



STANDARDIZATION, INNOVATION AND BUSINESS MODELS

ETSI Symposium, Beijing, China
31 October 2007

Keys Concepts: Balance, Flexibility, Inclusion



Key Concepts

Innovation

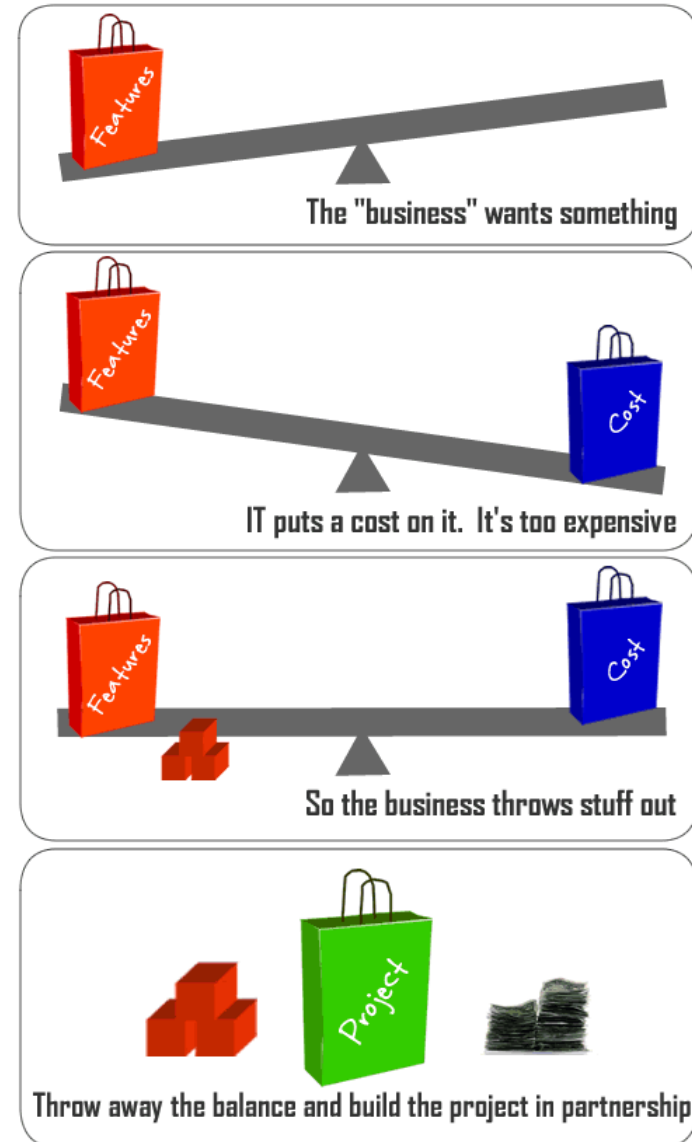
- Investment drives innovation
- Innovation creates new IP
- IP enables new products or technologies
- Sales create economic returns
- Reinvestment of returns in R&D sustains innovation

IPR protection

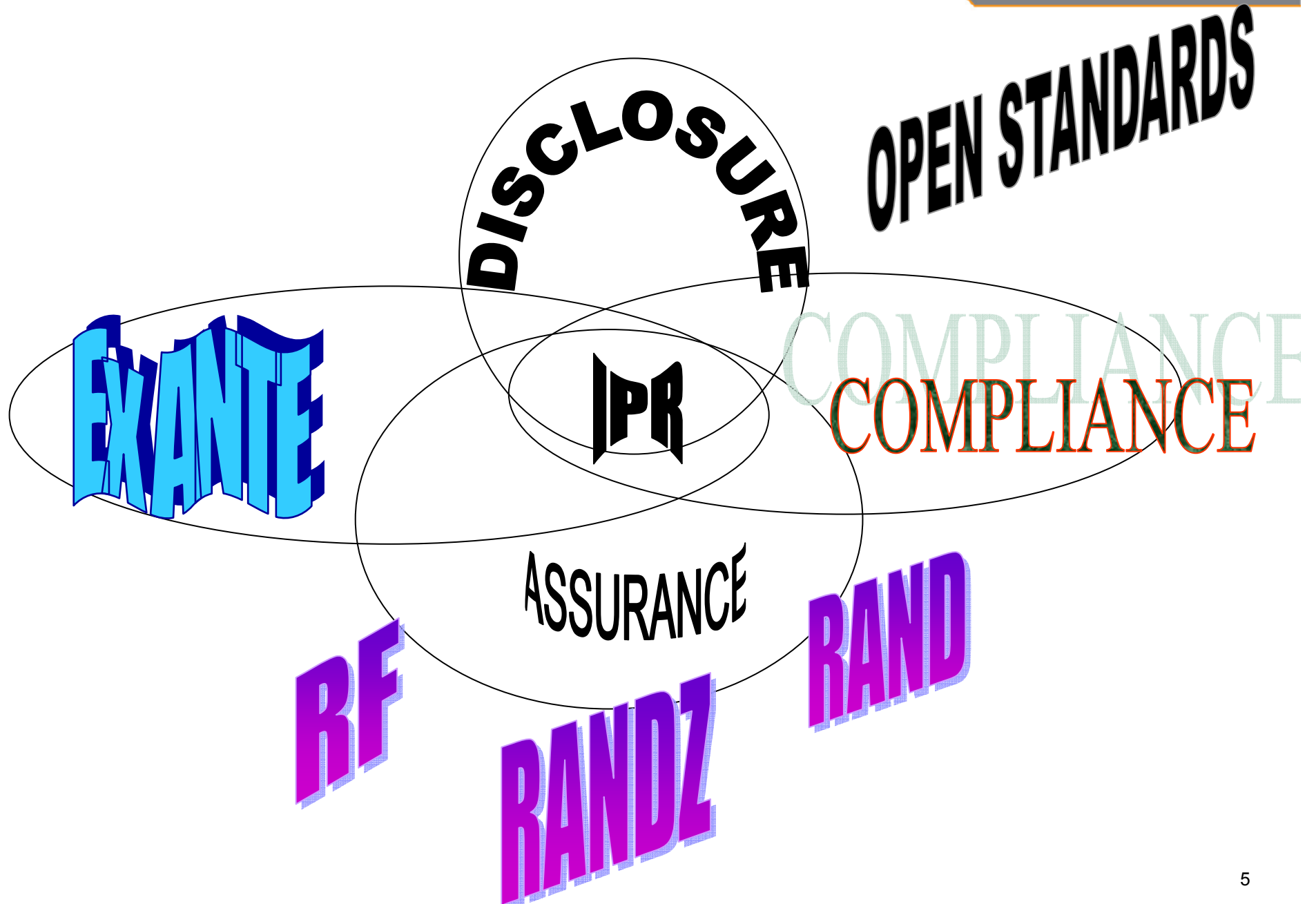
- IPR laws protect ability to earn economic returns from IP and recapture R&D expenses
- IPR laws are critical for new market entrants (SMEs)

