

Special Topics: Technology and Industries/Business

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Course Brief

- wk1(09.12): Course Introduction (Technology Definition, Technology and Innovation, Hype Cycle for Emerging Technology, Technology and Industry/Business)
- wk2-3(09.19;09.26): Worldview and International Business (“The world you have never seen it before”- Global population growth, resource and wealth distribution, manufacturing and production, services and fuel, food and goods etc)
- wk4(10.03): Big Pictures of Technology and Industry/Business (Review of past five technology revolutions in our modern civilization; Its impact on our infrastructure, business and Financial, and “Bubble Economy” - so to speak)
- wk5(10.10): National Holiday (no class)
- wk6(10.17): Big Pictures of Technology and Industry/Business (Review of past five technology revolutions in our modern civilization; Its impact on our infrastructure, business and Financial, and “Bubble Economy” - so to speak)
- wk7-8(10.24;10.31): Technology and Business Innovations and Coevolution (Discovery of innovator’s DNA skills and disruptive construction of innovation dilemma, exploration of “The Medici Effect” for creative thinking, and coevolution-driven society in the future)
- **wk9(11.07): no class; 11.10 Field Trip to Hsinchu Science Park and Biomedical Science Park**
- wk10(11.14): Case Study and Discussion of Disruptive Innovation in Various Industries (Computer(iPad), Publishing(Kindle), Advertise(AdSense), Web Search(Google), Social Networking(FB), Education(Karhacademy etc), Entertainment(Youtube), Music(Youtube and Pandora) etc.)
- wk11(11.21): Case Study and Discussion of Startup and Innovation
- wk12(11.28): Financial Innovation and Crisis, and Bubble Economy
- wk13(12.05): Recent Innovation in Technology, Market, Business, and Financial Systems @ Our Generations (Amusing Civilization Progress of Our Generations)
- wk14(12.12): Is Our World Flat or Spiky?, or Something Else; What Needs to be disrupted!
- wk15(12.19): What’s Next or Ahead (Age of Abundance....)
- wk16(12.26): Case Research Presentation and Discussion I
- wk17(01.02): Case Research Presentation and Discussion II
- wk18(01.09): no class

Course Reference

- " The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business " by Clayton M. Christensen, 2011
- " The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators“ by Clayton M. Christensen, 2011
- " The Medici Effect: What Elephants and Epidemics Can Teach Us About Innovation“ by Frans Johansson, 2006
- "The World is Flat" by Thomas L. Friedman, 2005
- "Hot, Flat, and Crowded: Why We Need a Green Revolution and How It Can Renew America" by Thomas L. Friedman, 2009
- "World On Fire: How Exporting Free Market Democracy Breeds Ethnic Hatred and Global Instability" by Amy Chua, 2002
- "Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages" by Carlota Perez, 2002
- "Civilization: The West and the Rest" by Niall Ferguson, 2011
- <http://www.professorwu.com/>- Contains information of useful cases studies
- <http://danieleewww.yolasite.com/2012-mgb-070.php> - Contains class handouts
- <http://ecorner.stanford.edu/index.html>
- <http://hbsp.harvard.edu/>

Student and/or GG(Generation Global)/ GenFlux(Generation Flux) Behaviors

- Be prompt
 - Class Starts at 13:30pm.
- Class participation is graded, preview assigned materials before class!
- Feedback
 - If the workload is too much – please give me feedback
 - If the workload is too light – I’m sure you won’t let me know 😊

<http://www.fastcompany.com/generation-flux> “What defines GenFlux is a mind-set that embraces instability, that tolerates—and even enjoys—recalibrating careers, business models, and assumptions”

Class Etiquette (Practices)

- Beverages are permitted in class, but food is not.
- If you cannot make a class meeting, or if you will be late for class, send me an e-mail advising me of this in advance.
- Laptops and PDAs etc. for class note is ok.

Grading

- Attendance (10%)
- Classroom Discussion (30%)
- Assigned Case Critic Review and Discussion (30%)
- Case Research Presentation and Report (30%)
 - Presentation (10%)
 - Research report (20%)
- Bonus Points ! (your choices of topic for either in-class discussion or additional case study)

Recommended Topics of Case Research Study (1)

- Next giant in green revolution, biotechnology, nanotechnology, AI-robot, cloud computing etc.
- Nowadays and future of Japan(1970s-1990s technology power house)
- Nokia's future
- Financial issues of EUs and what the future to be(financial innovation)
- Next China's
 - Apple or Sony (?)
 - Samsung (?)
 - IBM or Oracle (Alibaba)
 - Google (Baidu, Tencent)
 - HP (Lenova)
 - GE (Haier)
 - Toyota (?)
 - Verizon (China Mobile, China Telecom, China Unicom)
 - Cisco (Huawei)
 - Wal-Mart (Eupa.cn)
 - Berkshire Hathaway (TBD)
 - Amazon (dangdang.com)

Recommended Topics of Case Research Study (2)

- WIN-TEL Win-Win Business Model and Its Future
- Microsoft Next Move
- Reality of LED Business and its future
- Internet of thing (RFID); A big one or fake in five years from now
- Future semiconductor industry: Supply chain reconfiguration and fate of foundry business model
- Value chain analysis of global IT industry: reconfiguration or disruption ahead!
- Reality of LED Business and its future
- Internet of thing (RFID); A big one or fake in five years from now
- IoT value chain and supply chain analysis; and its future

Recommended Topics of Case Research Study (3)

- Disrupt Taiwan for revisiting top competitive position in global IT industry
- Value chain reconfiguration: Foxconn Technology Group next step? ; EMS business and its channel business and branding product thinking
- Supply chain integration: Critical review of Foxconn and Sharp boulded up for global competition
- HTC Smart Phone Business: next RIM or ???
- Foxconn: Why not go for brand company or non-brand product company!
- TSMC competitiveness in semiconductor foundry business and its likely fate in the future
- Reality of LED Business and its future
- Internet of thing (RFID); A big one or fake in five years from now
- How TSMC as a giant in semiconductor foundry should do to avoid becoming a shadow of itself like Nokia recent downhill!
- DRAM value chain and supply chain analysis: Starting with Micron leverage buyout of Alpidia, and its impact on Taiwan DRAM industry; Landscape change of DRAM and Flash Memory Market: what to expect 2012 and beyond

Starter: Shift Happens

- Video: [The Latest State of the Web](#)
- Video: [Shift Happens](#)
 - <http://www.youtube.com/watch?v=Gv8pmlr3a7k&feature=related>
 - <http://www.youtube.com/watch?v=pMcfrLYDm2U&feature=related>
 - <http://www.youtube.com/watch?v=ljbl-363A2Q&feature=related>

Generation Flux

(“What defines GenFlux is a mind-set that embraces instability, that tolerates—and even enjoys—recalibrating careers, business models, and assumptions.”)

- Know What
- Know How
- Know Why
- Know What is Likely to Happen in the Future!

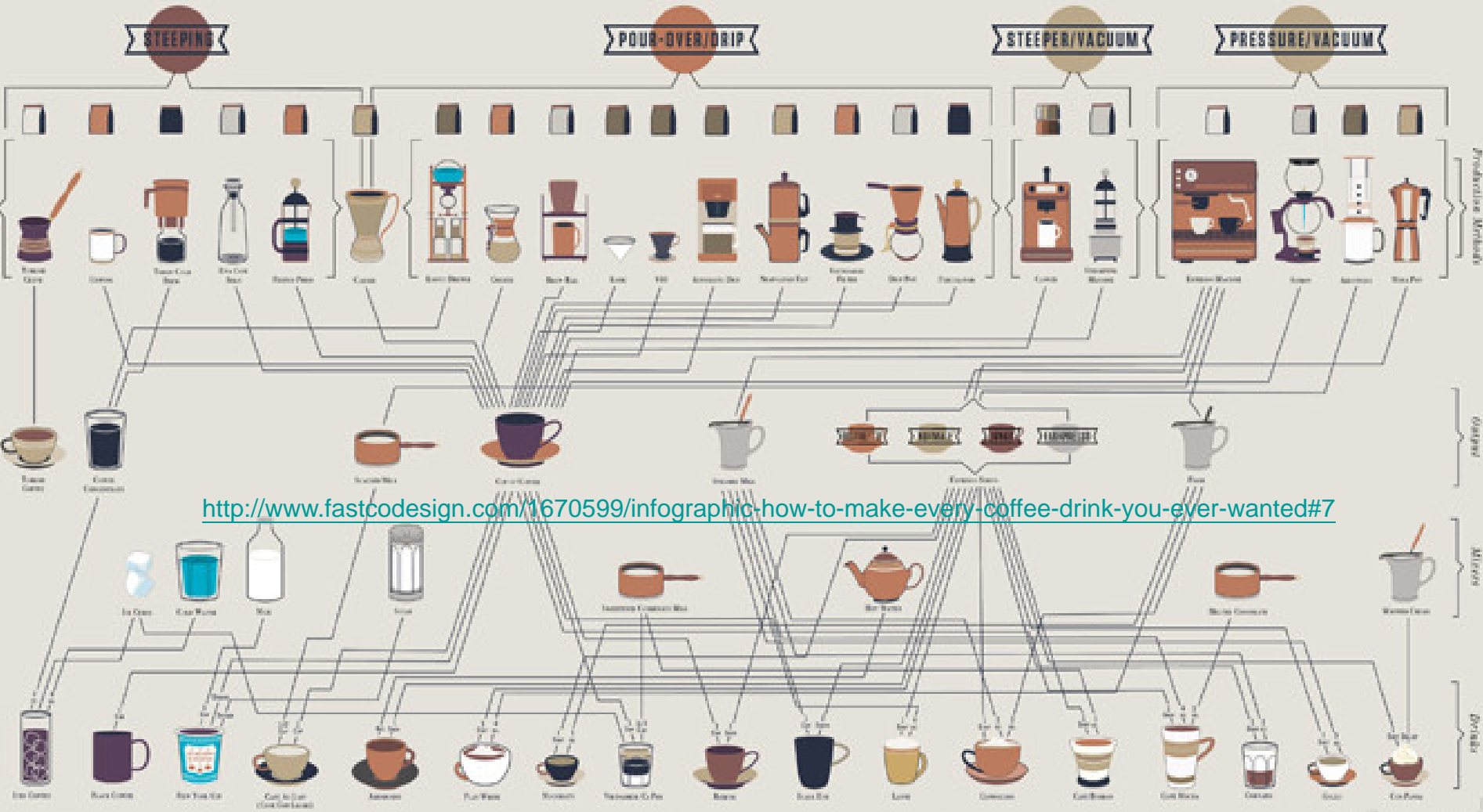
What You Will Learn

- Historical worldview and insight on how political, technology and business rolling together and develop your own foresight
- In today's world – finding information and analyzing it is more important than knowing facts
- Real Estate is Location, Location, Location and Competitive Advantage is **Value Chain, Value Chain, Value Chain, and “Location 3X” as well.**

Coffee ecosystem(egosystem) and its taxonomy-- sustainability

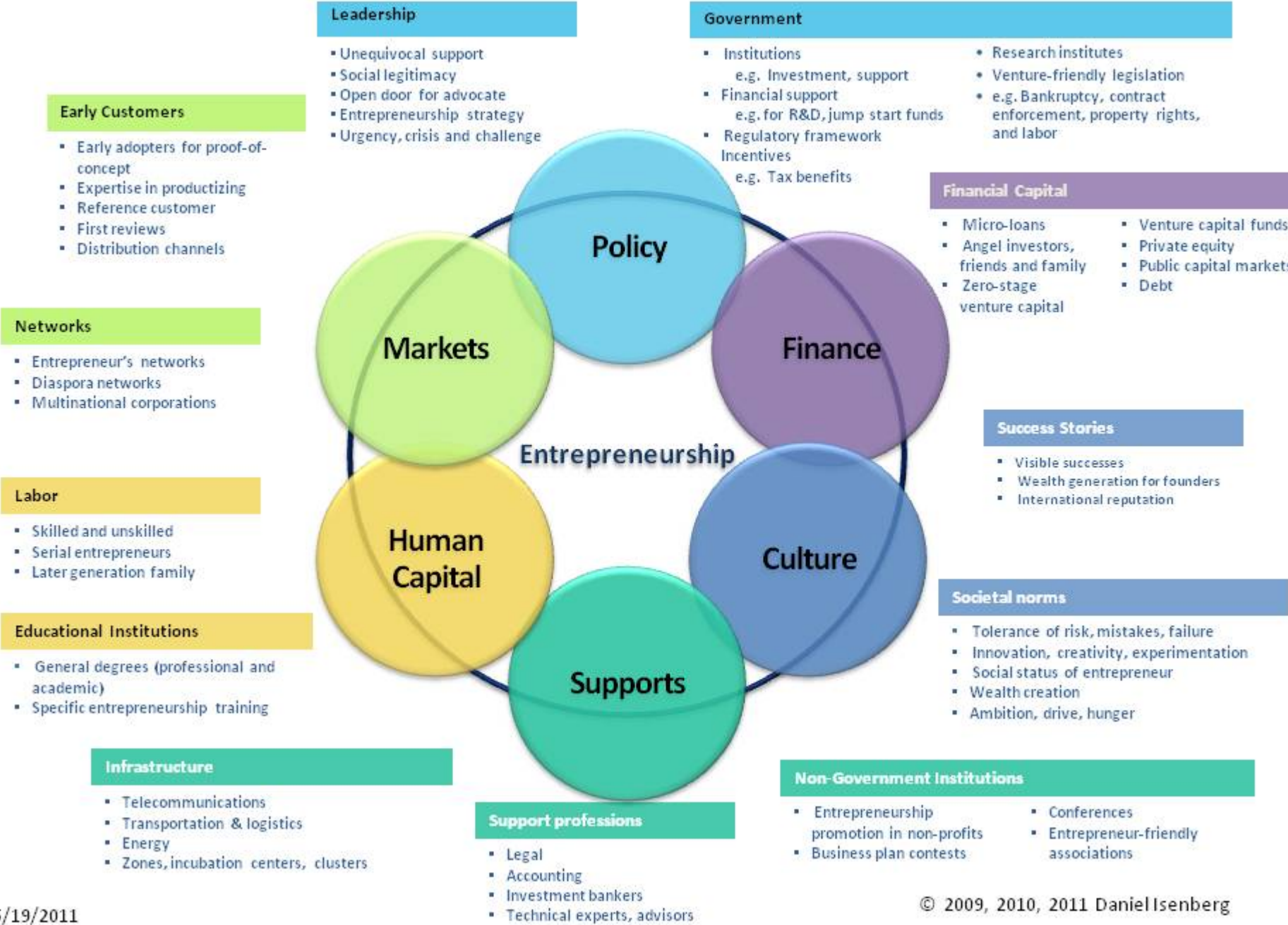
COFFEE

CHART of Grind Apparatus Grinds Production Methods Output Mixers Drinks

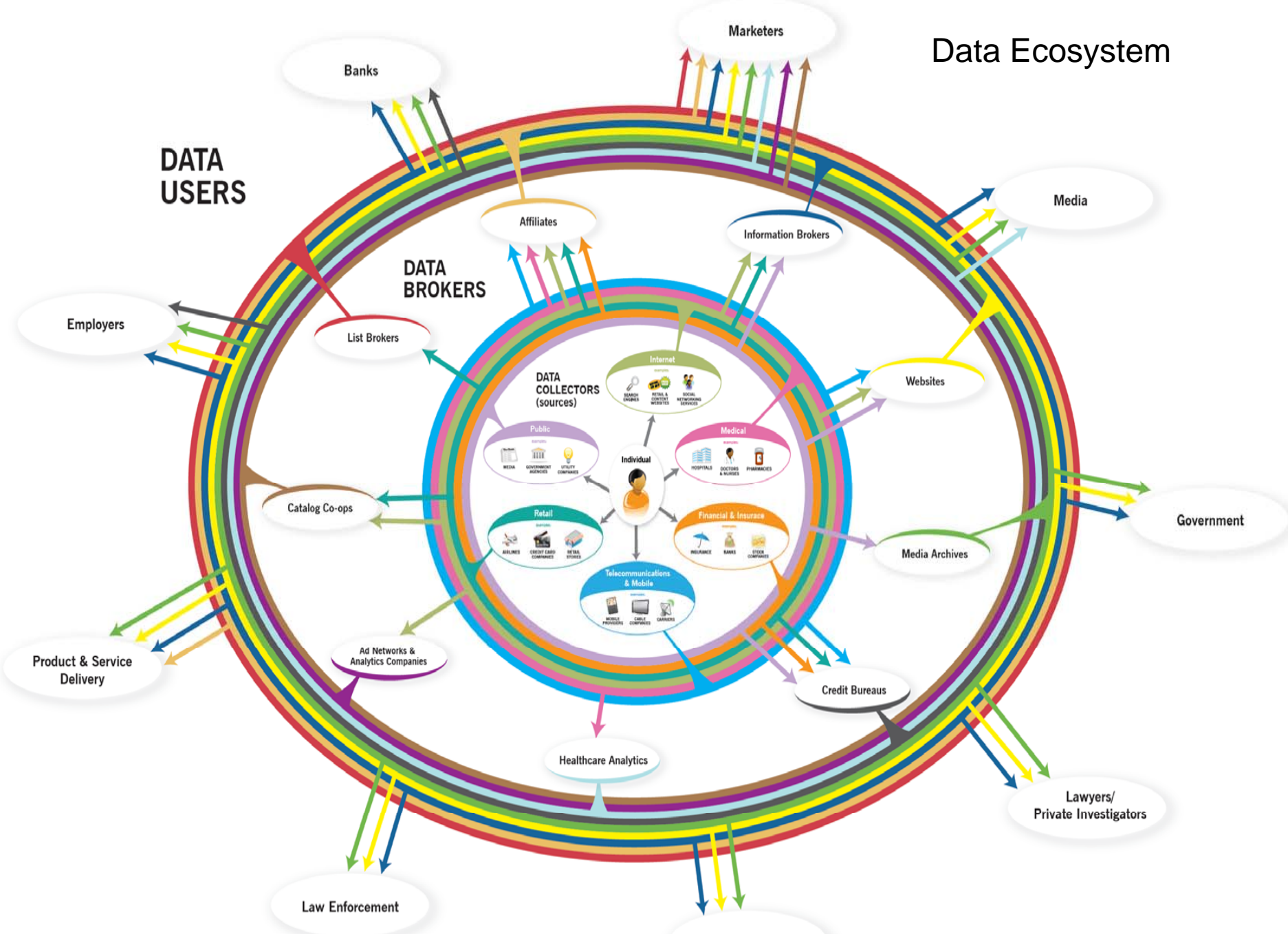


<http://www.fastcodesign.com/1670599/infographic-how-to-make-every-coffee-drink-you-ever-wanted#7>

Domains of the Entrepreneurship Ecosystem



Data Ecosystem



DATA COLLECTORS (sources)

Internet

examples:

- SEARCH ENGINES
- RETAIL & CONTENT WEBSITES
- SOCIAL NETWORKING SERVICES

Public

examples:

- MEDIA
- GOVERNMENT AGENCIES
- UTILITY COMPANIES

Medical

examples:

- HOSPITALS
- DOCTORS & NURSES
- PHARMACIES

Retail

examples:

- AIRLINES
- CREDIT CARD COMPANIES
- RETAIL STORES

Financial & Insurance

examples:

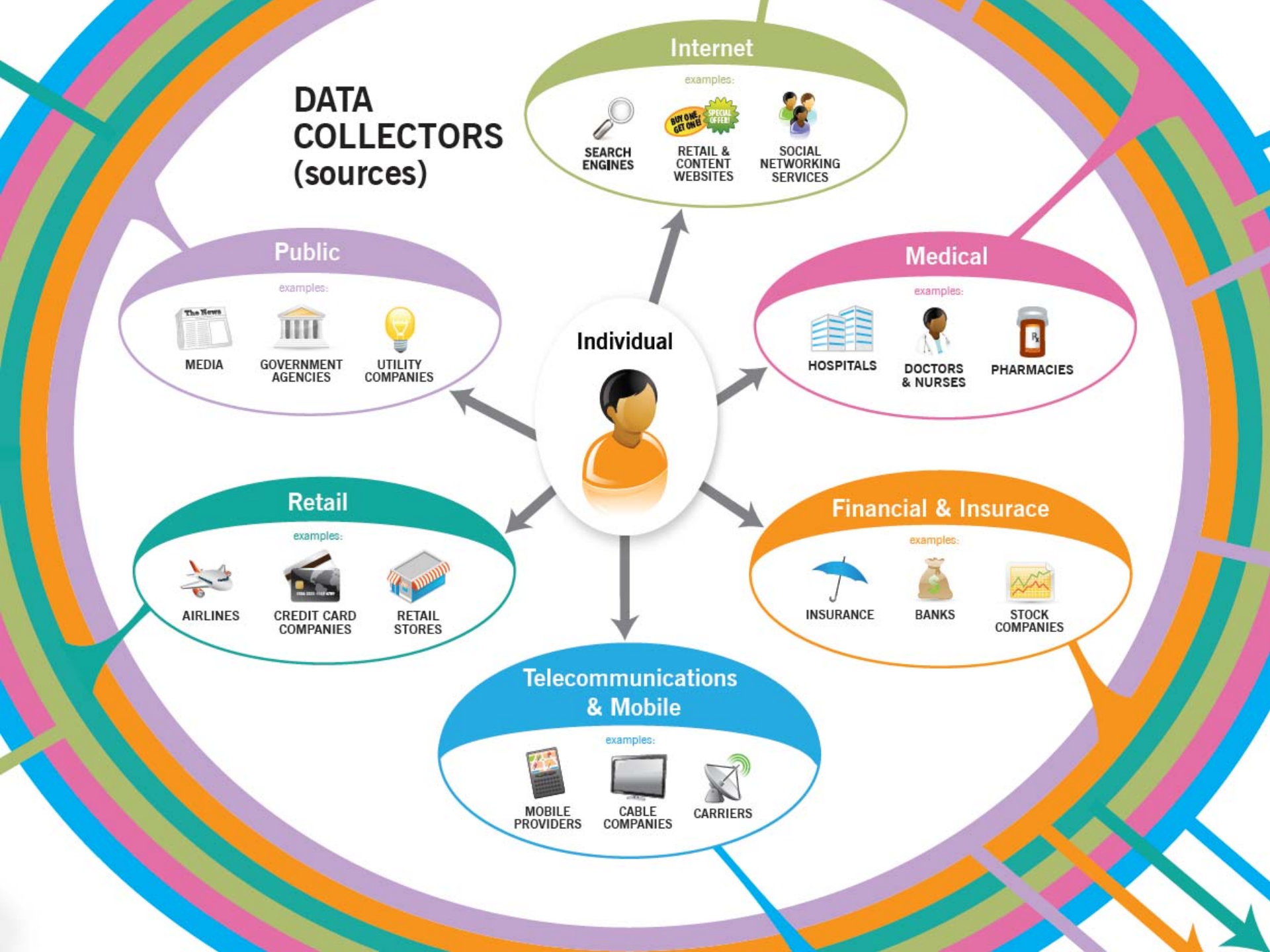
- INSURANCE
- BANKS
- STOCK COMPANIES

Telecommunications & Mobile

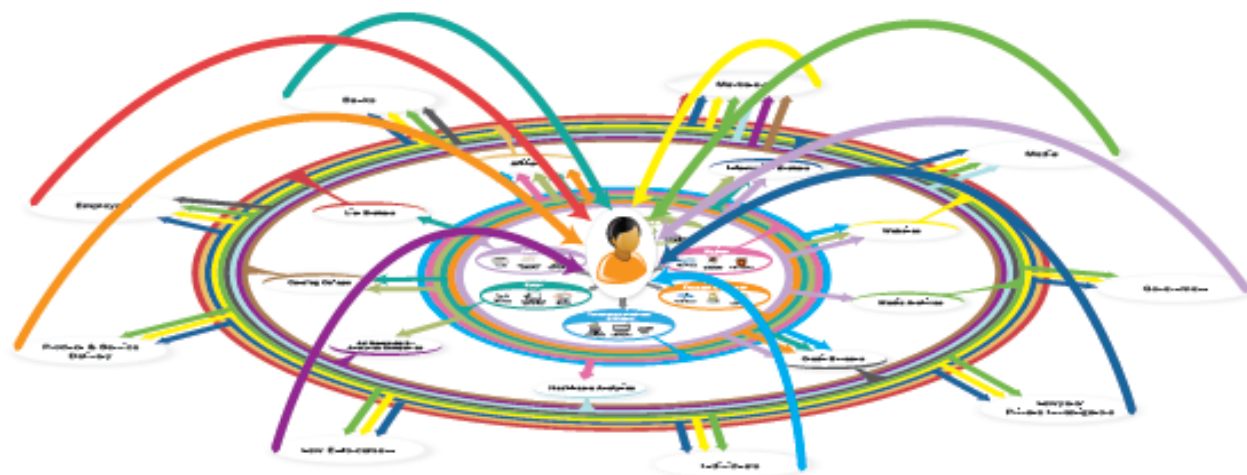
examples:

- MOBILE PROVIDERS
- CABLE COMPANIES
- CARRIERS

Individual



DATA USES:



Examples of uses of consumer information in personally identifiable or aggregated form:

- Financial services, such as for banking or investment accounts
- Credit granting, such as for credit or debit cards; mortgage, automobile or specialty loans; automobile rentals; or telephone services
- Insurance granting, such as for health, automobile or life
- Retail coupons and special offers
- Catalog and magazine solicitations
- Web and mobile services, including content, e-mail, search, and social networking
- Product and service delivery, such as streaming video, package delivery, or a cable signal
- Attorneys, such as for case investigations
- Journalism, such as for fact checking
- Marketing, whether electronically, through direct mail, or by telephone
- Data brokers for aggregation and resale to companies and/or consumers
- Background investigations by employers or landlords
- Locating missing or lost persons, beneficiaries, or witnesses
- Law enforcement
- Research (e.g., health, financial, and online search data) by academic institutions, government agencies, and commercial companies
- Fraud detection and prevention
- Government benefits and services, such as licensing

TAIC-SIMO Business Model

- Today's media and ICT businesses has four dimensions: Screen & Internet & Media & Operator businesses SIMO or in other words TAIC Technology – Access – Interest – Channel
- TAIC model equals with SIMO model (Screen – Internet – Media – Operator). If a company dominates all dimensions like Apple or Google they'll survive. If a company has only one dimension under control like Nokia = Screen, Facebook or LinkedIn = Access, Disney or CBS = Interest, Vodafone = Channel, they need to join or form a holistic joint venture to survive.

