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*Marked dynamics  
and development  
models for ICT  
in Asia*

Montpellier  
November 19-21, 2003

# QUALCOMM in Europe

## Geographical presence

- Rome, Italy
- Waalre, The Netherlands
- Farnborough, England
- Munich, Nuremberg, Germany
- Sophia Antipolis, France
- Paris, France
- Madrid, Spain
- Moscow, Russia
- Stockholm, Sweden

## Activities

- Business development (UMTS, etc)
- GSM/GPRS developments
- Regulatory activity
- Participation to standard activity
- Qualcomm Ventures
- Sales of Omnitrac products
- Technical support to operators and vendors

## People present

- About 200 people and growing



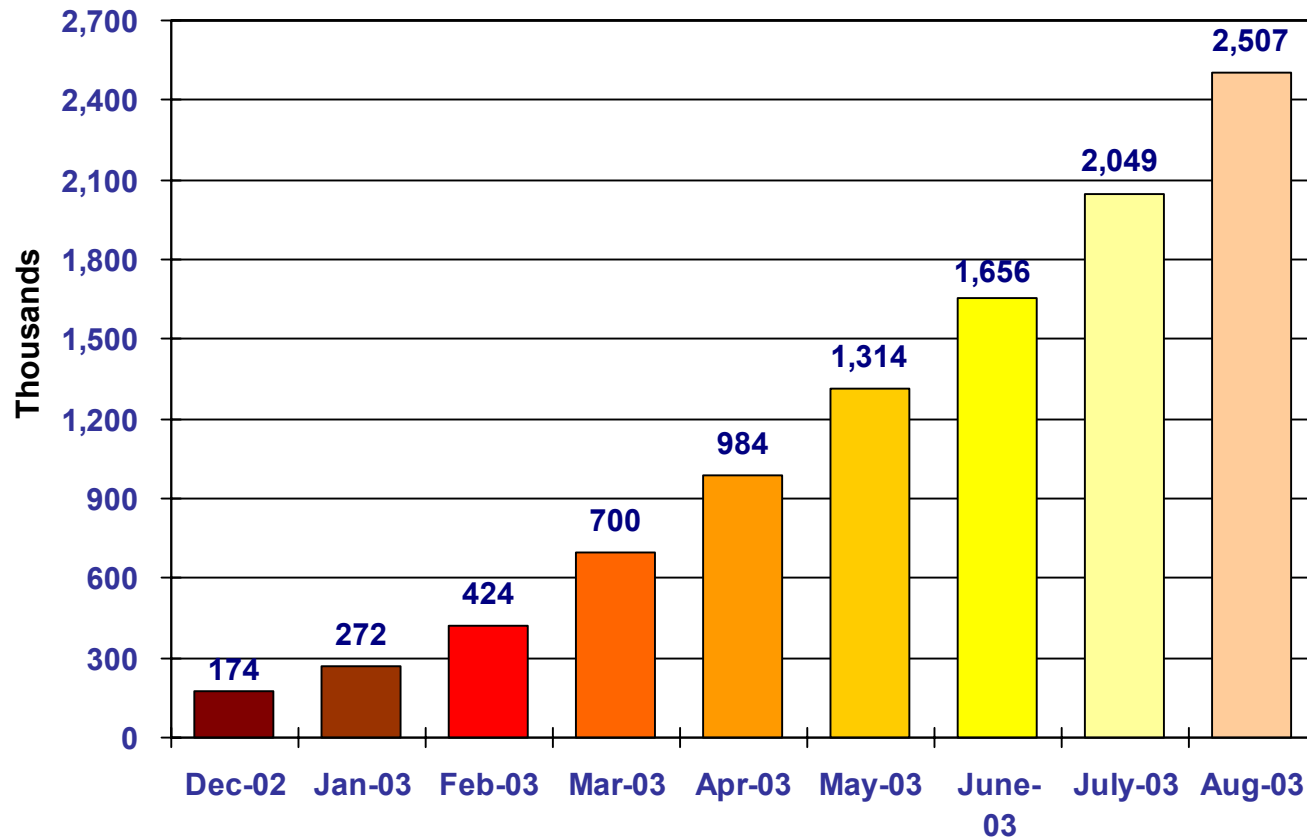
## Korea Mobile Market History

- **1984** : SKT launch its first cellular service on 800Mhz using AMPS  
(Analog shutdown in 1999)
- **1996** : SKT commercializes the world's first CDMA service on 800Mhz  
2nd Carrier, STI, launches its CDMA service on 800Mhz
- **1997** : KT Freetel, LG Telecom, and Hansol PCS start CDMA service on 1.8Ghz band
- **2000** : KTF merge with Hansol PCS  
SKT launches the first 3G services using cdma2000 1x systems on 800Mhz
- **2001** : KTF and LGT launches cdma2000 1x services on 1.8 Ghz  
SKT merge with STI
- **2002** : May KTF & SKT commercialize EV-DO in major cities