Standards drive growth

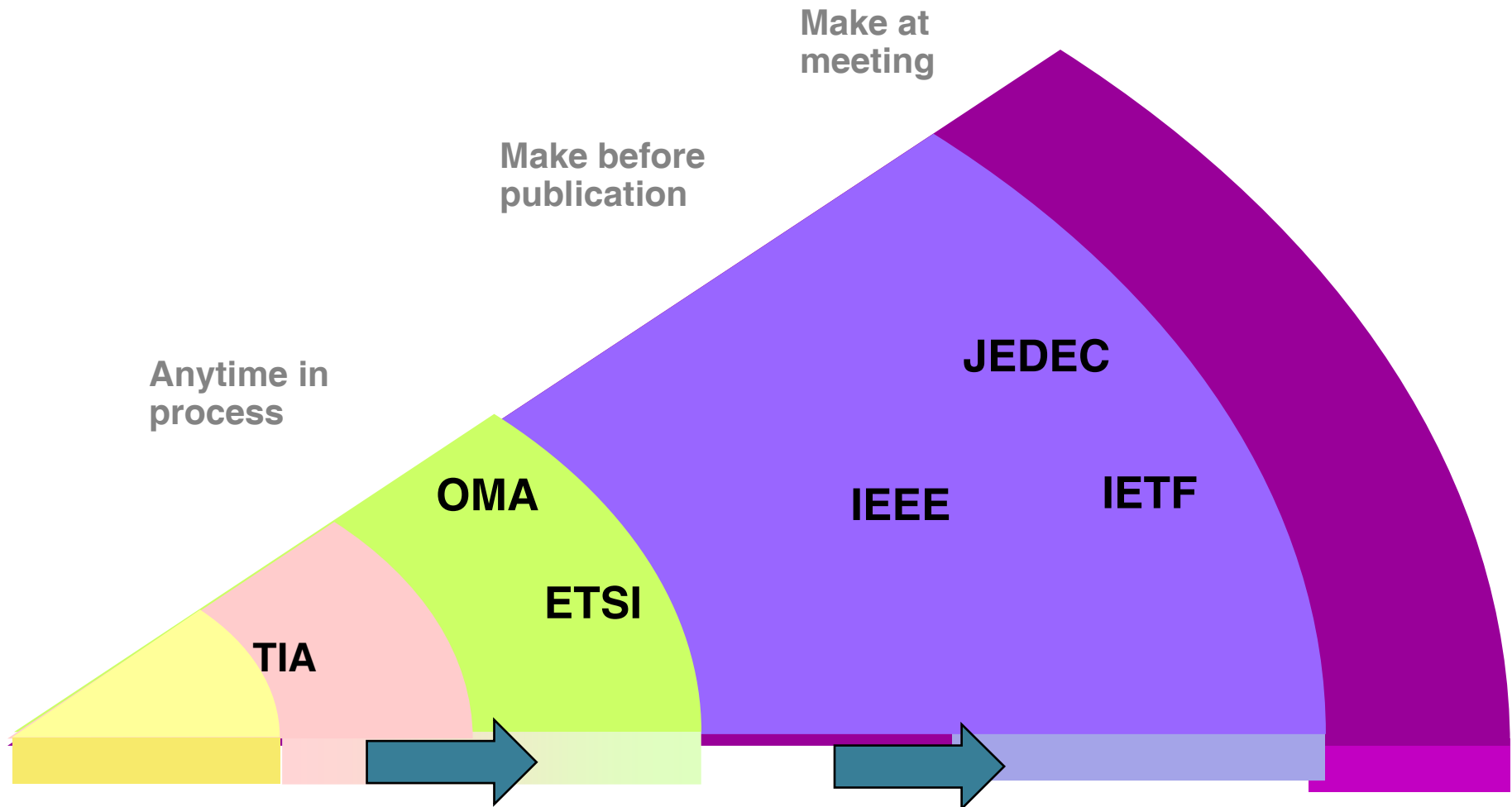
- Help establish interoperability of competing products
- Simplifies development by defining a minimum set of common requirement
- Helps enables business opportunities



