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Ensuring Competitive Costs and Prices for LTE Handsets

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Solving business problems
in wireless and mobile communications

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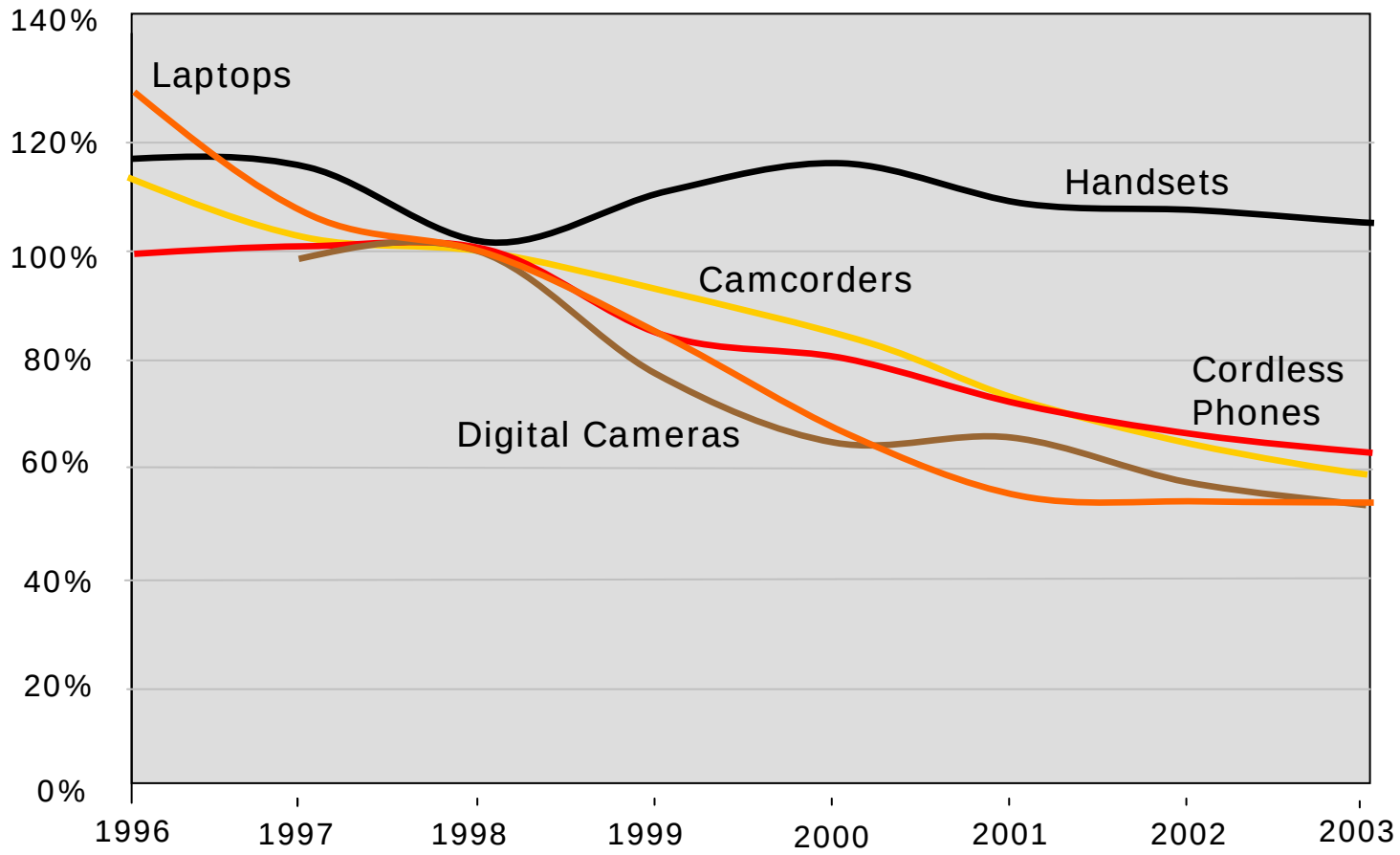
Next Gen Adoption and Market Development

