

Korean-Taiwan Collaboration Thoughts in ICT Business

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- Background
- Introduction of Taiwan ICT Industries
- Collaboration Necessities in Competitive ICT Business
 - Bloody-competition ICT business
 - Collaboration Opportunities
 - Collaboration Thoughts
- Ground work required for Collaboration
- Summary

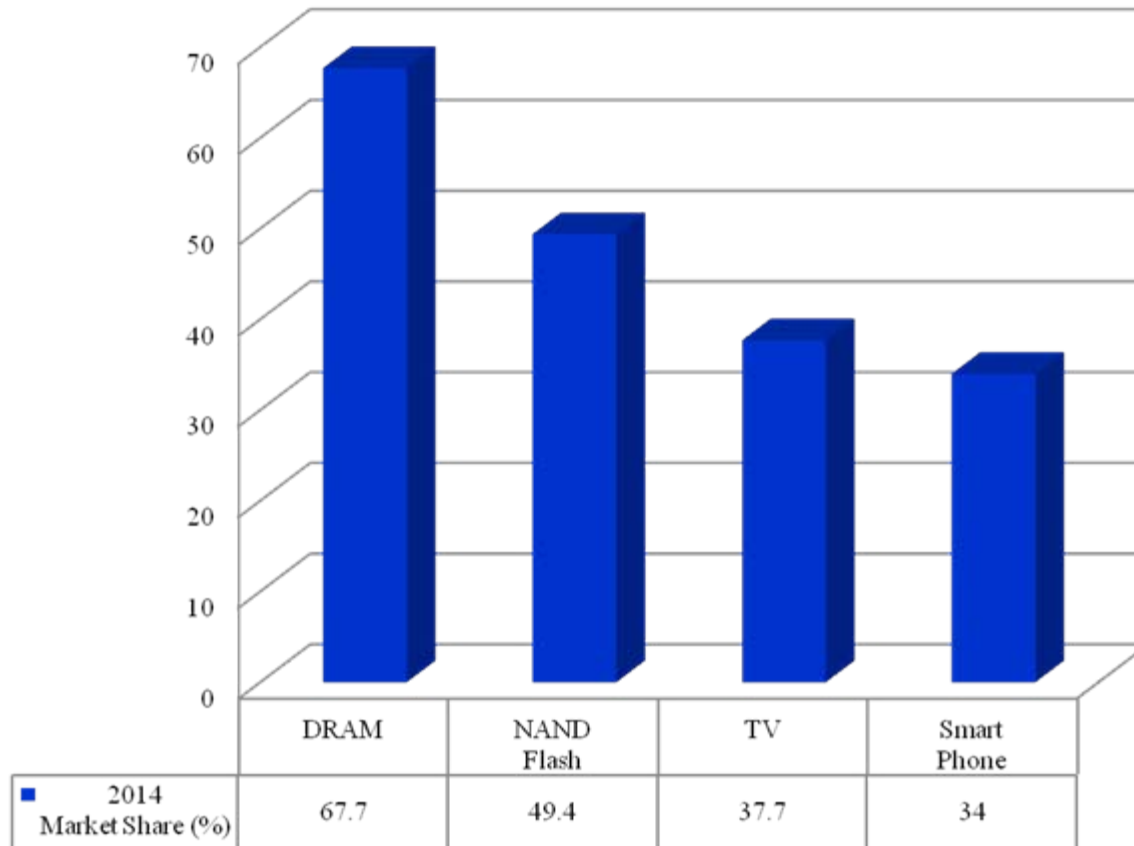


Background

- Brother-Type Trading since Tang Dynasty (735-1992)
 - 4th/6th largest trading country for Taiwan/Korea respectively
 - Korea → Taiwan: US\$14.79B
 - Taiwan → Korea: US\$12.69B
- Prosperity at the same time
 - Same Race, Same Culture
 - Same level of Technology and Branding Strength
- Head-on, Competition in ICT Business