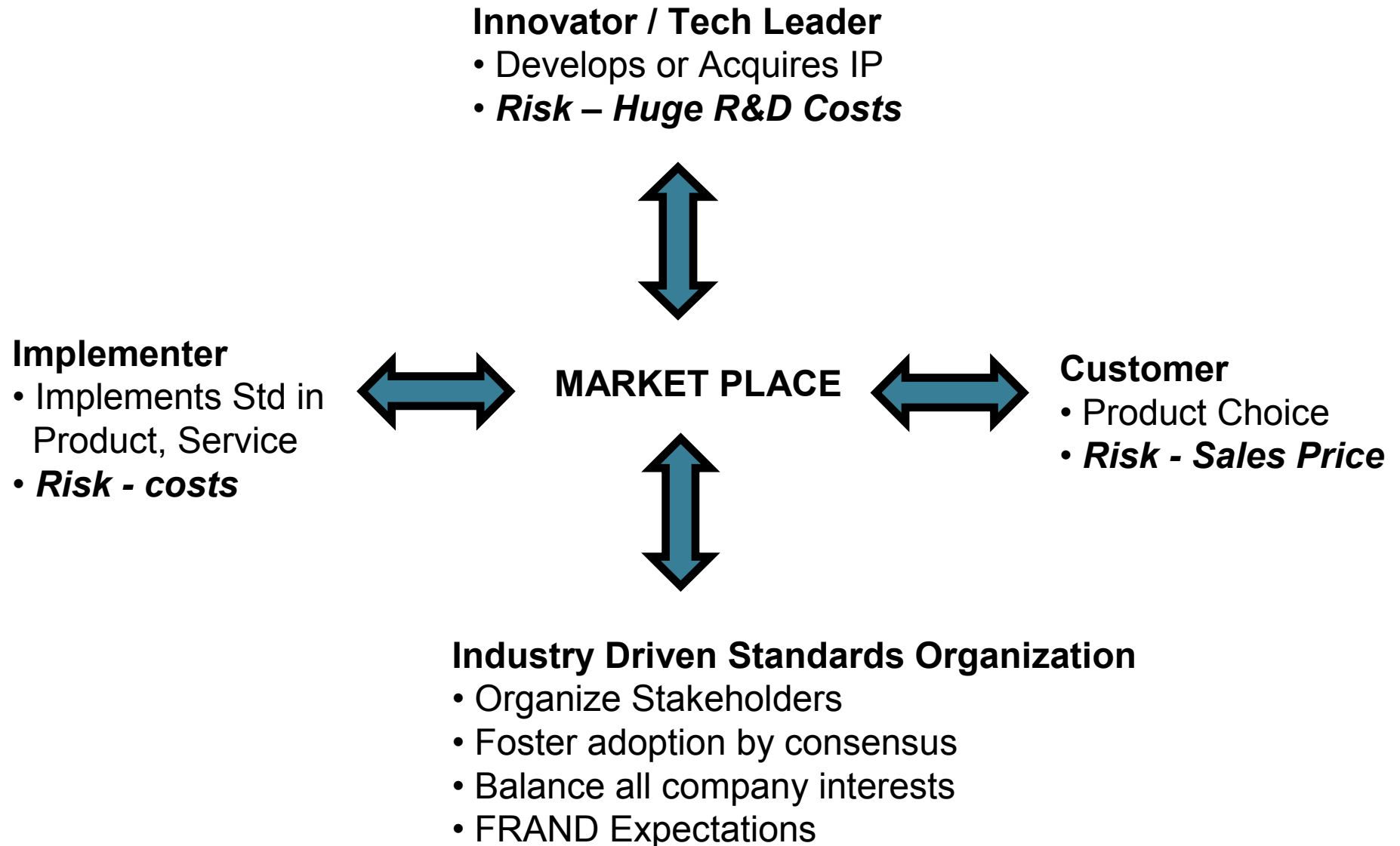
***Standards Policies and
Innovation***

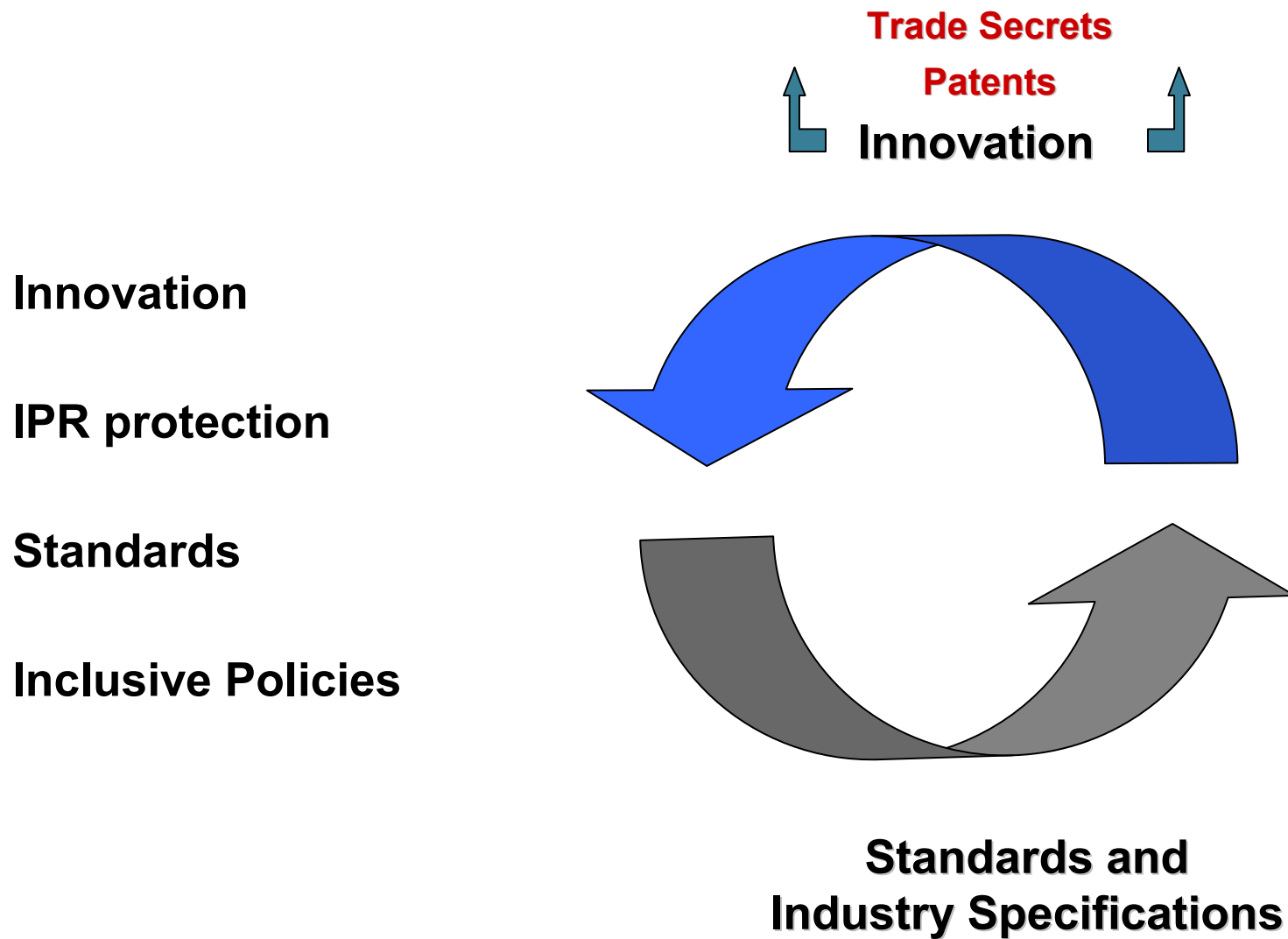


DISCLOSURE REQUIREMENTS SPECTRUM

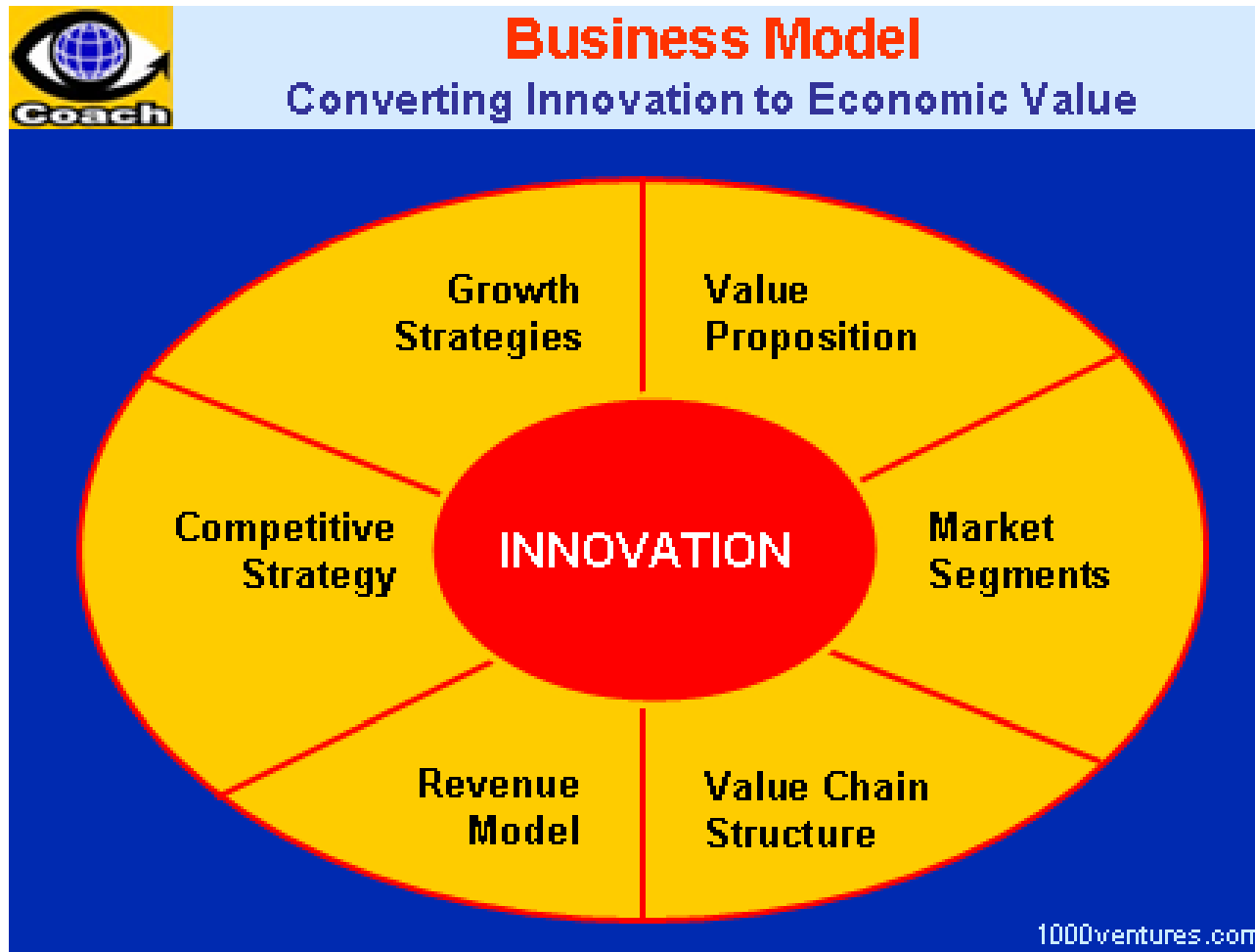


Standards Dynamics: Balance for All Businesses



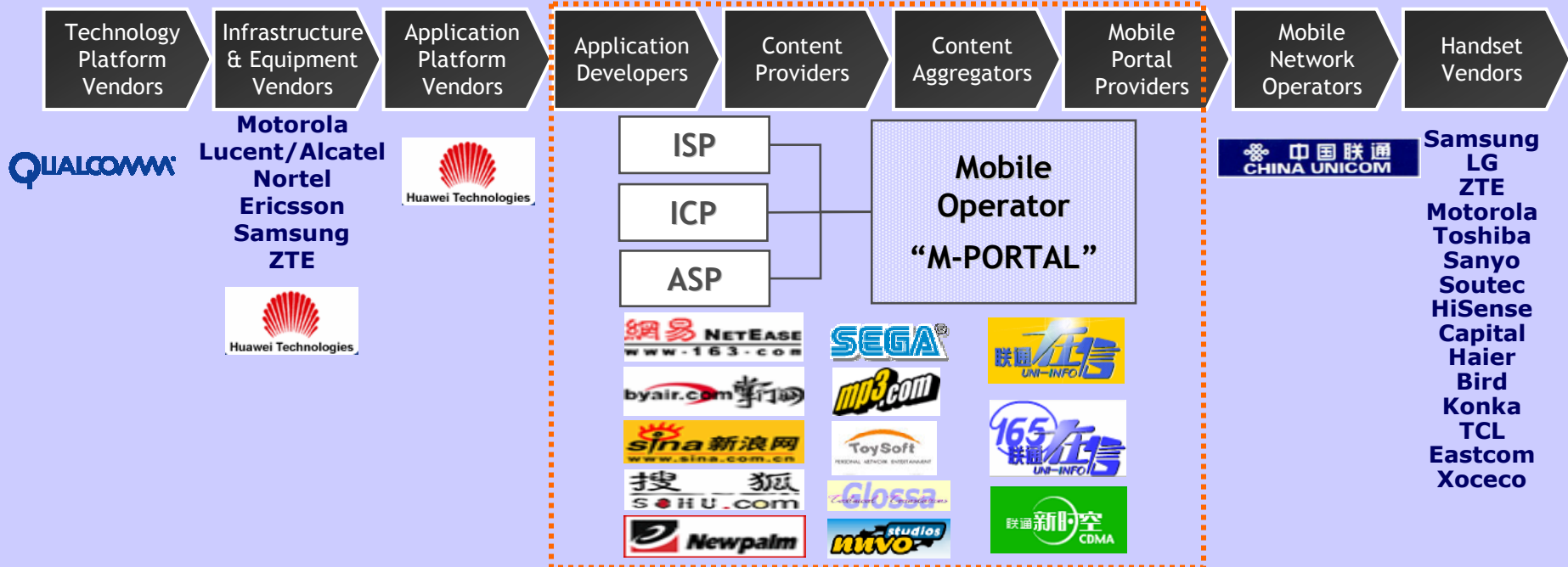


Business Models and Pressures on Standards Policies



One Example of a Value Chain

CDMA Value Chain Structure



Revenue Model Examples

- **Product driven**
 - Profits based on difference between manufacturing costs and sales price
 - Profits based on sale of replacement parts
 - Profits based on cosmetic concerns (product enhancement)
 - Defensive Licensing
- **Service Models**
 - Profits based on services offered to Consumer
 - Profits based on repair services
 - Profits based upon deployment/installation/maintenance services
 - FRANDz (free from monetary compensation)
- **R&D Models**
 - Profits based upon licensing intellectual property
 - FRAND

Many large companies may practice combinations of the above

Remember the Keys for Successful International Standards Organizations: Balance, Flexibility and Inclusion of Companies



Qualcomm Business Model

Key Points

- **QCOM Standard Royalty Rate is < 5% of the wholesale sales price (after certain deductions, e.g. packing costs, shipping) of the phone.**
 - Unchanged since 1991, while QCOM patent portfolio incorporated in CDMA and WCDMA phones continue to grow
 - Individual GSM vendors have charged up to 15 percent on GSM phones
 - QCOM's policy provides a stable/predictable model
- **LTE and UMB will not increase royalty rate above QC's standard CDMA rate when incorporated into a CDMA device**