- **Will history repeat itself in LTE?**
  - Lessons from the introduction of 2.5G and 3G
- **Cost, price and value**
  - What are we getting for our money?
- **Innovation and competition is about new business models as well as disruptive technology**
  - Software
  - Services
  - Patented IPR

With 2.5G Enhancements Mobile Handset Prices did not Decline as did CE and PC Prices



Source: US import data

The “Swiss Army Knife” Effect in Mobile Phones

- **Colour screens: from 0% penetration in 2001 to 38% in 2003 and 88% of sales by 2005**
- **Java and Brew: from 1% penetration in 2001 to 29% in 2003 and 66% of sales by 2005**
- **Integrated Camera: from 0% penetration in 2001 to 6% in 2003 and 38% of sales by 2005**
- **Browsers to 95% of sales by 2005**
- **Multiple Ringtones, Voicemail Indicator, Name/Number Display, Vibrate, Speaker Phone, Voice Memo Recorder, Games on Phone, Voice-Activated Dialling, FM Radio, MP3 Player, Video Player , Video Camcorder, Touch Screen, Push-to-Talk, PDA**

Source: Yankee Group figures on US market

3G versus 2G: What was Revolutionary in 2004?

Samsung Z105 3G Phone

Real-time video telephony, video on demand
Networks : UMTS 2100/GSM 900/GSM 1800
Dimensions : 95 x 50 x 26 mm
Weight : 132 grams
Talk time: up to 180 minutes

Motorola RAZR V3 2G Phone

MPEG 4 video clips and 22kHz polyphonics
Networks: GSM 850/900/1800/1900
Dimensions: 98 x 55 x 14 mm
Weight: 95 grams
Talk time: up to 430 minutes

Barriers and Drivers for Next Gen Adoption

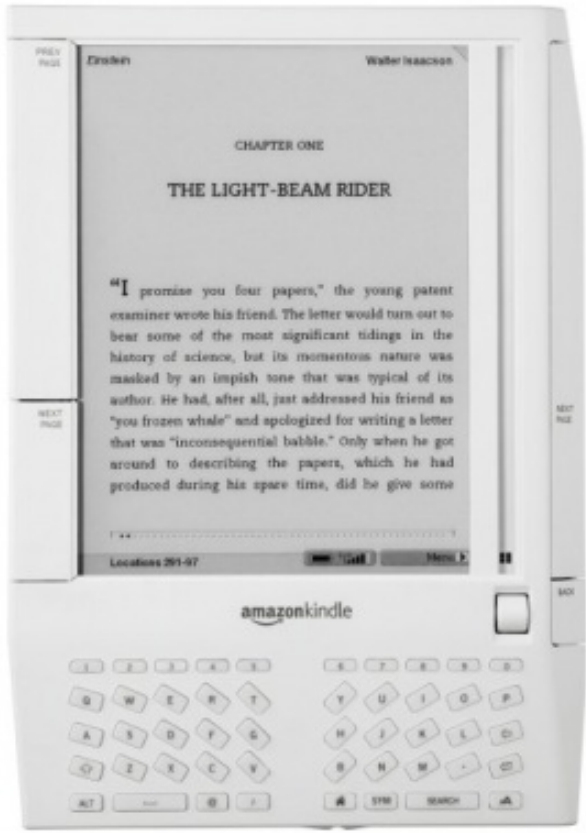
- **Spectrum availability**

- **Network**
  - Speed and capacity: how much better than what came before?
  - Coverage or backward compatibility