Technology – Access – Interest – Channel

Screen – Internet – Media – Operator

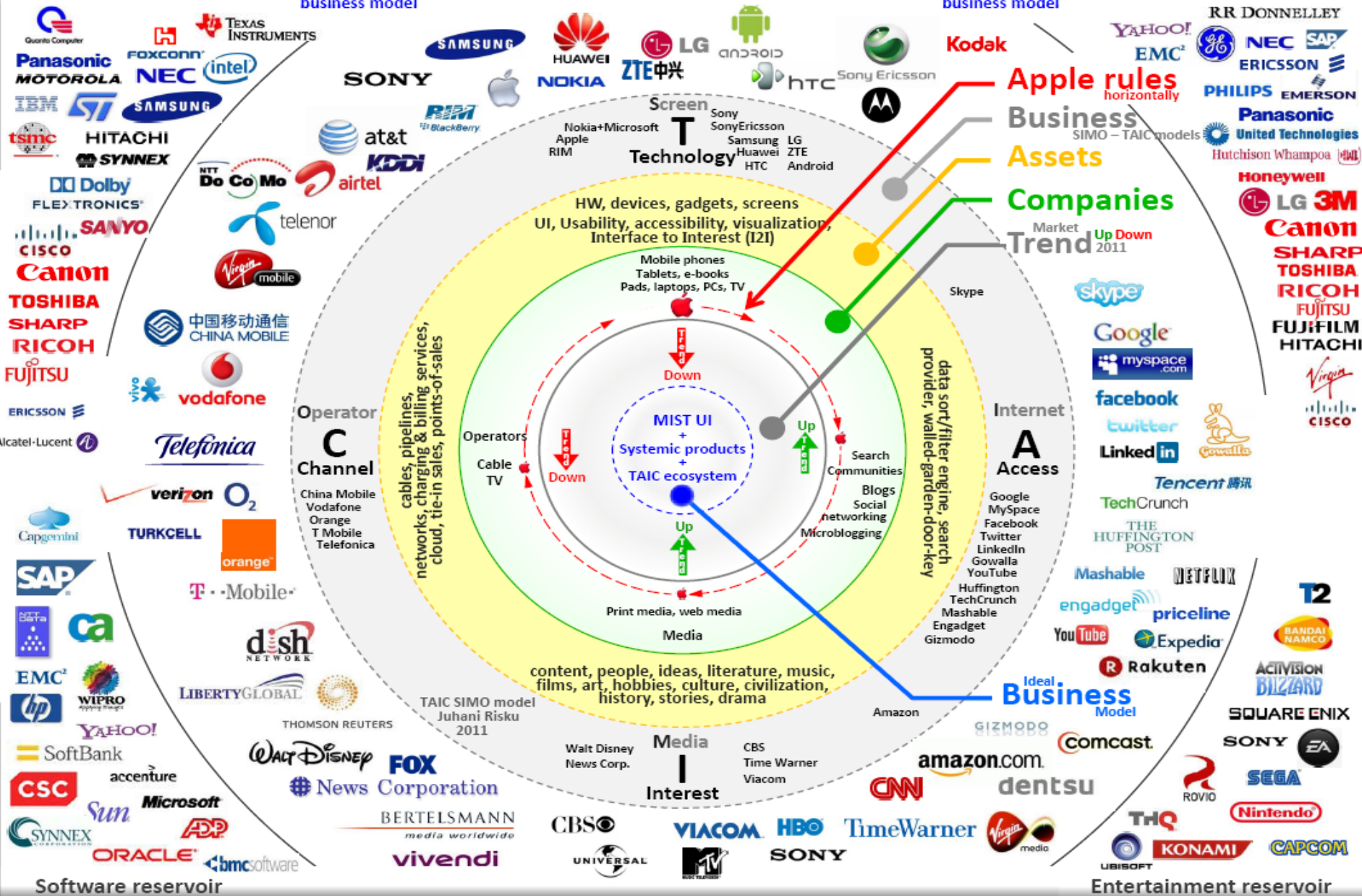
Juhani Risku 2011

Technology reservoir

SIMO business model
Screen – Internet – Media – Operator

Technology – Access – Interest – Channel
TAIC business model

Black Horse reservoir



SIMO model in detail

- So the businesses of four components/dimensions are (four different definitions of abstractions of the same thing):
- Screen & Internet & Media & Operator (SIMO)
- Technology & Access & Interest & Channel business (TAIC)
- Technology – Internet – Media – Operator model (TIMO)
- Gadget-Internet-Media-Operator business (GIMO)
- Formula 1 = [easy + pleasant] + [access] + [interests] + [channel]
- Formula 2 = [UI, usability] + [data sort/filter engine, search provider, walled-garden-door-key] + [content, people, ideas, literature, music, films, media companies] + [operators, cable/satellite companies].
- Explanation in detail:
 - T = Technology = Screen = Gadget = [easy + pleasant] = [iconic instrument, UI, usability]
 - A = Access = Internet oases = [access logic] = [data sort/filter engine, search provider + relevant search result, walled-garden-door-key]
 - I = Interest = Media = [content, people, ideas, news, blogs, opinions, literature, music, films, media companies]
 - C = Channel = [operators, cable/satellite companies] = [channel/medium/highway] .

Juhani Risku LinkedIn / Google / Critique
ref. Vaasa, Finland, July 8, 2011

What's happening in mobile media industry?

- Microsoft got Nokia for free, with zero dollars. HP got Palm and Meego and lost its focus. Sony kicks Ericsson out. Amazon adopts Android. Google takes Motorola. Samsung is strong but adrift. Apple rules through its systemic solution in products, services and content covering screens, Internet, media and operators.
- Media, technology, Internet and operator businesses are facing fundamental restructuring in organizing their dependencies.

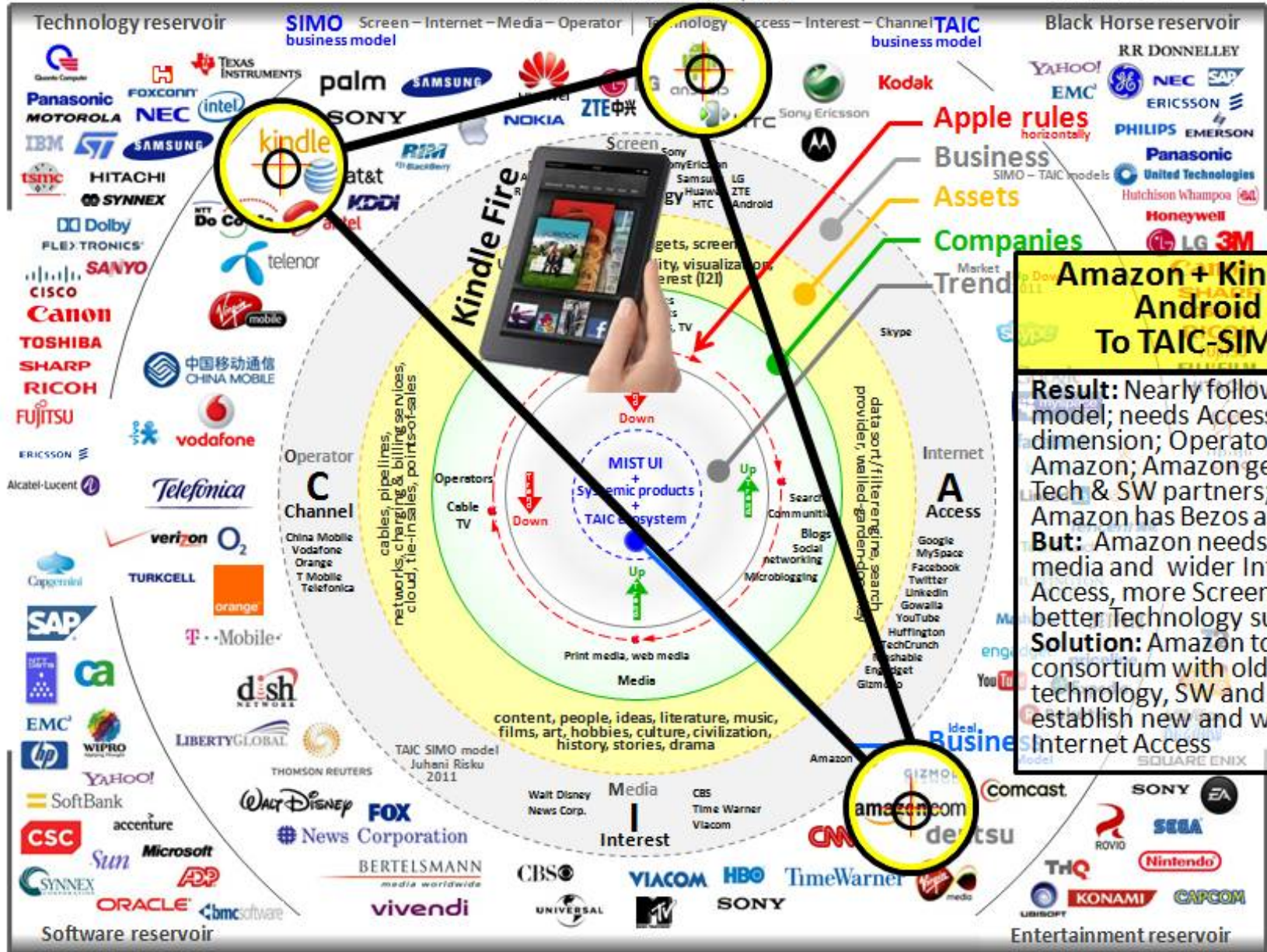
Amazon + Kindle + Android towards TAIC-SIMO

1

Technology – Access – Interest – Channel

Screen – Internet – Media – Operator

Juhani Risku 2011



Amazon + Kindle + Android To TAIC-SIMO

Result: Nearly follows Apple model; needs Access dimension; Operators love Amazon; Amazon gets easily Tech & SW partners; Amazon has Bezos as CCO; **But:** Amazon needs more media and wider Internet Access, more Screens and better Technology support

Solution: Amazon to build consortium with old media, technology, SW and establish new and wider Internet Access

Juhani Risku, TAIC-SIMO business model Oct 2011

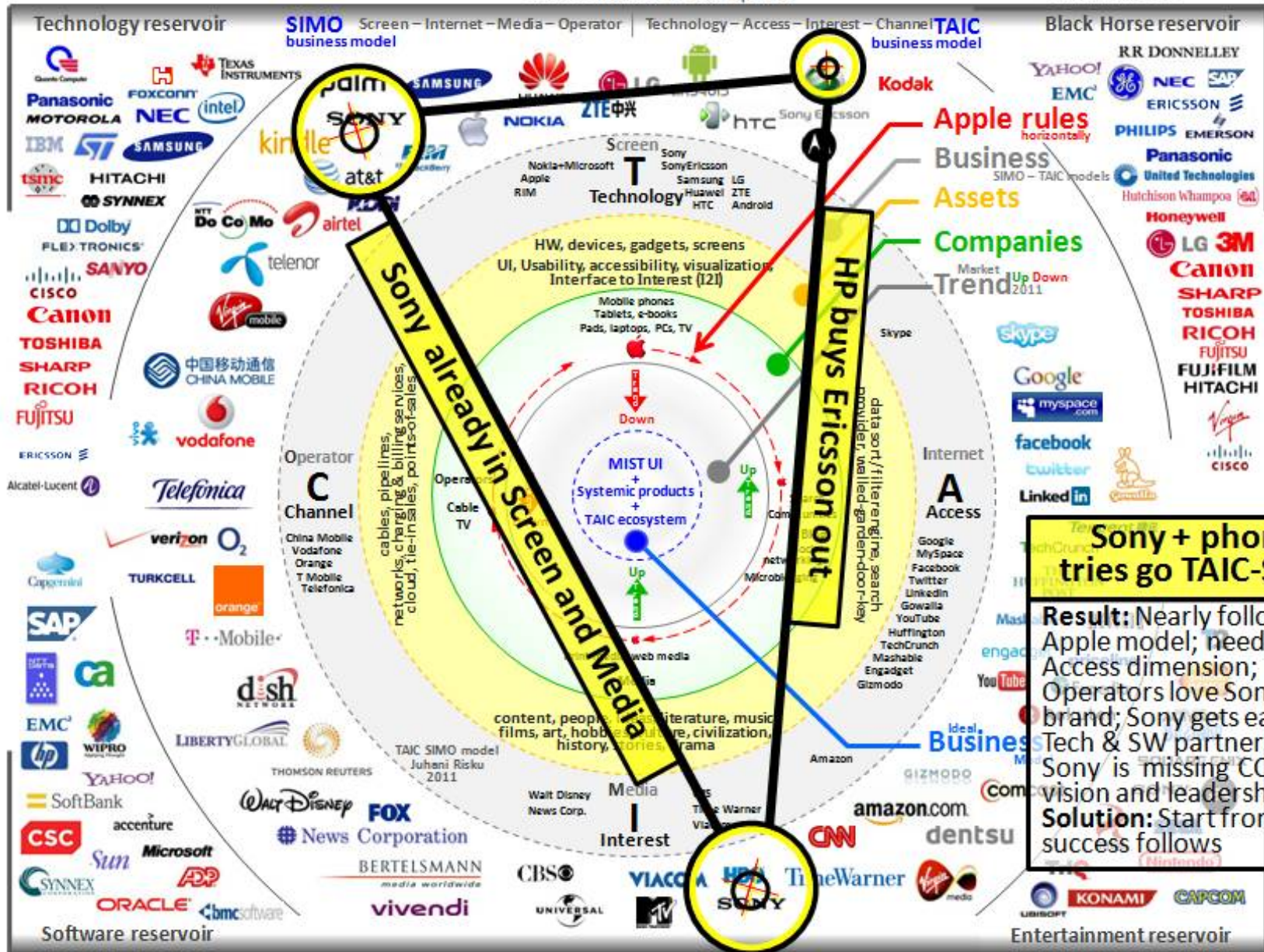
Sony + phones towards TAIC-SIMO

Technology – Access – Interest – Channel

Screen – Internet – Media – Operator

Juhani Risku 2011

2



Sony + phones tries go TAIC-SIMO

Result: Nearly follows Apple model; needs Access dimension; Operators love Sony brand; Sony gets easily Tech & SW partners **But:** Sony is missing CCO, vision and leadership

Solution: Start from CCO, success follows

Juhani Risku, TAIC-SIMO business model Oct 2011

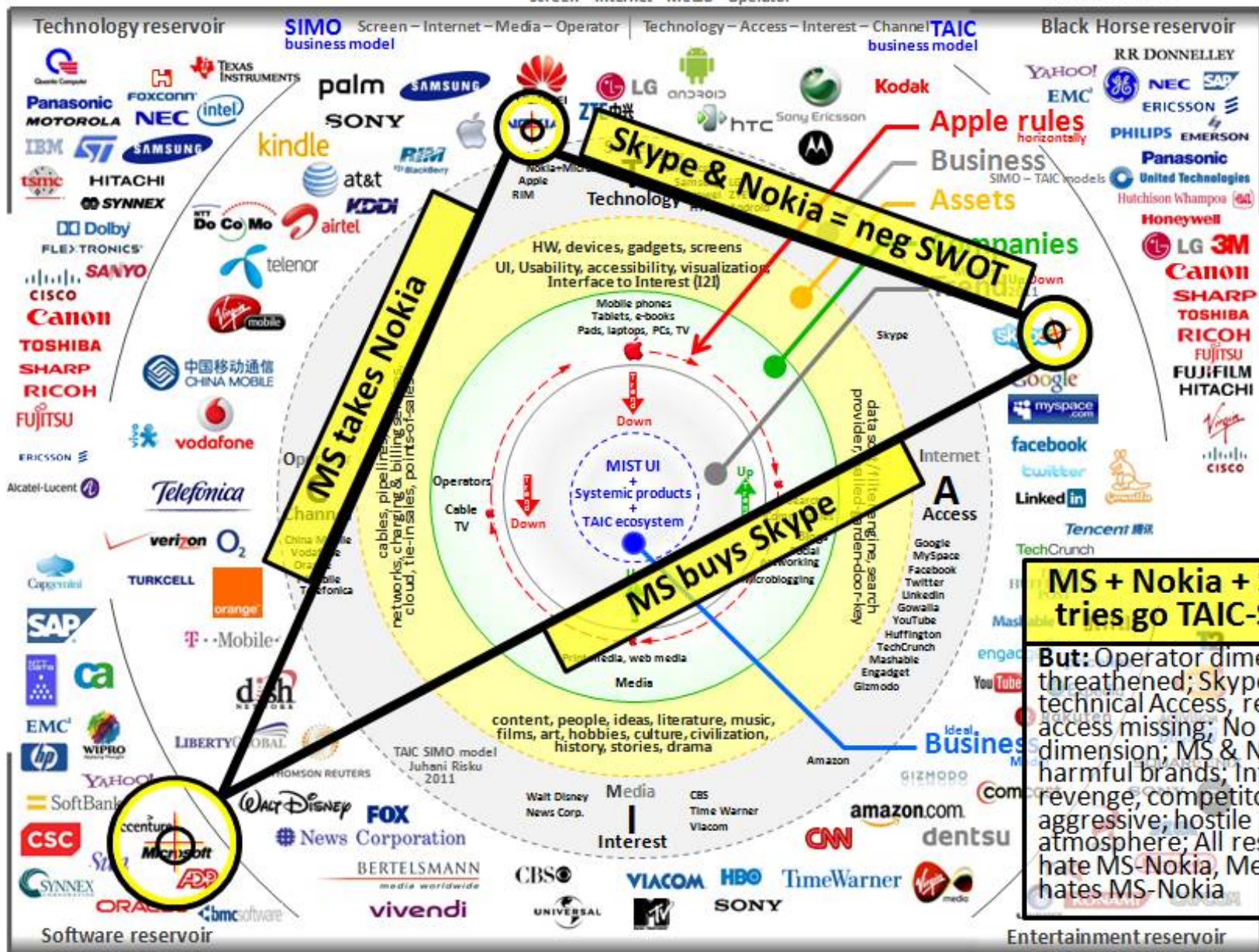
Microsoft + Nokia + Skype towards TAIC-SIMO