 - Multi-mode LTE/WCDMA and UMB/CDMA2000 device Royalty Rate is same as single mode WCDMA/CDMA2000 standard royalty rate
 - QCOM future proofs operators and vendors
- **QCOM aggregates R&D for vendors- 20% of revenues in 2006**
 - Many new vendors have entered the market using QCOMs solutions
 - These new vendors have to conduct far less of their own R&D
 - QCOM has lowered the barrier to entry for new vendors
 - QCOMs CDMA R&D has also been incorporated in WCDMA/HSPA
- **QCOM is committed to make 3G more affordable**
 - Two sub-\$30 CDMA2000 handsets are available in India with Q chips
 - LG won "3G for All" competition with the GSM Association
 - The LG bid uses a QUALCOMM Chipset

QUALCOMM's Standard Effective Royalty Rate is < 5% of the Wholesale Selling Price of a Complete CDMA/WCDMA Handset

- Standard Royalty Rate has remained unchanged since 1991
- Patents have increased from 37 in 1991 to 5,000+ in 2007*

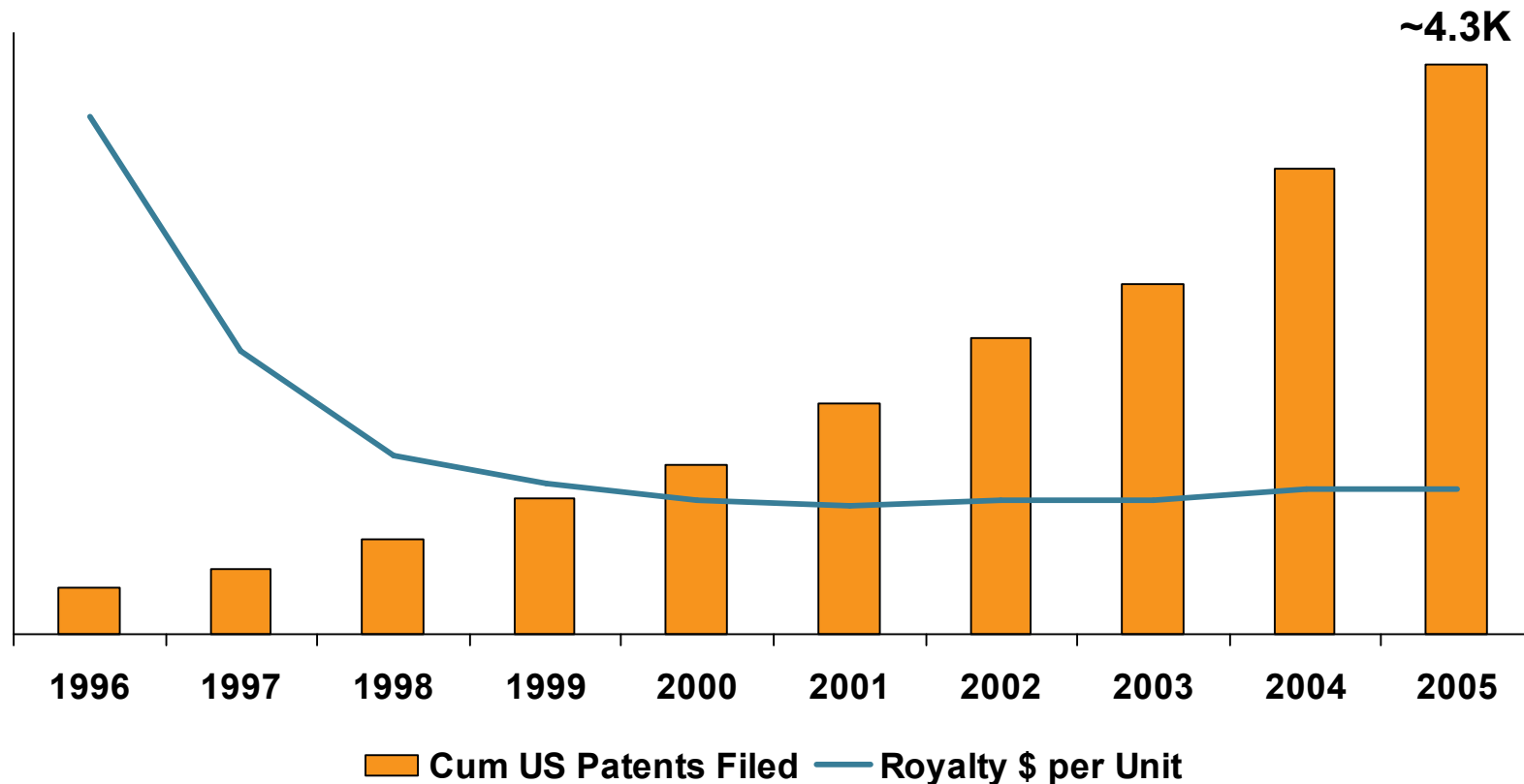


The Value of QUALCOMM's Patent Portfolio Has Been Established By More than 140 Arms-Length Negotiated License Agreements

*Cum US Patents filed

QUALCOMM Lowers Overall IP Cost – Enables Competition

Licensed Portfolio Has Grown Substantially While Average Royalty per Handset (\$) Has Declined Significantly



GSM Has Flourished While Employing a Royalty Structure

- Vendors with substantial IPR negotiate cross-licenses
- Vendors with little or no IPR negotiate licenses

"This year foreign firms are demanding royalties for GSM licensing and the amount accounts for **15 percent** of the product price," a source from Samsung Electronics said.