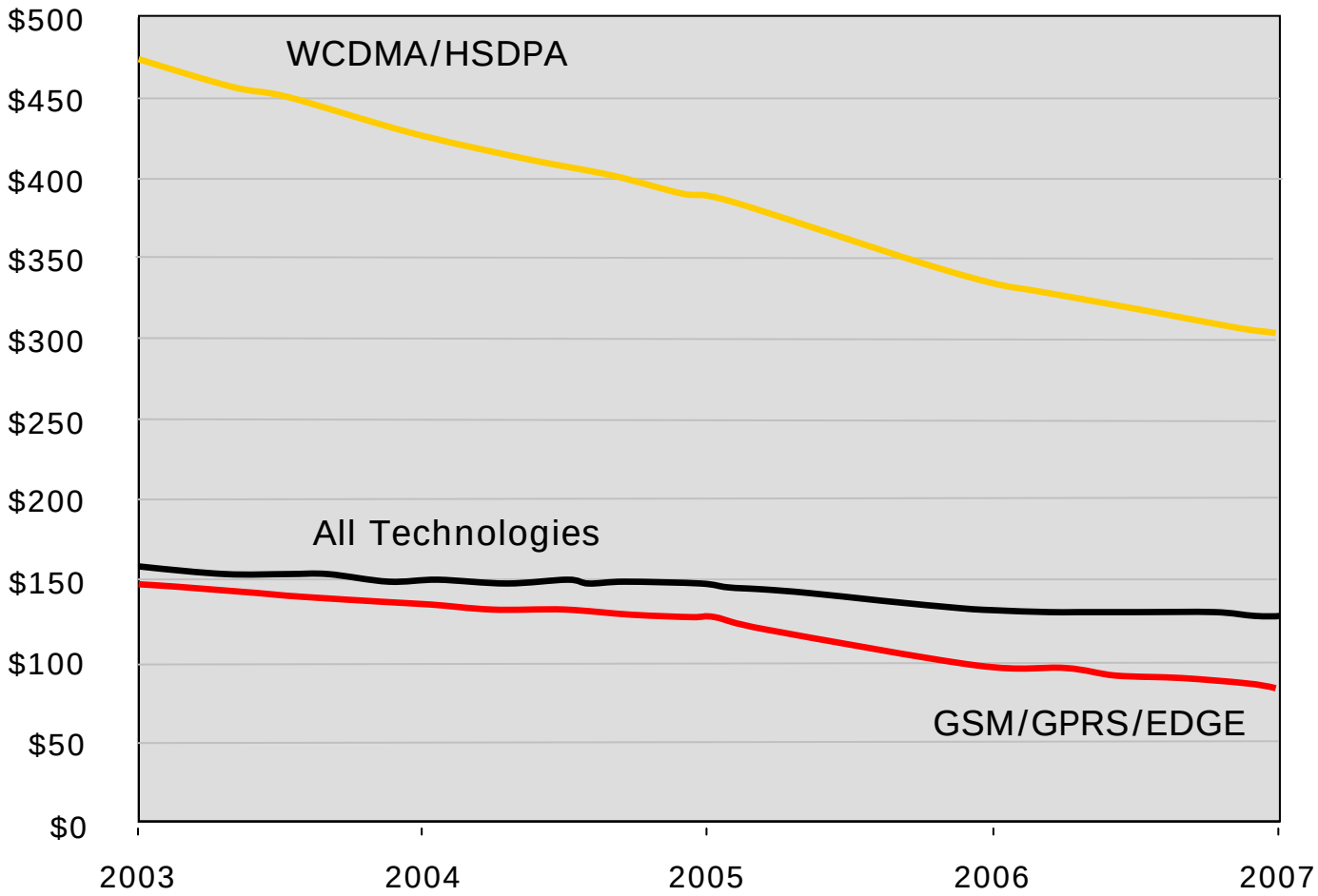
- **Device**
  - Processing and power
  - Form factor
  - IO
  - Software
  - Services

- **Economics**
  - Development costs and incentives
  - Manufacturing costs
  - Wholesale and retail pricing
  - Loss-leaders (cross-subsidies from service to product)
  - Customisation and aftermarket sales