# EV-DO Subscribers

Projected 2003 year-end EV-DO subscriber base is 3.8 million, 11.3% of total subscribers

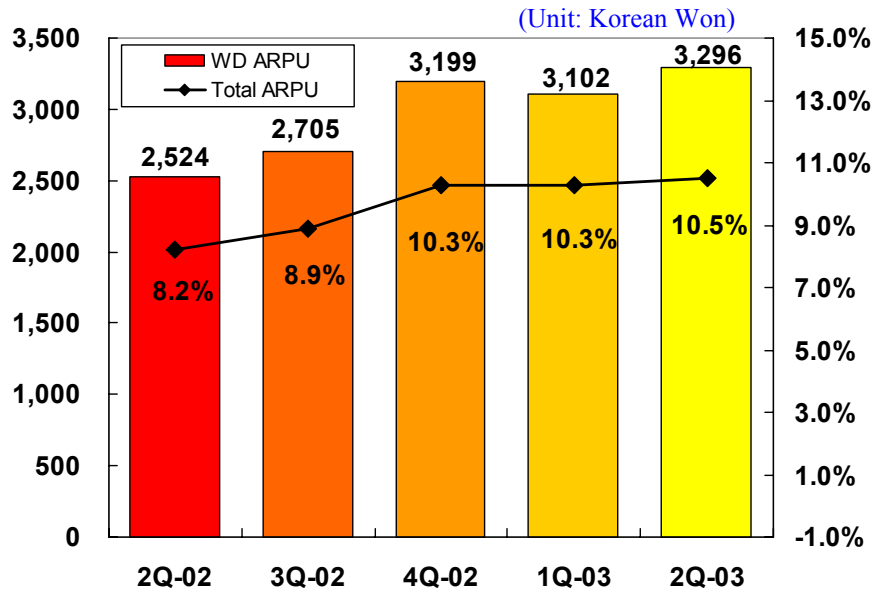
**CDMA2000 1xEV-DO Subscriber Growth**



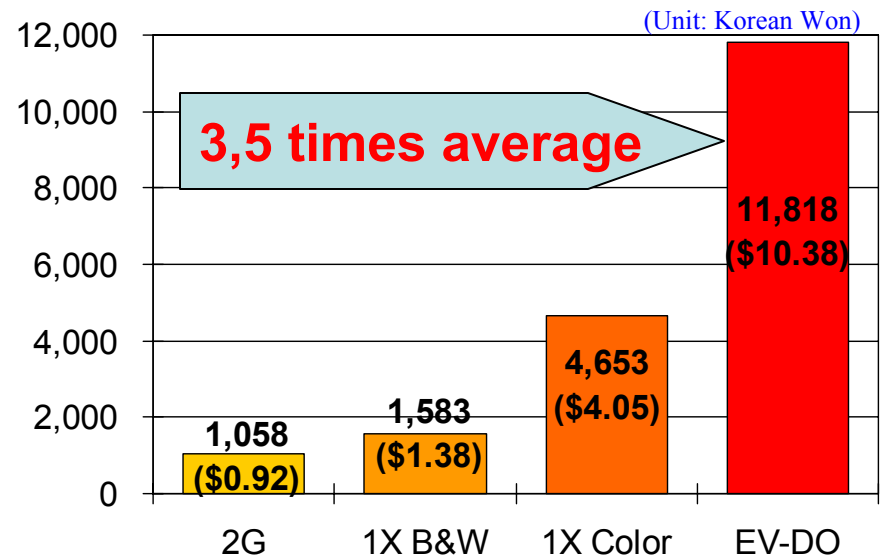
# Data ARPU

Wireless data becomes a new engine for operator's growth

Data ARPU



Data ARPU by Handset Type



**SKT's announced EV DO Data ARPU: - General \$14.60**  
 - "June" \$20.00  
 Source: News - The Digital Times (August 11, 2003)