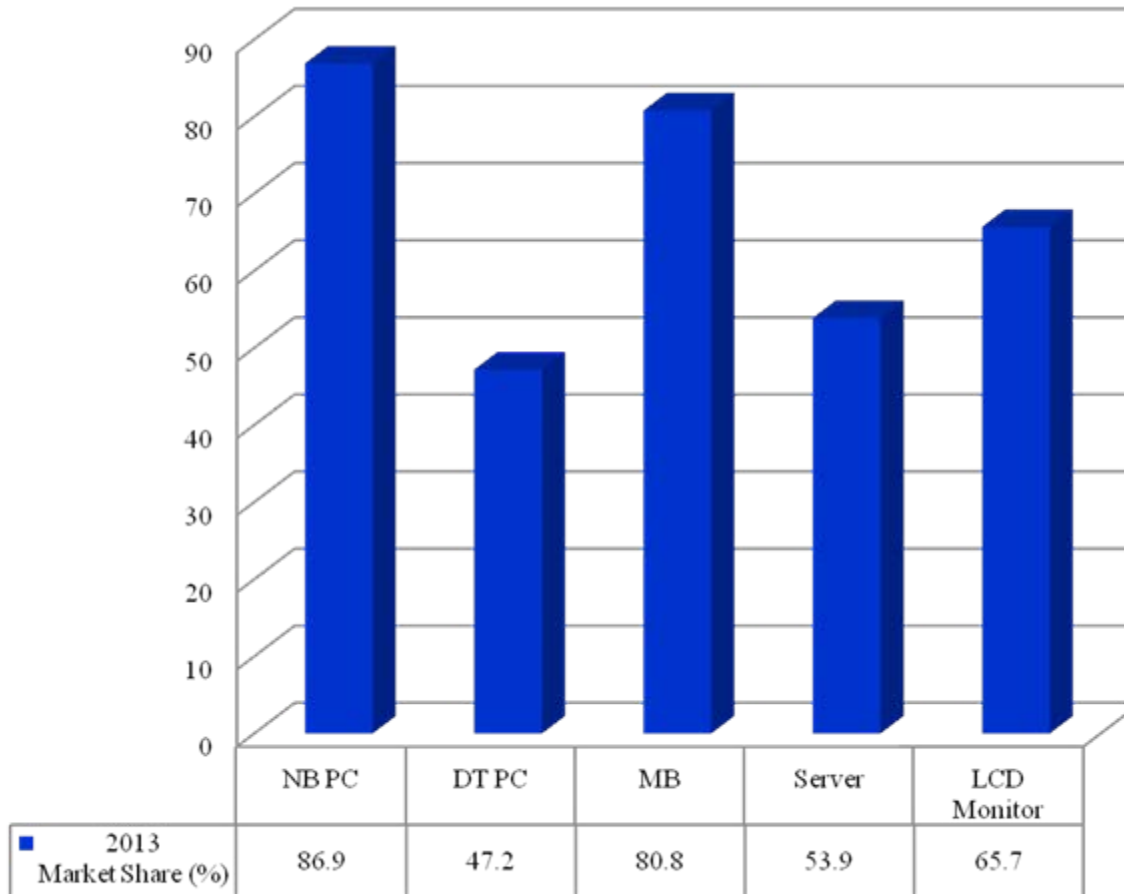


Global Market Share of Korea ICT Product





Global Market Share of Taiwan ICT Product





Major Trading Goods

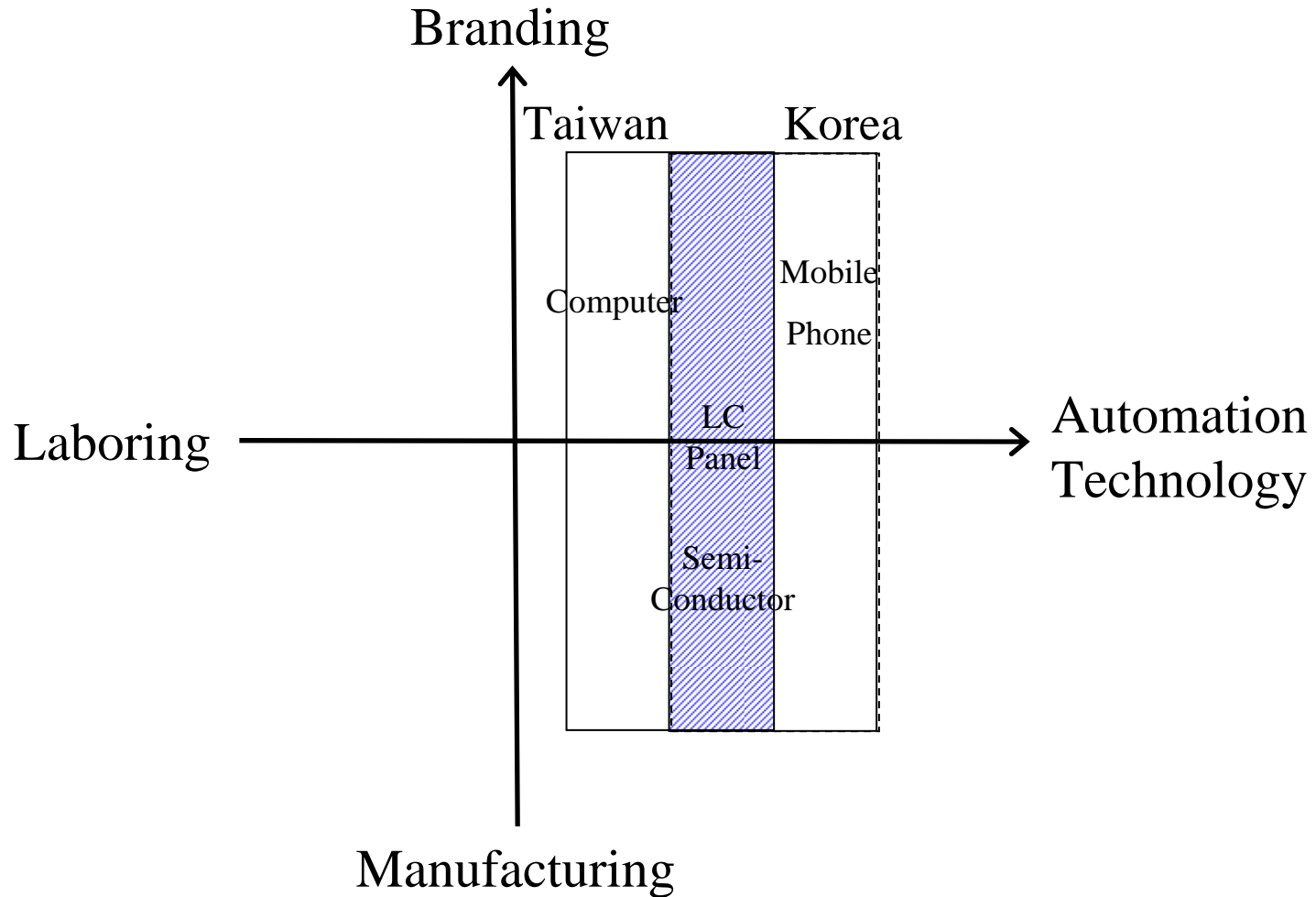
➤ Korea → Taiwan:

- IC, Memory, Micro-components
- Mobile Telecom System and devices
- Fiber Optical and devices

➤ Taiwan → Korea:

- IC, Memory, Transistor, Diode
- Magnetic Storage, Optical Disc
- Liquid Crystal Module
- Circuit Print Boards, Micro-components

NTCA^o Head-on Competition in ICT Business





Achievement of Taiwan ICT Industry

Unit: US\$ Billion

Industry	Sub-industry	Scope	2012 Output Value	Ratio of World and Domestic Sales
Communication Industry	Cable Communication Device	Terminal Transmission Equipment, Bridge, Router	7.87	World Market:98.5% Domestic Market:1.5%
	Wireless Communication Device	Wireless Base Station, Router, Gateway	4.96	World Market:99.6% Domestic Market:0.4%
	Smart Handhelds	Smart Phone, Tablet PC	18.51	World Market:97% Domestic Market:3%
	Communication Key Parts	Base band, RF, Signal Processing	8.26	World Market:81.2% Domestic Market:18.8%
Subtotal			39.60	
Information Technology Industry	IT Hardware	Notebook, Desktop, Tablet PC, Motherboard, Server, Display , DSC , Software and Service of Accessories and Components	147.66	World Market:99.3% Domestic Market:0.7%
	IT Software	Software and Service	5.68	World Market:26.1% Domestic Market:73.9%
	Smart Life	E-book , Online TV , Digital Signage, Industrial Computer and Relevant Service	19.40	World Market:91% Domestic Market:9%
Subtotal			172.74	