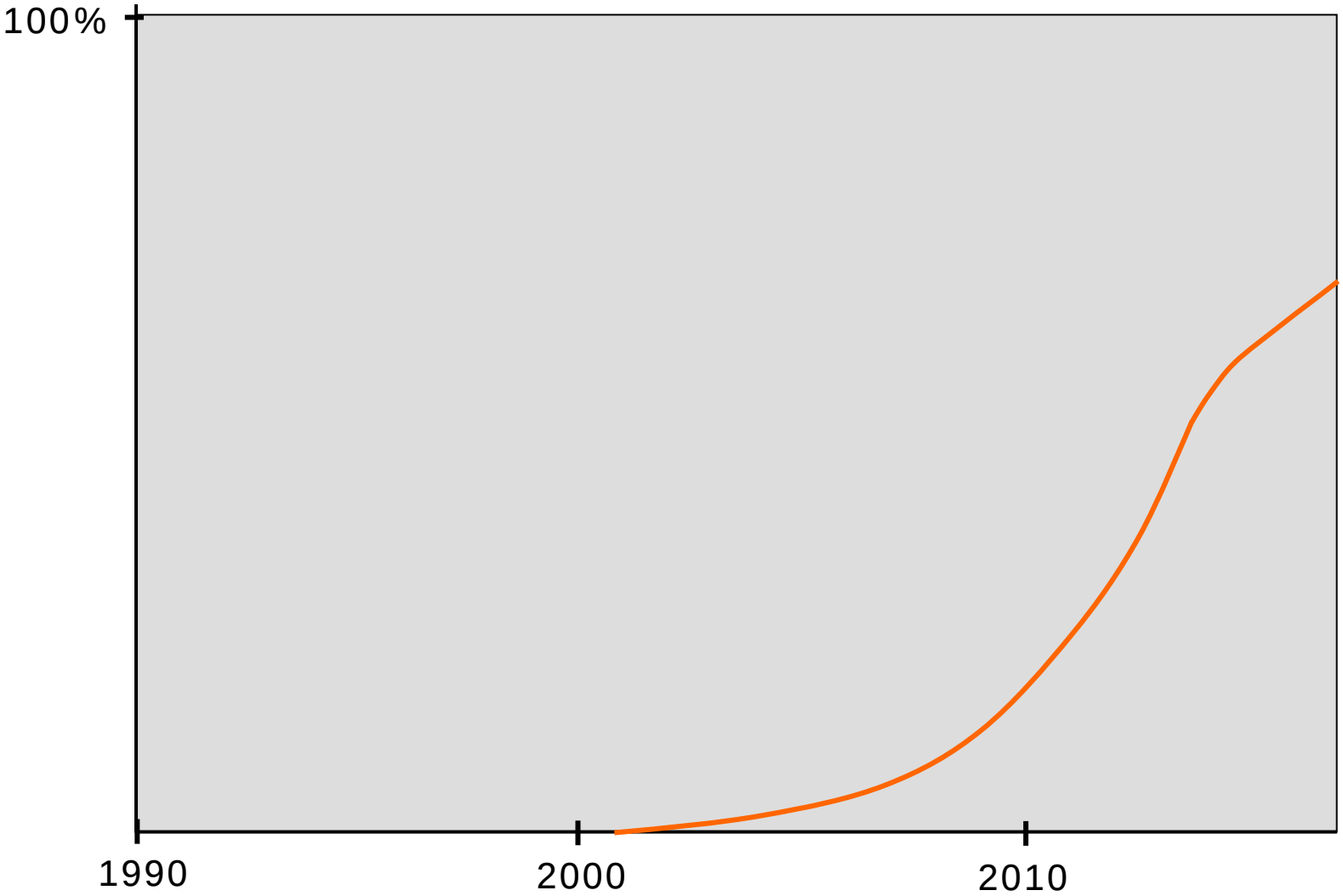
Current Mobile Market Game Changers with Software and Services