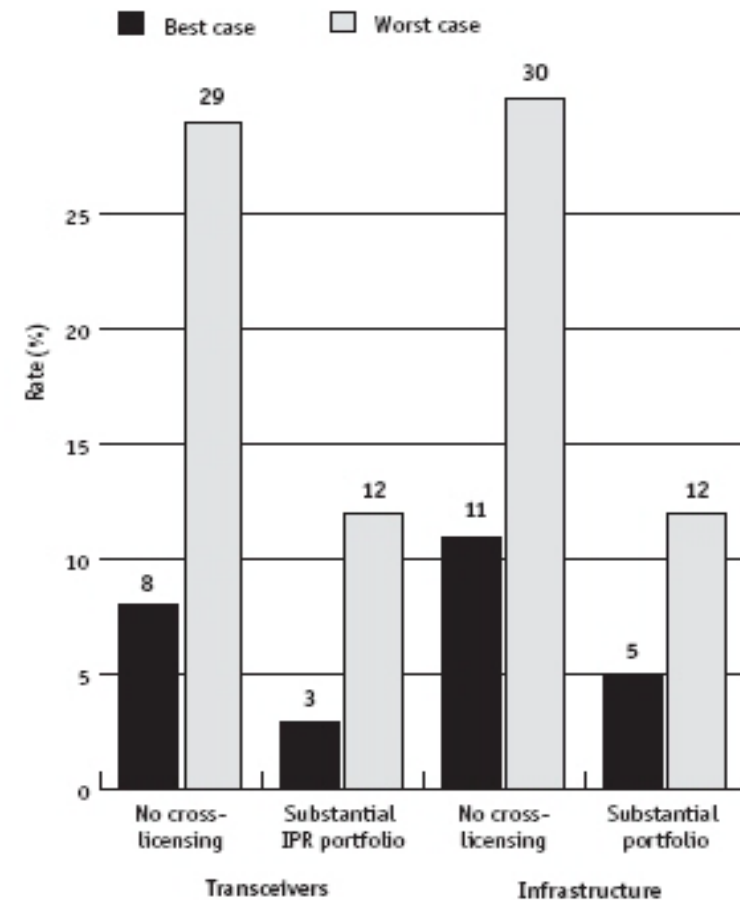
Source: An executive from Samsung Electronics, reported in the Korean Times, June 29, 2000

"Royalty fees make up to 29% of the costs of GSM handsets"

Director of the European public Telecommunications Network Operators' association (ETNO)

Source: Eindhoven Center for Innovation Studies (ECIS) white paper dated Sept 2000

Cumulative IPR royalty rates for 2G



Source: ITSUG 1998

Cited in 3GMobile November 23, 2005

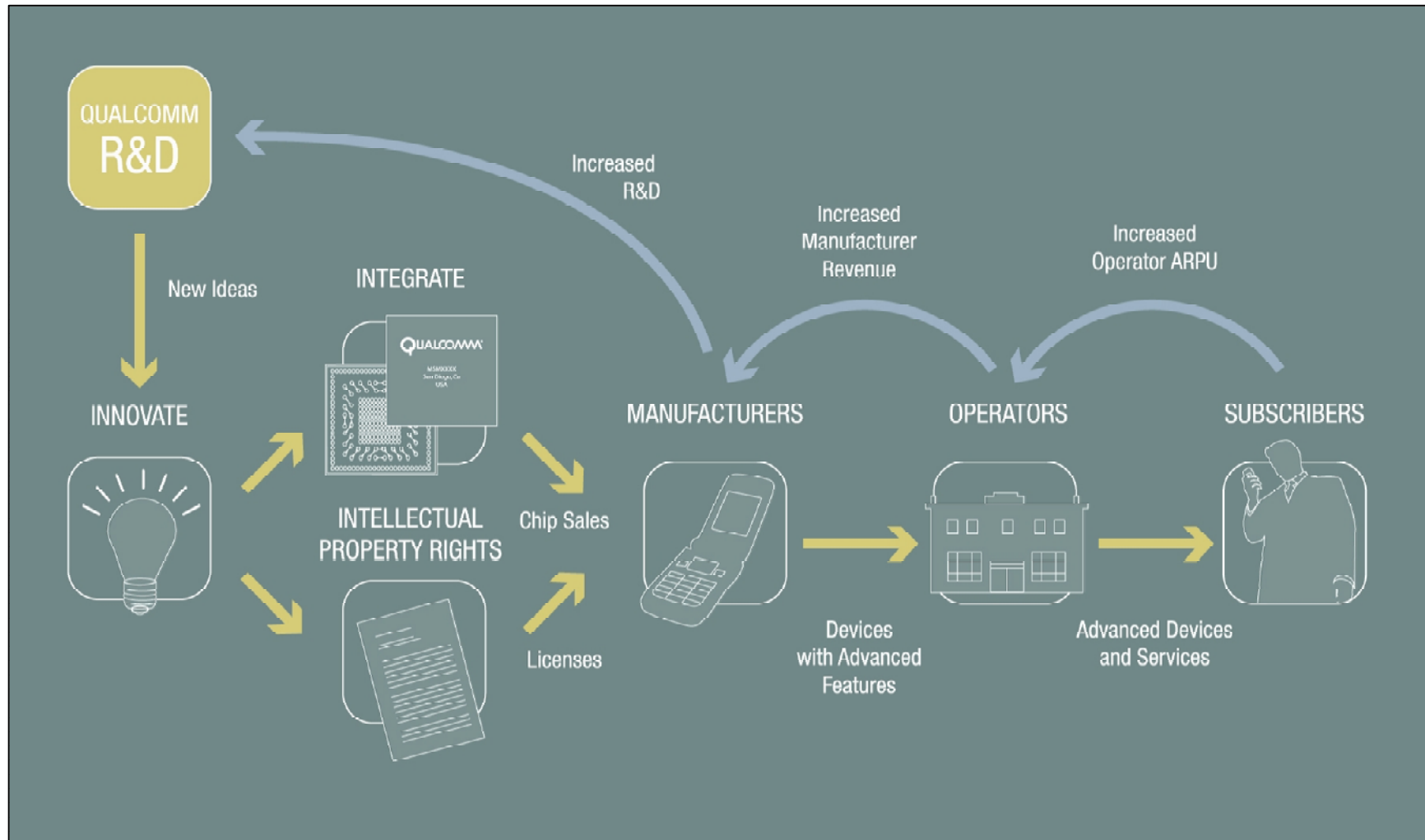
***MultiMode OFDMA and CDMA:
No Additional Royalty Rate Above
Standard Single Mode CDMA Rate***

QUALCOMM Future Proofs Operators and Vendors with OFDMA Solutions

- **QUALCOMM will charge no additional royalty rate above QUALCOMM's standard CDMA royalty rate for multi-mode OFDMA (LTE, UMB, WiMAX/WiBRO) products that also implement CDMA2000 or WCDMA, subject to other standard terms and conditions**
- **QUALCOMM creates a stable predictable environment for operators and vendors**
- **QUALCOMM has numerous essential patents for OFDMA**
 - **Applies to UBM, LTE and WiMAX/WiBRO**