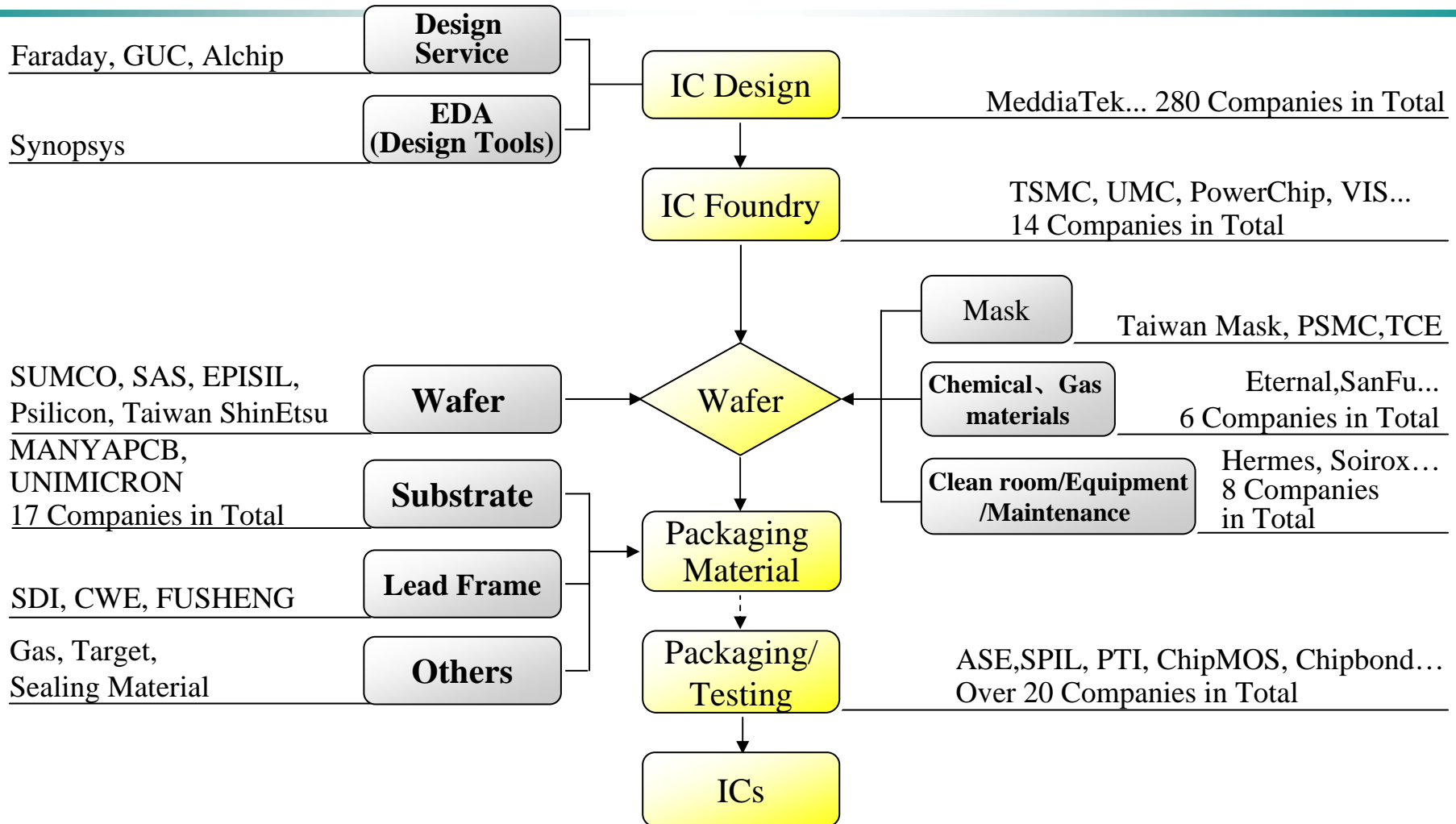
Branding Competition in PC Industry

Unit : Million

Product	Vendor	2015/2Q		2014/2Q		Growth Rate
		Shipment	Market Share	Shipment	Market Share	
Tablet PC	1. Apple	10.9	24.5%	13.3	27.7%	-17.9%
	2. Samsung	7.6	17.0%	8.6	18.0%	-12.0%
	3. Lenovo	2.5	5.7%	2.4	4.9%	6.8%
	4. Huawei	1.6	3.7%	0.8	1.7%	103.6%
	4. LG	1.6	3.6%	0.5	1.0%	246.4%
	Others	20.4	45.6%	22.4	46.7%	-9.3%
	Total	44.7	100.0%	48.0	100.0%	-7.0%
PC	1. Lenovo	13.4	20.30%	14.5	19.40%	-7.50%
	2. HP	12.2	18.50%	13.6	18.20%	-10.40%
	3. Dell	9.5	14.50%	10.4	14.00%	-8.70%
	4. Apple	5.1	7.80%	4.4	5.90%	16.10%
	5. Acer Group*	4.3	6.60%	5.9	7.90%	-26.90%
	5. ASUS*	4.3	6.50%	4.6	6.30%	-7.70%
	Others	17.0	25.80%	21.2	28.40%	-19.70%
	Total	66.1	100.00%	74.9	100.00%	-11.80%



Taiwan Semiconductor Infrastructure





Revenue Ranking of Semiconductor Suppliers

Unit : US\$ Million

Company	Region	Revenue 2010	Revenue 2011	Revenue 2012	Revenue 2013	Revenue 2014
TSMC	Taiwan	13,307	14,600	17,167	19,850	25,175
UMC	Taiwan	3,965	3,760	3,730	3,959	4,621
GLOBALFOUNDRIES	USA	3,510	3,480	4,013	4,261	4,400
Samsung	Korea	1,205	2,190	3,439	3,950	2,412
SMIC	China	1,555	1,320	1,682	1,973	1,970
PowerChip	Taiwan	-	374	625	1,175	917
Towerjazz	Israel	510	611	644	509	828
VIS	Taiwan	508	519	582	713	790
HHGrace	China	627	621	677	710	665



Revenue Ranking of Fabless IC Design Houses

Unit : US\$ Million

Corporations	2008	2009	2010	2011	2012	2013	2014
Qualcomm	6,477	6,585	7,204	9,828	13,177	17,211	19,291
Broadcom	4,643	4,278	6,589	7,390	7,793	8,219	8,428
MediaTek	2,896	3,551	3,590	2,969	3,366	4,587	7,032
AMD	5,455	5,403	6,494	6,568	5,422	5,299	5,510
Nvidia	3,425	3,326	3,543	3,998	3,965	3,898	4,681
Marvell	2,951	2,808	3,612	3,393	3,168	3,352	3,706
Hisilicon	-	-	737	1,112	1,178	1,355	-
Spreadtrum	-	-	417	705	730	1,070	-