3

Technology – Access – Interest – Channel

Screen – Internet – Media – Operator

Juhani Risku 2011



Juhani Risku, TAIC-SIMO business model Oct 2011

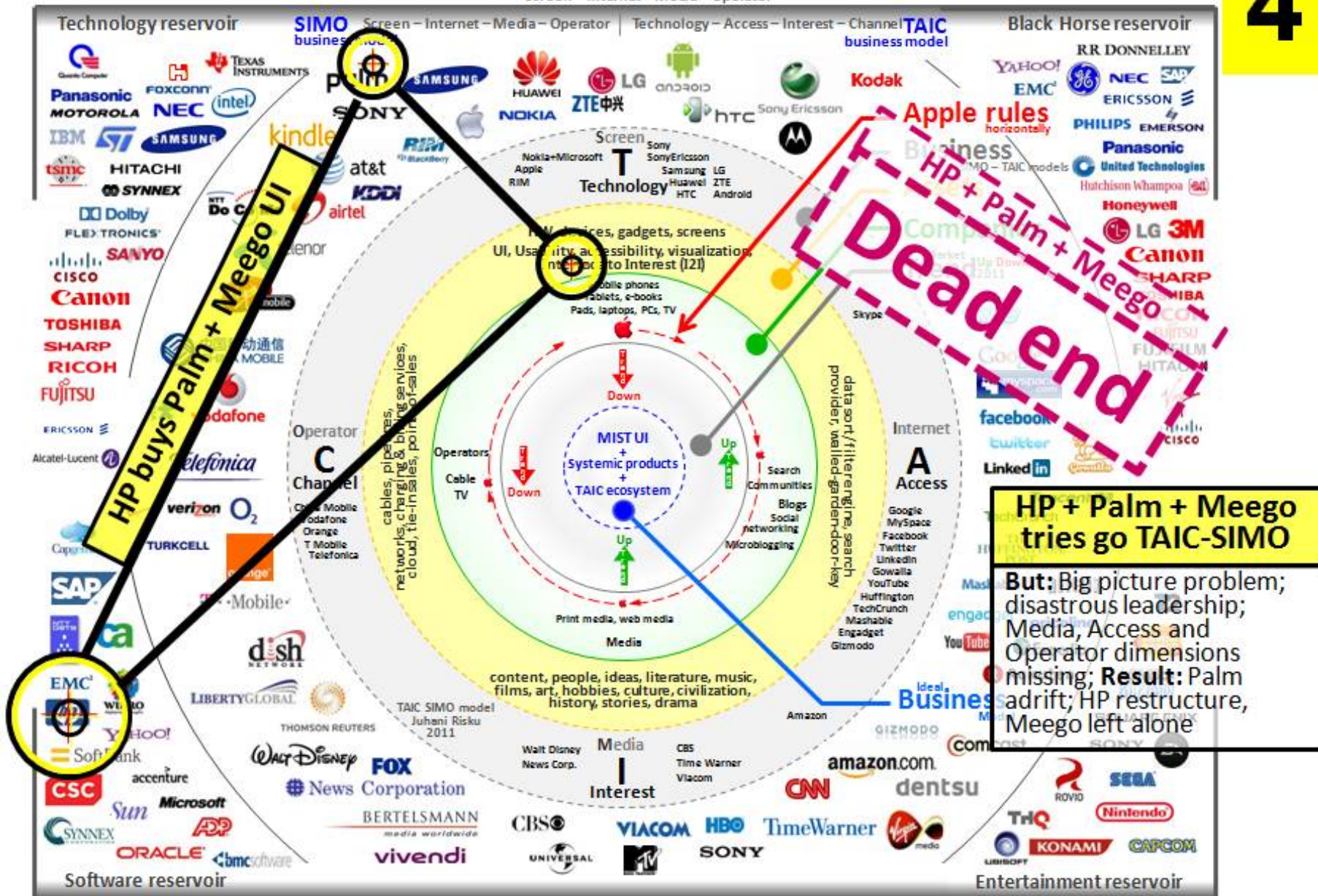
HP + Palm + Meego towards TAIC-SIMO

Technology – Access – Interest – Channel

Screen – Internet – Media – Operator

Juhani Risku 2011

4



Juhani Risku, TAIC-SIMO business model Oct 2011

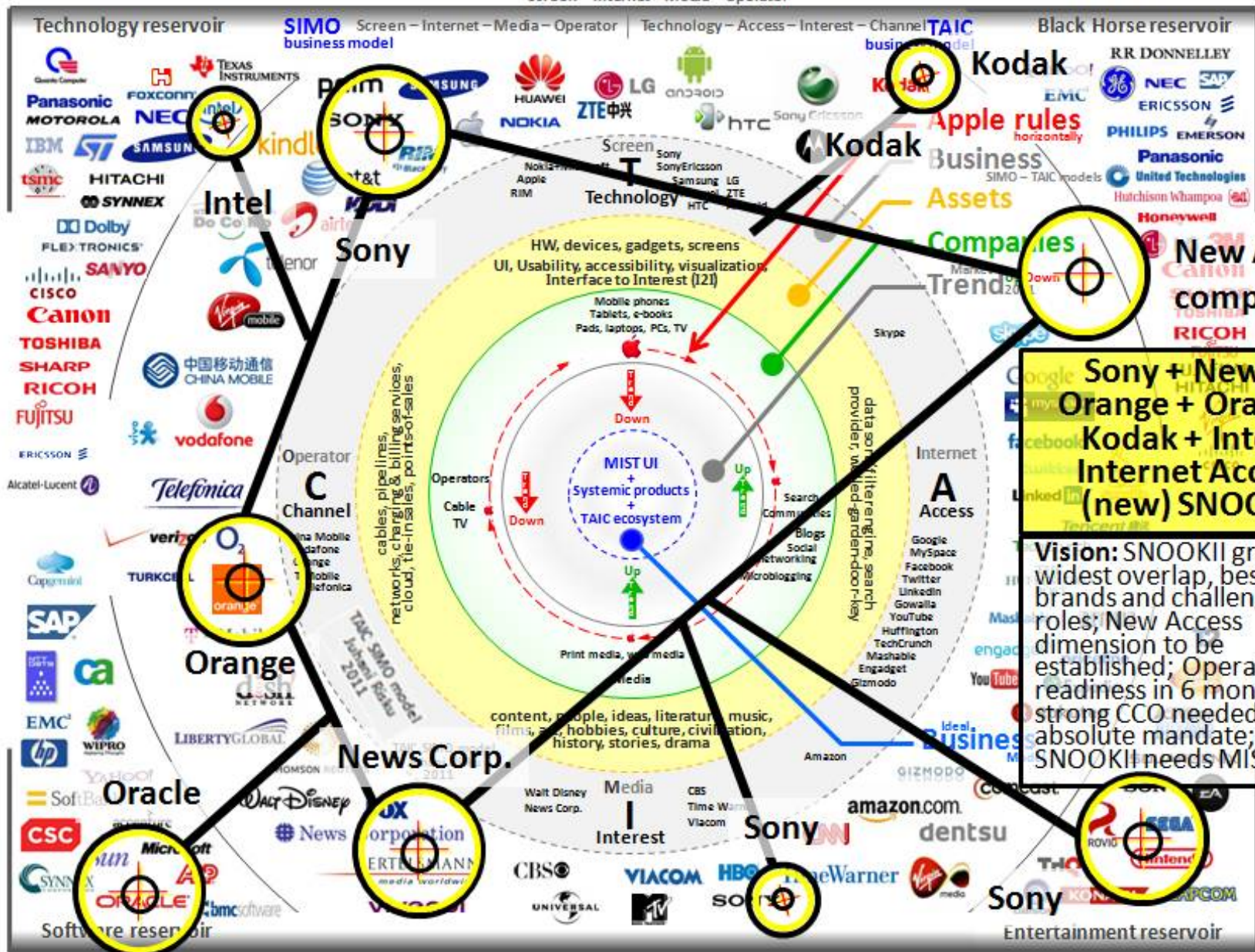
Ideal TAIC-SIMO Consortium SNOOKII

Technology – Access – Interest – Channel

Screen – Internet – Media – Operator

Juhani Risku 2011

5



Sony + News + Orange + Oracle + Kodak + Intel + Internet Access (new) SNOOKII

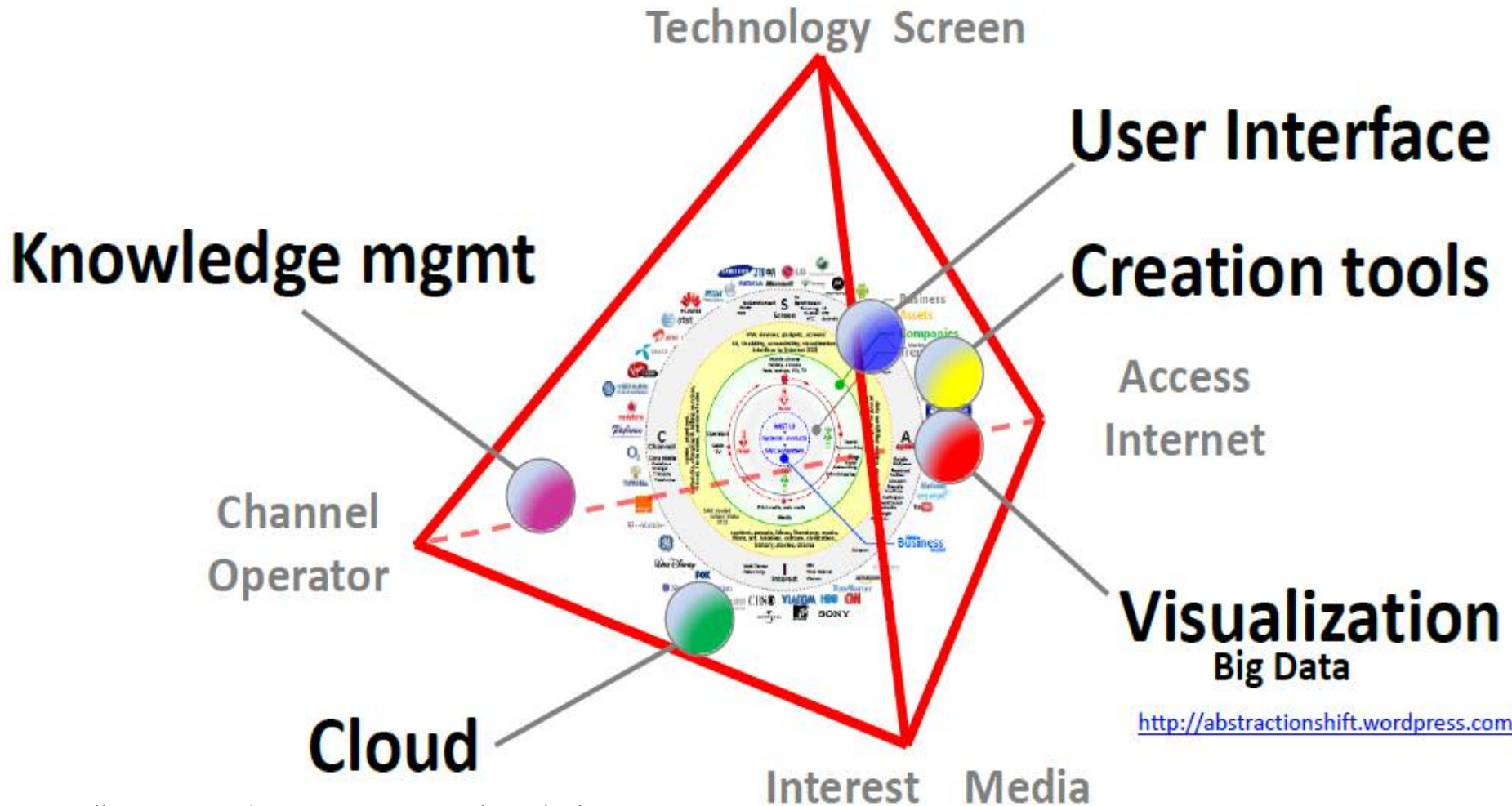
Vision: SNOOKII group has widest overlap, best brands and challenger roles; New Access dimension to be established; Operational readiness in 6 months; strong CCO needed with absolute mandate; SNOOKII needs MIST UI

Juhani Risku, TAIC-SIMO business model Oct 2011

Technology – Access – Interest - Channel

Screen – Internet – Media - Operator

Software & Technology needs

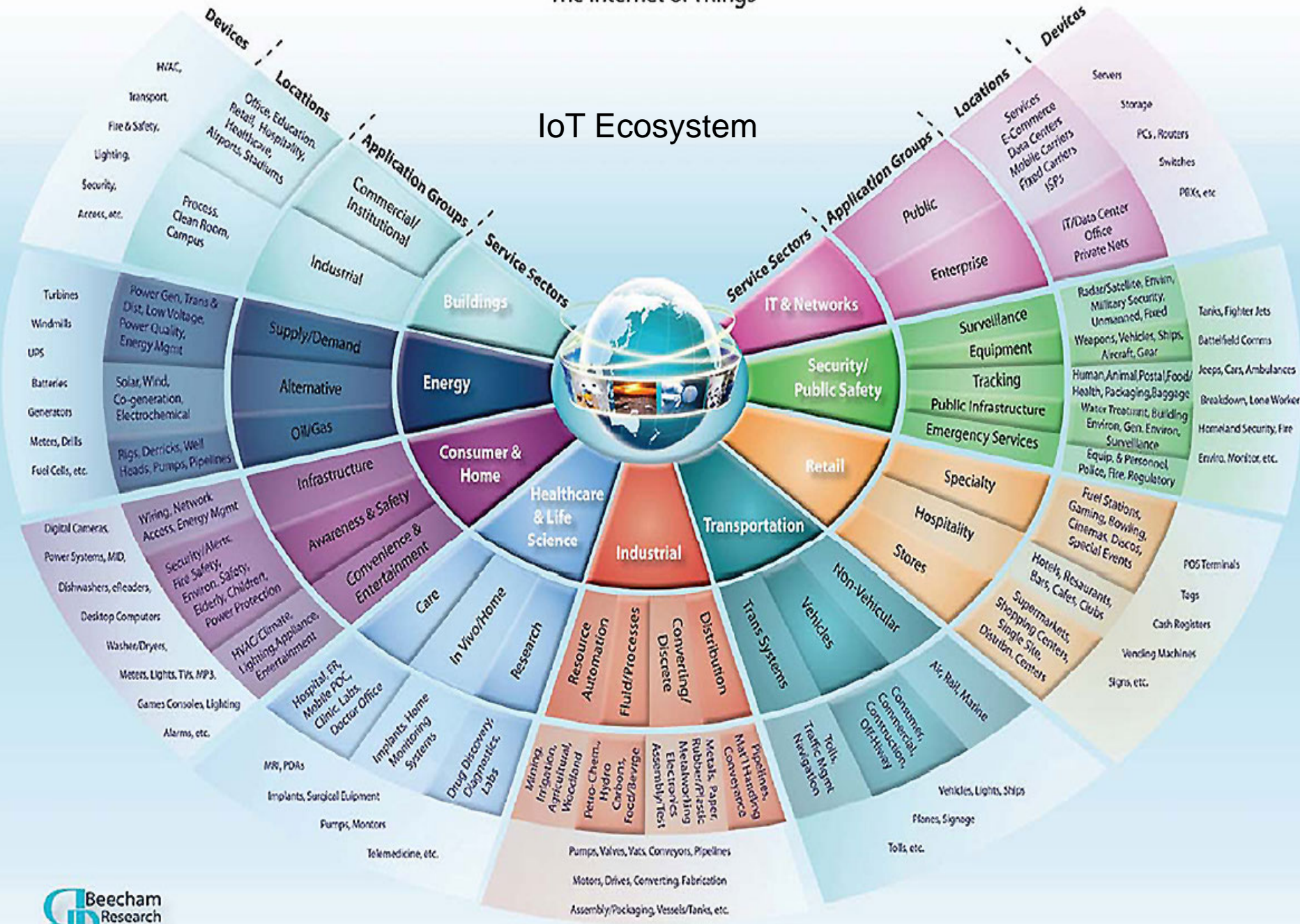


<http://abstractionshift.wordpress.com/>

http://kritiikkiblogi.files.wordpress.com/2011/11/11_juhani_risku_architect_nokia_ivalo_design_sw-tech-media-channel-visualization.jpg

The Internet of Things

IoT Ecosystem



Business Research/News Ref. links

- <http://www.plunkettresearch.com/ContactSupport/tabid/350/Default.aspx>
- <http://www.hoovers.com>
- <http://www.onesource.com/>
- <http://www.chinadaily.com.cn/bizchina/index.html>
- <http://economictimes.indiatimes.com/default1.cms>
- <http://asia.wsj.com/home-page>
- <http://www.mckinseyquarterly.com>
- <http://www.gartner.com>
- <http://www.idc.com>
- <http://cn.wsj.com/gb/bch.asp>

My Background

- Ph.D from U. of Connecticut
- Have worked with US, UK, Germany and Taiwan organizations
- International engineering and operation management, technology transfer, product and process development experiences
- Web20 startup consultant
- Four venture startup experiences
- High technology industry strategy planning experiences
- Board Member/Investor/Observer in over 20 Startups

What Do You Want to Learn from this Class?

- The different points of view of looking at and analyzing the same problem.
- Fundamental understanding and worldview on our civilization progresses and international business changes, and explores the broad changes in "who is winning, who is losing, and why" in global markets.
- Is World Flat or Spiky?
- Comprehension of industrial revolutions and its impact on civilization, business, industry, infrastructure, bubble and economy, and paradigms.
- Amusing innovations in technology, market, business, and financial systems in our recent generations

What Do You Want to Learn from this Class? (Continued)

- How I can fit in a overseas and international world.
- The effect of government policy on business
- How companies can gain competitive advantage
- How to adapt a business model or take an existing business to another country
- Future opportunities/trends in high technology and high growing market and what markets to enter
- Your feedback on this!!

Revised Chinese Proverb

- *Old Chinese proverb: “Give a man a fish; you have fed him for today. Teach a man to fish; and you have fed him for a lifetime”*
- *Other's: “Give a man a fish; you have fed him for today. Teach a man to use the Net and he won't bother you for weeks.”*
- *Today: “Give a folk a fish and tell him/her how to fish; you have fed him for a week. Teach a folk to fish and how to analyze fish business opportunity; and you have fed him/her for a year”*
- *Future: “Provide a folk a fish business; you have fed him for two years. Ask a folk to disrupt the fish business ; and you have fed him/her for a lifetime”*

The new generation entrants will be able to create their own businesses outside the "Fish Business" aforementioned are the ultimate goal eventually.

What is the Purpose of Business?

- If we were to ask physicians to name the central purpose of their profession, it's likely they all would answer, "To save lives." If we asked scientists the same question, they would probably respond, "To make new discoveries." And if we asked educators, they would say, "To teach the next generation."
- But what would happen if we asked the same question of executives, entrepreneurs, managers, stockbrokers, consultants, and others whose careers fall under the aegis of "business"?
 - \$\$\$?
 - Moral(ethic and community) responsibility: "serve the community skillfully as well as faithfully in offices of trust" and "aid in maintaining sound financial morality."—J. Wharton's
 - Your thoughts!

Meaning of High-Technology Businesses

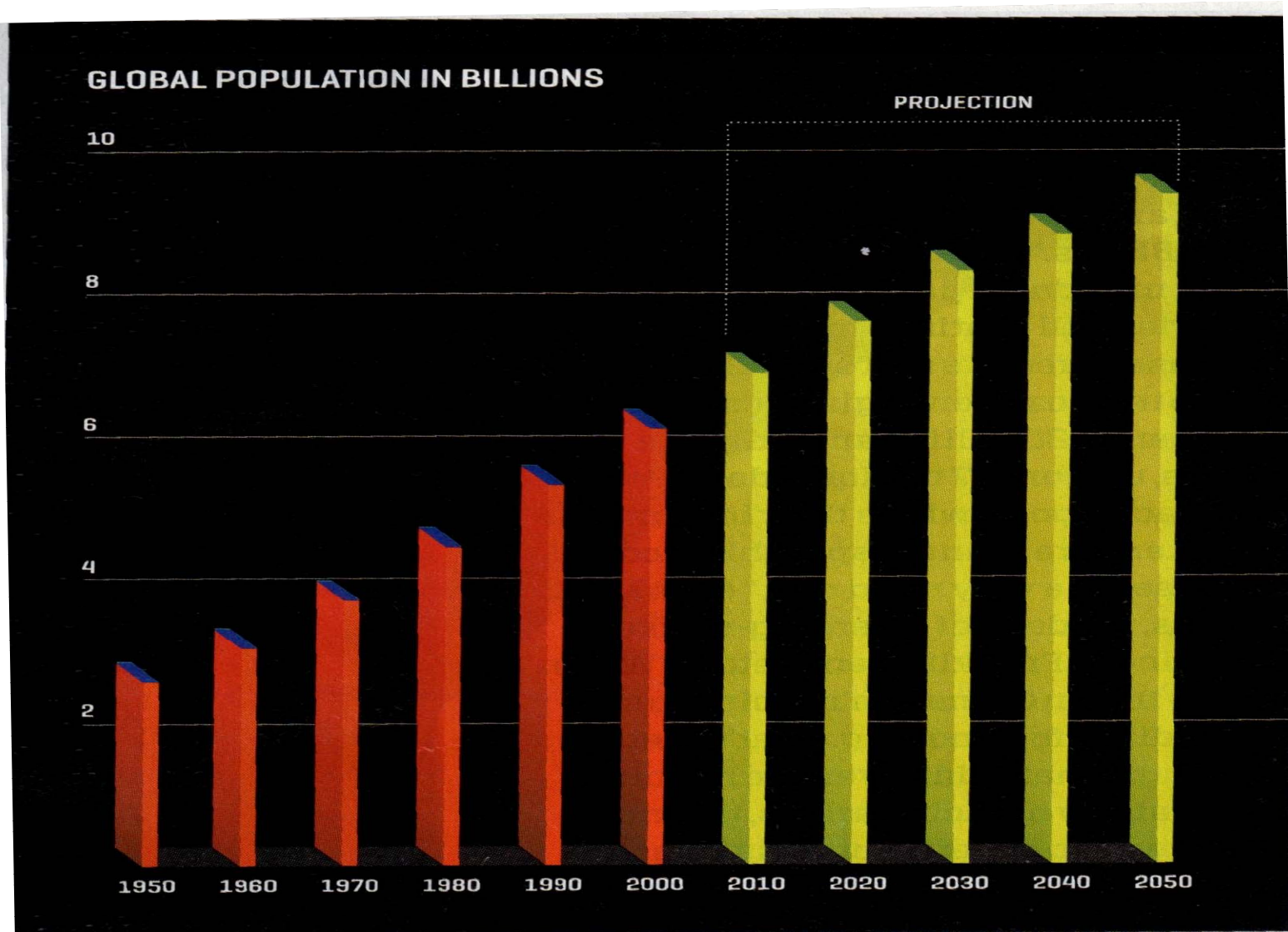
- “Rapid advances in technology that allow new ventures and competitors to offer new functionality or applications to help customers solve existing or latent problems.”
- Today’s high tech biz. is to be tomorrow’s traditional biz.

Technology advancements can be :

- Revolutionary: “Brave New World”
- Evolutionary: “Faster Better Cheaper”
- Disruptive: “Free, no Business Model; Scale First and Profit Later”

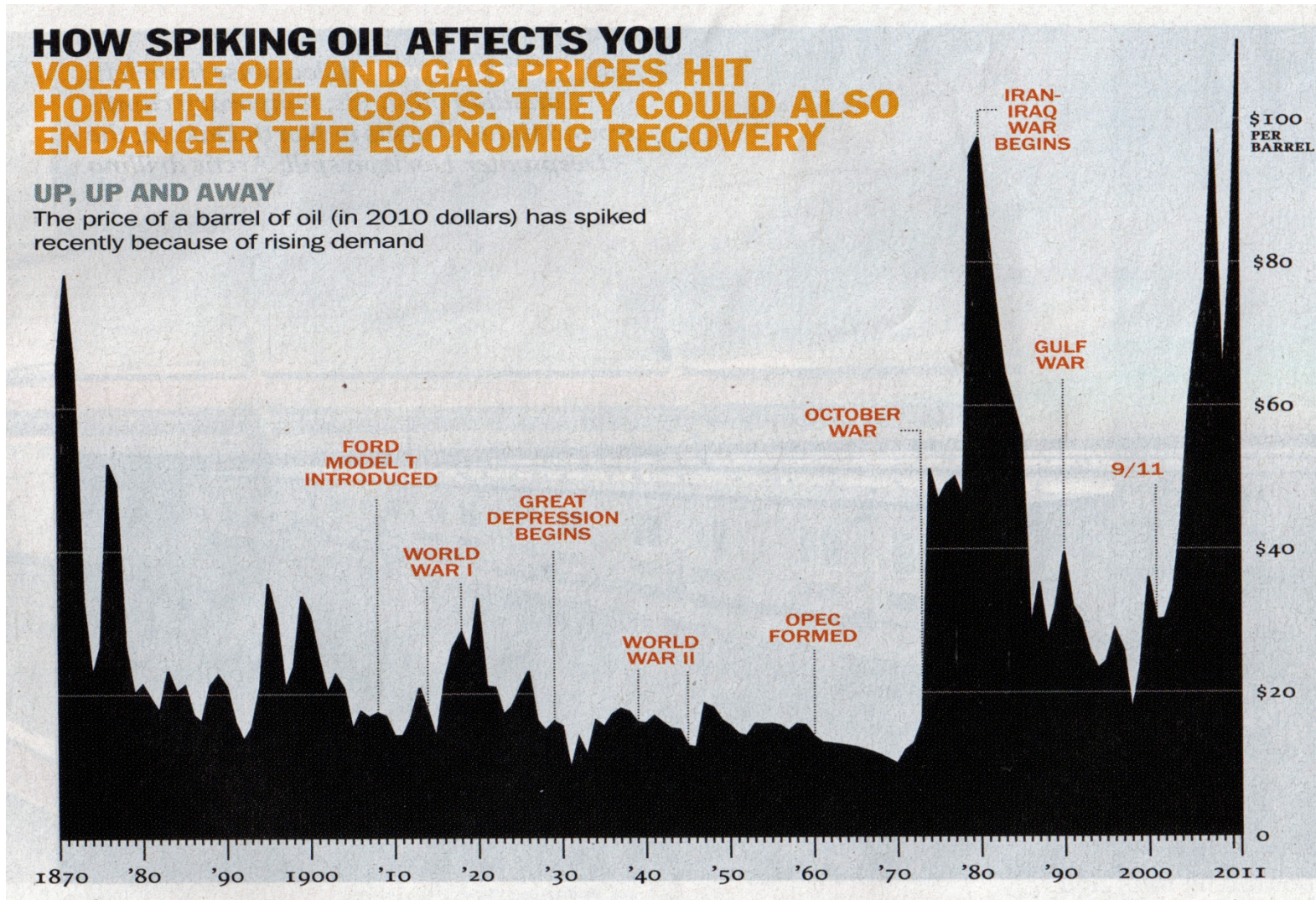
Our New World

Population Boom



Courtesy of Fortune 2011.06

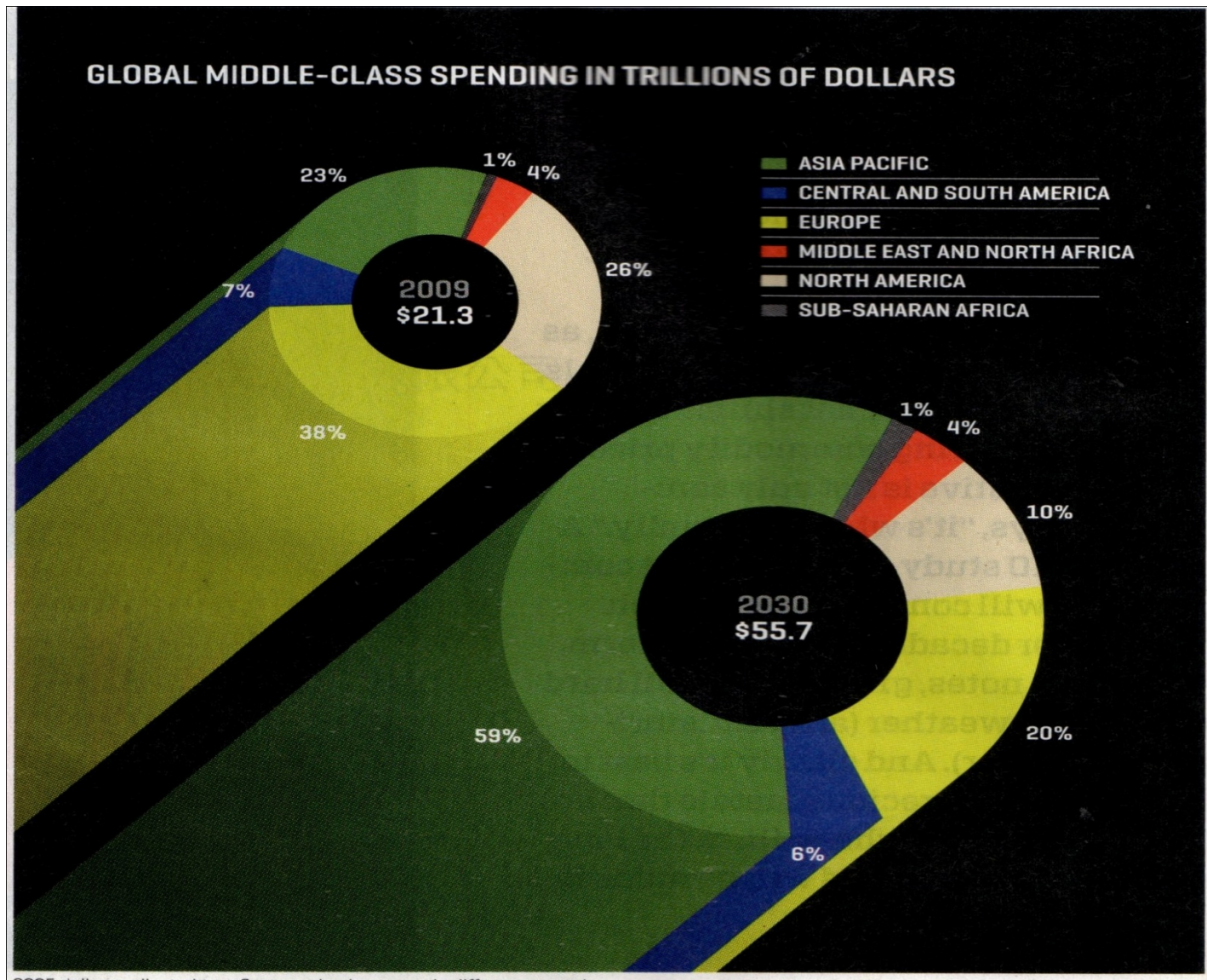
Oil Spikes



What to be happened should US become net exporter of oil in 2025 or earlier!