R&D

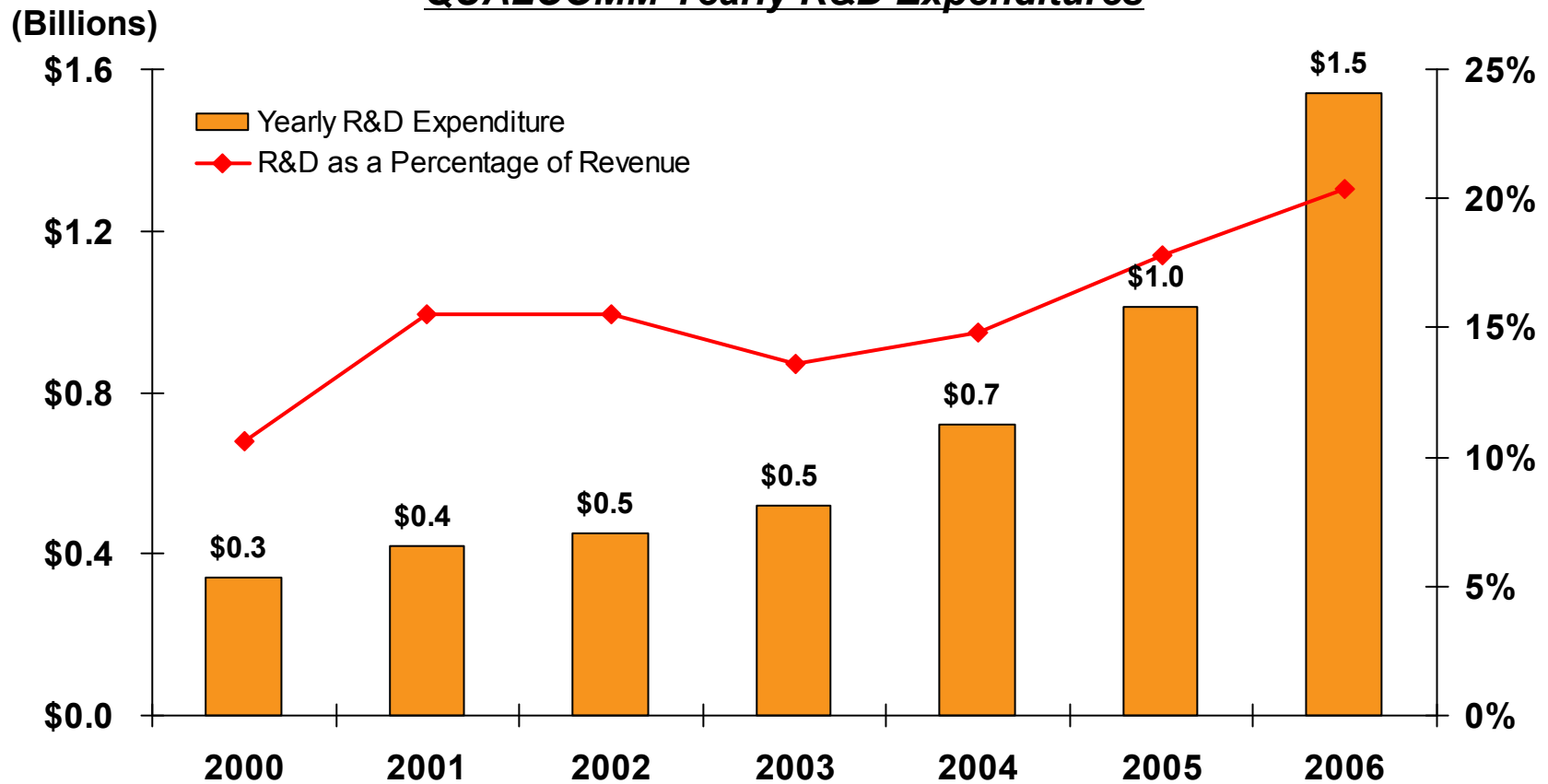
QUALCOMM Business Model: Technology and Value Chain Enabler



Aggressive Investment in a Complete Technology Roadmap

Cumulative R&D Expenditures Total More Than \$7.2B to Date

QUALCOMM Yearly R&D Expenditures



Standard royalty rate has not changed during this time

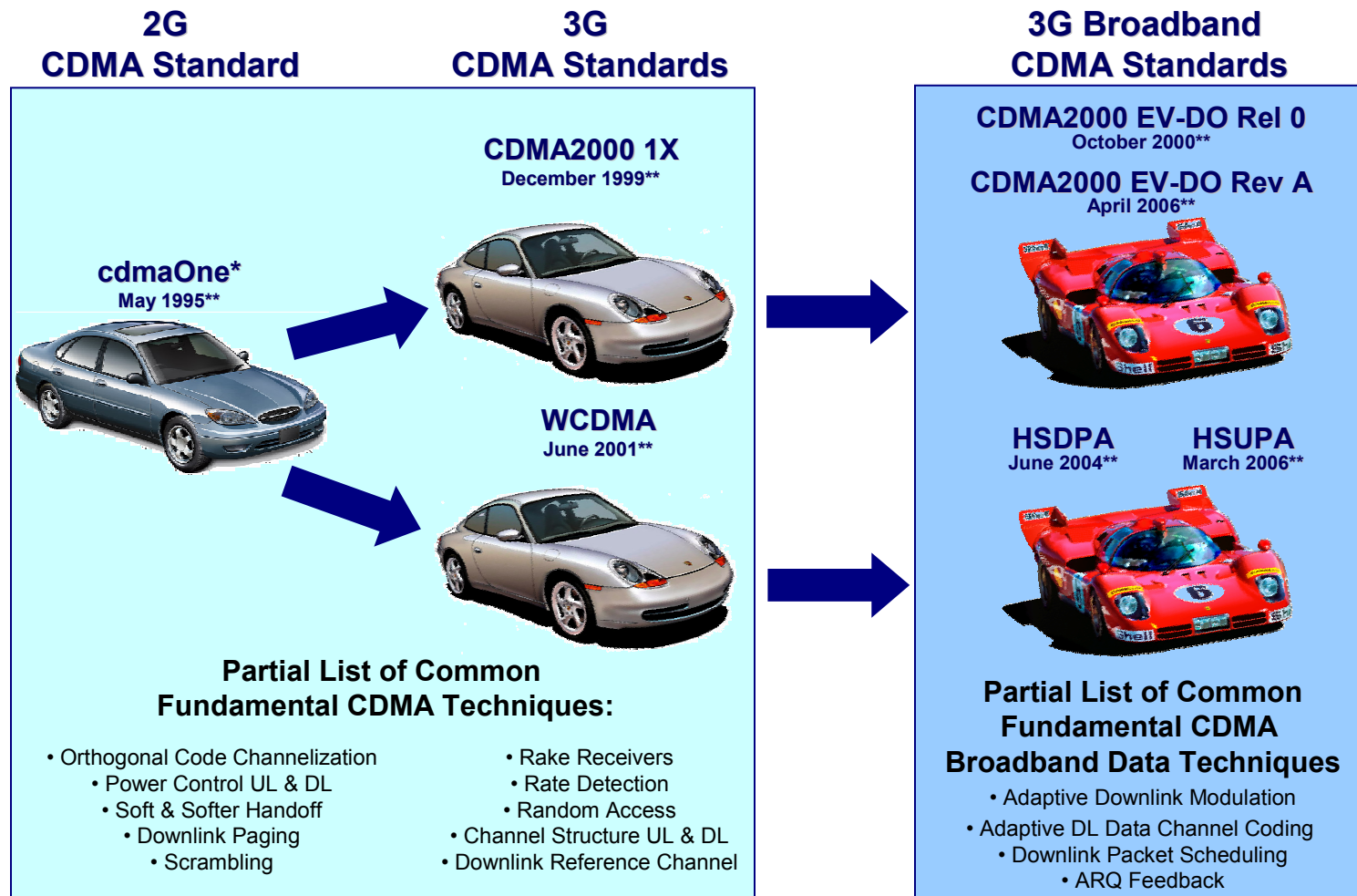
Additional Industry Advancements: Acquisitions & Expenditures

SnapTrack	Position location & E-911 services <i>Enables low cost position location services from mobile devices</i>	\$1.0B
Flarion	OFDMA <i>Provides greater differentiation, enables hybrid CDMA/OFDMA path</i>	\$805M
MediaFLO USA*	Nationwide mobile multicast network <i>Lower cost video and multimedia content to large audiences</i>	\$800M
Iridigm	Always-On, low-power display screens <i>Sunlight viewable, extended battery life</i>	\$186M
Elata	Unified multimedia content delivery platform <i>Standardized user experience, lower cost, faster introduction of new content</i>	\$57M
Berkana Wireless	RF CMOS integrated circuits <i>Increased integration, lower cost, faster time-to-market</i>	\$56M
Trigenix	User Interface customization <i>Lower cost, faster time-to-market</i>	\$36M
TechSoft	Application software for 3G devices <i>Reduce time to market and lower development costs for 3G devices</i>	\$35M**
Spike	90nm wafer technology <i>Lower cost, reduced geometry allows for smaller form factors</i>	\$20M

*Expected to require approximately \$800M in funding over the next 4 to 5 years, some of which may be provided by third parties (as of November 2004 guidance) .