Revenue Ranking of IC Package Companies

Unit : US\$ Million

Rank	Company	Region	Revenue 2013
1	ASE	Taiwan	4,399
2	Amkor	USA	2,760
3	SPIL	Taiwan	2,186
4	StatsChipPAC	Singapore	1,702
5	PTI	Taiwan	1,408
6	UTAC	Singapore	978
7	JCAP	China	714
8	ChipMOS	Taiwan	662
9	J-Device	Japan	619
10	Chipbond	Taiwan	508



Revenue Ranking of TFT LCD Panel Companies

Company	Generation	Capacity Planning (Kpcs/month)	Location	Production Timing	Equity Investment
BOE Technology	G6	90	Hefei	2010/4Q	Hefei Government/ BOE
	G8.5	120	Beijing	2011/3Q	SASAC./State-owned Enterprise/ BOE
	G8.5	90	Hefei	2014/2Q	Hefei Government/BOE
	G8.5	90	Chongqing	2015Q	Chongqing Government/BOE
China Electronics Panda Crystal Technology	G6	80	Nanjing	2011/2Q	Nanjing Government/CEC
	G8.5	45	Nanjing	2015/1Q	
China Star Optoelectronics Technology	G8.5	120	Shenzhen	2011/3Q	TCL/Century Display Co., Ltd.
	G8.5	100	Shenzhen	2015/2Q	Owned fund/Equity financing/Bank loans
Samsung	G8.5	85	Suzhou	2013/4Q	Samsung 60%/ Industrial Park 30%/TCL 10%
LGD	G8.5	70	Guangzhou	2014/3Q	LG 70%/ Skyworth+Guangzhou Government 30%

NTCA^o Deeply Influenced Chinese Culture

- Plotting Thoroughly: Second Agenda
Promising with Inconsistency
- Working Diligently: Better Achievement
Hard Working = Successfulness
- Managing Inaccurately: Summarizing Statistically
Rules for Reference
- Struggling Upward: Better Position
Unstable and Unloyal Employee
- Optimizing Locally: Short Sighted, Corner Cutting