Note: - Based on KTF Subscribers (as of 2Q 2003)  
 - All CDMA2000 1xEV-DO handsets are color screen  
 Source: KTF FY2003 (2Q) Earnings Release

Note: - General includes all EV-DO handsets  
 - "June" represents EVDO handsets with VOD function  
 - \$1 USD = 1,150 KRW

# Data Pricing

## CDMA2000 1xEV-DO Packet Data Pricing Examples

### CDMA2000 1X

#### Packet Data Pricing

- Text : \$11.58/MB
- Multimedia (Type I: Games) : \$4.45/MB
- Multimedia (Type II: VOD/AOD) : (\$2.32/MB)

#### Average cost for Multimedia File

(Example Music Video Download)

Average size - 4.5 MB

- Content fee - \$0.78
- Air-time charge - \$0.41 - \$1.62 (SKT: June500)
- Total cost: KTF - \$1.19  
SKT - \$2.40

<b>Fimm</b> By KTF	Monthly Payment	Free Allowance (packets)	Price for 1MB VOD file
Fimm 87	\$7.57 USD	54,000 packets	\$0.29 USD
Fimm 240	\$20.87 USD	300,000 packets	\$0.14 USD
Fimm 490	\$42.61 USD	1,000,000 packets	<b>\$0.09 USD</b>
<b>June</b> By SKT	Monthly Payment	Free Allowance (packets)	Price for 1MB VOD file
June95	\$8.26 USD	13,500 packets	\$1.25 USD
June250	\$21.74 USD	75,000 packets	\$0.59 USD
June500	\$43.48 USD	250,000 packets	\$0.36 USD

Note: - Rate: 1,150 KRW = US\$1  
- Source: All Service Providers (as of Sept. 1, 2003)

- \* Content fees are not included.
- \*\* If a user doesn't choose one of the above plans, 1X data price is applied

# KTF 1xEV-DO Service: Menu Tree



**fimm**  
한국슈퍼모델 선발대회

**FEATURED CONTENTS !**

**CHANNELS**

- ▶ 1 TAJI
- 2 SPECIAL
- 3 TV
- 4 음악
- 5 영화
- 6 스포츠와생활
- 7 엔터테인먼트
- 8 성인
- 9 BELL&SCREEN

1. Special: Taiji

2. Special

3. TV

4. Music

5. Movie

6. Sports & Leisure

7. Entertainment

8. Adult

9. Bell & Screen

CONTENTS INDEX **fimm**

**TAIJI**

- 1 T메시지
- 2 T공연상황
- 3 T광고
- 5 T스페셜뮤비
- 6 T벨&스크린

CONTENTS INDEX **fimm**

**SPECIAL**

- 1 같잖이 때림리 콘서트
- 2 리디오에드 특집신보공개
- 3 (최운영)요기다이어트
- 4 로보트태권보이
- 5 뎀사

CONTENTS INDEX **fimm**

**TV**

- 1 Live TV
- 2 KBS
- 3 MBC
- 4 SBS
- 5 iTV
- 6 뉴스
- 7 드라마
- 8 연예오락
- 9 교양

CONTENTS INDEX **fimm**

**음악**

- 1 최신음악
- 2 최신앨범
- 3 인기베스트20
- 4 추천명곡20!
- 5 테마뮤직
- 6 장르별뮤직
- 7 뮤직스타
- 8 뮤직비디오
- 9 노래방/댄스

CONTENTS INDEX **fimm**

**영화**

- 1 현재상영영화
- 2 개봉예정영화
- 3 장르별지난영화
- 4 영화통신
- 5 특정단편영화관
- 6 비디오/DVD
- 7 영화음악
- 8 영화 발&스크린