** Combined investment with TechFaith Wireless Communication Technology Limited (TechFaith) .

Some Common Fundamental Techniques Used in All CDMA Systems

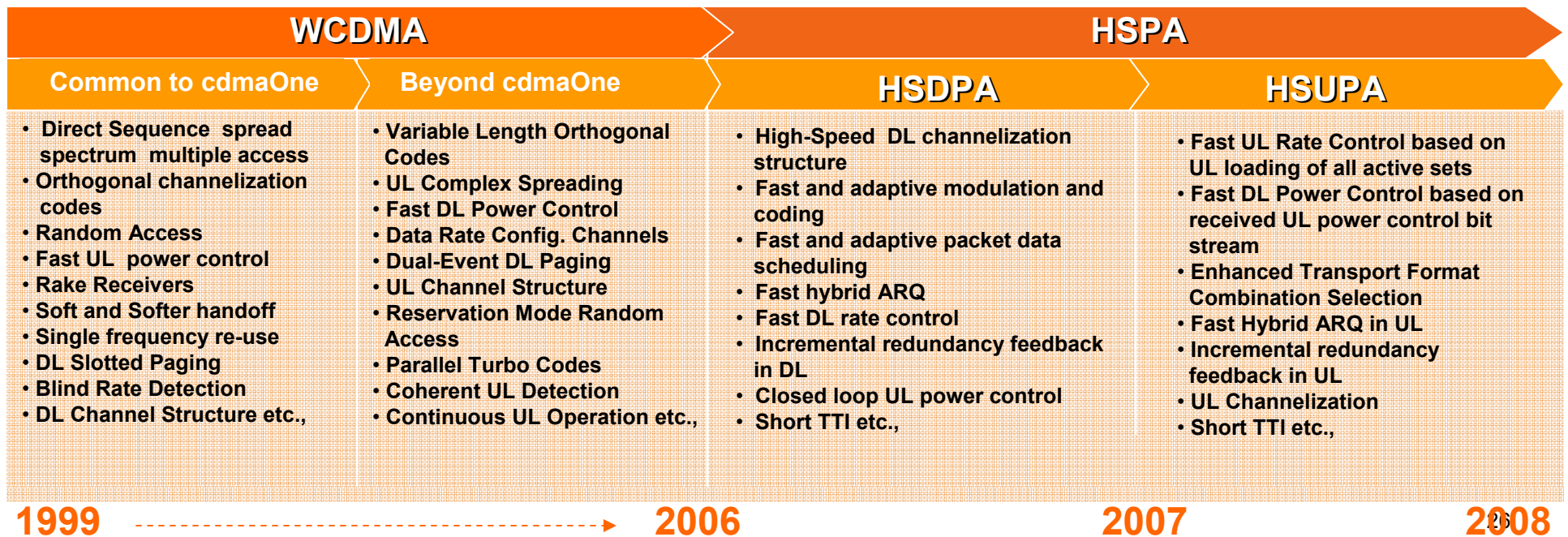


Common CDMA techniques continue to be evolved and shared in EV-DO & HSPA

* cdmaOne was the first commercial standard to use the fundamental CDMA techniques
** Standard completion date.
Images: www.khulsey.co

WCDMA Standard Continues to Evolve as QUALCOMM Continues to Contribute Actively in 3GPP

A Standard is a living document that continues to evolve ...



***QUALCOMM Enables
More Affordable 3G***

QUALCOMM Continues to Drive Down the Cost of 3G

*India's Reliance is currently offering sub-\$40 CDMA2000 phones
... and one sub \$30 phone!*

Sub-\$30!



RELIANCE
Mobile

\$30+



ZTE Classic 201 (C160)

- CDMA2000
- SMS
- B & W with color film
- Polyphonic ring tone
- Games
- Targeting young professionals

TCL Classic 401

- CDMA2000
- Multiple recipients SMS
- B & W with color film
- Polyphonic ring tone
- World clock
- Conference calling

CDMA2000 Provides a Wide Selection of Affordable Devices

Competition and economies of scales continue to drive down prices

Sub-US\$30

Sub-US\$40

Sub-US\$50

Sub-US\$30: ZTE C160

Sub-US\$40: Jingpeng 101, Motorola W150i, Rose 631, Kimpo 761

Sub-US\$50: Haier C1000, Haier D1000, Huawei C218, Huawei C2205, Jingpeng Spektra 101, Jingpeng C131, Jingpeng C132, Kyocera K112, LG RD2330, LG 2530, LG RD2670, LG 3330, Motorola C210, Nokia 1255, Motorola C131, Samsung N500, Samsung N380

BREW-enabled low-end phones: ZTE 202, ZTE 203, LG 2750, ZTE 204, TCL 401, LG RD2650, LG RD2690, LG RD2710, Kyocera KX 17, LG RD2340, LG RD2430, LG RD2530, LG RD2535, LG RD2630, Samsung S109, UTStarcom C1122, ZTE C133, ZTE C150

38 entry-level CDMA handsets from 13 suppliers

Notes: 1. Mobile devices shown are sold in India at an ex-factory wholesale cost below US\$50.
 2. Only devices shipped in volumes above 10,000 units are shown.

Legend: **Color Screen Handsets**

QUALCOMM and LG Expand the Availability of WCDMA

GSMA selects LG handset for “3G for All”

“We congratulate QUALCOMM on the outcome of the '3G for All' selection process. QUALCOMM has provided enthusiastic support for the GSMA's goals for the program, as well as significant efforts on behalf of their vendor partners, such as LG.”