Fighting for Survival



ICT Manufacturing Milestones

- PC Invention (1976): Massive Manufacturing

Apple Computer: Steve Jobs



- Open System (1980): Vertical → Horizontal Integration

IBM: William C. Lowe

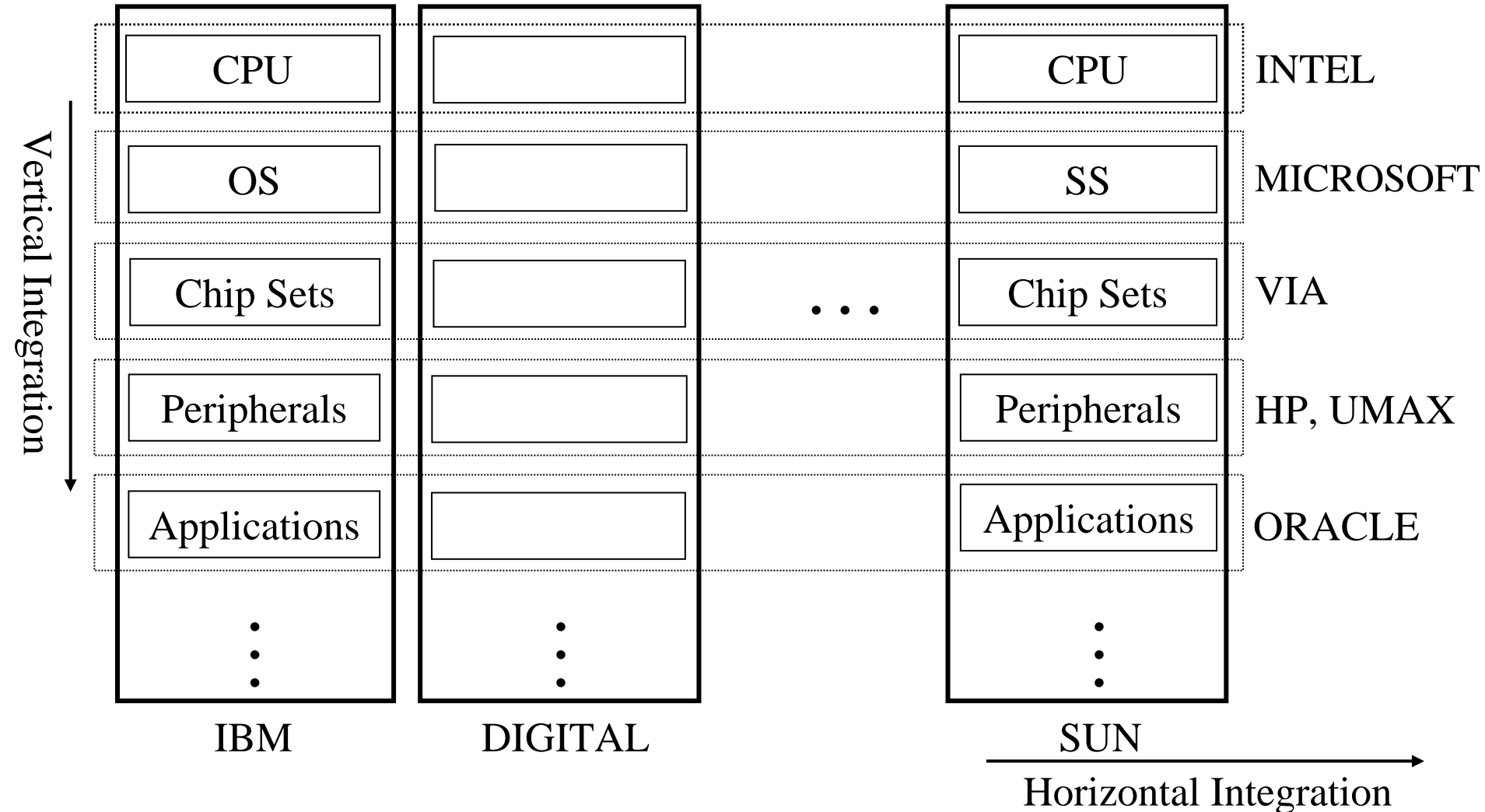


- iPhone (2007): Instantaneously Massive Manufacturing

Apple Computer: Steve Jobs



Revolution of ICT Integration





Deeply Influenced Chinese Culture

- **Plotting Thoroughly:**
 - Adapt New Technology Quickly for Better Competition
 - Shift Focus Quickly to Other Business Opportunities
- **Working Diligently:**
 - Restless Overtime for Triple Quantity Expansion without Investment
- **Managing Inaccurately:**
 - Operate Statistically for Mass Production and Quality Control
- **Struggling Upward:**
 - Entrepreneur to Repeat Success Story Inducing Heavy Competition
- **Optimizing Locally**
 - Compromise Easily for Integration and Cost Reduction

Manufacturing for Survival



1994 Taiwan ICT Industry Infrastructure

Unit: %

Year	1994	1995	1996	1998	1999	2000	2001
Notebook	28	27	32	40	49	52.5	54.8
Motherboard	80	65	74.2	61	64	70.2	70.4
Desktop computer	8	10	10.2	17	19	24.5	24
Monitors	56	57	53.4	58	58	53.7	-
Keyboard	52	65	61	65	68	-	-
CD-ROM drive	1	11	15	34	34	38.9	31.9
Desktop Scanner	61	64	52	84	91	92.5	-
Switching Power Supply	31	35	55.3	66	70	74	-
Sound Card	11	22	50	-	-	-	-
Mouse	80	72	65	60	58	-	-
Graphics Card	32	32	38.3	31	31	-	-
Terminal	22	27	24.6	-	-	-	-
Network Card	34	38	-	36	40	-	-
Video Card	24	35	55	-	-	-	-