CONTENTS INDEX **fimm**

**BELL & SCREEN**

- 1 테마상
- 2 리얼뮤직벨
- 3 스크린세이버

CONTENTS INDEX **fimm**

**성인**

- 1 성인방송국
- 2 색시영화관
- 3 에로영화관
- 4 아설극장
- 5 성인만화관
- 6 색시갤러리
- 7 색스클럽
- 8 성인오락관

CONTENTS INDEX **fimm**

**엔터테인먼트**

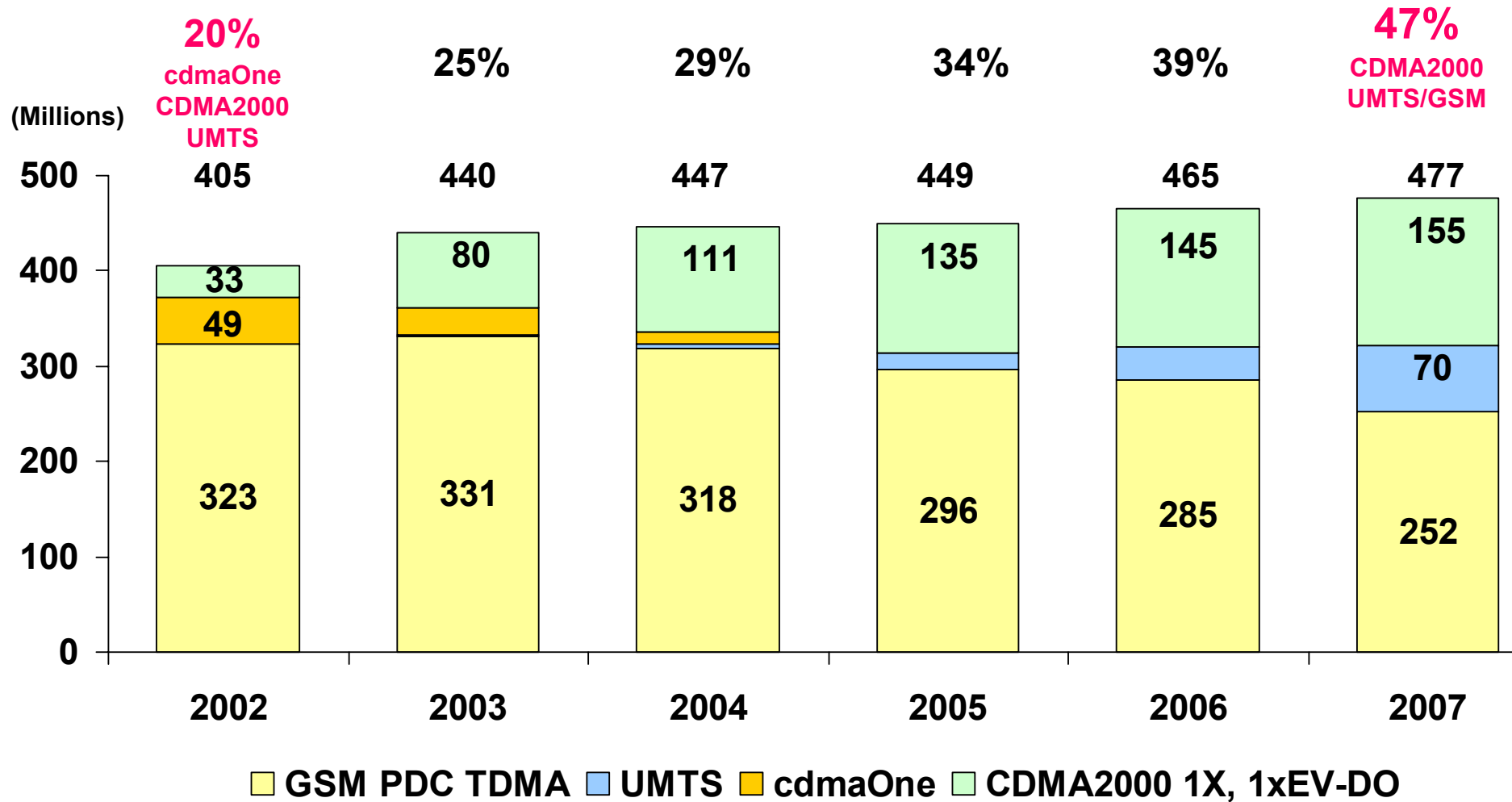
- 1 애니메이션
- 2 2003 슈퍼모델
- 3 개그
- 4 게임
- 5 연예통신
- 6 연예
- 7 엔터클럽
- 8 공연

