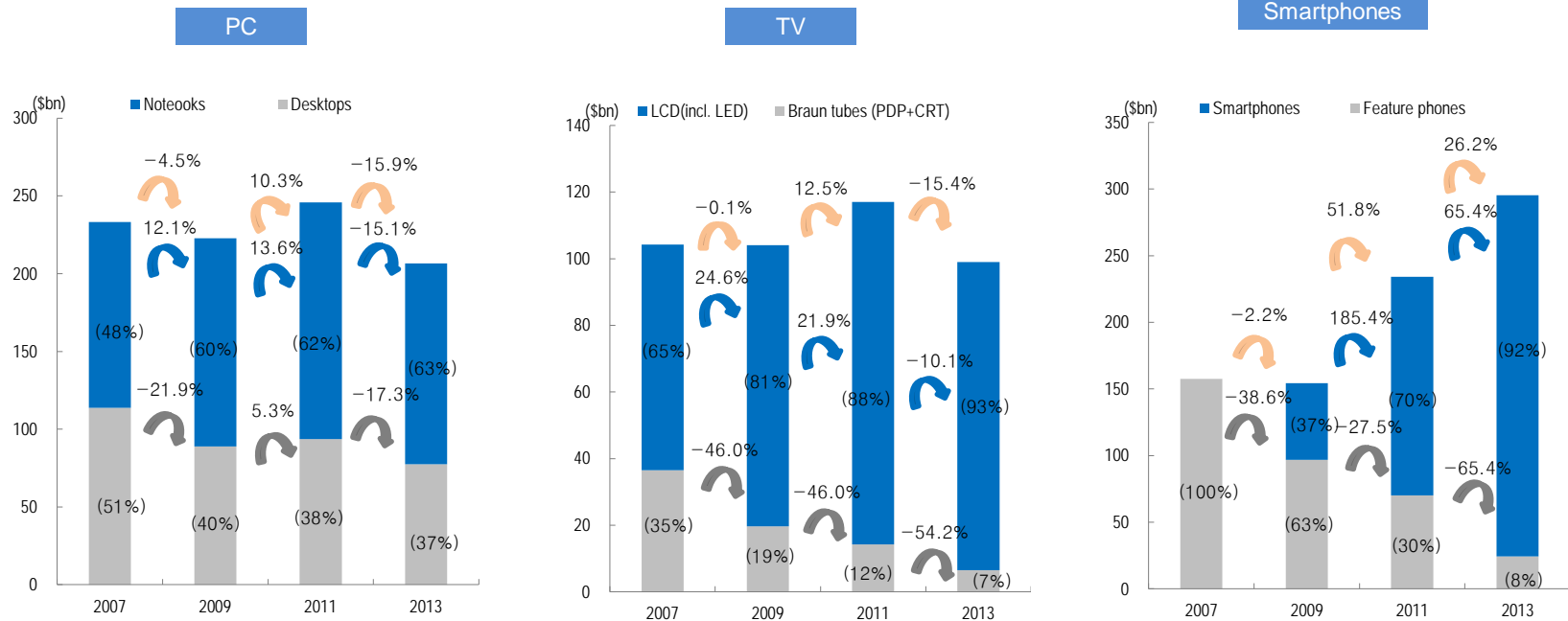
Note: ↗ denotes yoy growth; number within parentheses are proportions.

Source: Gartner, DisplaySearch, Daishin Securities Research Center

Taking stock: IT market (2)

- PC: The market is contracting because of smartphones and tablets, even though premium notebooks are holding firm.
- TV: 1) LCD substitution of CRT is over; 2) the lines between different hardware segments (UHD, OLED, etc.) are blurring; and 3) content is limited.
- Smartphones: Smartphones are crowding out other IT devices with competition shifting to hardware, content, and new services.

Hardware competition boosts smartphone ASP

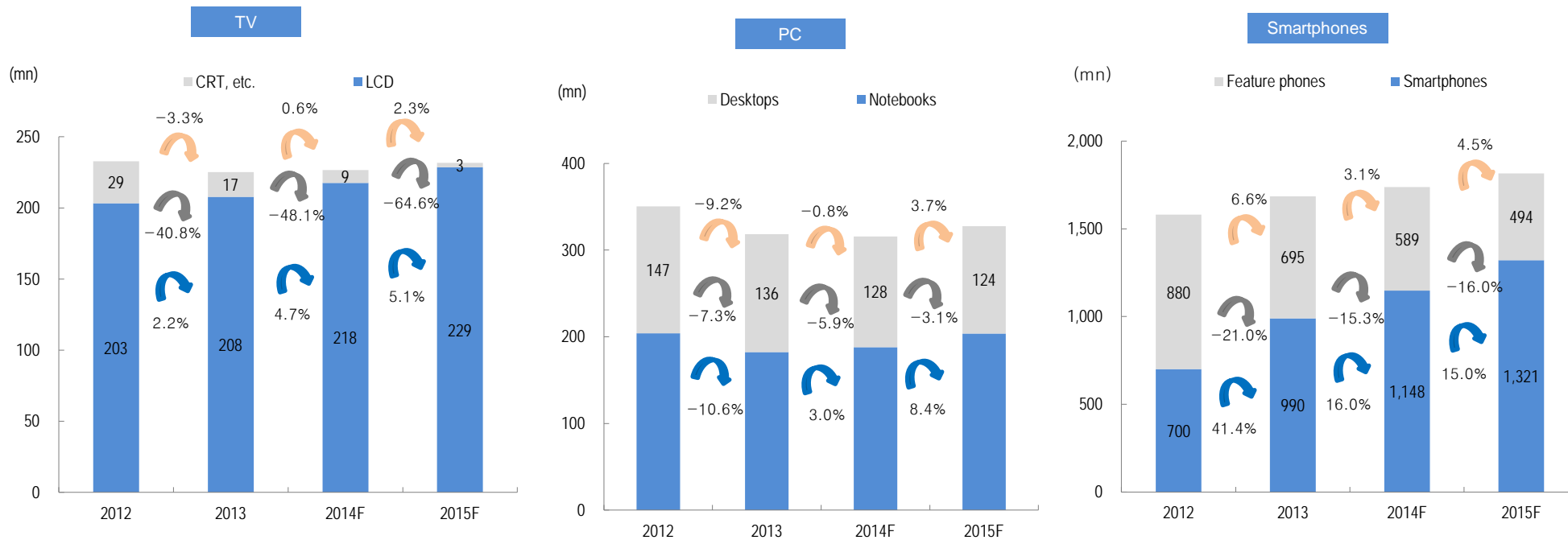


Note: ↻ denotes yoy growth; number within parentheses are proportions.
 Source: Gartner, DisplaySearch, Daishin Securities Research Center

IT market outlook

- PC: Growth will continue, led by premium notebooks
- TV: Hardware differentiation is in focus. UHD TV will outpace OLED TV.
- Smartphones: Smartphones will serve as a gateway to the Internet of Things.