Courtesy of TIME, April 9, 2012

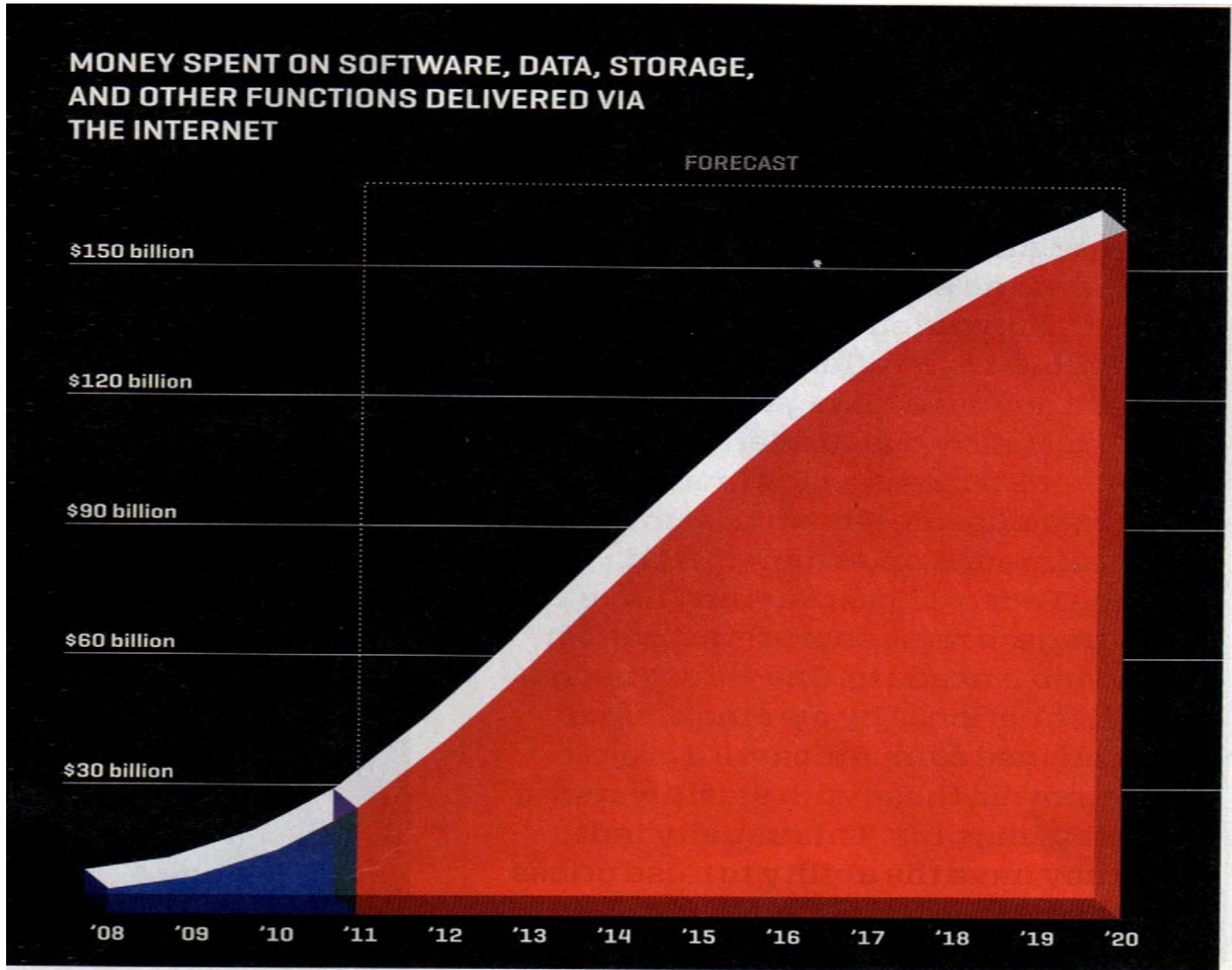
The New Spenders



2005 dollars, adjusted to reflect purchasing power in different countries

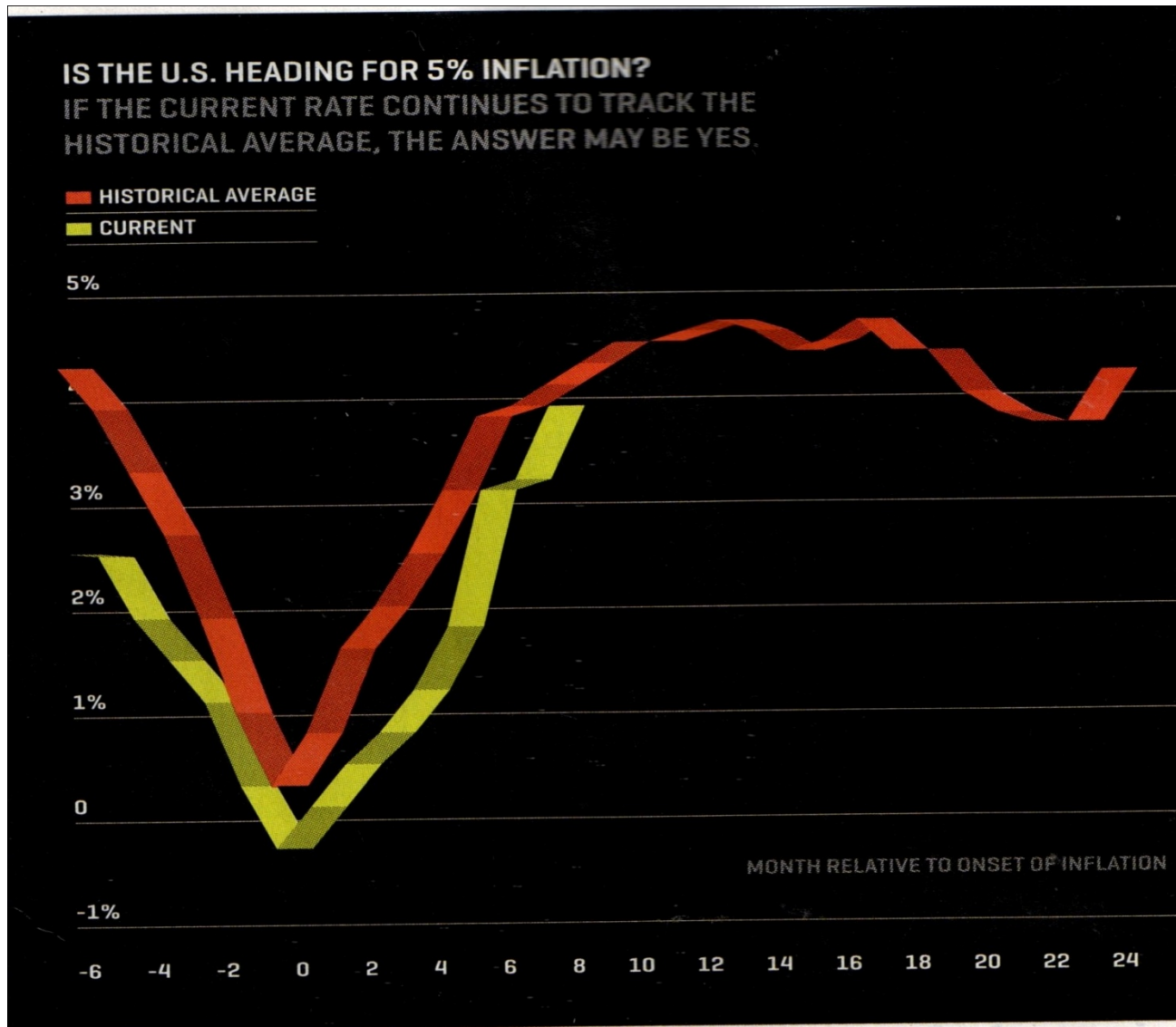
Courtesy of Fortune 2011.06

Computing, Untethered

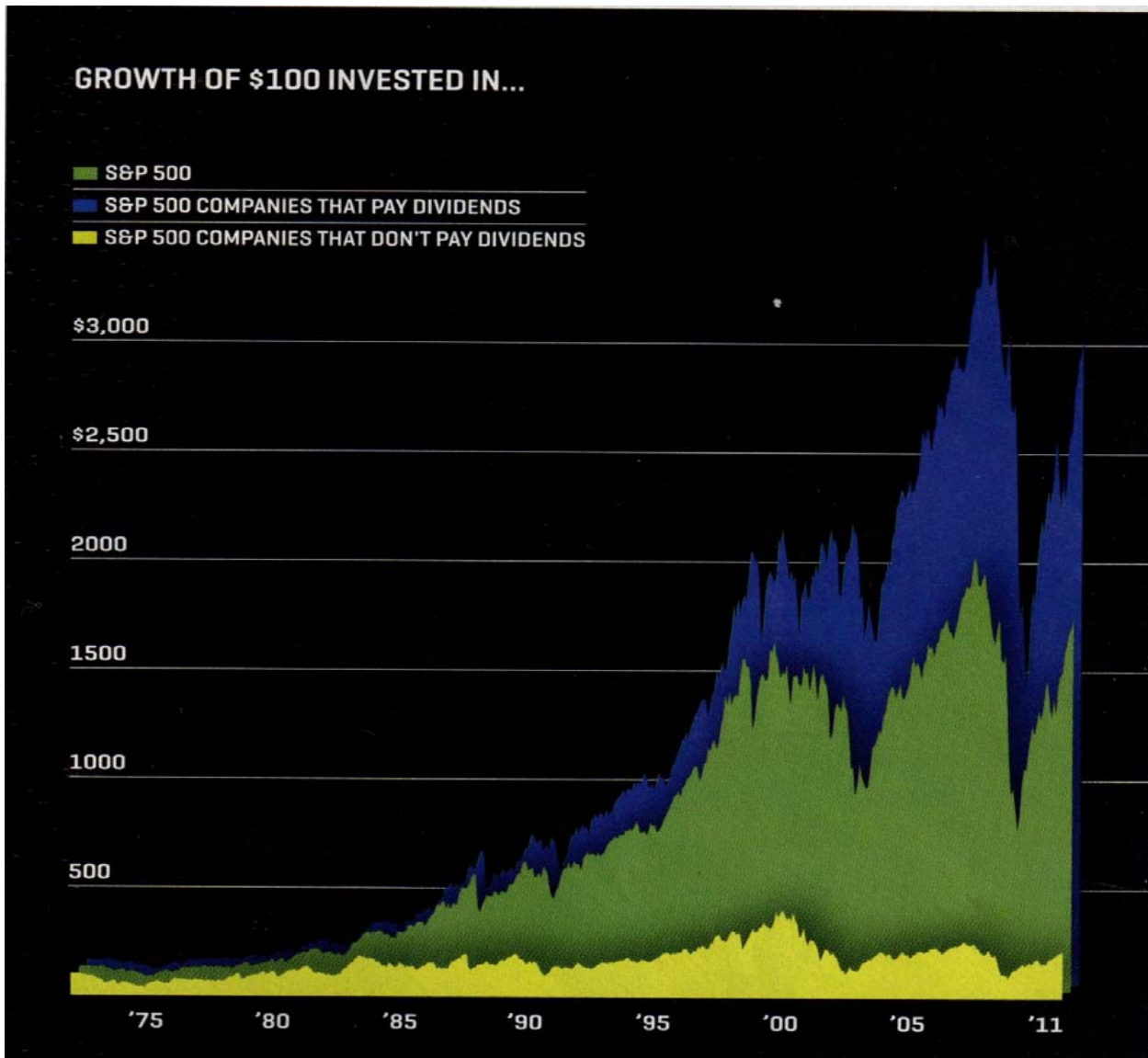


Courtesy of Fortune 2011.06

Inflation Rises Again



Dividends Get Their Due



OMT/QE and Technology

OMT: Outright monetary transactions (ECB)

QE: Quantitative easing (FED)

***“The US government has a technology,
called a printing press,
that allows it to produce
as many US dollars as it wishes
at essentially no cost.”***

QE3-unlimit + OMT-infinity → ???

Enterprise Top500 by Countries (2010-2012)

- Top20 (11-20):

Australia(9→8→9)

Italy(10→10→9)

Spain(12→9→8)

Brazil(6→7→8)

India(7→8→8)

Russia(8→7→7)

Taiwan(6→8→6)

Belgium(5→5→4)

Sweden(6→6→4)

Mexico(4→3→3)

Rank	Country	Companies
1	 United States	140→133→132
2	 China	37→61→73
3	 Japan	68→68→68
4	 France	37→35→32
5	 Germany	39→34→32
6	 United Kingdom	26→30→26
7	 Switzerland	15→15→15
8	 South Korea	11→14→13
9	 Canada	14→11→11
10	 Netherlands	12→12
11	Italy	10→10→9
12	Australia	9→8→9

Rank	Company	Revenues (\$ millions)	Profits (\$ millions)
1	Royal Dutch Shell	484,489	30,918
2	Exxon Mobil	452,926	41,060
3	Wal-Mart Stores	446,950	15,699
4	BP	386,463	25,700
5	☆ Sinopec Group	375,214	9,453
6	☆ China National Petroleum	352,338	16,317
7	☆ State Grid	259,142	5,678
8	Chevron	245,621	26,895
9	ConocoPhillips	237,272	12,436
10	Toyota Motor	235,364	3,591
11	Total	231,580	17,069
12	Volkswagen	221,551	21,426
13	☆ Japan Post Holdings	211,019	5,939
14	Glencore International	186,152	4,048
15	☆ Gazprom	157,831	44,460
16	E.ON	157,057	-3,085
17	ENI	153,676	9,539
18	ING Group	150,571	6,591
19	General Motors	150,276	9,190
20	Samsung Electronics	148,944	12,059
21	Daimler	148,139	7,880
22	General Electric	147,616	14,151
23	☆ Petrobras	145,915	20,121
24	Berkshire Hathaway	143,688	10,254
25	AXA	142,712	6,012
26	☆ Fannie Mae	137,451	-16,855
27	Ford Motor	136,264	20,213
28	Allianz	134,168	3,539
29	Nippon Telegraph & Telephone	133,077	5,924
30	BNP Paribas	127,460	8,412
31	Hewlett-Packard	127,245	7,074

Top500 2012

(☆ state
owned)

32	AT&T	126,723	3,944
33	GDF Suez	126,077	5,566
34	Pemex	125,344	-7,358
35	Valero Energy	125,095	2,090
36	PDVSA	124,754	2,640
37	McKesson	122,734	1,403
38	Hitachi	122,419	4,397
39	Carrefour	121,734	516
40	Statoil	119,561	14,055
41	JX Holdings	119,258	2,161
42	Nissan Motor	119,166	4,324
43	Hon Hai Precision Industry	117,514	2,777
44	Banco Santander	117,408	7,440
45	EXOR Group	117,297	701
46	Bank of America Corp.	115,074	1,446
47	Siemens	113,349	8,562
48	Assicurazioni Generali	112,628	1,190
49	Lukoil	111,433	10,357
50	Verizon Communications	110,875	2,404
51	J.P. Morgan Chase & Co.	110,838	18,976
52	Enel	110,560	5,768
53	HSBC Holdings	110,141	16,797
54	Industrial & Commercial Bank of China	109,040	32,214
55	Apple	108,249	25,922
56	CVS Caremark	107,750	3,461
57	International Business Machines	106,916	15,855
58	Crédit Agricole	105,156	-2,044
59	Tesco	103,839	4,484
60	Citigroup	102,939	11,067
61	Cardinal Health	102,644	959
62	BASF	102,194	8,604
63	UnitedHealth Group	101,862	5,142



64	Honda Motor	100,664	2,678
65	SK Holdings	100,394	1,510
66	Panasonic	99,373	-9,780
67	Société Générale	98,464	3,316
68	☆ Petronas	97,355	21,915
69	BMW	95,692	6,787
70	ArcelorMittal	94,444	2,263
71	Nestlé	94,405	10,692
72	Metro	92,746	877
73	☆ Électricité de France	90,806	4,185
74	Nippon Life Insurance	90,783	2,848
75	Kroger	90,374	602
76	Munich Re Group	90,137	976
77	☆ China Construction Bank	89,648	26,181
78	Costco Wholesale	88,915	1,462
79	☆ Freddie Mac	88,262	-5,266
80	Wells Fargo	87,597	15,869
81	☆ China Mobile Communications	87,544	11,703
82	☆ Telefónica	87,372	7,513
83	☆ Indian Oil	86,016	882
84	☆ Agricultural Bank of China	84,803	18,860
85	Peugeot	83,305	818
86	Procter & Gamble	82,559	11,797
87	Sony	82,237	-5,784
88	☆ Banco do Brasil	81,887	7,577
89	Deutsche Telekom	81,554	775
90	Repsol YPF	81,122	3,049
91	Noble Group	80,732	431
92	Archer Daniels Midland	80,676	2,036
93	☆ Bank of China	80,230	19,208
94	AmerisourceBergen	80,218	707
95	PTT	79,690	3,456

Top500 2012

(☆ state owned)

96	Meiji Yasuda Life Insurance	77,463	2,188
97	Toshiba	77,261	934
98	Deutsche Post	76,307	1,617
99	Reliance Industries	76,119	4,117
100	China State Construction	76,024	1,108
101	China National Offshore Oil	75,514	8,836
102	INTL FCStone	75,498	37
103	Groupe BPCE	75,082	3,733
104	Deutsche Bank	74,425	5,745
105	Vodafone Group	74,051	11,099
106	Marathon Petroleum	73,645	2,389
107	Walgreen	72,184	2,714
108	BHP Billiton	71,739	23,648
109	American International Group	71,730	17,798
110	Robert Bosch	71,600	2,428
111	China Railway Construction	71,443	489
112	China Railway Group	71,263	1,035
113	Sinochem Group	70,990	1,178
114	MetLife	70,641	6,981
115	Mitsubishi	70,492	5,748
116	Home Depot	70,395	3,883
117	Hyundai Motor	70,227	6,911
118	Medco Health Solutions	70,063	1,456
119	Microsoft	69,943	23,150
120	Target	69,865	2,929
121	Barclays	68,950	4,821
122	ThyssenKrupp	68,791	-1,799
123	Boeing	68,735	4,018
124	RWE	68,345	2,511
125	EADS	68,310	1,436
126	Pfizer	67,932	10,009
127	Tokyo Electric Power	67,751	-9,900
128	Landesbank Baden-Württemberg	67,431	122

Top50 Fastest Growing 2012

( state
owned)



Rank	Company	Global 500 Rank	Revenues % change from 2010 *	2011 Revenues (\$ millions)
1	Landesbank Baden-Württemberg	128	209.8	67,431.4
2	International Petroleum Investment	305	131.0	35,495.4
3	Zhejiang Geely Holding Group	475	125.9	23,355.7
4	ACS	240	97.9	42,654.9
5	Xinxing Cathay International Group	484	92.3	22,832.3
6	World Fuel Services	313	81.0	34,622.9
7	International Airlines Group	494	75.7	22,390.4
8	Woori Finance Holdings	449	67.6	24,435.3
9	Apple	55	66.0	108,249.0
10	Coop Group	364	65.0	30,022.2
11	Kailuan Group	490	63.4	22,519.3
12	Greenland Holding Group	483	63.4	22,872.9
13	Ecopetrol	303	63.4	35,520.3
14	S-Oil	383	61.1	28,808.1
15	INTL FCStone	102	60.8	75,497.6
16	United Continental Holdings	283	59.8	37,110.0
17	Jizhong Energy	330	58.4	33,660.8
18	China Resources National	233	56.1	43,439.5
19	OMV Group	210	53.3	47,349.3
20	Brazilian Distribution	399	52.7	27,838.6
21	China National Aviation Fuel Group	318	51.8	34,352.4
22	China National Building Materials Group	365	50.1	30,021.9

23	EXOR Group	45	50.1	117,297.1
24	China Merchants Bank	498	49.2	22,093.8
25	Tesoro	366	47.8	29,927.0
26	Wilmar International	223	47.2	44,710.0
27	Comcast	167	47.2	55,842.0
28	China National Petroleum	6	46.7	352,338.0
29	Shandong Weiqiao Pioneering Group	440	46.6	24,905.5
30	CHS	287	46.1	36,915.8
31	Showa Shell Sekiyu	389	45.7	28,496.7
32	Ping An Insurance	242	45.6	42,110.3
33	Valero Energy	35	45.4	125,095.0
34	China Minmetals	169	45.1	54,509.1
35	Nomura Holdings	471	45.0	23,452.7
36	Schlumberger	260	44.1	39,540.0
37	China National Offshore Oil	101	44.1	75,513.8
38	Marquard & Bahls	455	43.3	24,258.4
39	Shanxi Coal Transportation & Sales Group	447	43.3	24,533.4
40	Sinochem Group	113	43.3	70,990.1
41	China Post Group	258	42.5	40,023.3
42	Noble Group	91	42.4	80,732.1
43	GS Caltex	235	41.7	43,280.3
44	China Railway Materials	349	41.4	31,991.1
45	Caterpillar	155	41.2	60,138.0
46	Manulife Financial	181	41.1	51,547.8
47	Amazon.com	206	40.6	48,077.0
48	Rosneft Oil	137	40.6	65,093.0
49	Agricultural Bank of China	84	40.1	84,802.7
50	Bank of Communications	326	39.6	33,871.6

Rank	Company	Global 500 Rank	2011 Profits (\$ millions) *	Profits % change from 2010
1	☆ Gazprom	15	44,459.6	39.4
2	Exxon Mobil	2	41,060.0	34.8
3	☆ Industrial & Commercial Bank of China	54	32,214.1	32.0
4	Royal Dutch Shell	1	30,918.0	53.6
5	Chevron	8	26,895.0	41.4
6	☆ China Construction Bank	77	26,180.6	31.4
7	Apple	55	25,922.0	85.0
8	BP	4	25,700.0	0.0
9	BHP Billiton	108	23,648.0	85.9
10	Microsoft	119	23,150.0	23.4
11	Vale	159	22,885.0	32.6
12	☆ Petronas	68	21,915.3	25.4
13	Volkswagen	12	21,425.5	136.7
14	Ford Motor	27	20,213.0	208.1
15	☆ Petrobras	23	20,121.0	4.9
16	☆ Bank of China	93	19,208.3	24.5
17	J.P. Morgan Chase & Co.	51	18,976.0	9.2
18	☆ Agricultural Bank of China	84	18,859.5	34.6
19	☆ American International Group	109	17,798.0	128.6
20	Total	11	17,069.2	21.9
21	HSBC Holdings	53	16,797.0	27.6
22	☆ China National Petroleum	6	16,317.0	13.6
23	Wells Fargo	80	15,869.0	28.4

Top50 Most Profitable 2012

(☆ state owned)

24	International Business Machines	57	15,855.0	6.9
25	Wal-Mart Stores	3	15,699.0	-4.2
26	General Electric	22	14,151.0	21.5
27	☆ Statoil	40	14,055.1	123.0
28	Intel	173	12,942.0	12.9
29	☆ Rosneft Oil	137	12,452.0	19.7
30	ConocoPhillips	9	12,436.0	9.5
31	Mitsubishi UFJ Financial Group	144	12,428.7	82.6
32	Samsung Electronics	20	12,059.1	-11.8
33	Procter & Gamble	86	11,797.0	-7.4
34	☆ China Mobile Communications	81	11,702.5	20.2
35	Vodafone Group	105	11,098.8	-10.4
36	Citigroup	60	11,067.0	4.4
37	☆ Sberbank	304	10,755.7	79.3
38	Nestlé	71	10,691.5	-67.4
39	Roche Group	192	10,529.2	26.6
40	☆ Lukoil	49	10,357.0	15.0
41	Berkshire Hathaway	24	10,254.0	-20.9
42	Pfizer	126	10,009.0	21.2
43	AstraZeneca	331	9,983.0	24.0
44	Google	277	9,737.0	14.5
45	Johnson & Johnson	138	9,672.0	-27.5
46	☆ ENI	17	9,538.5	14.0
47	☆ Sinopec Group	5	9,452.9	23.9
48	General Motors	19	9,190.0	48.9
49	Novartis	157	9,113.0	-7.0
50	TNK-BP International	198	8,981.0	54.4

Rank	Company	Global 500 Rank	2011 Number of Employees
1	Wal-Mart Stores	3	2,200,000
2	China National Petroleum	6	1,668,072
3	State Grid	7	1,583,000
4	Sinopec Group	5	1,021,979
5	Hon Hai Precision Industry	43	961,000
6	China Post Group	258	889,307
7	U.S. Postal Service	135	601,601
8	Volkswagen	12	501,956
9	China Telecommunications	221	491,447
10	Aviation Industry Corp. of China	250	480,147
11	Compass Group	432	471,108
12	Agricultural Bank of China	84	447,401
13	International Business Machines	57	433,362
14	Deutsche Post	98	423,502
15	McDonald's	410	420,000
16	Carrefour	39	412,443
17	Industrial & Commercial Bank of China	54	408,859
18	Tesco	59	406,088
19	Gazprom	15	401,000
20	Sodexo	495	391,148
21	Target	120	365,000
22	Siemens	47	360,000
23	China Resources National	233	350,524
24	Hewlett-Packard	31	349,600
25	Kroger	75	339,000
26	Panasonic	66	330,767
27	Jardine Matheson	275	330,000
28	China Construction Bank	77	329,438

Top50 Biggest Employers 2012

(☆ state owned)

29	Nestlé	71	328,000
30	Toyota Motor	10	325,905
31	Hitachi	38	323,540
32	United Parcel Service	177	310,010
33	Edeka Zentrale	342	306,000
34	HSBC Holdings	53	305,984
35	Robert Bosch	110	302,519
36	China Southern Power Grid	152	301,539
37	General Electric	22	301,000
38	PepsiCo	133	297,000
39	China Railway Group	112	294,761
40	Sears Holdings	245	293,000
41	State Bank of India	285	292,215
42	China Railway Construction	111	291,598
43	Telefónica	82	291,027
44	Bank of China	93	289,951
45	Deutsche Bahn	179	284,319
46	Bank of America Corp.	46	281,791
47	China North Industries Group	205	279,563
48	EXOR Group	45	273,460
49	Daimler	21	271,370
50	Berkshire Hathaway	24	270,858

Small businesses and entrepreneurs are the main engines to create jobs.

Shrinking industries



Growing industries



Renewables & Environment

Internet
Online Publishing

Philanthropy
E-Learning
Public Policy
International Trade & Development
Think Tanks

Venture Capital
Computer Games
Health, Wellness & Fitness
Oil & Energy
Utilities

Medical Devices
Management Consulting

Hospital & Health Care
Marketing & Advertising
Information Technology

Financial Services

Real Estate

Pharmaceuticals

Telecommunications

Banking

Construction

Automotive

Retail

Supermarkets

Capital Markets

Warehousing

Restaurants

Newspapers

Size of circle is related to volume of jobs gained or lost

-30% -20% -10% 0% 10% 20% 30% 40% 50% 60% 70%

Percent change in industry size, 2007 to 2011

Fluctuations in industry size, 2007-2011



China's Small Entrepreneur (Little Guy's successful stories)

- http://maxtv.videoland.com.tw/channel/ch_c/default_004.asp
- http://tmaxtv.videoland.com.tw/channel/money/default_002.asp
- <http://www.cyone.com.cn/Article/chuangyegushi/>

Business/Political World of 21th. Century

- Western-dominated world is coming to an end as US's pivotal role in global security fading away
- US-lead and Europe-follow unipolar world → multipolar world with various authoritarian systems and sprawling democracies of next-wave countries
- Inevitable growth rate of next-wave countries like China(with Taiwan?), Vietnam, India, Russia, Turkish, Brazil, Indonesia and South Africa are focus of multinational corp.
- Generation Global?– where to land your career or venture startup business!