- Rob Conway, CEO of the GSM Association



LG KU250

Winner announced at 3GSM

Steering Group Participants

Cingular Wireless

Globe Telecom

Hutchison 3G

KTF

MTN

Orange

Smart

Telecom Italia

Telefonica

Telenor

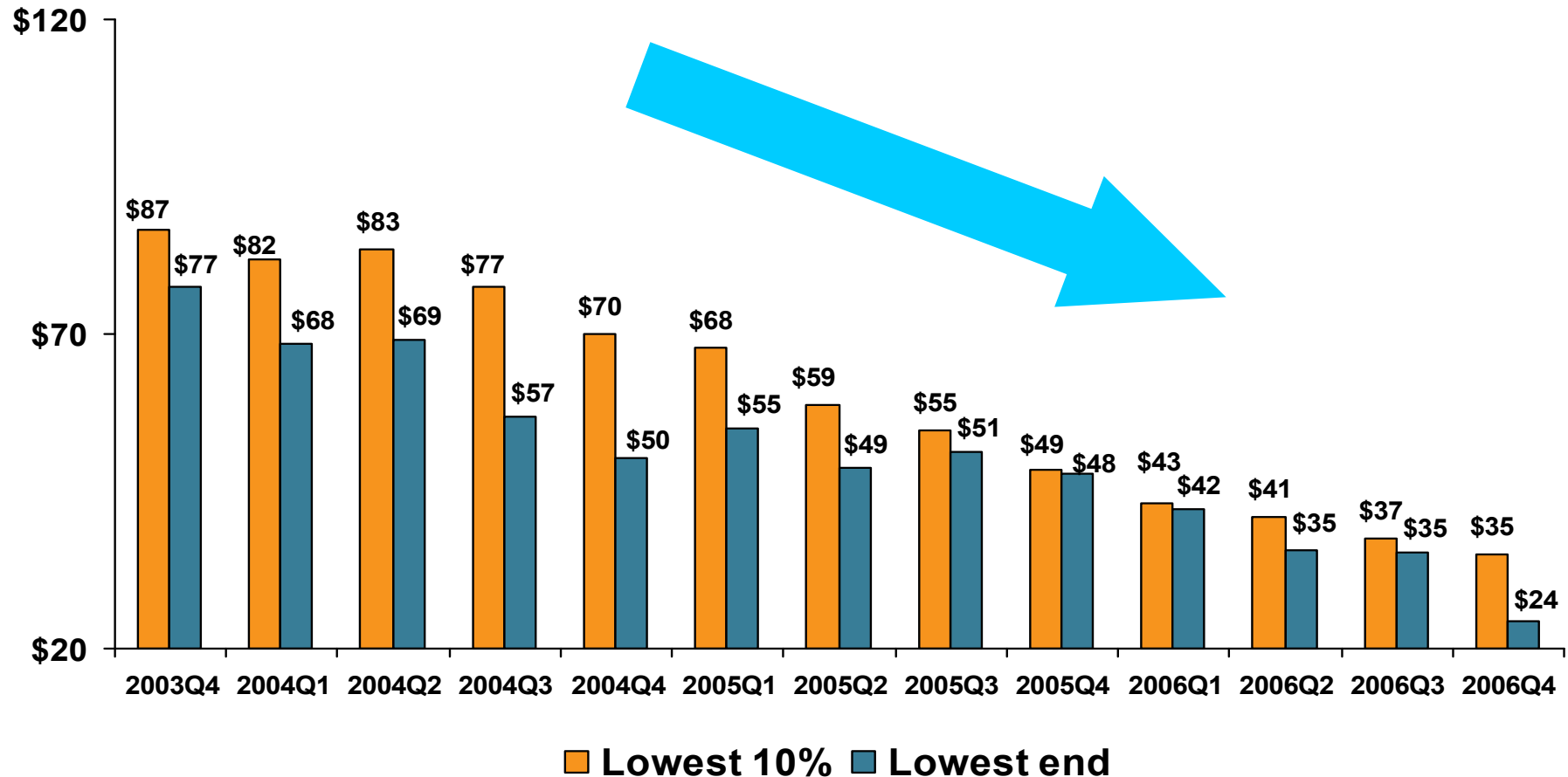
T-Mobile

Vodafone



- 3G for All program background:
 - Program to bring 3G multimedia services and Internet access to the mass-market worldwide
 - Builds on GSMA EMH program
 - 12 leading mobile operators across 6 continents and representing 620 million subscribers voted on winning handset
 - LG KU250 chosen as winner, priced at ~30% less than entry-level WCDMA handsets
 - 15mm thin, video telephony, 1.3 MP camera, MP3, Bluetooth, removable memory, Internet access
 - Uses QUALCOMM UMTS chipset
 - Expected to provide LG economies of scale in manufacturing, logistics and marketing

Lowering the Cost of CDMA2000 Handsets

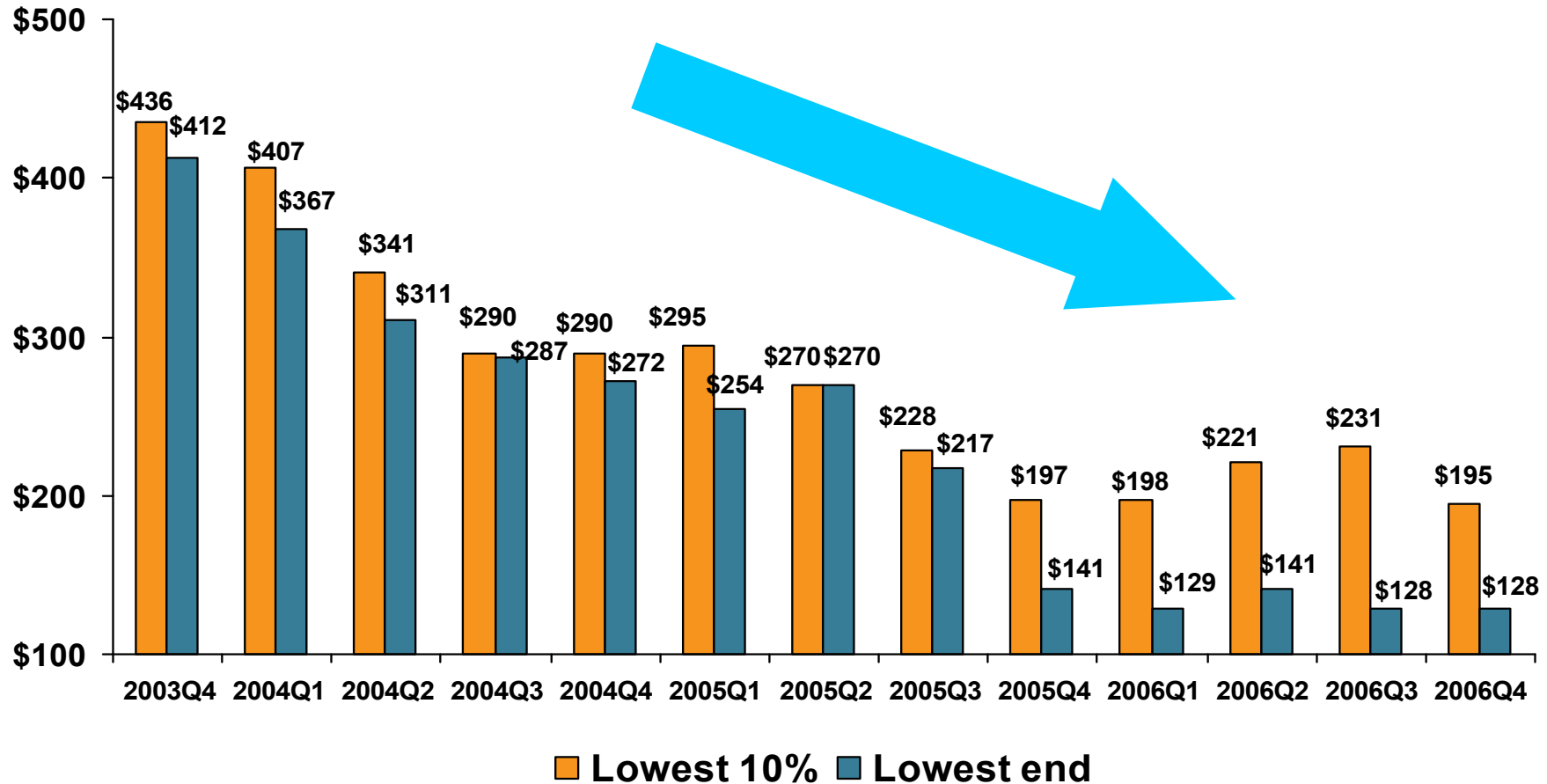


Note: CDMA2000 Phones Sold per Calendar Quarter; lowest end represents complete phones sold in quantities of approx 150,000 units or higher

Note: Data derived from licensee reports. Does not include modules.

Source: QUALCOMM Incorporated

Lowering the Cost of WCDMA (UMTS) Handsets



Note: WCDMA Phones Sold per Calendar Quarter; lowest end represents complete phones sold in quantities of approx 50,000 units or higher

Note: Data derived from licensee reports. Does not include modules.

Source: QUALCOMM Incorporated

Thank you!