Shipment forecasts: TV vs. PC vs. Smartphones



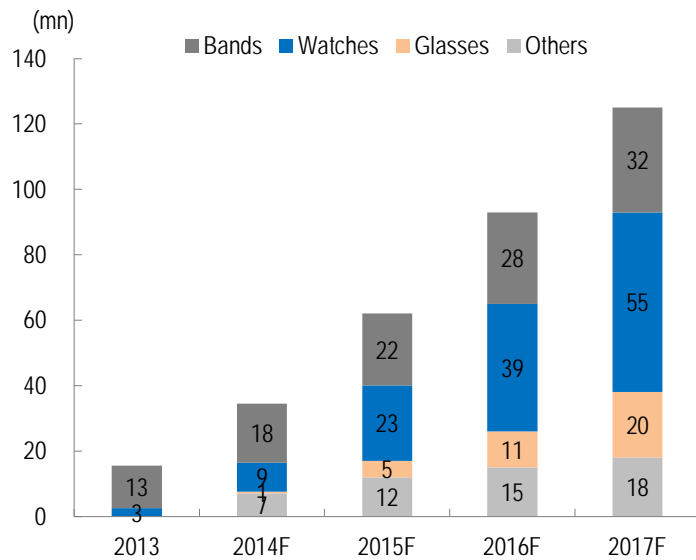
Note: denotes overall market growth.

Source: DisplaySearch, Gartner, Daishin Securities Research Center

Wearables and tablets

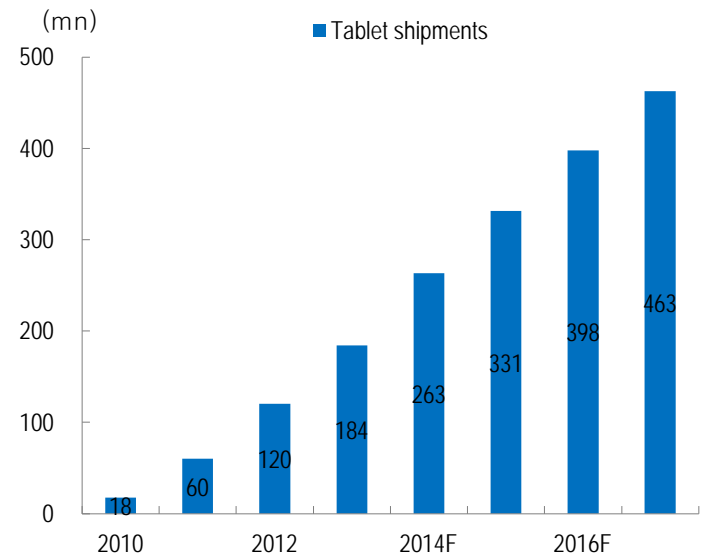
- Wearables: Smart watches and smart bands will drive market growth.
- Tablets: Growth will fall short of expectations due to delayed replacement demand and lack of new applications.

Market outlook: wearables



Source: Gartner, Daishin Securities Research Center

Market outlook: tablets

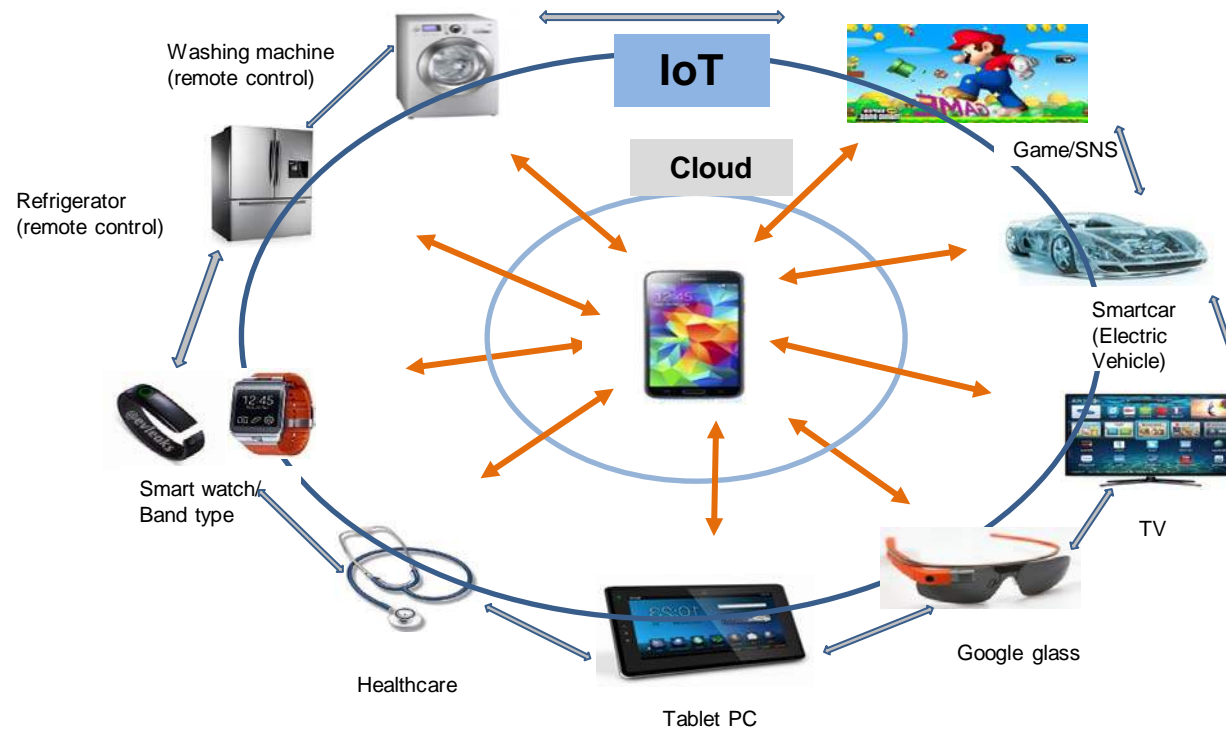


Source: Gartner, Daishin Securities Research Center

Smartphones: IoT, big data, and cloud computing

- Smartphones will become the main gateway hardware platform for the Internet of Things. Better smartphones mean stronger customer loyalty.
- Mobile technology, network development and wearable market expansion will spur the creation of new services.