Policy, Business Technology/Innovation

Outline

- What is High-Tech Competition and What is Innovation
- Macro-View of High-Tech Competition
 - Macro-View on Hi-Tech Hubs (Clusters)
 - High-Tech Strategy of Germany, China, Taiwan, Nordic
- Micro-View of High-Tech Competition
 - Past, Now, and Future
 - Case Studies: PC Industries, Consumer Industries, Internet, Mobile Communication etc.
- Syndromes and New Waves
- Innovation Strategy
 - OECD Innovation Strategy and Eco Innovation
 - Case Studies: Apple, Aging Society

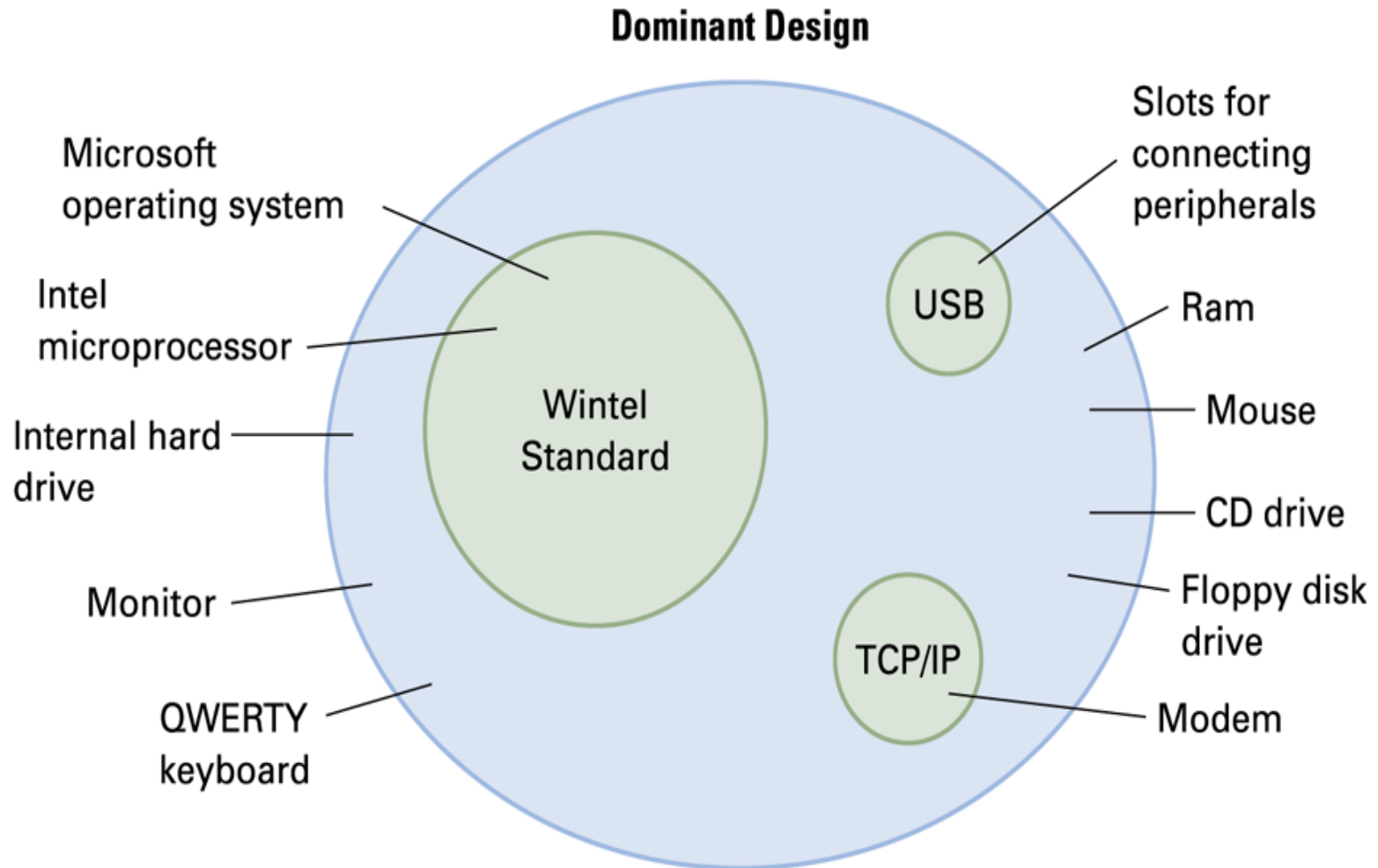
What is High-tech Competition

- Knowledge-Based (knowledge creation and conversion)
- Continuous Innovation (both incremental and disruptive(occasionally), and not only tech but also non-tech sectors)
- IP and Patent right additions and
- Technical Standards and Format Wars
- Integration and Collaboration

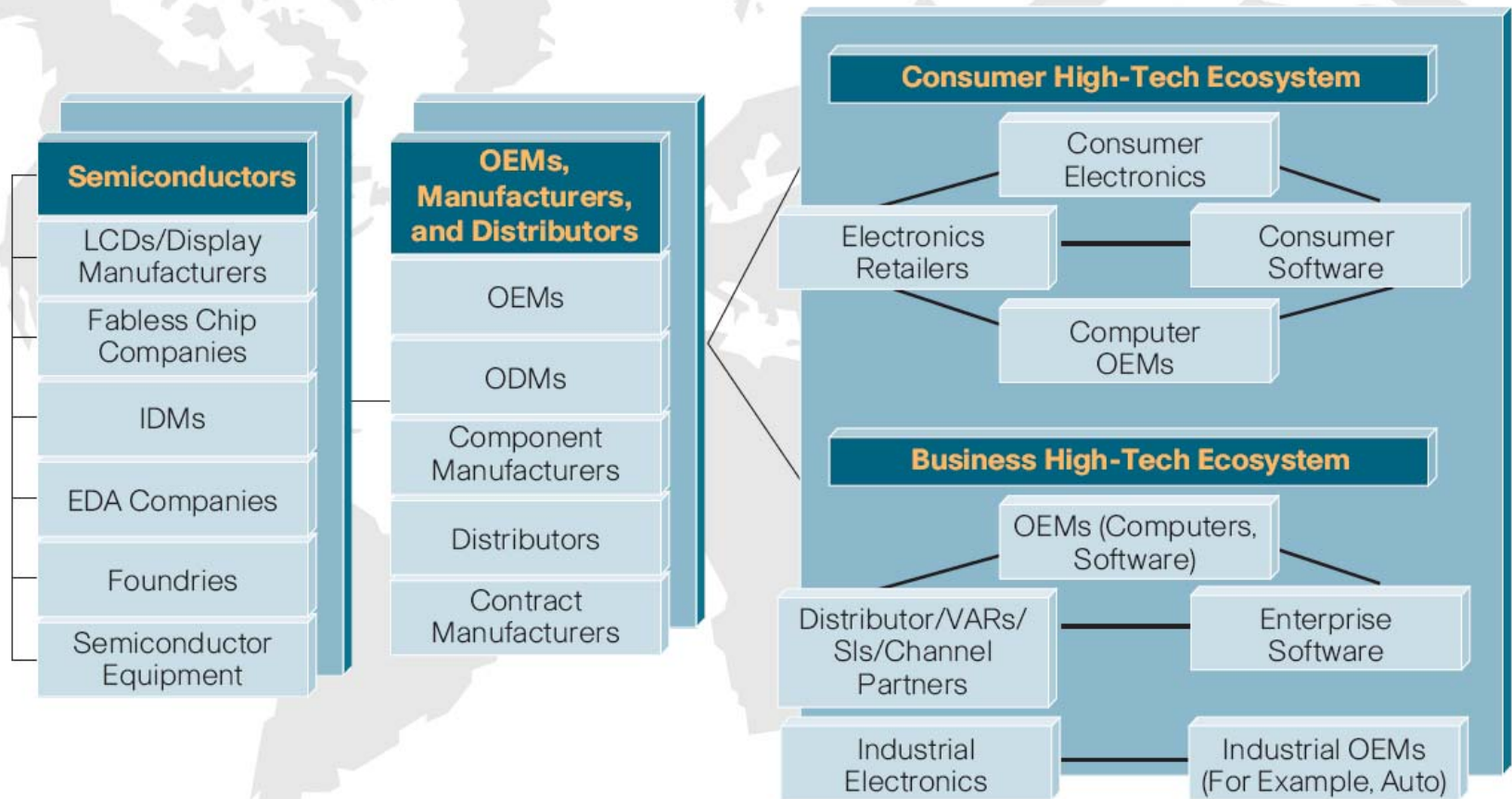
Hi-Tech Definition (OECD)

- Knowledge-intensive Manufacture
 - High-tech Industries
 - Pharmaceuticals
 - Office, Accounting and Computing Machinery
 - Radio, Television and Communication Equipment
 - Medical, Precision and Optical Instruments
 - Aircraft & Spacecraft
 - Medium-High-tech Industries
 - Electrical Machinery and Apparatus, N.E.C. (not elsewhere classified)
 - Motor Vehicles, Trailers & Semi-Trailers
 - Chemicals Excluding Pharmaceuticals
 - Railroad and other Transport Equipment
 - Machinery & Equipment, N.E.C.
 - Medium-Low-tech Industries
 - Coke, refined petroleum products & nuclear fuel
 - Rubber and plastics
 - Basic metals
 - Fabricated metal products
 - Ships
 - Low-tech Industries
 - Food products, beverages and tobacco
 - Textiles, fur & leather
 - Wood, paper, printing, publishing
 - Furniture, other manufacturing and recycling
- Knowledge-intensive Service
 - Post and Communication
 - Finance & Insurance
 - Business Service

Technical Standards for PCs



The High-Tech Ecosystem



High-Tech Industry Competition

- **Country/Region/Enterprise Domain Advantages**
 - China for system manufacturing, Taiwan for product integration, U.S. for product marketing and design, India for software and service etc.
- **Region Cluster Comparative Advantages**
 - Silicon Valley, Munich, Taiwan, Bengaluru (Bangalore), and Singapore

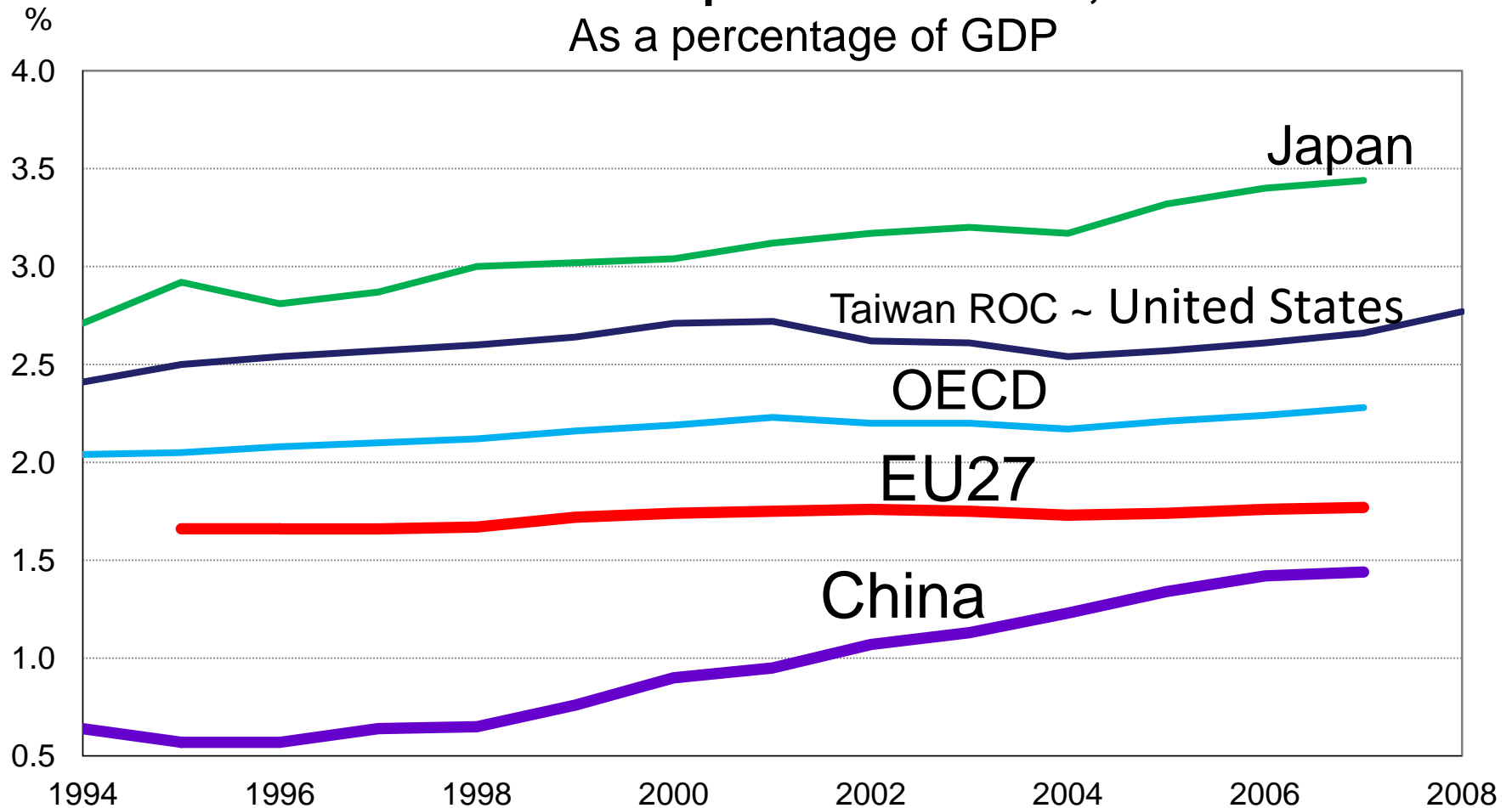
Innovation Focus on Value

- Innovation is the creation and delivery of new customer value in the marketplace with sustainable value for those producing it
 - Not just collaboration or teamwork
 - Not just entrepreneurship
 - Not just R&D and knowledge creation
 - Not just creativity



R&D is critical to innovation...

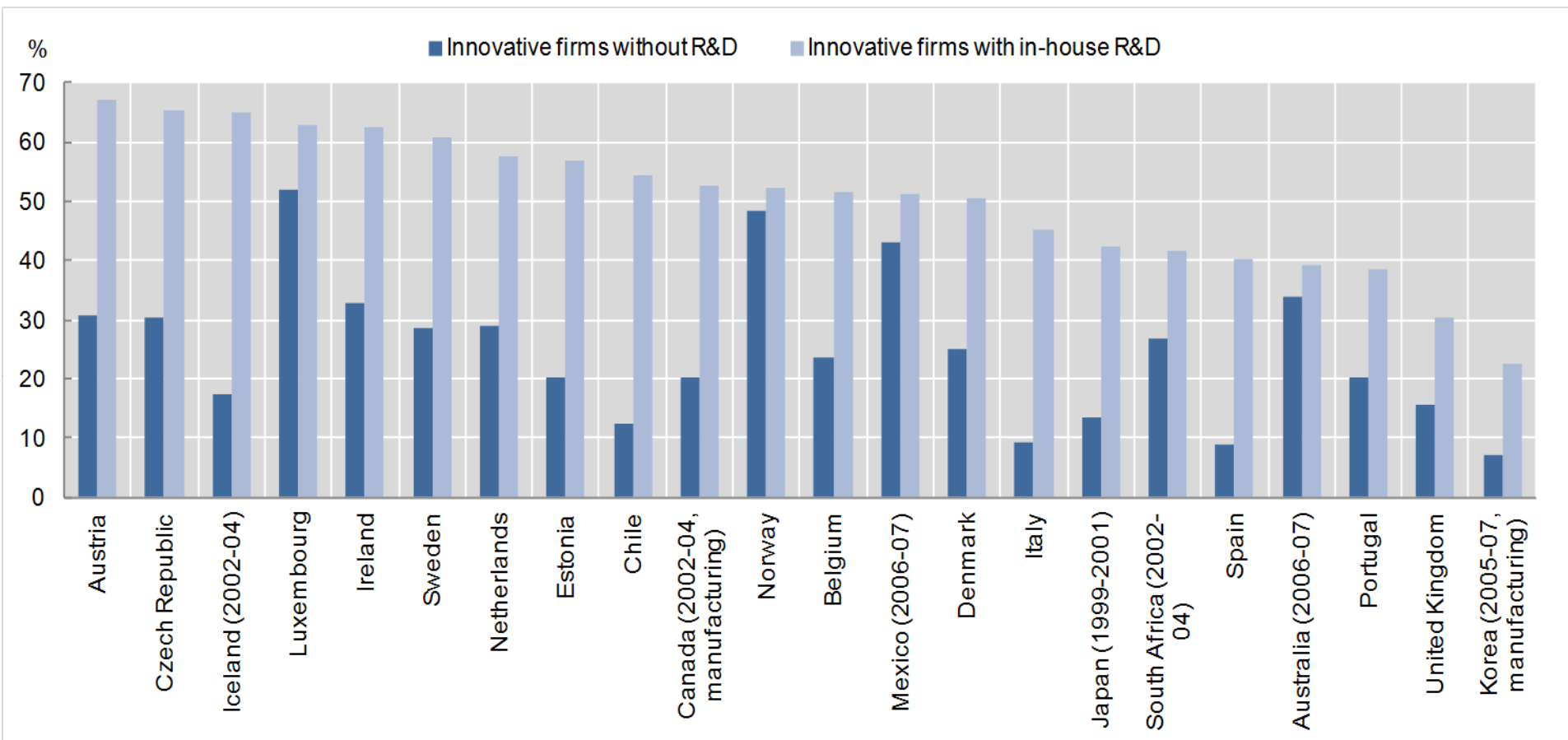
Gross domestic expenditure on R&D, 1994-2008
As a percentage of GDP



Source: OECD (2009), *Main Science and Technology Indicators 2009/2*, December.

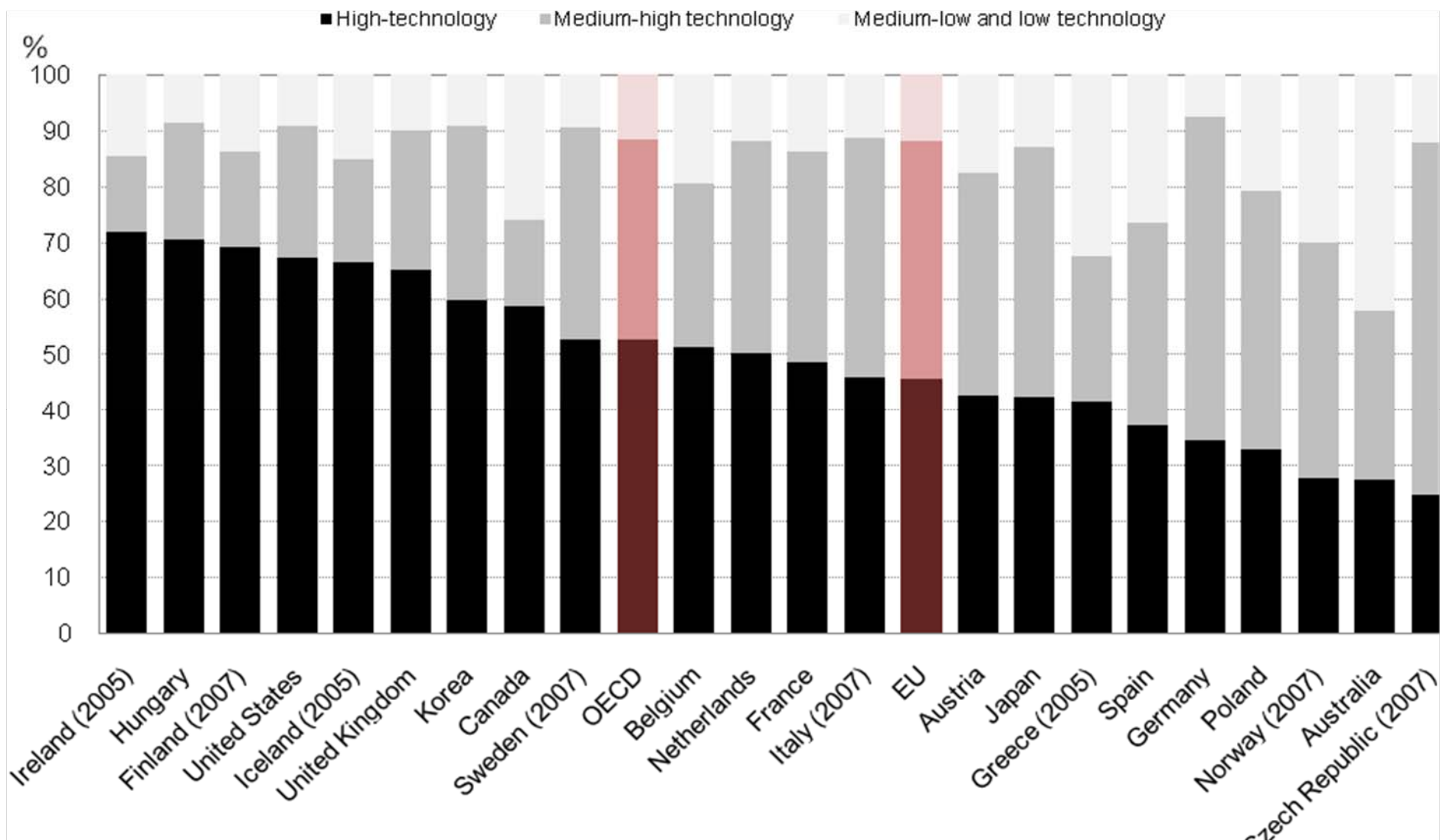
But innovation is more than R&D...

New-to-market product innovators, 2004-06
As a percentage of innovative firms by R&D status



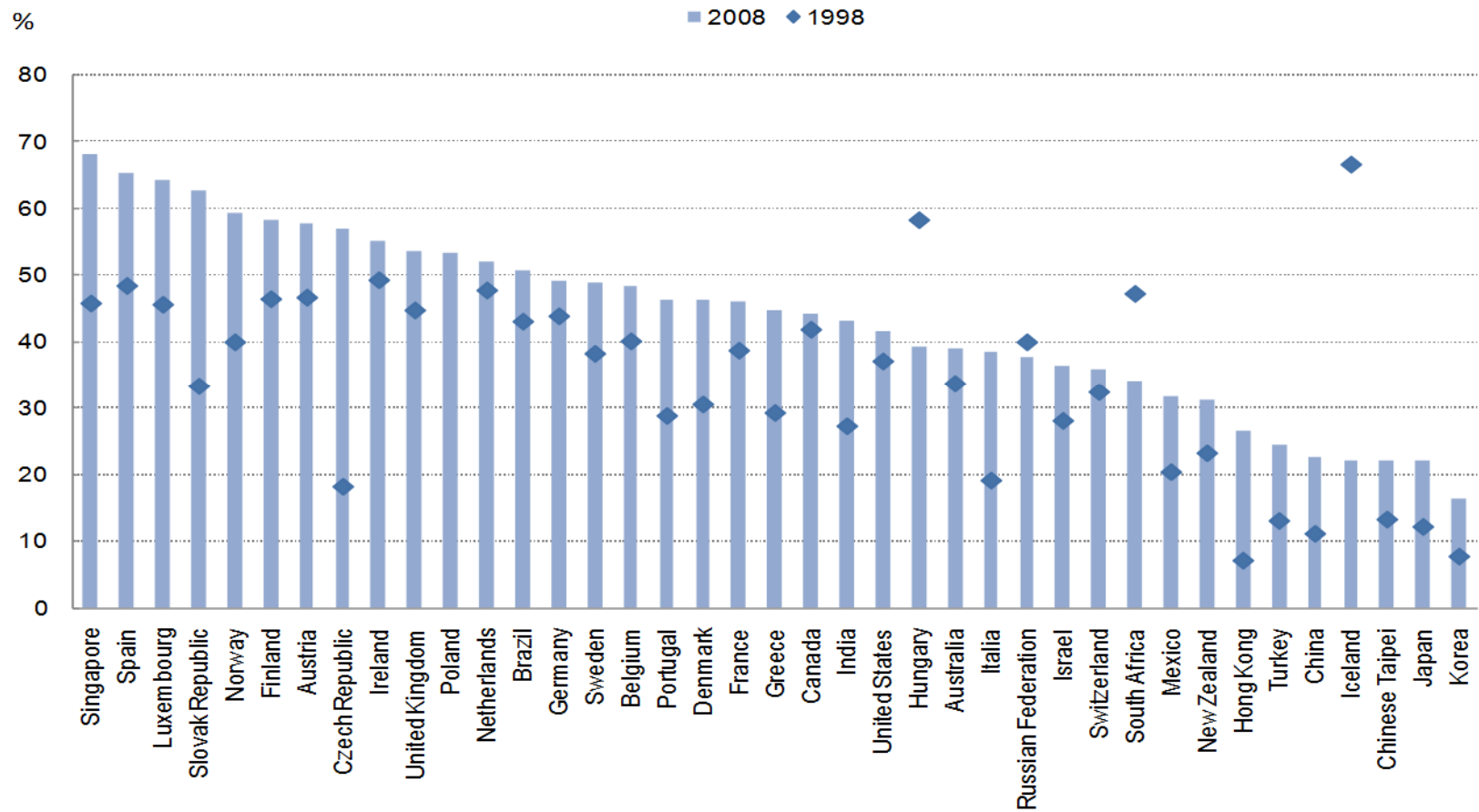
...and R&D is not only for high-tech firms...

Share of business R&D by technological intensity (manufacturing, 2006)



...and innovation is not only about manufacturing.

Share of all trademarks registered by services



It is a bundle that includes services, hardware, software and “network” capital.

The Apple iPod = 299\$ of Chinese exports to US



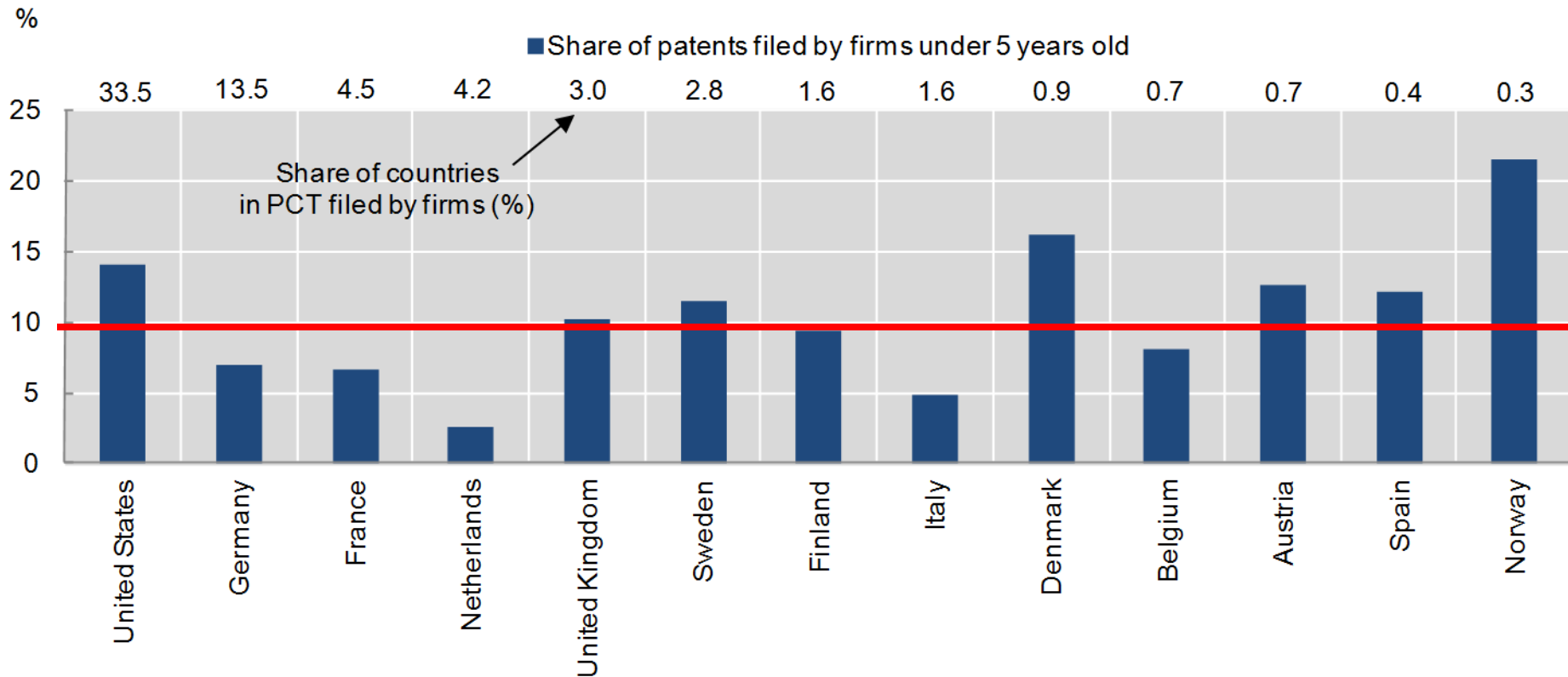
Distribution of the value added

- 299 US\$
 - 75\$ **profit** to US (Apple)
 - 73\$ **whls/retail** US (Apple)
 - 75\$ to Japan (Toshiba)
 - 60\$ 400 parts from Asia
 - 15\$ 16 parts from the US
 - 2\$ assembly by China
- iTunes Music Store (2010)
 - 80% digital market share
 - Big 5 recording companies

New firms are very important to innovation...