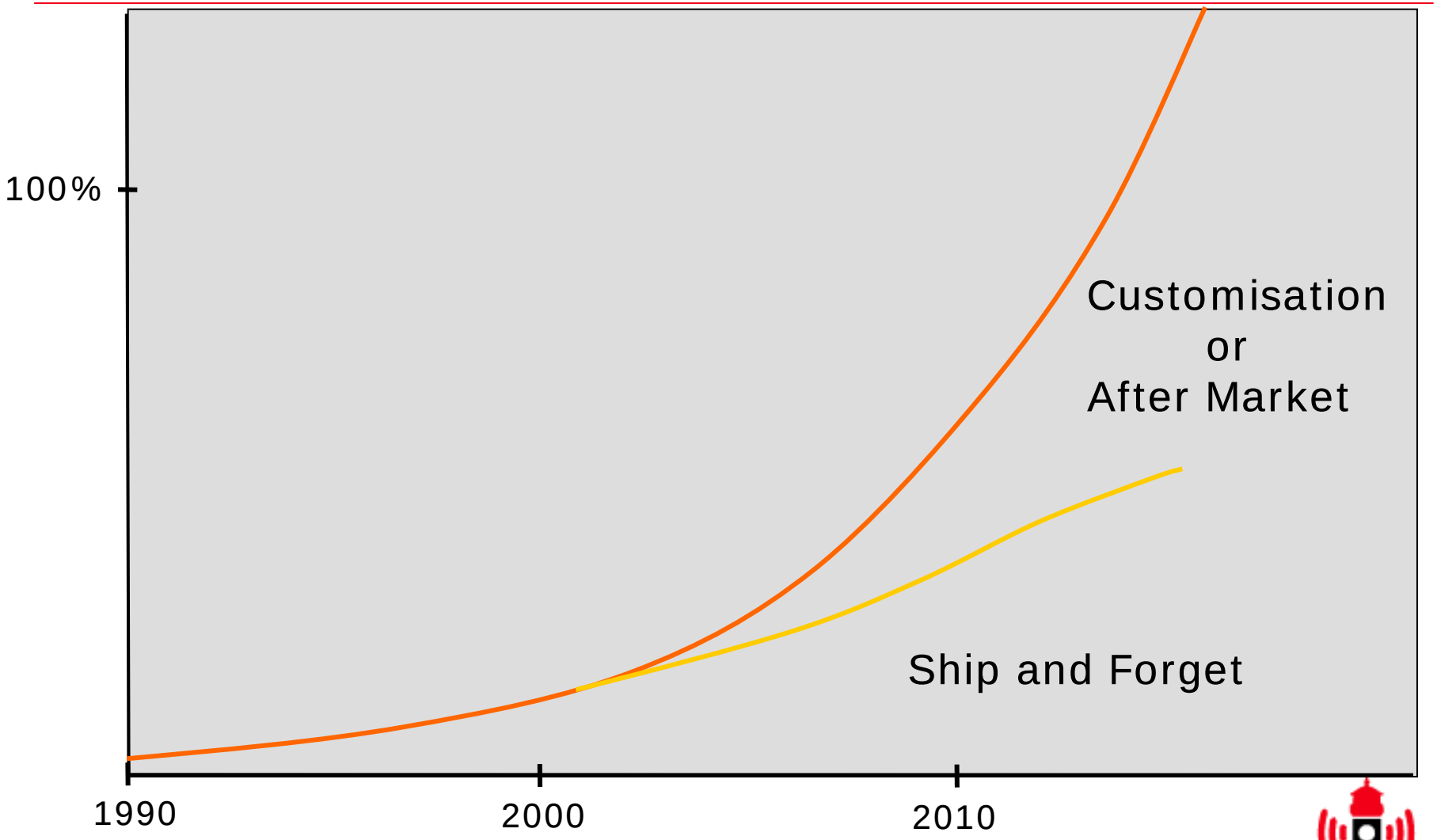
Deceptive Averages in Wholesale Handset Prices (Global ASPs)