What is the Internet of Things



Source: Daishin Securities Research Center

Smartphone evolution (1)

- Display technology is key to differentiation: Bigger screen sizes and higher-pixel camera modules propel high-resolution display development

Evolution of smartphone display panels



Year	2009	2010	2011	2012	2013	2014
Make		Samsung Electronics	Samsung Electronics	Samsung Electronics	Samsung Electronics	Samsung Electronics
Model		Galaxy S1	Galaxy S2	Galaxy S3	Galaxy S4	Galaxy S5
Screen resolution		480x800(SD)	480x800(SD)	720x1280(HD)	1080x1920(FHD)	1080x1920(FHD)
PPI		233	218	306	441	432
Make	Apple	Apple	Apple	Apple	Apple	Apple
Model	iPhone 3GS	iPhone 4	iPhone 4S	iPhone 5	iPhone 5S	iPhone 6
Screen resolution	320x480	640x960(SD class)	640x960(SD class)	640x1136(HD class)	640x1136(HD class)	1242x2208(FHD class)
PPI	165	326	326	326	326	461
Make		LG Electronics	LG Electronics	LG Electronics	LG Electronics	LG Electronics
Model		Optimus One	Optimus LTE	Optimus G	G2	G3
Screen resolution		320x480	720x1280(HD)	768x1280(HD)	1080x1920(FHD)	1440x2560(QHD)
PPI		180	326	318	423	538

Note: iPhone 6 specifications are estimates.

Source: Company data, Phonearena, Daishin Securities Research Center

Smartphone evolution (2)

- Smartphones increasingly adopt high-end components to support bigger screen sizes and versatile functions.
- The growth of the Internet of Things requires bigger memory capacity.

RAMs for major smartphones



Year	2009	2010	2011	2012	2013	2014
Make		Samsung Electronics	Samsung Electronics	Samsung Electronics	Samsung Electronics	Samsung Electronics
Model		Galaxy S1	Galaxy S2	Galaxy S3	Galaxy S4	Galaxy S5
RAM		512MB	1GB	1GB	2GB	2GB
Make	Apple	Apple	Apple	Apple	Apple	Apple
Model	iPhone 3GS	iPhone 4	iPhone 4S	iPhone 5	iPhone 5S	iPhone 6
RAM	256MB	512MB	512MB	1GB	1GB	1GB
Make		LG Electronics	LG Electronics	LG Electronics	LG Electronics	LG Electronics
Model		Optimus One	Optimus LTE	Optimus G	G2	G3
RAM		170MB	1GB	2GB	2GB	3GB

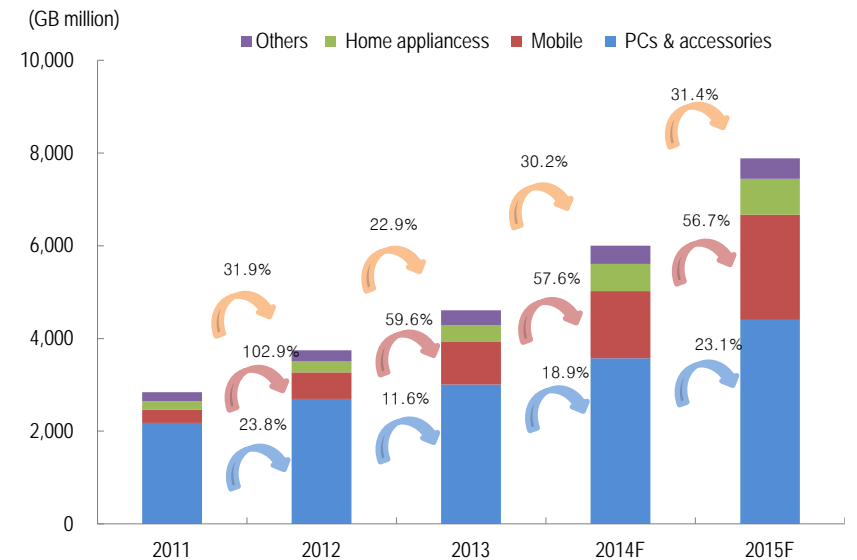
Rising DRAM demand

Growing number of connected devices



Source: industry data, Daishin Securities Research Center

DRAM demand forecast

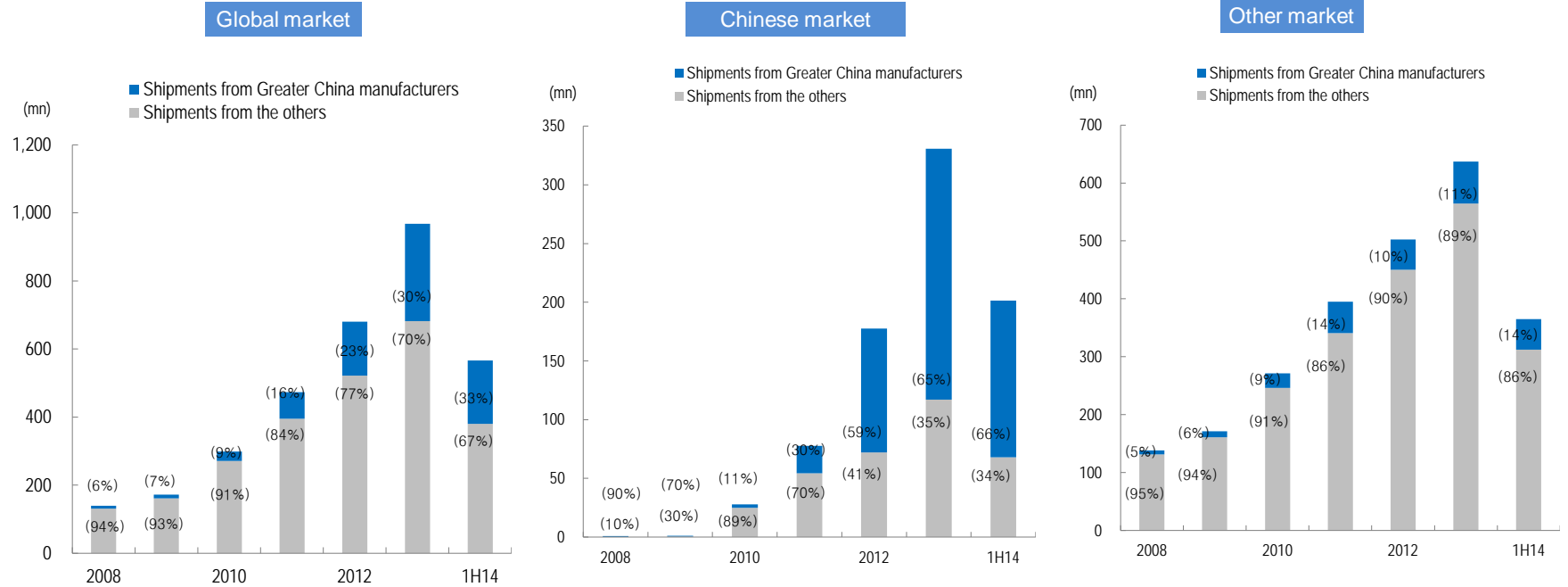


Note: Blue denotes change for PC and PC related products, while pink represents change for mobile devices. Orange denotes change for overall market.