Patenting activity of young (<5 years) firms, 2005-07

PCT patent filings by young firms as a percentage of filings by firms in each country

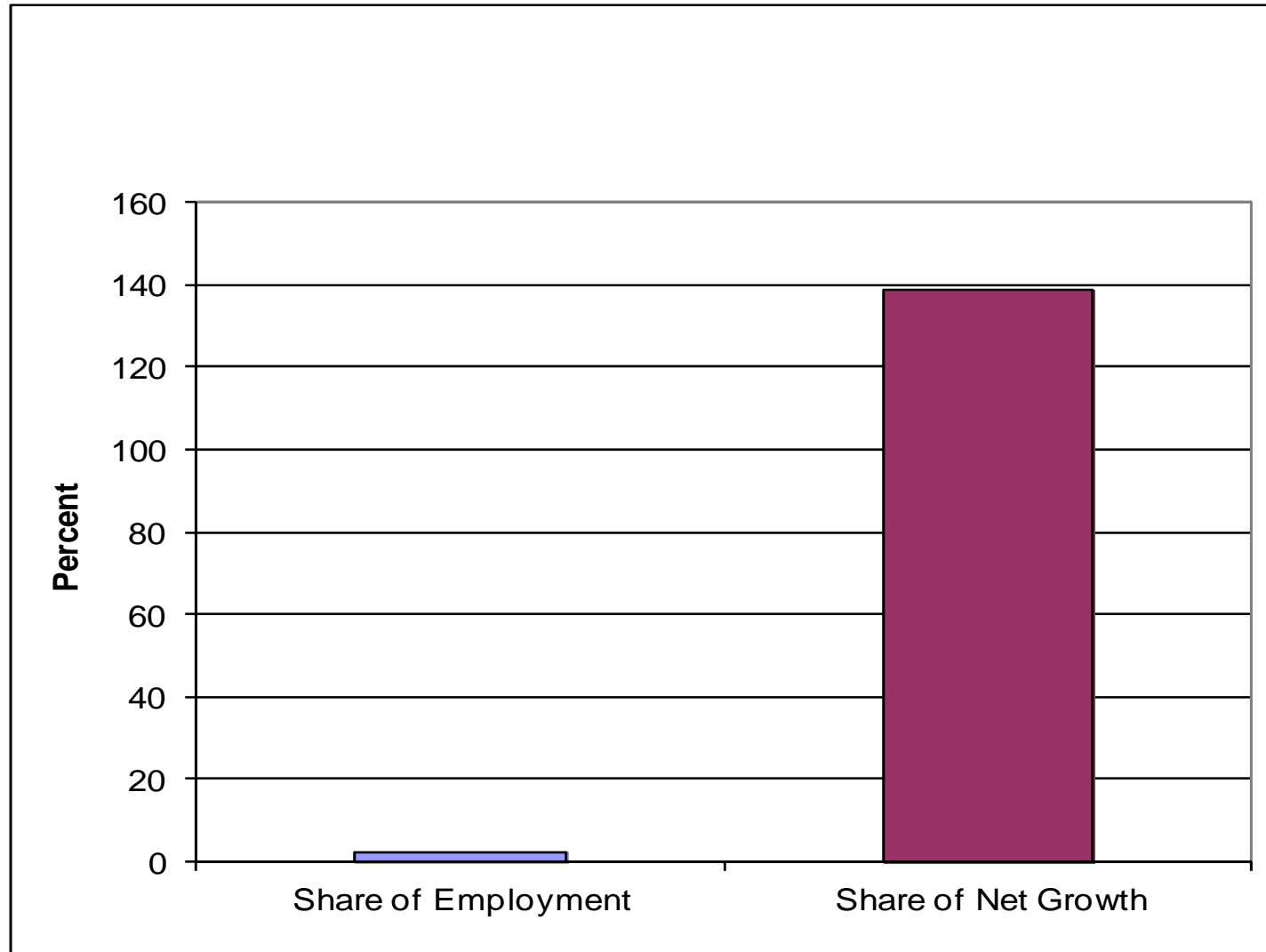


Source: OECD (2010), *Measuring Innovation: A New Perspective*, OECD, Paris.

Note : Data refers to patent applications filed under the Patent Co-operation Treaty (PCT) with a priority in 2005-07. Patent counts are based on the country of residence of the applicants. The share of young firms is derived from the set of patent applicants successfully matched with business register data.

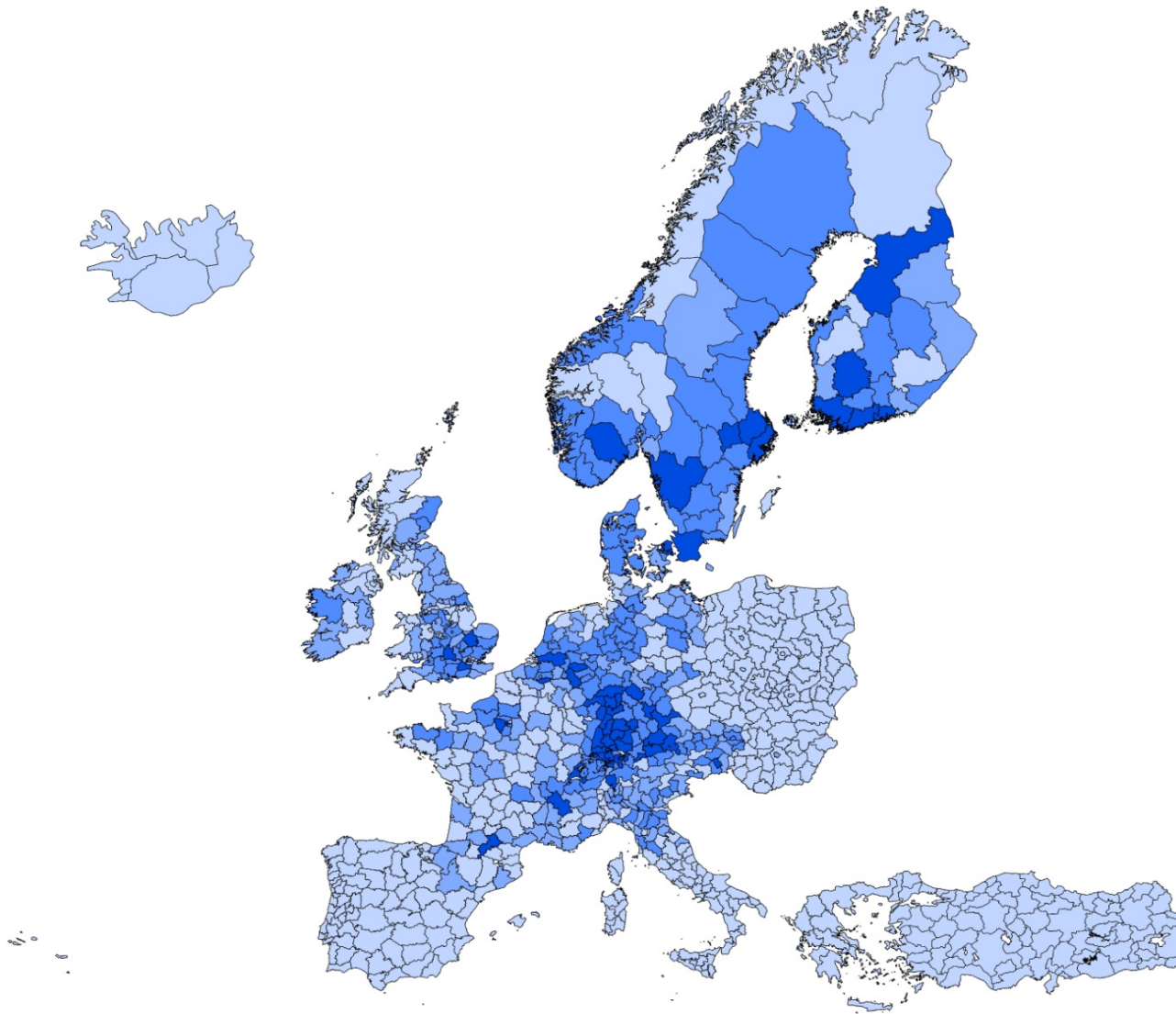
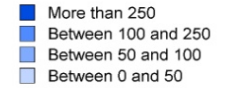
...and job creation.

Contribution of business start-ups to overall employment and the net employment growth (US, 1992-2005)



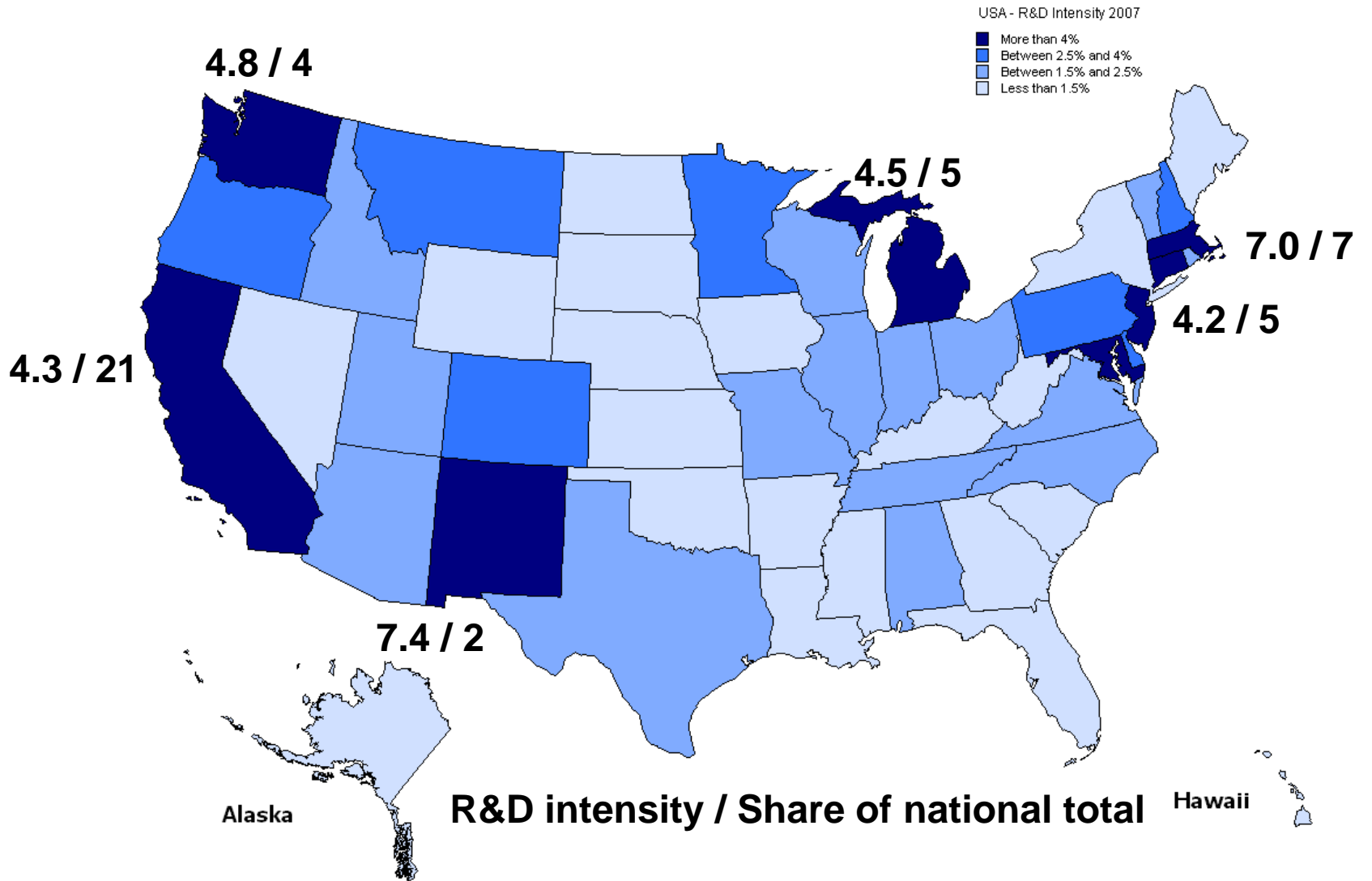
Innovation is not “flat”...

Patents per million inhabitants, average 2005-07



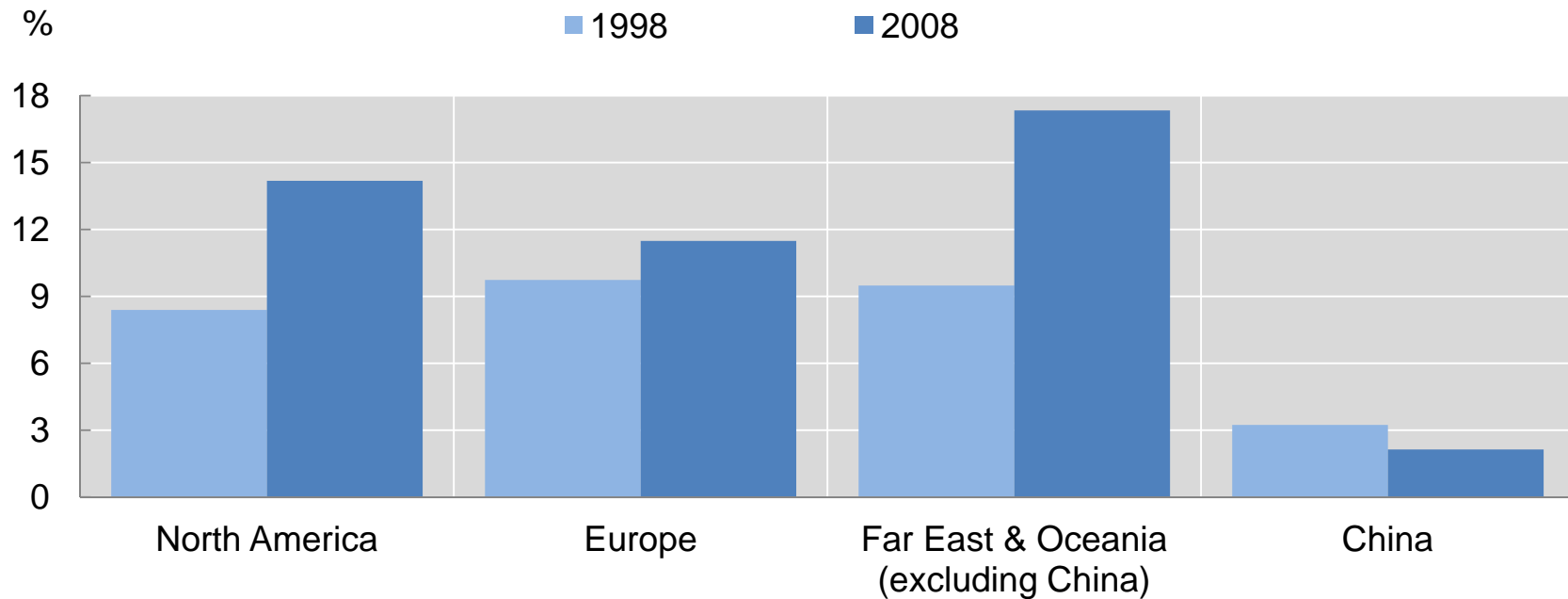
...it is concentrated.

R&D per GDP, 2007



New players are emerging, spreading innovative capabilities...

Scientific collaboration with BRIC countries, 1998 and 2008 As a percentage of total international co-authored articles



Source: OECD (2010), *Measuring Innovation: A New Perspective*, OECD, Paris based on Scopus Custom Data, Elsevier, December 2009.

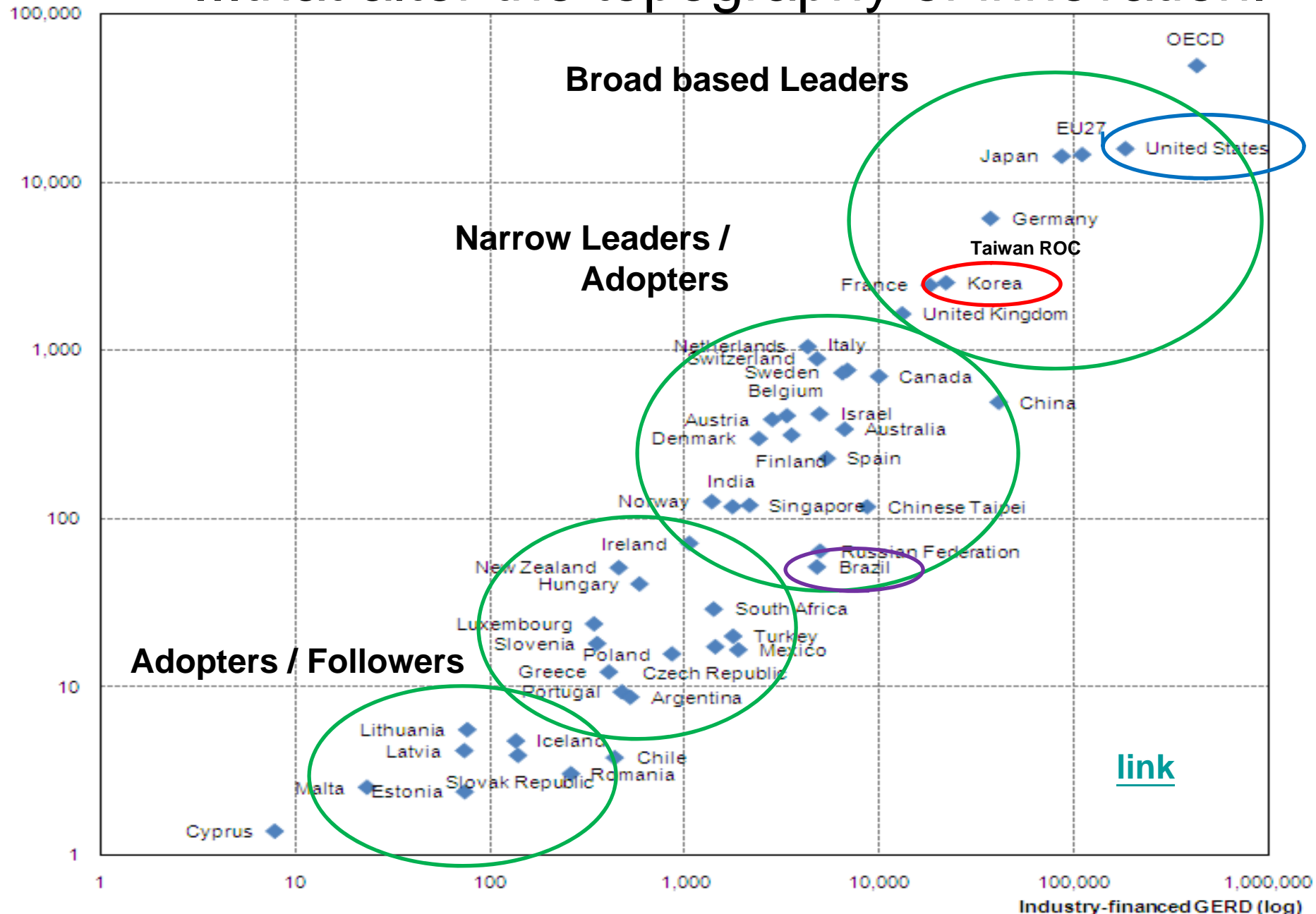
Notes: Only countries with more than 500 publications, and/or EU27 and OECD countries are tabulated.

North America: the United States, Canada and Mexico.

Europe: Austria, Belgium, Bulgaria, Belarus, Switzerland, Cyprus, the Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, the United Kingdom, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Sweden, Slovenia, the Slovak Republic and Ukraine.

Far East & Oceania: Australia, Indonesia, Japan, Korea, Malaysia, New Zealand, Singapore, and Thailand.

...that alter the topography of innovation.



Remained Questions for Competition and Innovation System

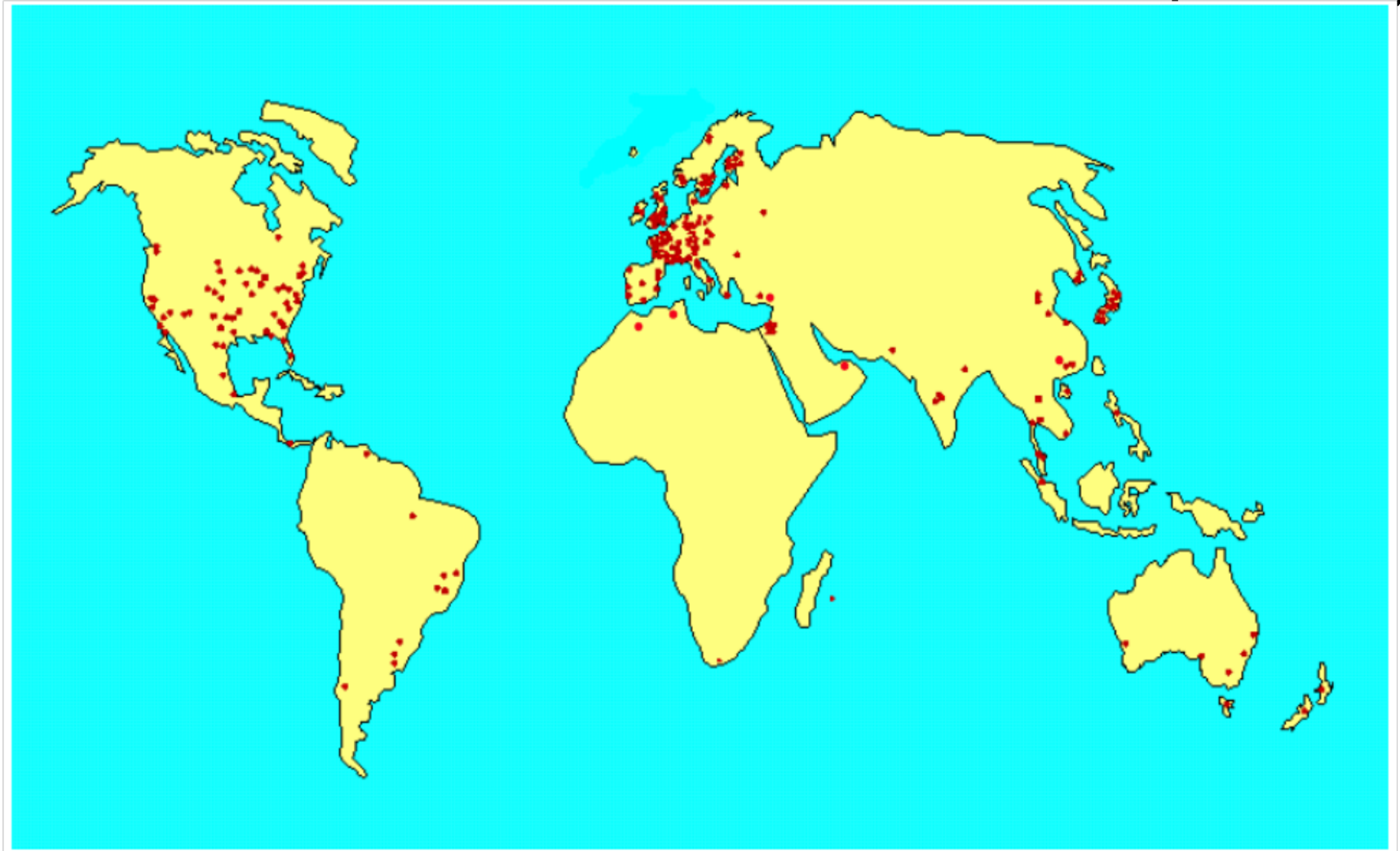
- Competition delay or prevent innovation?
- Antitrust Law and M&A(merger and acquisition)
- Innovation system?