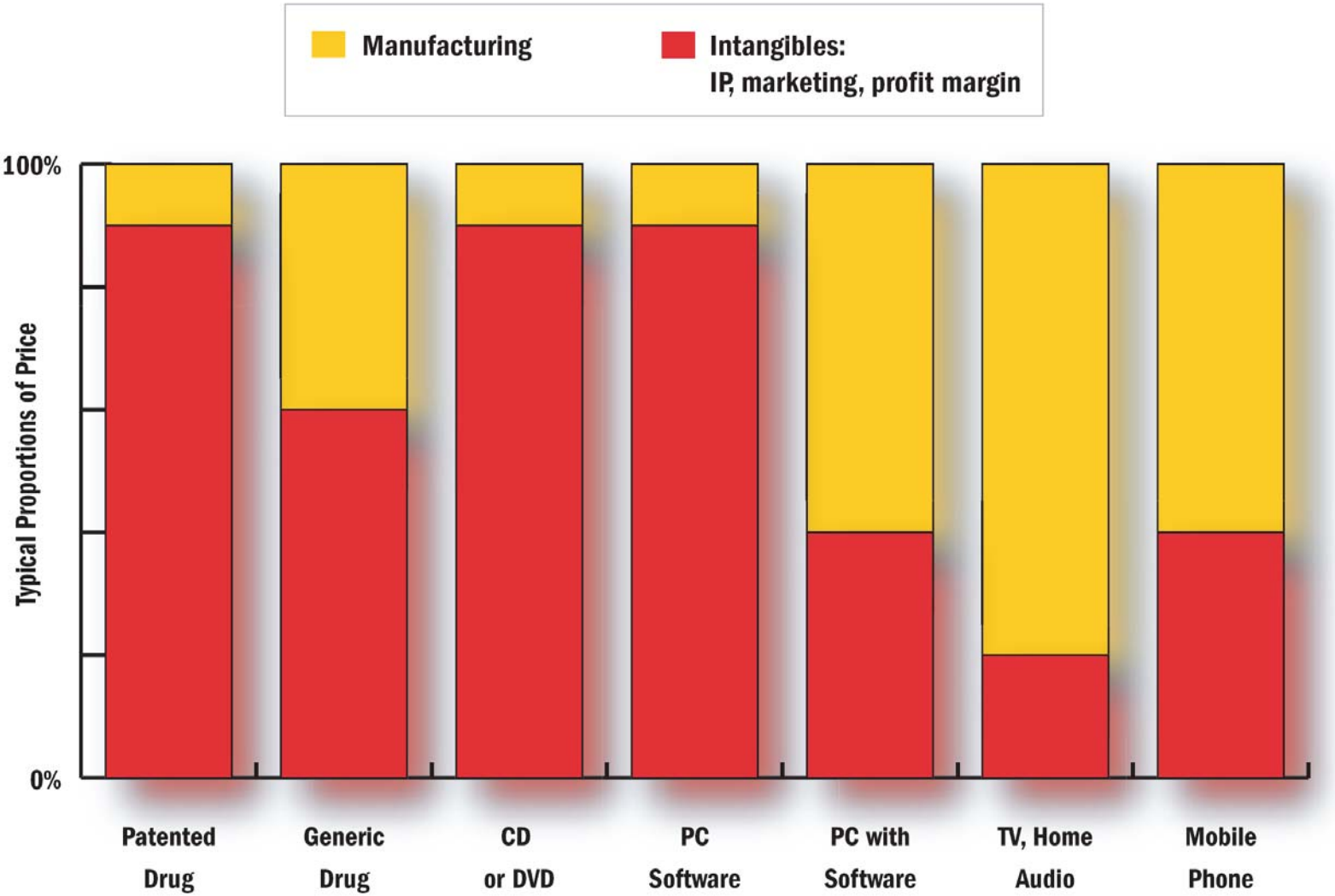
Smartphones and MIDs on the Ascendancy



Software as a Proportion of Handset Cost



Manufactured and Intangible Content including Software and IPR Varies Substantially by Product Category



Open Source, Open Standards and Alternatives

- **Open source is like free speech, not free beer**
  - Open and widespread participation can be beneficial
  - Open source solutions might still infringe others' IPR
  - Implementation costs may exceed licensing fees elsewhere
  - Open standards need not be open source

- **Less open and vertically integrated business models can be fast and effective innovators**
  - Windows Mobile offered by 4 of the top 5 handset vendors
  - Blackberry
  - iPhone