Source: Gartner, Daishin Securities Research Center

China's smartphone market

Market share trends: Greater China manufacturers vs. the rest



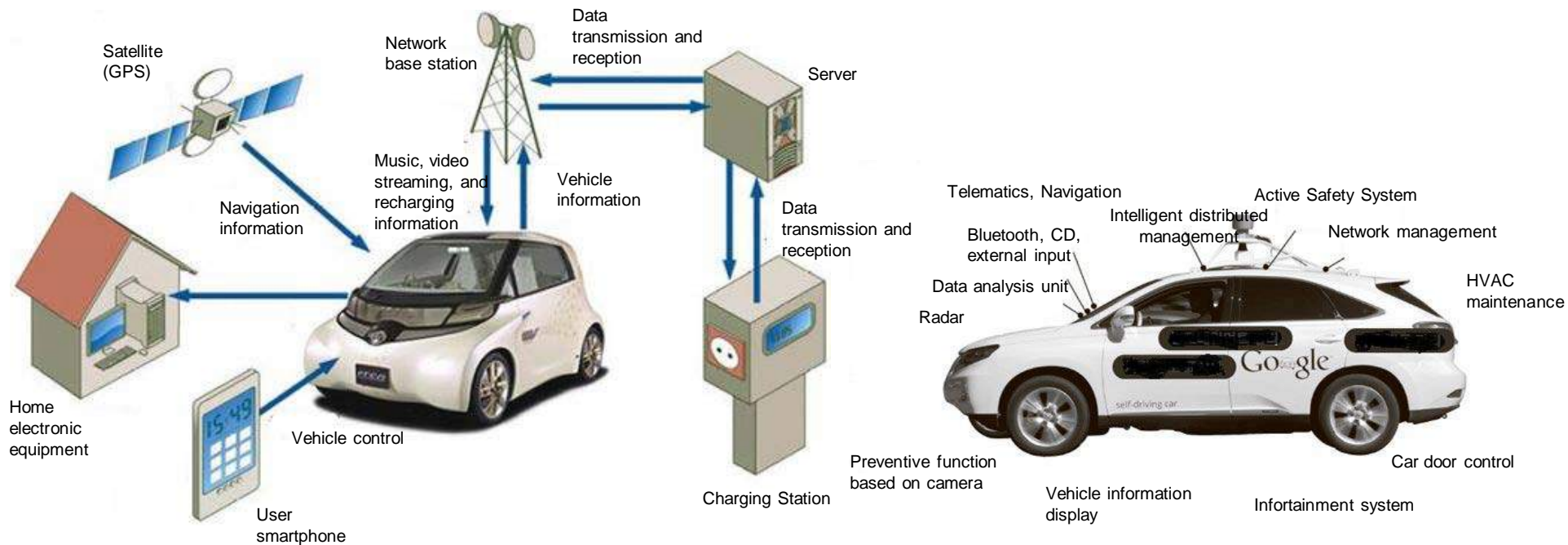
Note: Chinese companies include Huawei, ZTE, Xiaomi, Coolpad, Acer, Lenovo, HTC, and Yulong.

Source: Gartner, Daishin Securities Research Center

New growth drivers (1): Smart cars

- Integration of mobile technology, IT, and hardware gives rise to new markets.
- Smart car technology will be applied to gasoline vehicles in early stages before expanding to electric vehicles.
- IT companies will supply core components of electric vehicles such as midsize and large rechargeable batteries, display panels, and communication modules.

Smart car systems and their major functions

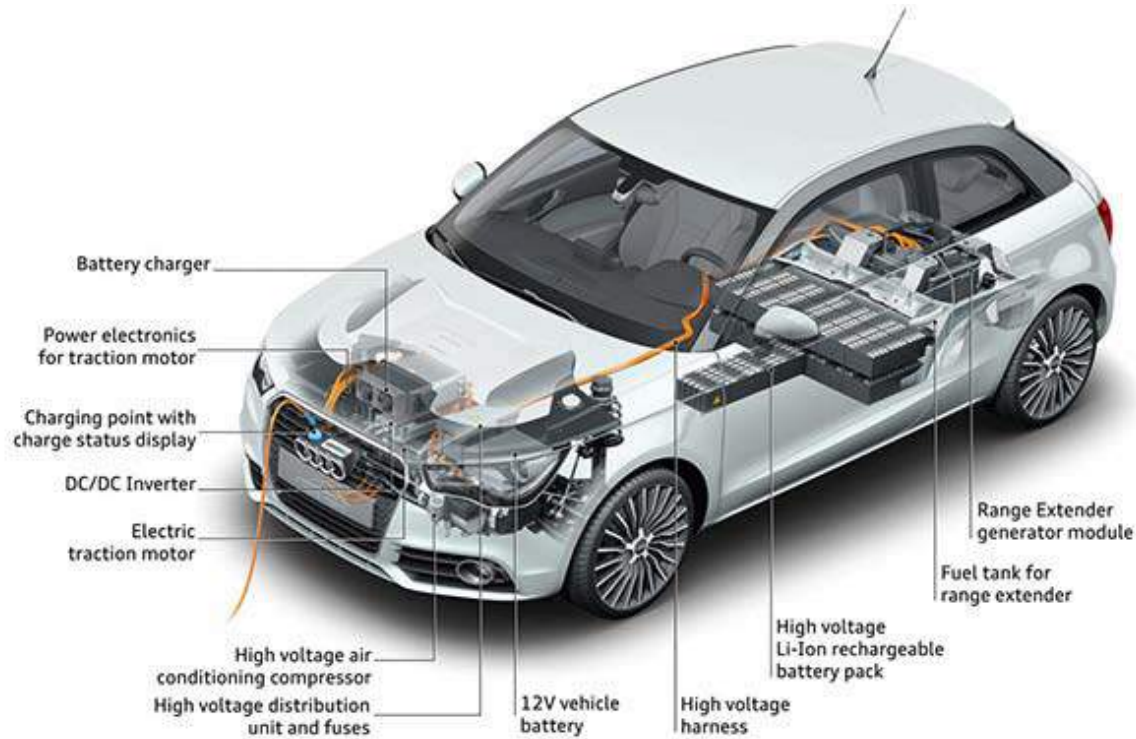


*HVAC: heating, ventilation, air conditioning
Source: Daishin Securities Research Center

Electric vehicles (1)

IT technology integration (batteries, displays, inverters, motors, electronic components, etc.)