Macro-View of High-Tech Competition

- Macro-View on Hi-Tech Hubs (Clusters)
- Historical Review on Taiwan Hi-Tech Industry
- High-Tech Strategy of Germany, China, U.S. Nordic

The Global Hi-Tech Hubs

(Hubs and the New Economics of Competition)



Source: Masbounji, 2004

Started at Silicon Valley in 1900s and spread West & East

Examples of Hi-Tech Hubs

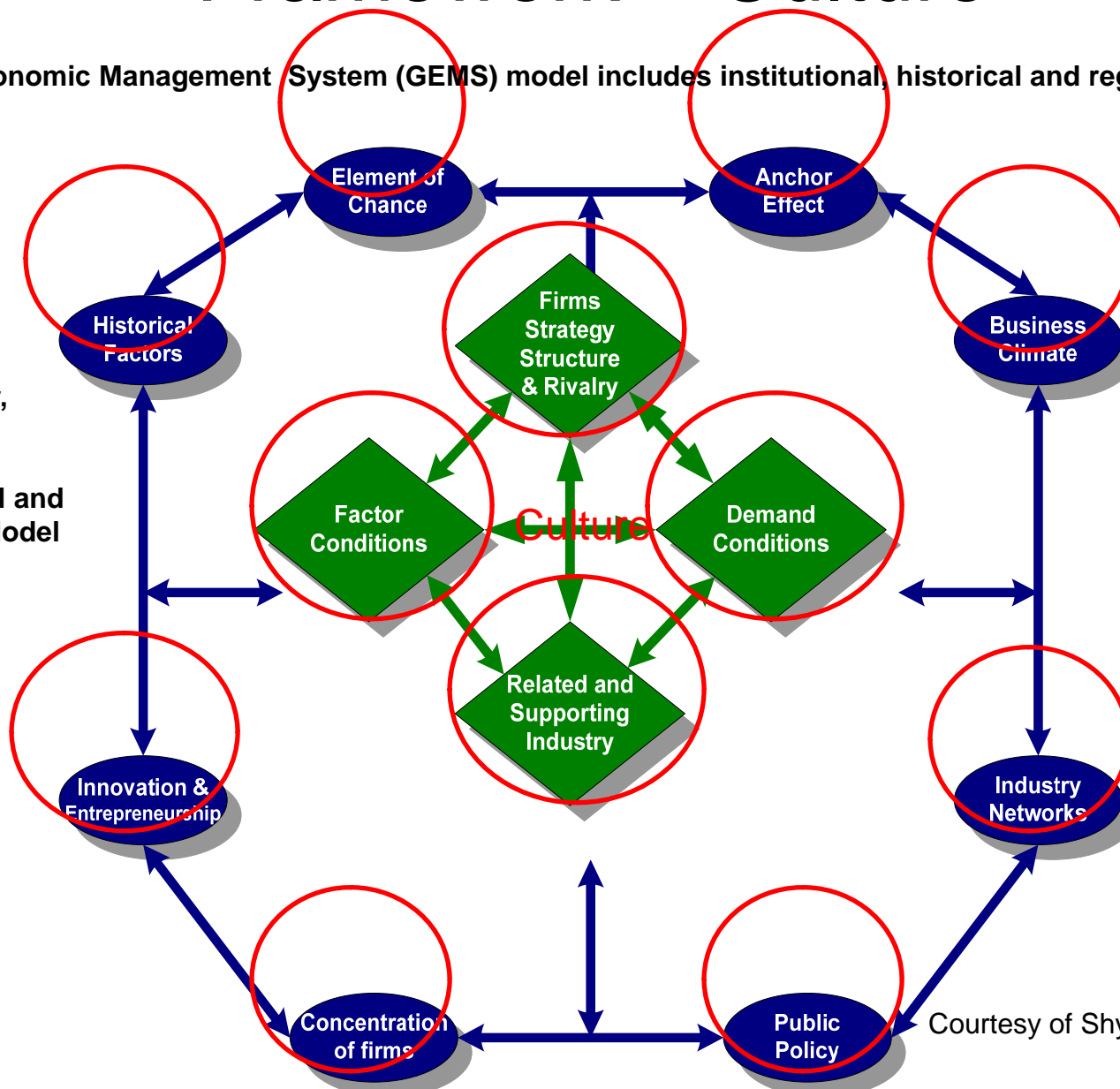
- Focused Hi-Tech Hubs: Virginia Biotechnology Research Park, USA; National Digital Park, Ireland; Multimedia Super Corridor, Malaysia; Zhongguancun Software Park, China; Software Technology Parks, India; Sapiens Parque, Brazil
- Hybrid Hi-Tech Hubs: Silicon Valley and Route 128, USA; Sophia Antipolis, France; Cambridge Corridor, UK; Hsinchu, Taiwan; Taichun, Taiwan; Tainan, Taiwan; NanKung, Taiwan; Pudong Zone, China; Bengaluroo, India; Hyderabad, India

What Makes Some Hubs Successful and Not Others?

- Successful Hubs: Silicon Valley, Route 128, Hong Kong, Taiwan Hsinchu/Taichung/Tainan Regions, Singapore, Ireland, Munich/Bavaria Region
- Unsuccessful Hubs: Akademgorodok, Russia; Taedok, South Korea; Tsukuba Science City, Japan
- “Intermediate Case” Regions: Kansai City, Japan; Cambridge Corridor, UK; Sophia-Antipolis, France

Analytical Model – The Twelve GEMS Framework + Culture

Global Economic Management System (GEMS) model includes institutional, historical and regulatory factors



Source:
 Michael E. Porter,
 Four-Diamond
 Competitive
 Advantage Model and
 TEMBA GEMS Model

Courtesy of Shyam J. Kamath, 2008

Firms' Choice Criteria to Locate in a Hub/Park

Choice Criteria	Tenants	%
Location of hub/park	41	80%
Industry focus of hub/park	25	49%
Company's goals	22	43%
Quality of park management	21	41%
Incentive package	15	29%
Government support	14	28%
Services offered	14	28%
Quality/nature of tenants	14	28%
Nature of customer service	11	22%
Funding availability	11	22%
Comparative investment costs	11	22%

Source: Survey of Management of Technology Parks Worldwide, 2006

Relative Importance of KSFs*

Success of a Park = f (Factor Scores on 4 Dimensions)

<u>Four Factors/Dimensions</u>	<u>Relative Importance</u>
Business Environment, Public Policy & Labor	27.5%
Input Pre-requisites Factor	26.5%
Park Specific Endowment Factor	25.0%
Supply & Demand Factor	<u>21.0%</u>
Total	100%

*KSFs: key successful factors

Source: Survey of Management of Technology Parks Worldwide, 2006

Key Failure Factors

KFF's	Management	Tenants
High cost of entry and operation	48%	59%
Infrastructure & facilities	14%	66%
Improper location	30%	27%
Lack of skilled labor	19%	20%
Limited funding	13%	7%
Bureaucratic/regulation	23%	5%
Lack of affiliation with research universities	19%	0%
Lack of support services	18%	12%

Source: Survey of Management of Technology Parks Worldwide, 2006

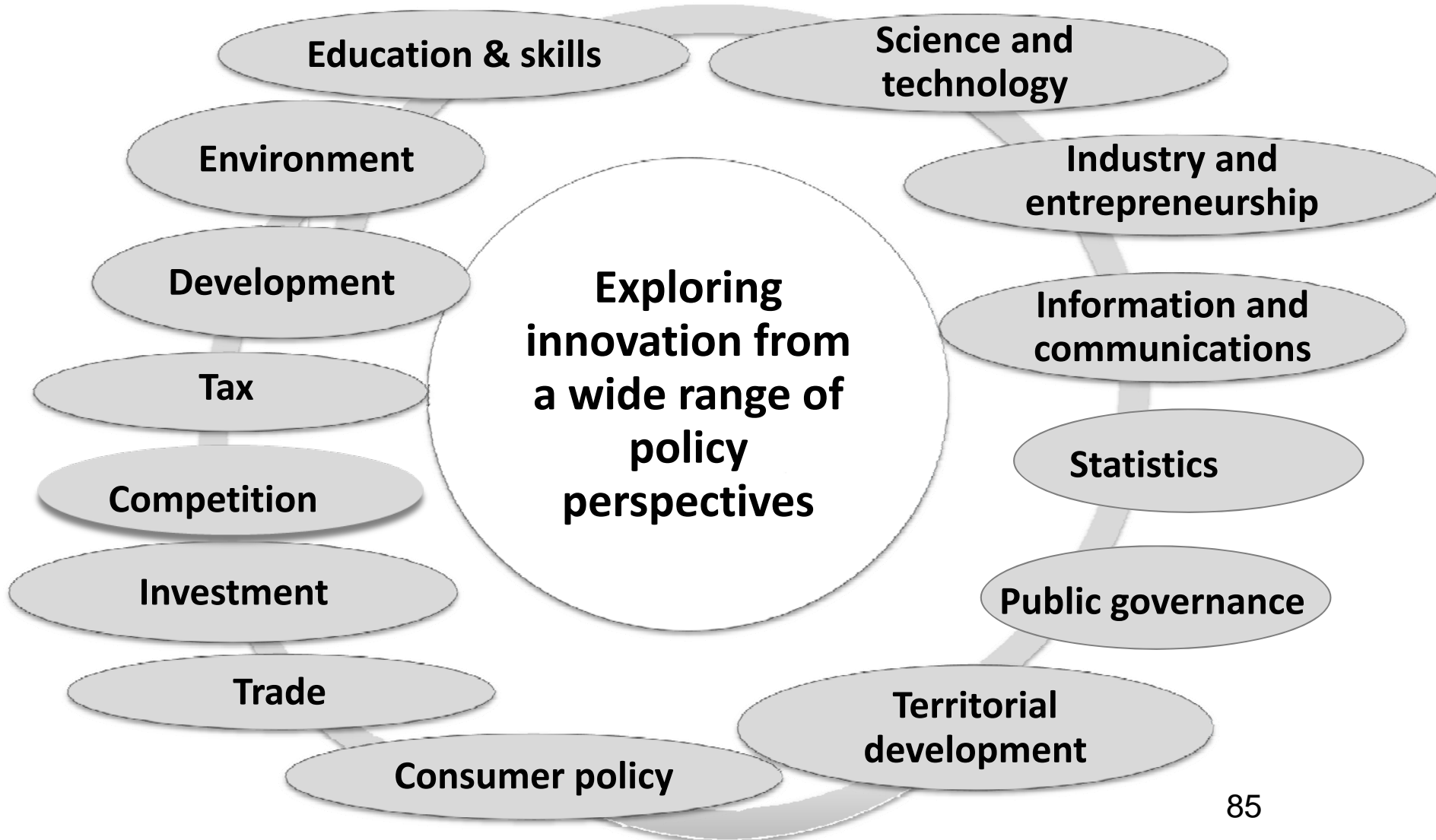
Future High-Tech Strategy of Germany, Taiwan, China, Nordic

Innovation Strategy

- OECD Innovation Strategy and Eco Innovation
- New Innovated Way to Grow Future Generations!!
- Case Studies

A “horizontal” approach

Cutting across policy areas



OECD Innovation Strategy: Policy Principles (1)

- Empowering people to innovate
 - Education and training systems should equip people with the foundations to learn and develop the broad range of skills needed for innovation in all of its forms, and with the flexibility to upgrade skills and adapt to changing market conditions. To foster an innovative workplace, ensure that employment policies facilitate efficient organisational change.
 - Enable consumers to be active participants in the innovation process.
 - Foster an entrepreneurial culture by instilling the skills and attitudes needed for creative enterprise.
- Unleashing innovations
 - Ensure that framework conditions are sound and supportive of competition, conducive to innovation and are mutually reinforcing.
 - Mobilise private funding for innovation, by fostering well-functioning financial markets and easing access to finance for new firms, in particular for early stages of innovation. Encourage the diffusion of best practices in the reporting of intangible investments and develop market-friendly approaches to support innovation.
 - Foster open markets, a competitive and dynamic business sector and a culture of healthy risktaking and creative activity. Foster innovation in small and medium-sized firms, in particular new and young ones.

OECD Innovation Strategy: Policy Principles (2)

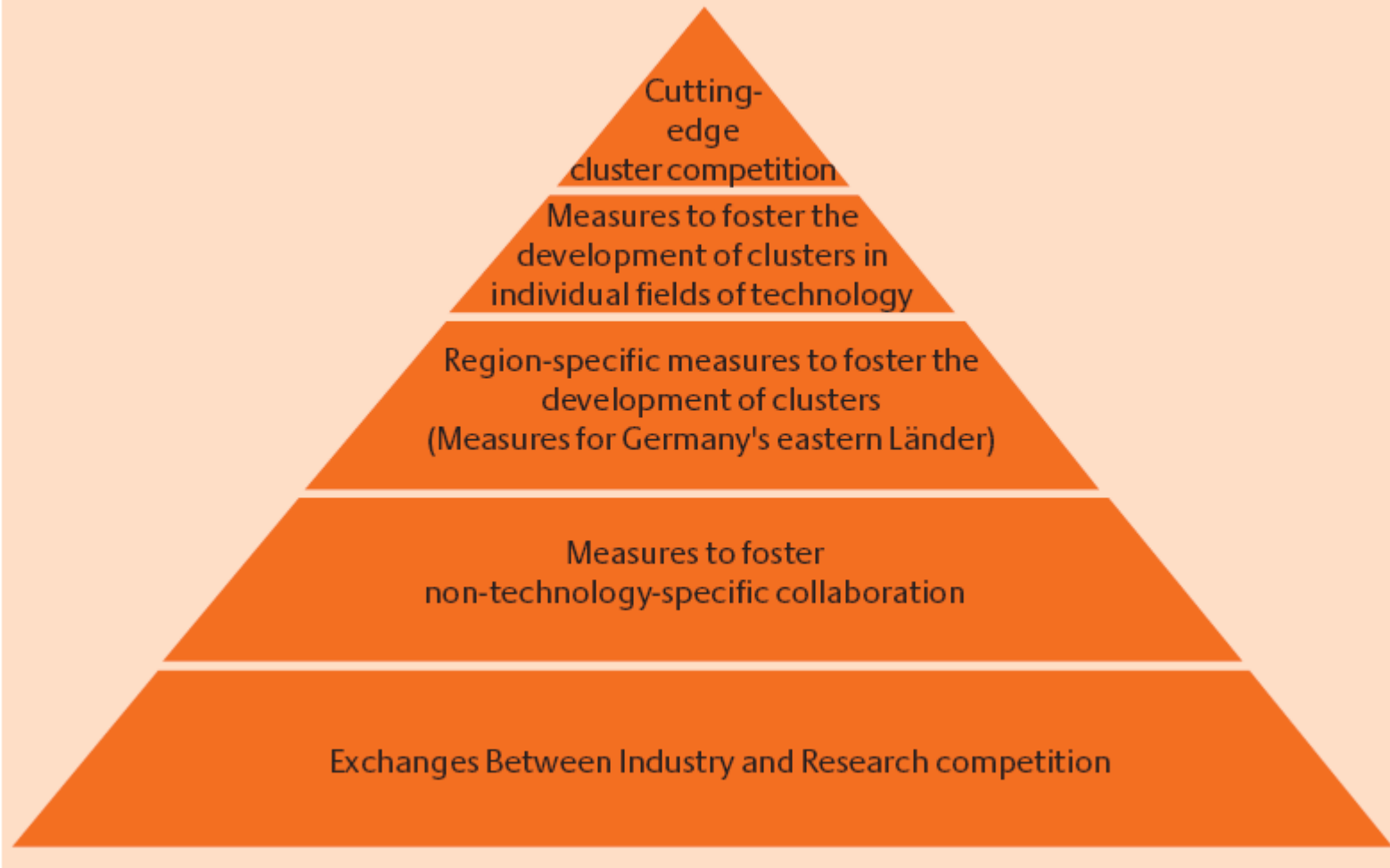
- Creating and applying knowledge
 - Provide sufficient investment in an effective public research system and improve the governance of research institutions. Ensure coherence between multi-level sources of funding for R&D.
 - Ensure that a modern and reliable knowledge infrastructure that supports innovation is in place, accompanied by the regulatory frameworks which support open access to networks and competition in the market. Create a suitable policy and regulatory environment that allows for the responsible development of technologies and their convergence.
 - Facilitate efficient knowledge flows and foster the development of networks and markets which enable the creation, circulation and diffusion of knowledge, along with an effective system of intellectual property rights.
 - Foster innovation in the public sector at all levels of government to enhance the delivery of public services, improve efficiency, coverage and equity, and create positive externalities in the rest of the economy

OECD Innovation Strategy: Policy Principles (3)

- Applying innovation to address global and social challenges
 - Improve international scientific and technological co-operation and technology transfer, including through the development of international mechanisms to finance innovation and share costs.
 - Provide a predictable policy regime which provides flexibility and incentives to address global challenges through innovation in developed and developing countries, and encourages invention and the adoption of cost-effective technologies.
 - To spur innovation as a tool for development, strengthen the foundations for innovation in low-income countries, including affordable access to modern technologies. Foster entrepreneurship throughout the economy, and enable entrepreneurs to experiment, invest and expand creative economic activities, particularly around agriculture.
- Improving the governance and measurement of policies for innovation
 - Ensure policy coherence by treating innovation as a central component of government policy, with strong leadership at the highest political levels. Enable regional and local actors to foster innovation, while ensuring co-ordination across regions and with national efforts. Foster evidence-based decision making and policy accountability by recognising measurement as central to the innovation agenda.

Germany High-tech Strategy

Diagram 1: The German government's Cluster Strategy





Germany High-Tech Innovation Focus (1) : Innovation for a safe and healthy life

- Health Research and Medical Technology –Sparking a growth market: Better quality at less cost
- Security Technologies – No chance for crime or terrorism: Using research to protect freedom
- Plants – New paths for agriculture and industry: Tomorrow's source for raw materials
- Energy Technologies – The challenge for the 21st century : Reliable, efficient, sustainable
- Environmental Technologies – Clear water, clean air, fertile soil: Integrated environmental protection and resource conservation



Germany High-Tech Innovation Focus (2) : Innovation for communication and mobility

- Information and Communications Technologies – Injecting momentum into the No. 1 innovation driver: Developing Germany's strengths in core sectors and tap new fields of application
- Automotive and Transport Technologies – Mobility for the future: Germany as Europe's logistics hub
- Aviation Technologies – Making flying safer and cleaner: Less pollution despite growing air traffic volume
- Space Technology – Going into Space for Earth: Satellites for earth observation and navigation
- Maritime Technologies – Innovation for the oceans: Being present in the global market with innovative systems solutions
- Services – On the road to tomorrow's knowledge society: Innovation driver for high-tech business models



Germany High-Tech Innovation Focus (3) : Innovation through cross-cutting technologies

- Nanotechnologies – A small scale with enormous economic potential: Innovations from the quantum world
- Biotechnology – Life sciences on the threshold to broad application: Innovations based on the defining sciences of the 21st century
- Microsystems Technology – Paving the way for intelligent products: Linking individual technologies to create systems solutions
- Optical technologies – Light is generating growth and jobs: The century of the photon
- Materials technologies – New designs for matter: New properties, greater material efficiency
- Production technologies – Outfitting the global economy: Mechanical engineering and plant manufacturing "Made in Germany"

Taiwan Vision 2020 : Key Technologies

- Biotechnology
- Materials
- Energy
- Semiconductor
- Information and Communication
- Integrated Application and Technology

29 Industrial Technology Clusters

<http://www.taiwan2020.org/Eng/Taiwan2015/KeyTechnology.aspx>

Nordic Innovation Center:

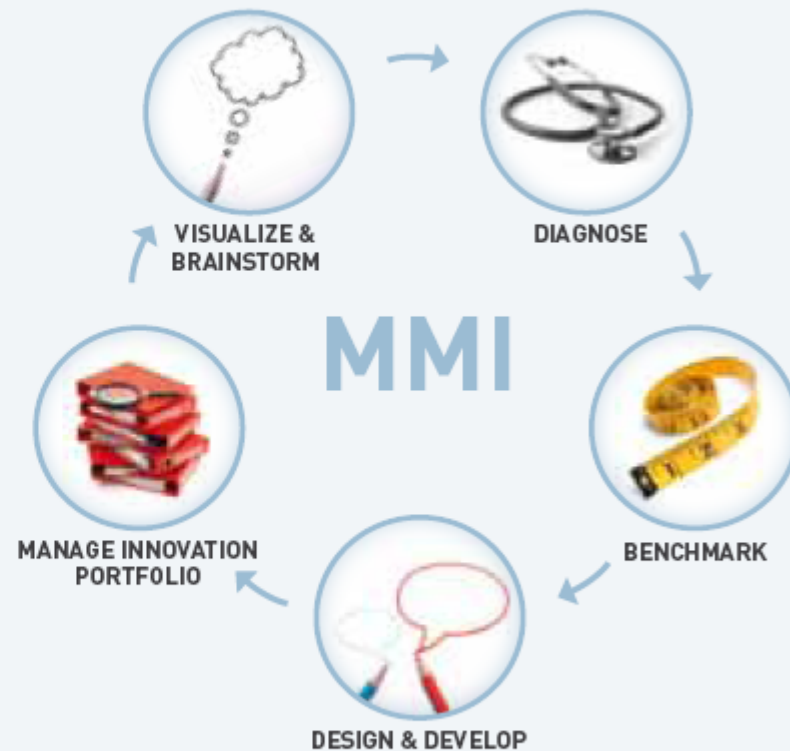
- Nordic Innovation works within the following understanding of innovation: ‘Innovation is a new or improved process, service, product or organization that creates economic or other public value. Innovation is important for both private and public sectors’.
- Assisting Nordic countries in the development of world-class innovation ecosystems, supporting business growth and long-term Nordic competitiveness.
- Innovation tools: Nordic Innovation developed and collected a whole range of effective and inspiring innovation tools and systems to help any organisation towards a more innovative business strategy. One important tool for innovation management is the so-called Measured and Managed Innovation Programme (MMI), that you may read more about under projects.

<http://www.nordicinnovation.org/>

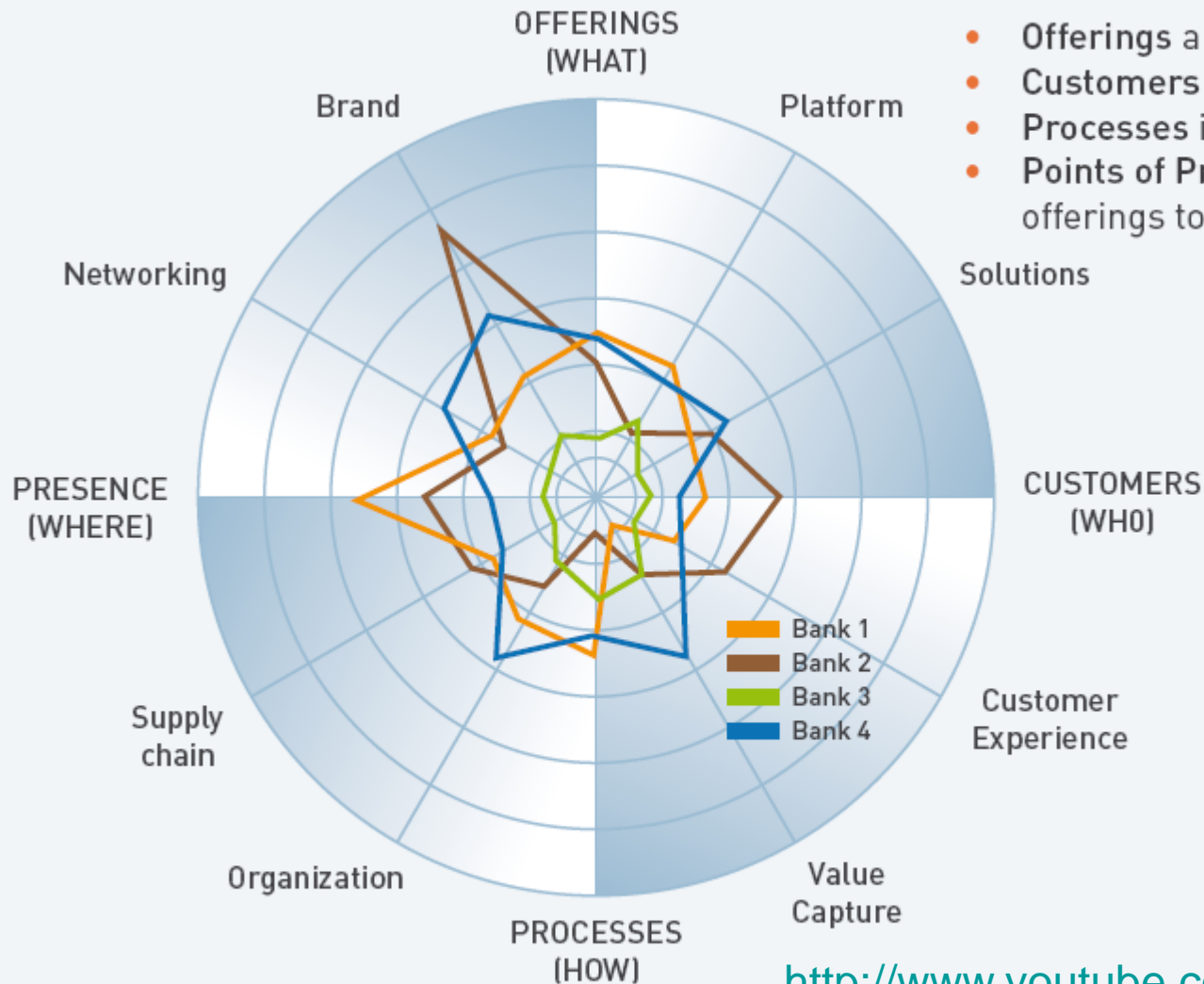
Nordic Innovation Center: MMI

The Measured and Managed Innovation Programme will enable Nordic businesses to:

- **Visualize and Brainstorm:** Explore dimensions of their innovation investments in a systematic and holistic manner
- **Diagnose:** Identify the gaps in innovation performance of their business systems
- **Benchmark:** Benchmark the innovative capabilities of their business within and across industries
- **Design New Ventures:** Design and track the development of complete business systems
- **Manage Across the Portfolio:** Get a holistic view of their innovation initiatives



Nordic Innovation Center: Innovation Radar



<http://www.youtube.com/watch?v=vj8J7mv9B>

Source: Mohanbir Sawhney, Robert C. Wolcott and Inigo Arroniz,
Kellogg School of Management, Northwestern University

China 12th. 5-Year Plan

- Develop China's western regions
- Protect the environment and improve energy efficiency
- Continue transitioning to an economy driven by domestic consumption instead of exports
- Improve the lives of Chinese citizens
- Develop seven priority industries, with the aim of increasing their GDP contributions from 2% of GDP to 8% by 2015
 - three sectors align with the theme of sustainable growth: energy savings and environmental protection; new energy; and clean energy vehicles
 - the other areas are consistent with China's ambition to move up the value chain: biotechnology; new materials; new IT; and high-end manufacturing.