NTCA^o ICT System Manufacturing Industry

The Revolutions in

- PC Invention (1976): Massive Manufacturing

Apple Computer: Steve Jobs



- Open System (1980): Vertical → Horizontal Integration

IBM: William C. Lowe



- iPhone (2007): Instantaneously Massive Manufacturing

Apple Computer: Steve Jobs



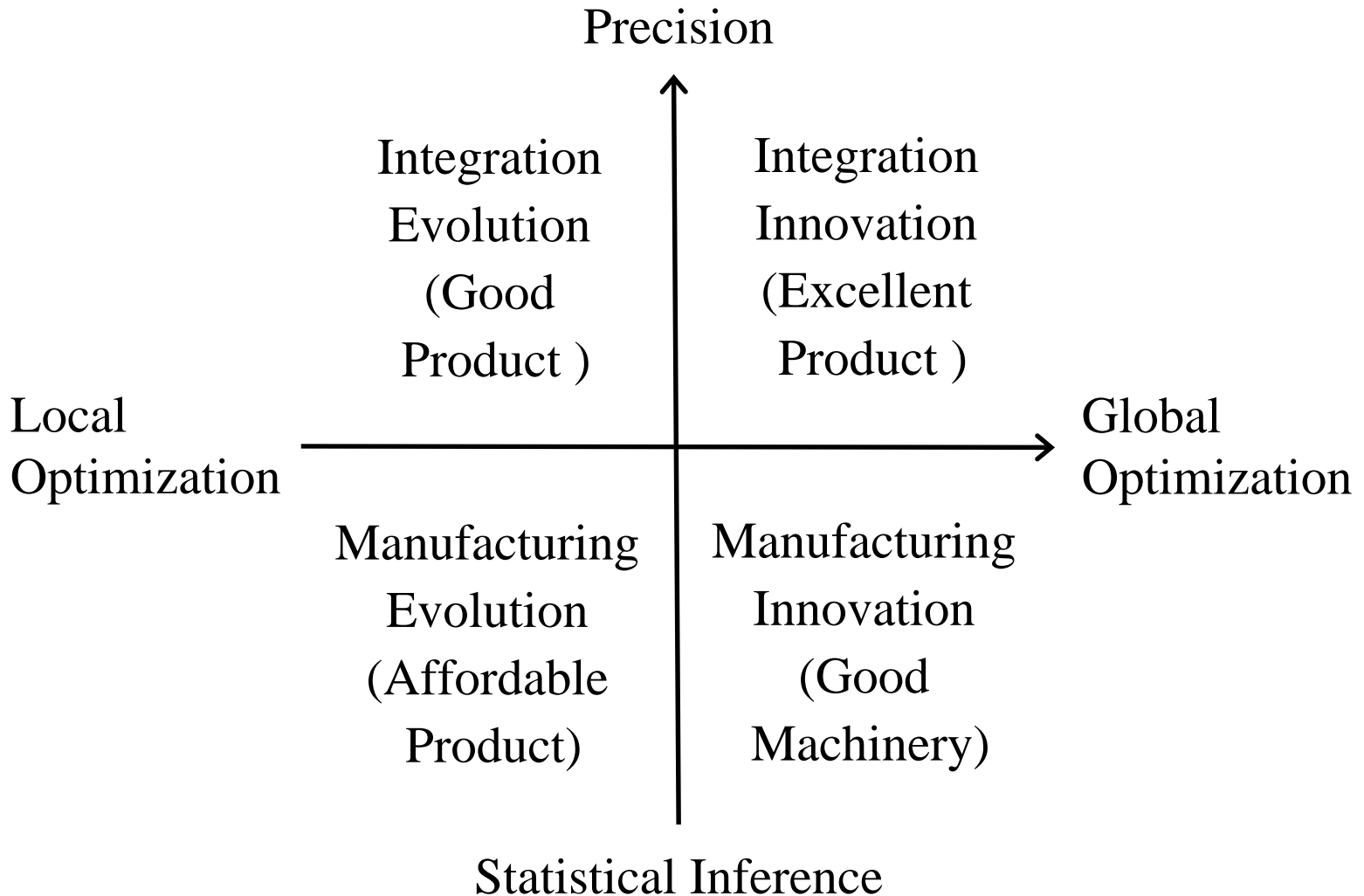
Apple iPhone 6 Manufacturing Infrastructure

Fields	Suppliers	Remark
CPU Manufacturing	TSMC	A8 Processor · 20nm Process
IC Package	ASE	No.1 IC Package & Test Corporation
System Assembly	FOXCONN, PEGTRON	No.1&2 OEM Makers
Lens	LARGAN	No.1 Mobile Phone Lens Maker
Case	FOXCONNTECH, CATCHER	
Pressing Parts	COXON	
Battery Module	SIMPLO	
PCB	ZHENDING TECH, UNIMICRON...	
FPCB	CARRER, FLEXIUM	40um FPCB
IC Substrate	KINSUS	No.1 IC Substrate Supplier
Fingerprint Authentication	XINTEC	
Quartz Crystal	TXC	
Speaker	Merry	
Connector	PLASTRON	
Inductor	MAGLAYERS	
Cover Glass	UNIBRIGHT	
Nut Materials	China Steel Precision Material	Titanium Nut
Others	USUNTEK, WINSEMICONDUCTOR, SUNNIC, CHENG LOONG, ALL RING TECH..	





Industrial Supreme Influenced by Cultures



NTCA^o Collaboration Mission Almost Impossible

	Korea Branding Company	Korea Small-size Company
Taiwan Branding Company	Heavily competition	No business opportunity
Taiwan Small-size Company	No business opportunity	Minimum influence

NTCA Similar Culture Between Two Countries

- Share many ancient stories
 - Good people → Good Reward
- Believe hard working rather than gifted
 - Devote Diligently → Harvest Satisfactorily
- Wish good future life
 - Persistence → Outstanding