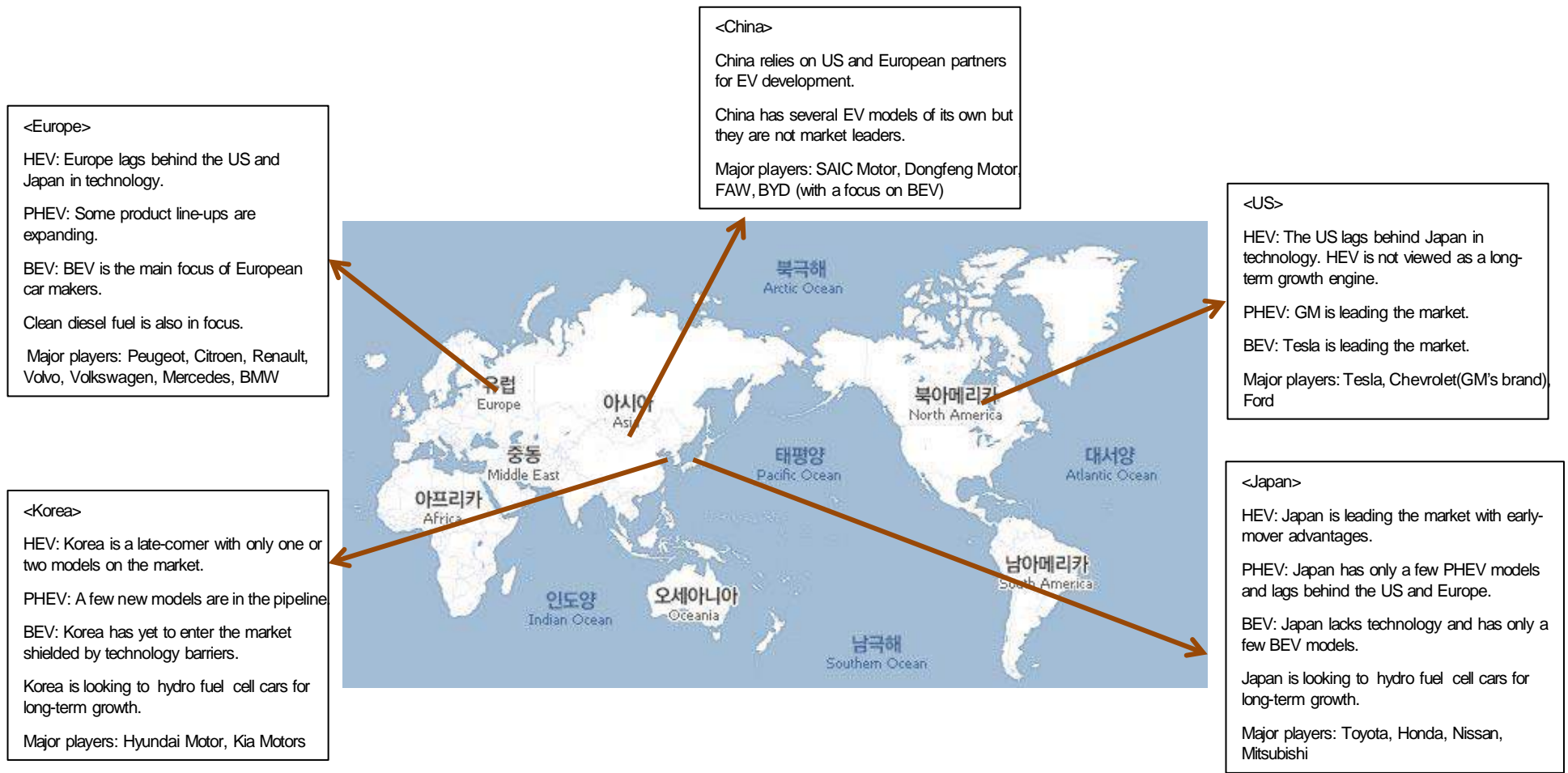
Structure



Source: Audi, Daishin Securities Research Center

Electric vehicles (2)

EV technology map



Source: Daishin Securities Research Center

Electric vehicles (3)

Characteristics of electrical vehicles by type

Type	All electric vehicle	Hybrid electric vehicle	Plug-in Hybrid vehicle
Battery capacity (kWh)	20~85	0.5~1.5	4.5~16.5
Composition	large-size battery+motor+rechargeable battery with external power source	internal combustion engine+mid-size battery+motor	internal combustion engine+midsize battery+motor+rechargeable battery with external power source
Power	motor	engine+motor	motor, engine(when a battery dies)
Fuel	electricity	fossil fuel, electricity	electricity, fossil fuel (when a battery dies)
Pros	<ul style="list-style-type: none"> -Battery-powered drive -No CO2 emission -A quiet engine -Longer life 	<ul style="list-style-type: none"> - Higher fuel efficiency with an efficient, alternative use of both motor and engine - Less CO2 emission than other engine-powered vehicles 	<ul style="list-style-type: none"> - A motor as a single power source - Rechargeable battery with an external electric power source
Cons	<ul style="list-style-type: none"> - Low battery capacity - High prices - Lack of charging stations and long recharging time 	<ul style="list-style-type: none"> - High prices relative to other engine-powered vehicles 	<ul style="list-style-type: none"> - Low battery capacity - High prices - Lack of charging stations and long recharging time - Unsuitable for long-haul drive (bus, truck)
Model	- Nissan Leaf, Tesla Model S, BMW i3, Mitsubishi I	- Toyota Prius, Ford Fusion, Hyundai Sonata	- Chevrolet Volt, Toyota Prius Plug In, Ford Fusion Energi



BEV_Telsa_Model S



HEV_Toyota_Prius



PHEV_Chevrolet_Volt

Source: Industry data, Daishin Securities Research Center

Electric vehicles (4)