China 12th. 5-Year Plan

12th Five-Year Plan vs. 11th Five-Year Plan : what is new?

- Housing target: develop 36 million units of economic housing
 - Two new pollution targets:
 - Nitrogen oxide: 10% reduction
 - Ammonia nitrogen: 10% reduction
 - Wellbeing target: increase average life expectancy by one year
 - Innovation target: 3.3 patents per 10,000 people
 - Education target: increase high school enrollment ratio from 82.5% to 87%
-

China 12th. 5-Year Plan

China's 12th Five-Year Plan: Seven Priority Industries

1 **New energy**

- Nuclear, wind and solar power

2 **Energy conservation and environmental protection**

- Energy reduction targets

3 **Biotechnology**

- Drugs and medical devices

4 **New materials**

- Rare earths and high-end semiconductors

5 **New IT**

- Broadband networks, internet security infrastructure, network convergence

6 **High-end equipment manufacturing**

- Aerospace and telecom equipment

7 **Clean energy vehicles**

Hype Cycle for Emerging Technology

**"The future is
already here, it's just not
evenly distributed."**

— *William Gibson*

Technology Trend — the Internet of Things

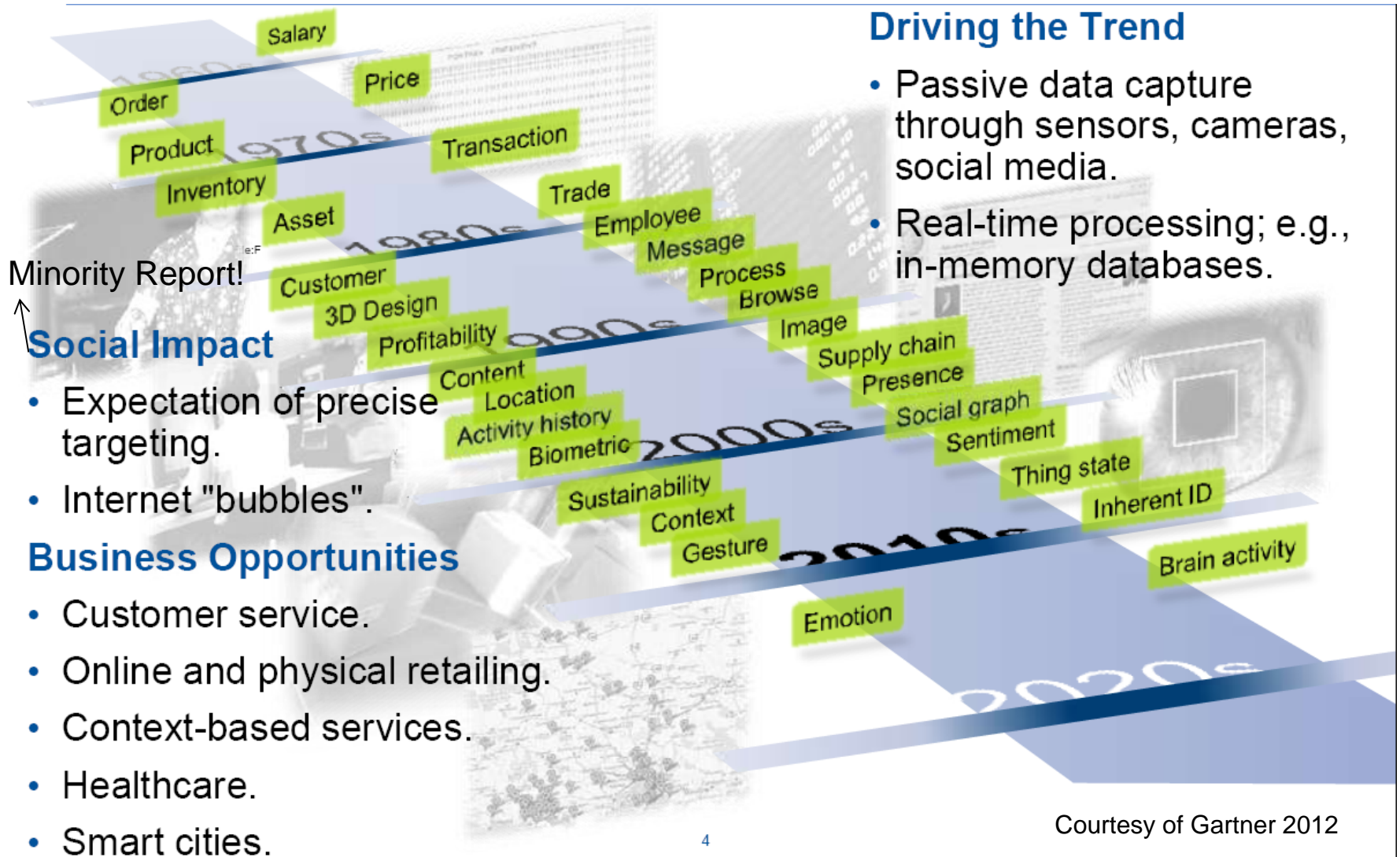
Not a single technology, but a concept enabled by multiple technology advances

- **Driving the Trend:** Embedded sensors in devices and objects, image recognition, augmented reality, Near Field Communication.
- **Social Impact:** Situational decision support and learning, (even) more transparency.
- **Business Opportunities:** Real-time decision support for customers and employees; remote sensing, services on top of connected products.



Courtesy of Gartner 2012

Technology Trend — Real-Time Predictive Analytics



Technology Trend — Natural User Interaction

Driving the Trend

- Consumer-grade touch and gesture recognition: media tablets, Kinect.
- Large-scale commercialization of screen technologies: OLED, e-paper, 3D.
- Machine learning for natural language and image analysis.



Source: IBM

Social Impact

- Natural language: virtual advisors and friends.
- Screens and gesture: interactive and contextual ambiance.

Business Opportunities

- Natural language: medicine, legal, government, helpdesk, e-commerce, business intelligence.
- Screens and gesture: retail, hospitality, control centers.

Courtesy of Gartner 2012

Technology Trend — For Less Than \$10,000, How About...



Source: Z Corporation

Your very own 3D printer

- **Drivers:** Price, range of materials.
- **Social Impact:** Small business growth in custom designs, decentralization of manufacturing and spare parts.
- **Business Opportunities:** Focus on IP, not products, logistics process transformation; medical and dental.

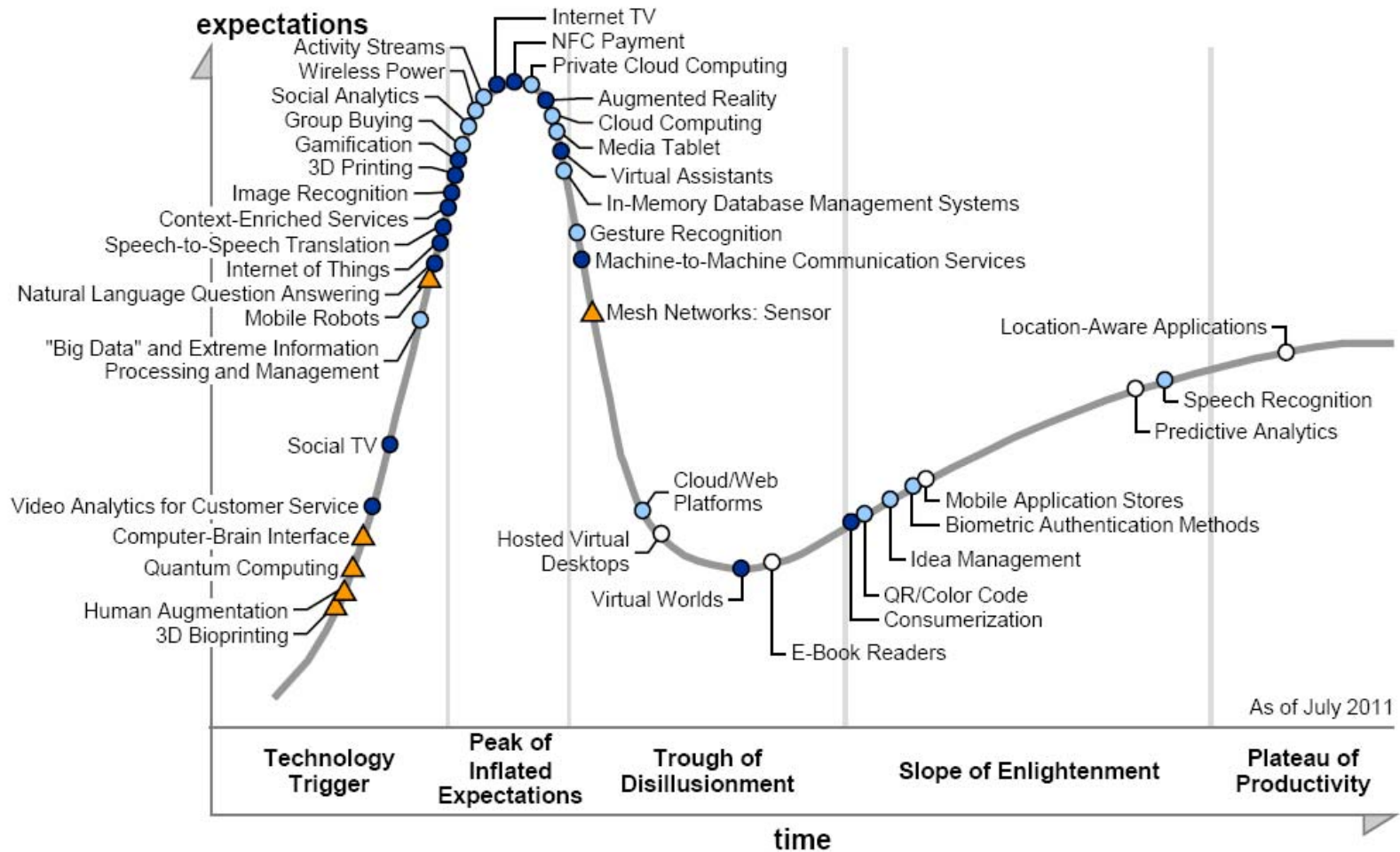
Or your very own avatar

- **Drivers:** Price, laser navigation for flexible movement.
- **Social Impact:** Low-cost remote visits with mobility.
- **Business Opportunities:** Remote consultations, warehousing, security, high-cost infrastructure.



Courtesy of Gartner 2012

Hype Cycle of Emerging Technologies

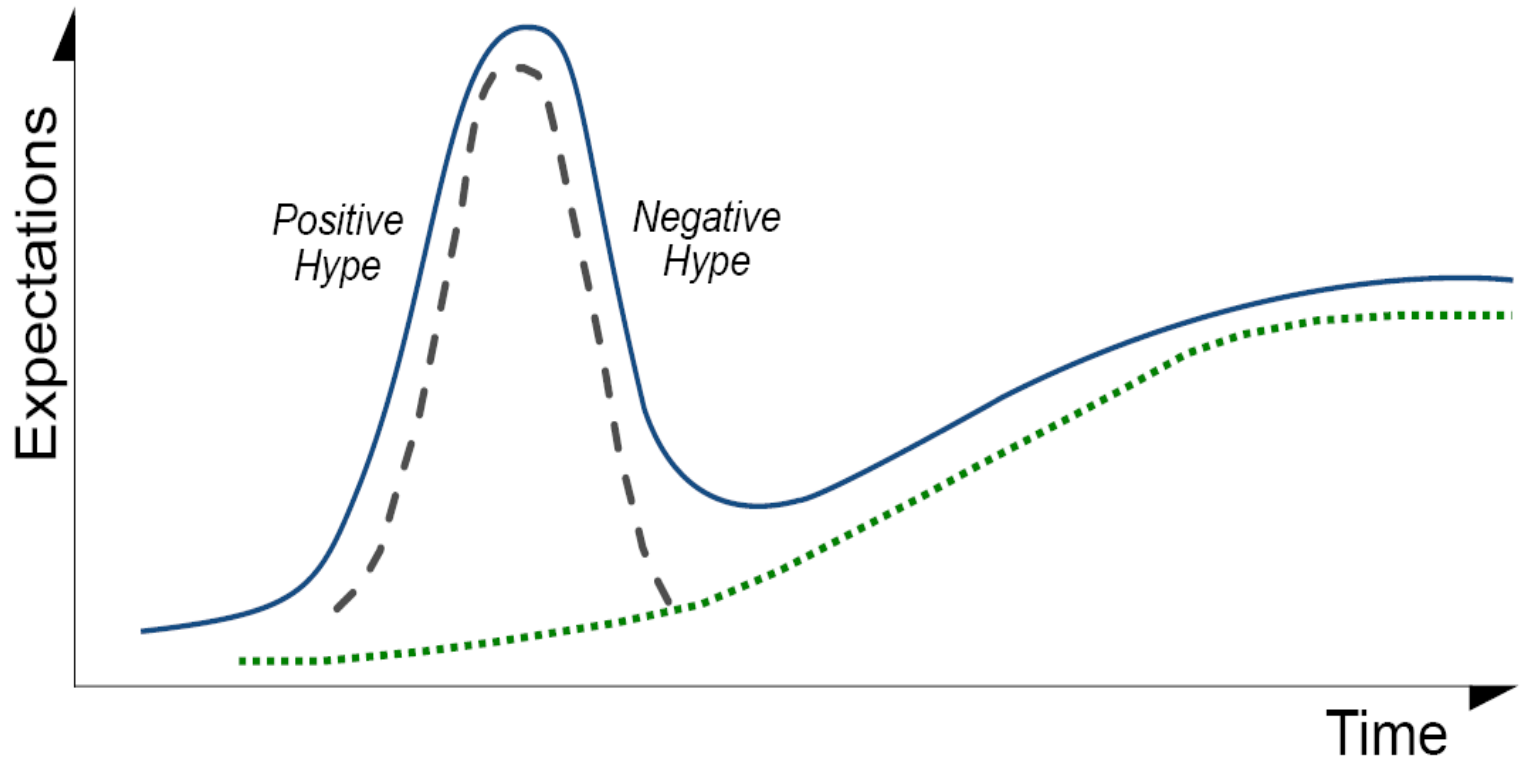


Years to mainstream adoption:

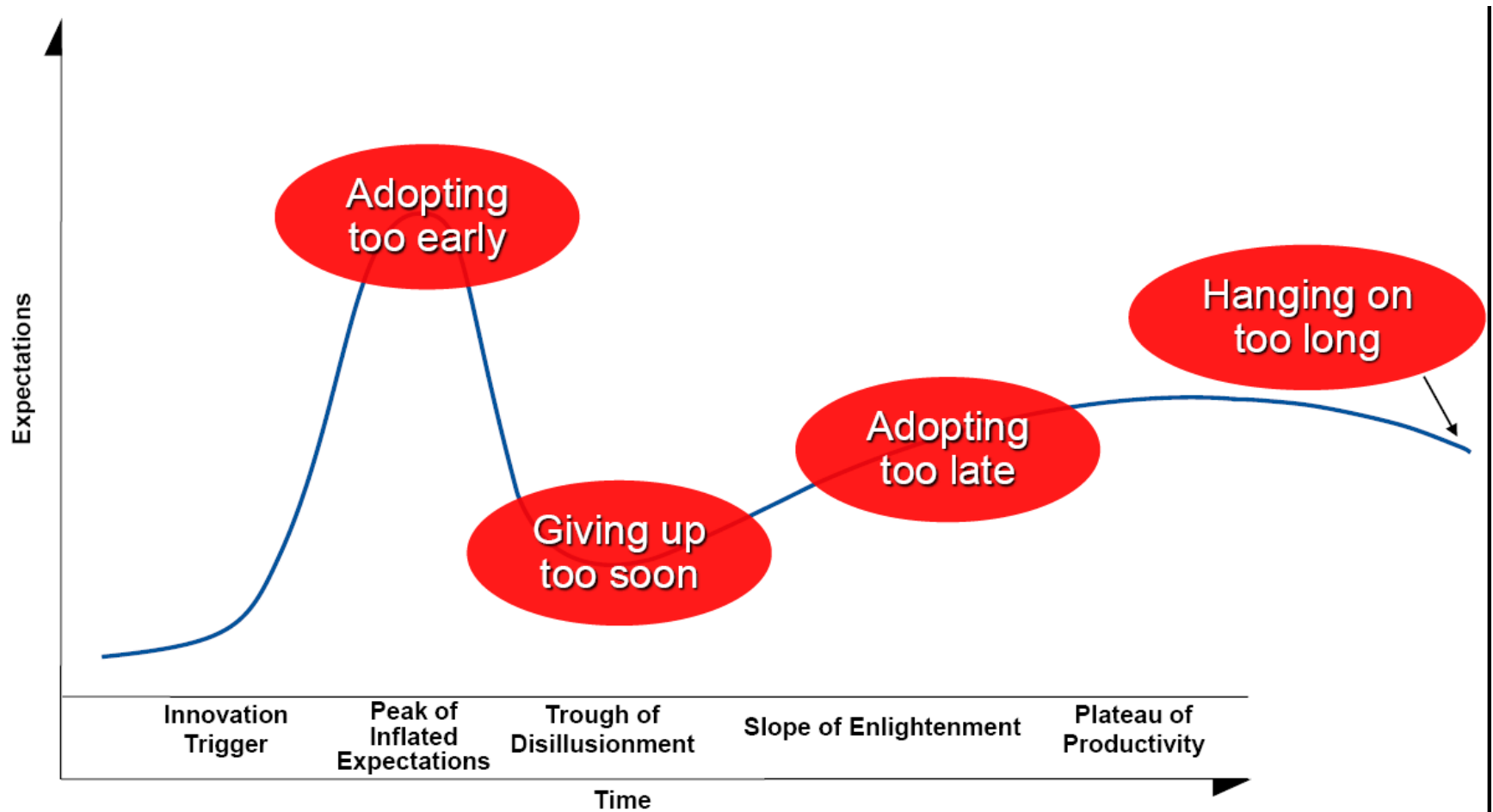
○ less than 2 years ● 2 to 5 years ● 5 to 10 years ▲ more than 10 years ⊗ obsolete before plateau

Courtesy of Gartner 2012

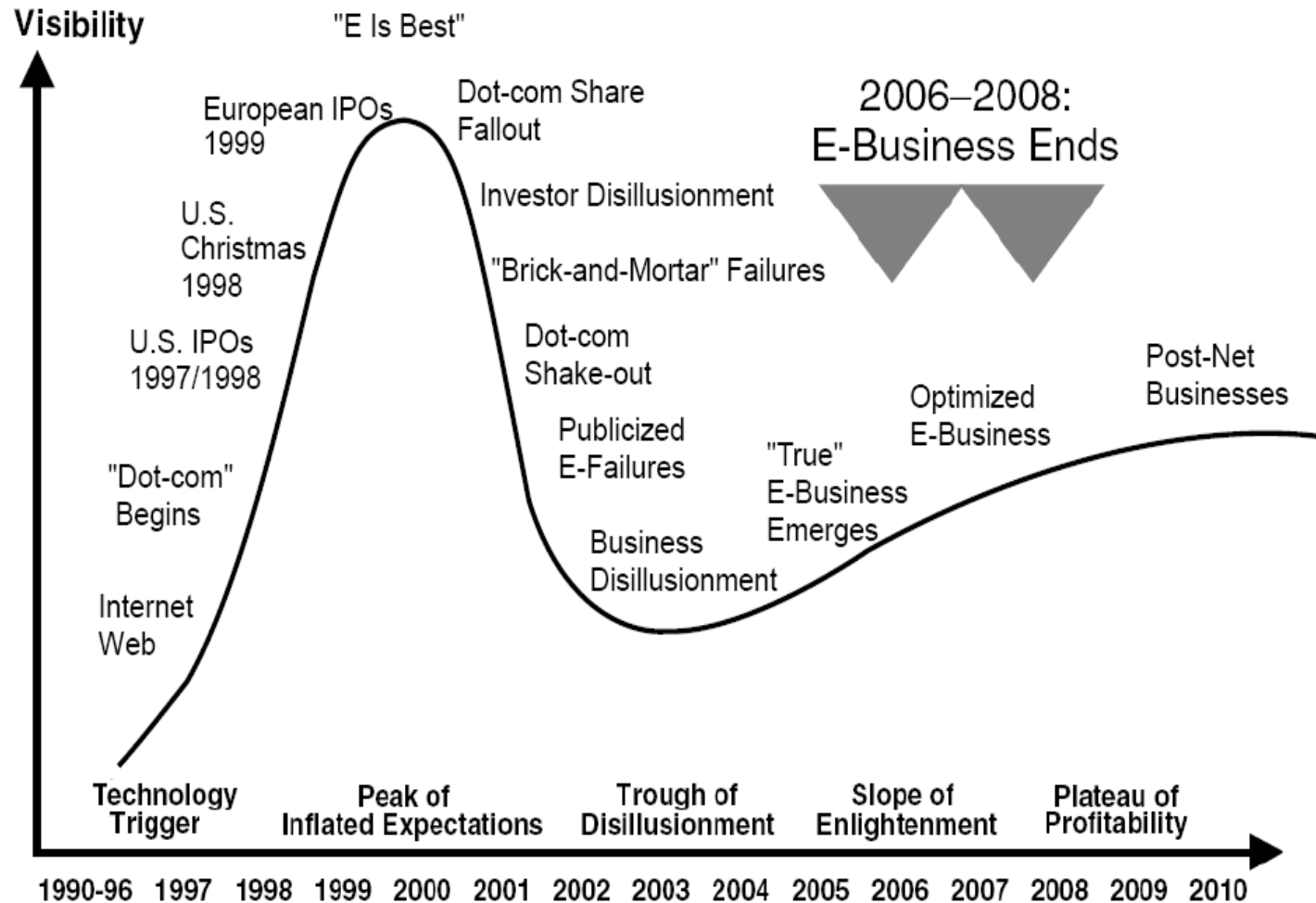
Component of the Hype Cycle



Hype Cycle Traps

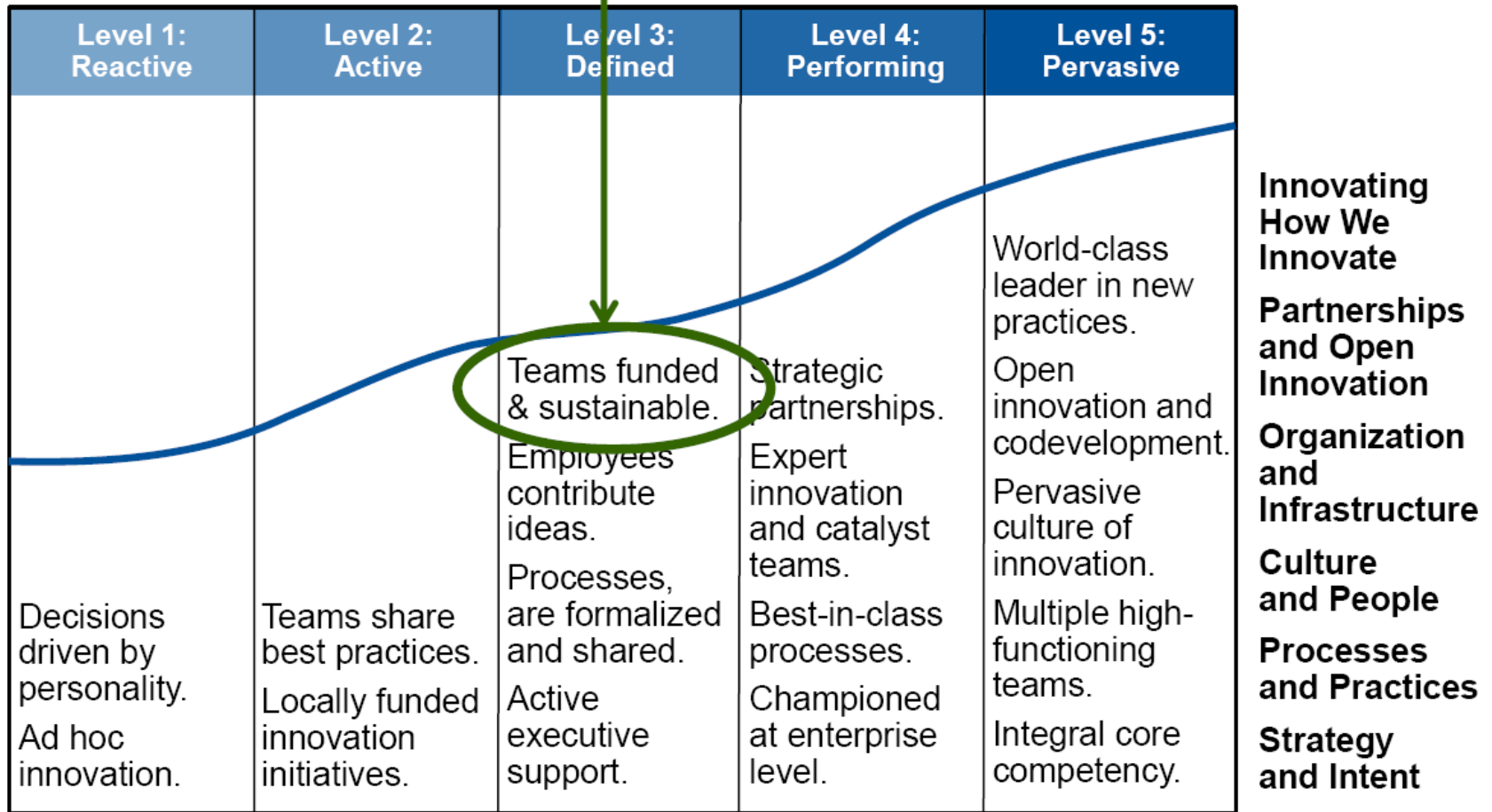


Predictive Value of the Hype Cycle: E-Business Hype Cycle Published in 1999



Mature Model for Innovation Management

Innovation is sustainable when it has an owner



**"The task is not so much
to see what no one yet
has seen, but to think
what nobody yet has
thought about that which
everybody sees."**



Arthur Schopenhauer, 1788-1860

Wrap-up

- Technology business changes quickly
- International business changes quickly
- Technology business used to be inherently international and privately held, but China/India way might be different!
- At the end – Business is still business regardless technology or non-tech.
- The purpose of business is in the eye of the beholder