- **Different business models can coexist and compete**
  - Competition among technologies, suppliers and business models increases innovation customer choice
  - Motorola has recently focused on Windows Mobile and Android as its two smartphone OS platforms

And there's no Free Lunch in IPR

- **Licensing-based business recoup their investments in successful and failed technologies with royalty fees**
- **Product vendors profit mostly through margins on finished goods**
  - They also depend mostly on these margins to recoup their technology development costs
  - Those product vendors with large market shares regard IPR royalties predominantly as costs to minimize
  - Their royalty revenues are only partially offset their royalty costs
  - Those with significant IPR will cross-license and also use their patents for defense against potential or actual infringement claims
- **NGMN members agreed to increase transparency and predictability**
  - Mandatory (non-public disclosure of maximum rates)
  - Trusted Third Party aggregates and publishes total

NGMN Splinter Group: Proposed Framework for LTE technology IPR Licensing (April 2008)

ANNOUNCEMENT (Press release)

- **"Alcatel-Lucent, Ericsson, NEC, Next*Wave* Wireless, Nokia, Nokia Siemens Networks and Sony Ericsson commit to a framework for establishing maximum aggregate costs for licensing intellectual property rights (IPR) that relate to 3GPP Long Term Evolution and Service Architecture Evolution standards (LTE/SAE)**
- **Framework is based on the prevalent industry principle of fair, reasonable and non-discriminatory (FRAND) licensing terms for essential patents**
- **Royalty rates based on the value added by the technology in the end product and to flexible licensing arrangements according to the licensors' proportional share of all standard essential IPR for the relevant product category**
- **Maximum aggregate royalty level for LTE essential IPR in handsets is a single-digit percentage of the sales price. For notebooks, with embedded LTE capabilities, the companies support a single-digit dollar amount as the maximum aggregate royalty"**

ANALYSIS

- **They are all NGMN members, but this is not the NGMN disclosure policy with calculation of aggregate royalty rate by Trusted Third Party**
- **Declaration by just five players given the overlapping ownership and control between**
  - Nokia and Nokia Siemens Networks
  - Ericsson and Sony Ericsson
- **FRAND does not require a royalty cap, as the Framework description implies**
- **This implies that value will be determined by counting patents – a method that has attracted a lot of criticism on the basis that**
  - all patents are not equal
  - such a system could be gamed
- **These are arbitrary figures. Nobody suggests other elements in the value chain such as prices, marketing costs or profits should be capped, so why pick on IPR?**

IPR Licensing Rate Declaration Example: Nortel

- **"Nortel believes that pioneers and innovators should be entitled to a reasonable return on their investment in R&D and leading contributions to the next-generation standard, where not all patents are created equal"**

- **"Nortel will license its LTE standards essential patent claims for LTE handsets at a royalty rate of about 1% on the sale price, subject to specific terms to reciprocity, defensive suspension, and grantback to Nortel products, services and solutions, as well as other customary license terms and conditions"**

Source: Nortel

Five Vendors Who Have Publicly Declared Rates

	Vendor's Own Estimate of its Essential LTE IPR	Expected Handset Royalty Rate
Nokia	20-30%	1.5% (2%*)
Nokia Siemens Networks	10-15%	0.8%
Ericsson	20-25%	1.5%
Motorola		2.25%
Nortel Networks		1%
Subtotal	>50-70%	7.05%

* Multi-standard devices

How to Ensure Competitive Costs and Prices for LTE Handsets?

- **Encourage competition among**
  - New technologies: many of them and as quickly as possible
  - Standards: several open standards and others
  - Alternative business models: diversity is good and can be even more disruptive than new technology

- **They don't regulate product or service prices, marketing costs, profits or the CEO's compensation**
  - Don't cap IPR royalties
  - Let licensed software continue to compete with open source
  - The market will decide what's best
  - Let customers decide for themselves

- **Maximizing value and investment returns is what matters, not simply minimizing costs**
  - Look what happened to the wristwatch business
  - The pocket calculator industry did even worse

A Survivor: HP-12c 1981 ($150) – 2008 ($95)

Q&A

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