Electric vs Gasoline



Model	Nissan Leaf	Toyota Prius	Chevrolet Volt	Hyundai Elantra (Avante)
Type	BEV	HEV	PHEV	gasoline
Length (mm)	4,445	4,480	4,498	4,550
Width (mm)	1,770	1,750	1,788	1,775
Height (mm)	1,550	1,505	1,430	1,435
Engine	electricity, motor	I4 1.8L	L4 1.4L	I4 1.6L
Fuel	electricity	electricity gasoline	motor, gasoline	gasoline
Battery capacity (kWh)	24.0	1.3	16.5	-
Emission (cc)	0	1,798	1,400	1,591
Fuel efficiency(liter)	51.0km / L	21.0km / L	41.0km / L	14.0km / L
Accommodation (persons)	5	5	4	5
Maximum power	80.0Kw(107hp)	99hp	149hp	140hp
Engine	front-engine, front-drive	front-engine, front-drive	front-engine, front-drive	front-engine, front-drive
Tire(inch)	16	15~17	17	14~17
Weight (kg)	1,493	1,395	1,721	1,250
Price	around W27mn	around W25mn	around W28mn	around W20mn

Note: Prices in North America have been converted to the Korean won

Source: Companies' homepages, Daishin Securities Research Center

New growth engines (2) : Wearables

Bands

- Fitbit, NikeFuel
- Tracks daily activity, sleep, etc.
- Capabilities are limited
- Currently available



Watches

- Samsung's Gear series, iWatch (set to be launched)
- Focuses on the linkage with smartphones
- Currently available

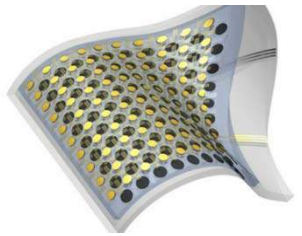
Glasses

- Google Glass, MS
- Will be available in 2015



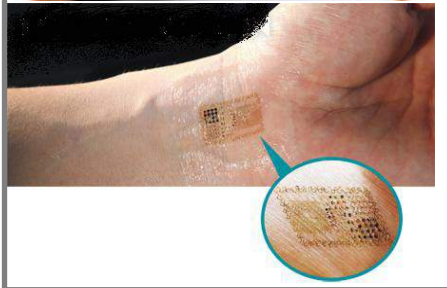
Apparel

- Smart, removable fabrics
- Flexible fabric circuit board
- Applications: Healthcare, entertainment, information, etc.
- Technology is in early stages of development



Smart skin

- "Print" device onto skin
 - Flexible circuit board
 - Technology is currently under development
- ## Implantable devices
- Flexible circuit board
 - Implanting biometric chips
 - Technology is currently under development



Smart watch

Specifications



Company	Qualcomm	Samsung Electronics	Samsung Electronics	LG Electronics	Samsung Electronics	Motorola	Samsung Electronics	LG Electronics	Apple	Sony
Model	Toq	Gear 2	Gear 2 Neo	G Watch	Gear Live	moto360	Gear S	G Watch R	iWatch	Smart watch 3
Release date	Dec 2013	Apr 2014	Apr 2014	Jun 2014	Jun 2014	To be released in 2014	To be released in Oct 2014	To be released in 4Q14	To be released	To be released
Size (mm)	43.3x47.6x9.96	36.9x58.4x10.0	37.9x58.8x10.0	37.9x 46.5x 9.9	37.9x 56.4x 8.9	N/A				
Weight	90.8g	68g	55g	63g	59g	N/A				
AP	200MHz ARM	1.0 GHz	1.0 GHz	1.2GHz	1.2GHz	N/A				
Core	Single	Dual Core	Dual Core	Dual Core	Quad Core	N/A				
RAM	512MB	512MB	512MB	512MB	512MB	512MB				
LCD	1.55" Mirasol	1.63" Super AMOLED	1.63" Super AMOLED	1.65" IPS LCD	1.63" Super AMOLED	1.5 IPS LCD				
Resolution	288x192	320x320	320x320	280x 280	320x 320	320x290				
Camera	None	2.0 M	None	None	None	None				
Battery	240 mAh	300 mAh (low usage up to 6 days)	300 mAh (low usage up to 6 days)	400 mAh	300 mAh	N/A				
Price	\$350	#300	\$200	\$230	\$200	\$250				

- 2.0" AMOLED curved display
 - Tizen OS
 - S Health
 - Plastic OLED
 - 1.2GHz snap dragon 400
 - Waterproof/ dust resistant
 - Flexible AMOLED display
 - Sapphire glass
 - Higher resolution
 - Wireless charging

Source: individual smartphone makers, Daishin Securities Research Center

Smart watch

- Smart watches are emerging as a new category of IT devices
- Major features include 1) health management 2) supplements to smartphones, tablets and other wearables and 3) unique functions of its own