Minor Deviations

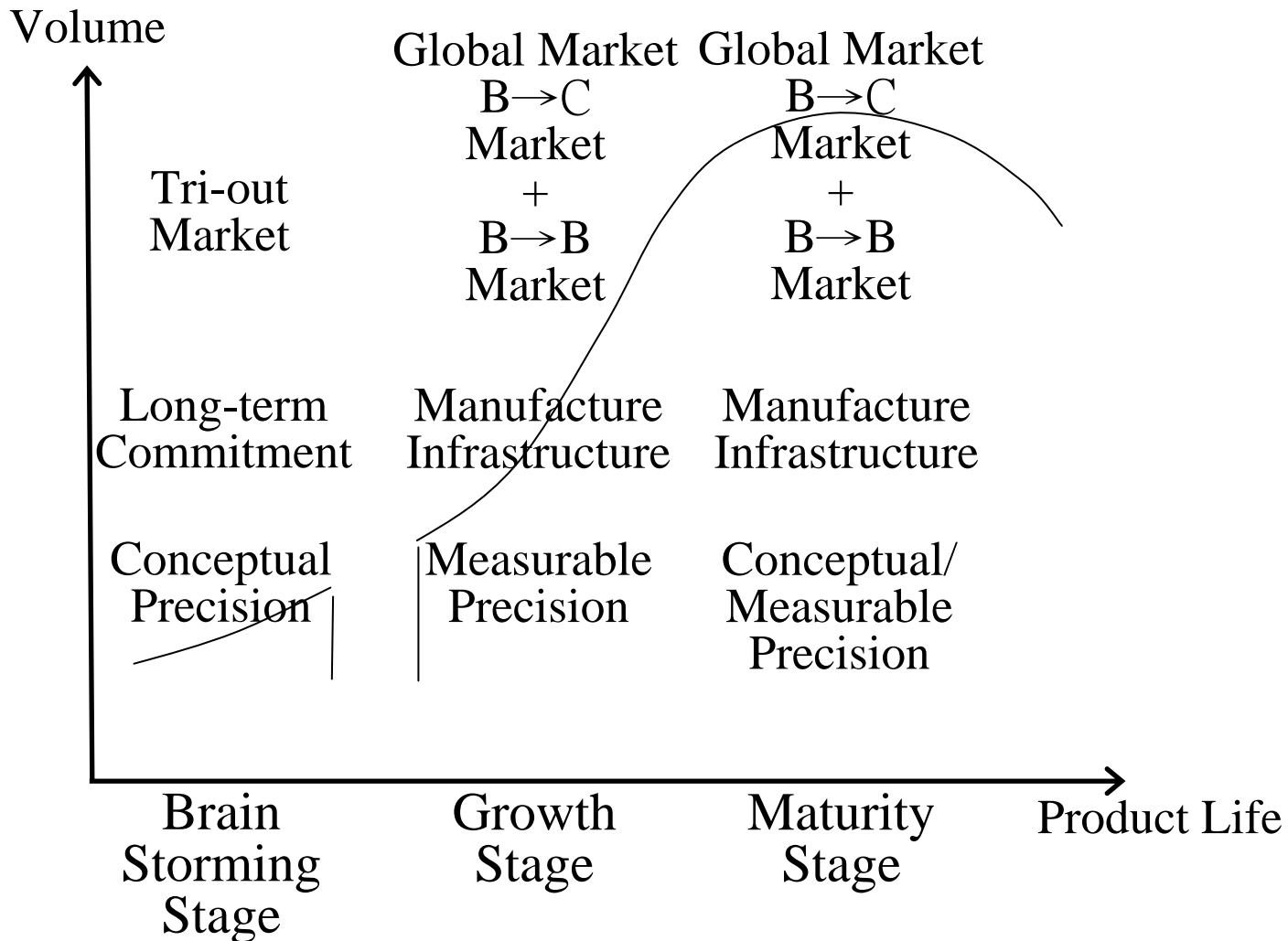
	Korea	Taiwan
Rewarding	Major Reward (Innovation)	Short-term Reward (Manufacturing infrastructure)
Confidence	Respect Mutually (Work together)	Self-Satisfaction (Work individual)
Precision	Measurable	Conceptual
Committed Assignment	Life/Death	Excusable



Business Characteristics

		Korea	Taiwan
Company Category		Several big companies	Many medium / small companies
Market	Domestic	Sufficient for Tri-out	No domestic market influenced
	World	Idea creation Vertical Integration (e.g. mobile phone)	Standard follower Horizontal Integration (e.g. computer)
Product Branding		B→C Market	B→B Market

NTCA^o Collaboration Opportunities in IOT



NTCA^o Collaboration Mission Becomes Possible

	Korea Branding Company	Korea Small-size Company
Taiwan Branding Company	Standardization Alliance	Infrastructure
Taiwan Small-size Company	Infrastructure	New Product Exploration

NTCA^o Collaboration Thoughts in IOT

- Merge two country industrials into one
 - Explore new innovation product market
 - Develop required manufacturing infrastructure
 - Compete heavily to grow market size
 - Share profits together

Mutually Understanding required

Ground Work for Collaboration

- Bridging communication channels to understand each other
 - Enrollment in education study freely
 - Hiring without general restriction of foreigner
- Trading agreement to be slatted
 - Free import and export tax
 - Free limitation of trading items
- Collaboration experience to be beneficial
 - Mutually investment for profit sharing

Summary

- Boolean Algebra (1854)
 - VLSI Semiconductor (1980s)
- } Massive ICT Industry (1990s)
-
- Committed Korean
 - Trustable Chinese
- } ? (2015 ~)