Smart watch features



<Voice call>



<E-mail>



<SNS>



<Recorder/ voice control>



<Navigation>



<Music streaming>



<Health management>



<Alarm, scheduling>



<E-payment>

Glass and head mount wearables

Glass and head mount wearables



<Google: Google Glass>



<Samsung Electronics & Oculus: Gear VR>

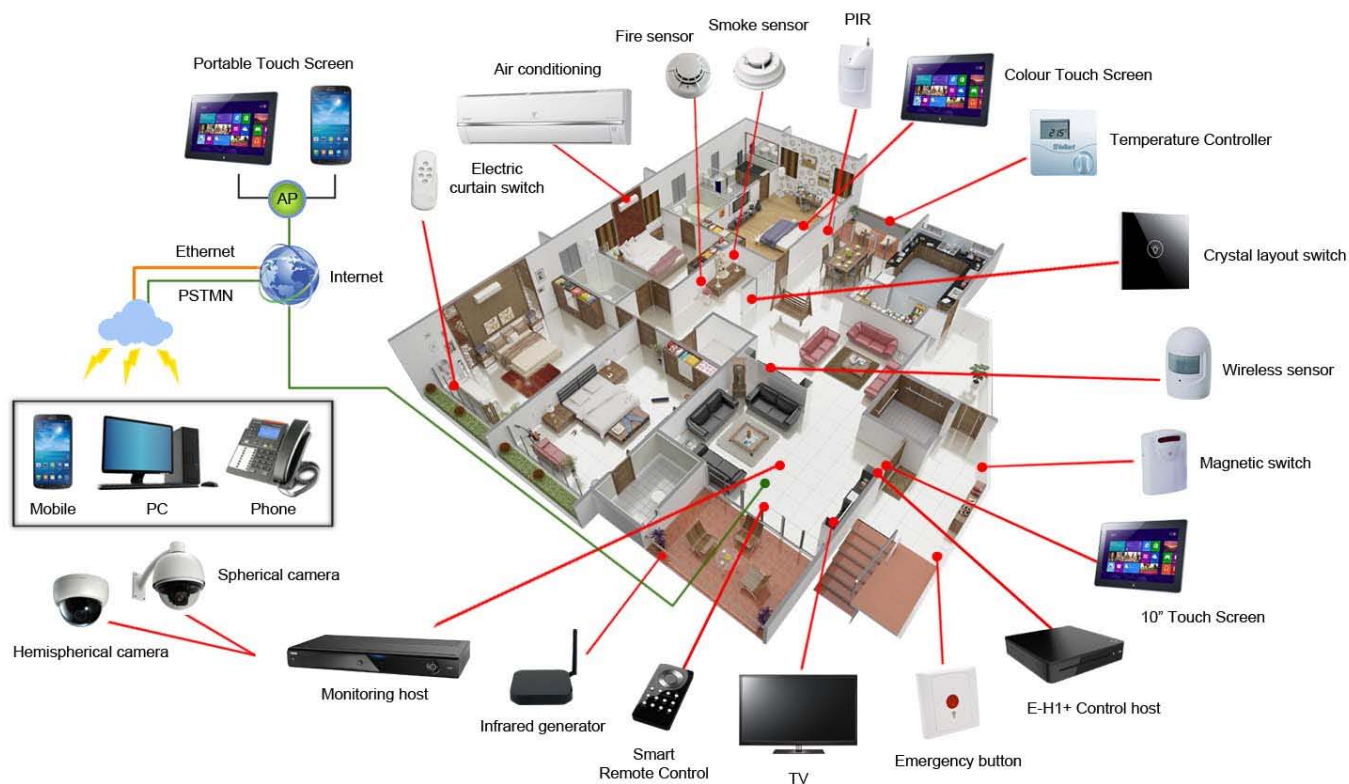


<Sony: HMZ-T3>

New growth catalysts (3): Smart home

- The Internet of Things drives a paradigm shift in the conventional market for TV, lighting and home appliances.
- Smartphone applications are growing in variety: Software and content are becoming more important than hardware

Smart home concept



Source: Industry data, Daishin Securities Research Center

Platform company growth strategies (1)

- Internet of Things: Companies with their own OS and platform will outshine peers and lead growth
- Hardware makers (smartphones) will become less differentiated vs. software providers
- A paradigm shift will create new businesses

SW/HW platform companies are offering more services



Source: Daishin Securities Research Center

Platform company growth strategies (2)

Google, Apple, and Samsung Electronics M&A deals in 2014






Acquirer	Announcement	Target companies	Business	Payment method	Status
Google	2014-08-22	Gecko Design Inc	IT device design	Undisclosed	Pending
Google	2014-08-06	Tinker Square Inc	Mobile messenger	Undisclosed	Pending
Google	2014-08-06	Directr Inc	Mobile video	Cash	Completed
Google	2014-07-23	DrawElements Ltd	Image processing SW	Undisclosed	Pending
Google	2014-07-01	Songza Media Inc	Music streaming	Undisclosed	Completed
Google	2014-06-25	Appurify	App performance test	Cash	Completed
Google	2014-06-21	Dropcam Inc	Home security system	Cash	Pending
Google	2014-06-19	mDialog Corp	Video platform	Undisclosed	Completed
Google	2014-06-10	Skybox Imaging Inc	Satellite image	Cash	Pending
Google	2014-05-19	Enterpoid Inc	Mobile device management	Undisclosed	Pending
Google	2014-05-16	Quest Visual Inc	Augmented reality	Undisclosed	Completed
Google	2014-05-07	Stackdriver Inc	Cloud service	Undisclosed	Completed
Google	2014-05-06	Adometry Inc	Marketing analysis	Undisclosed	Completed
Google	2014-04-14	Titan Aerospace Corp	Drones	Undisclosed	Completed
Google	2014-02-21	Spider.io	Online ad fraud detection	Undisclosed	Completed
Google	2014-02-16	SlickLogin	Password technology	Undisclosed	Completed
Google	2014-01-27	DeepMind Technologies Ltd	Machine learning	Cash	Completed
Google	2014-01-15	Imperium Corp	Cyber security	Undisclosed	Completed
Google	2014-01-13	Nest Labs Inc	Indoor temperature control	Cash	Completed
Apple	2014-07-28	Booklamp	E-book search	Undisclosed	Completed
Apple	2014-06-06	Simple Rules Inc	Online music file	Undisclosed	Completed
Apple	2014-05-28	Beat by Dre	Headset, earphone	Undisclosed	Completed
Apple	2014-02-22	Burstly Inc	App data analysis	Undisclosed	Completed
Apple	2014-01-06	SnappyLabs LLC	Camera application	Undisclosed	Completed
Samsung Electronics	2014-08-19	Quietside Corp	Heating, air conditioning and hot water making	Undisclosed	Pending
Samsung Electronics	2014-08-14	SmartThings	IoT platform	Undisclosed	Pending
Samsung Electronics	2014-03-20	Sunedison Semiconductor LLC	Semiconductor material	Undisclosed	Pending

Source: Bloomberg, Daishin Securities Research Center

Hardware companies: Growth hinges on product line-up upgrades

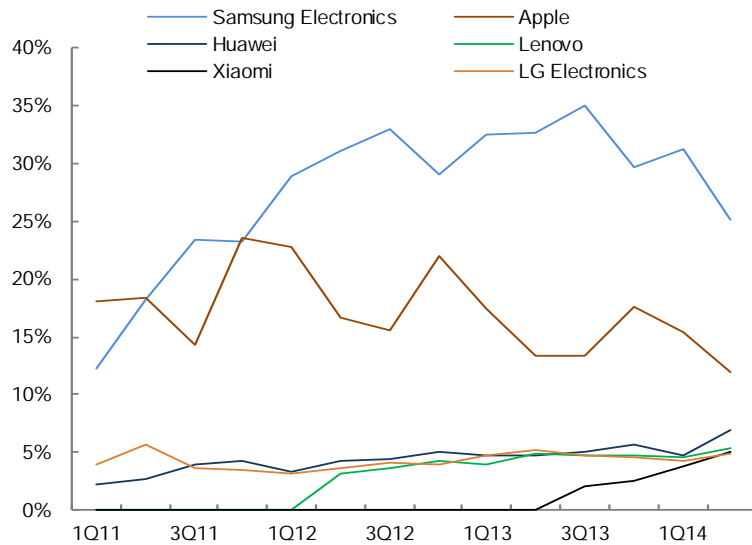
- The success of wearable devices depends on smartphone brand power (smart device portfolios)
- Samsung Electronics: The company has the biggest smartphone market share. Its strategy is to flood the market with product offerings to overwhelm competition
- Apple: Brand loyalty is high. Apple has the biggest app store and the biggest pool of app designers, which enables earlier app launches than rivals.
- Second-tier companies: The focus is primarily on smartphone ecosystem formation, which is being delayed

Product line-ups

Samsung Electronics	Apple	LG Electronics	Huawei	Lenovo
 Smartphone Galaxy S4 mini (4.3") Galaxy S5 (5.1") Galaxy Grand 2 (5.3") Galaxy Note 3 (5.7") Galaxy Mega (6.3") Tablet Galaxy Tab 4 (7.0"/8.0"/10.1") Wearable Gear 2, Gear 2 Neo, Gear Fit PC TV (LCD, UHD, Curved UHD) Home appliances	 Smartphone iPhone 5S (4.0") iPhone 5C (4.0") iPhone 6 (5.5", 4.7" estimate) Tablet iPad Air (9.7") iPad mini2 (7.9") MP3 PC TV (set-top box concept)	 Smartphone L series (3.5", 4.5", 4.7") F series (4.5", 4.7") G3 (5.5") G Pro 2 (5.7") G-Flex (6.0") Tablet G-Pad (7.0"/8.0"/10.1") Wearable G-watch PC TV (LCD, UHD, UHD OLED) Home appliances	 Smartphone Ascend Y330 (4.0") Ascend P7 mini (4.5") Ascend P7 (5.0") Tablet MediaPad X1 (7.0") MediaPad M1 (8.0") Wearable Talkband	 Smartphone S660 (4.7") S860 (5.3") Tablet A7-50 (7.0") A8 (8.0") A10 (10.1") PC

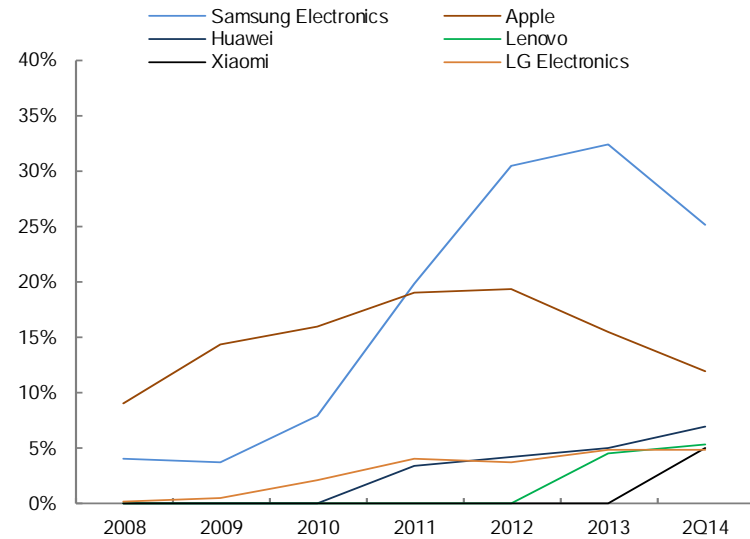
APPENDIX) Smartphone market

Global smartphone market share (quarterly)



Source: Gartner, Daishin Securities Research Center

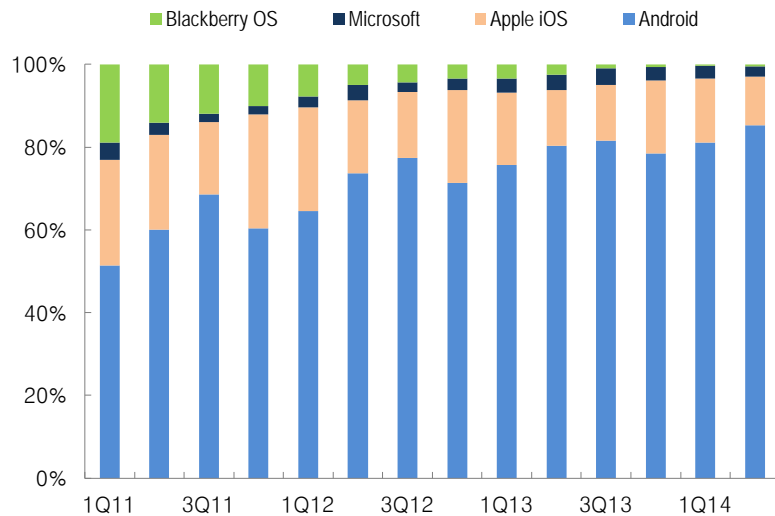
Global smartphone market share (yearly)



Source: Gartner, Daishin Securities Research Center

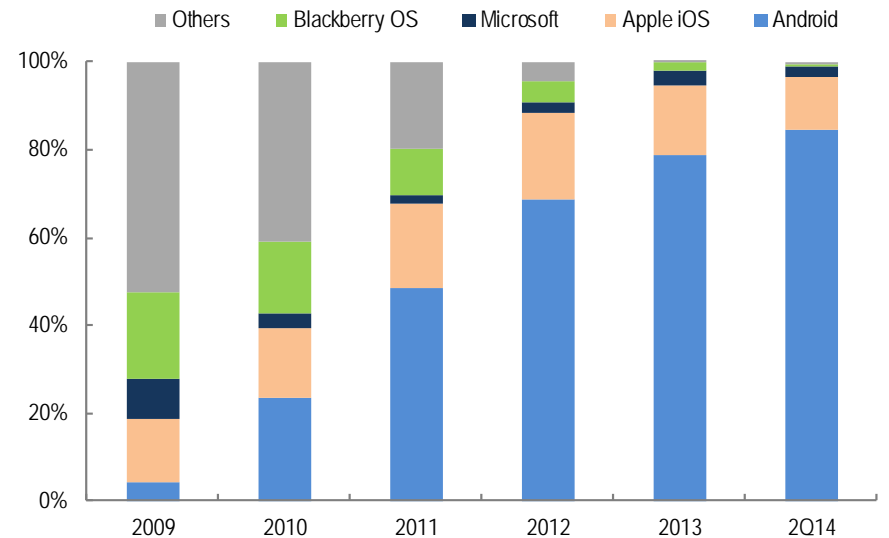
APPENDIX) Smartphone OS market share

Global smartphone OS market share (quarterly)



Source: Gartner, Daishin Securities Research Center

Global smartphone OS market share (yearly)



Source: Gartner, Daishin Securities Research Center