CONTENTS INDEX **fimm**

**스포츠와 생활**

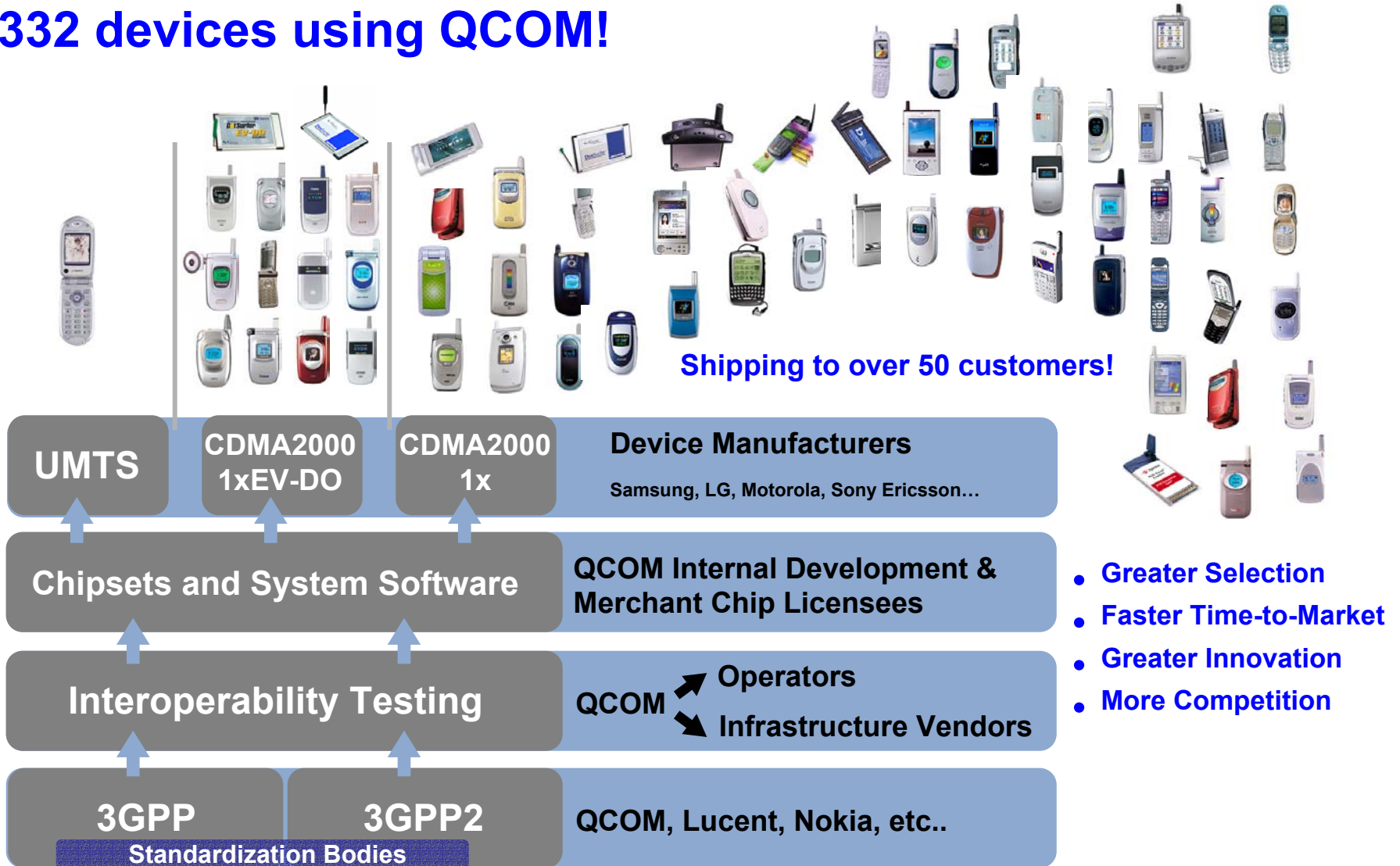
- 1 스포츠
- 2 뉴스와날씨
- 3 잉글리시
- 4 퀴미/여가

# Global Wireless Handset Growth



# 3G CDMA Horizontal Market Structure

## 332 devices using QCOM!



# Signed Over 55 UMTS/WCDMA License Agreements

## *Same Royalty Rate by Manufacturer Regardless of Standard*



Hutchison  
Whampoa Ltd.

### Licensed manufacturers include:

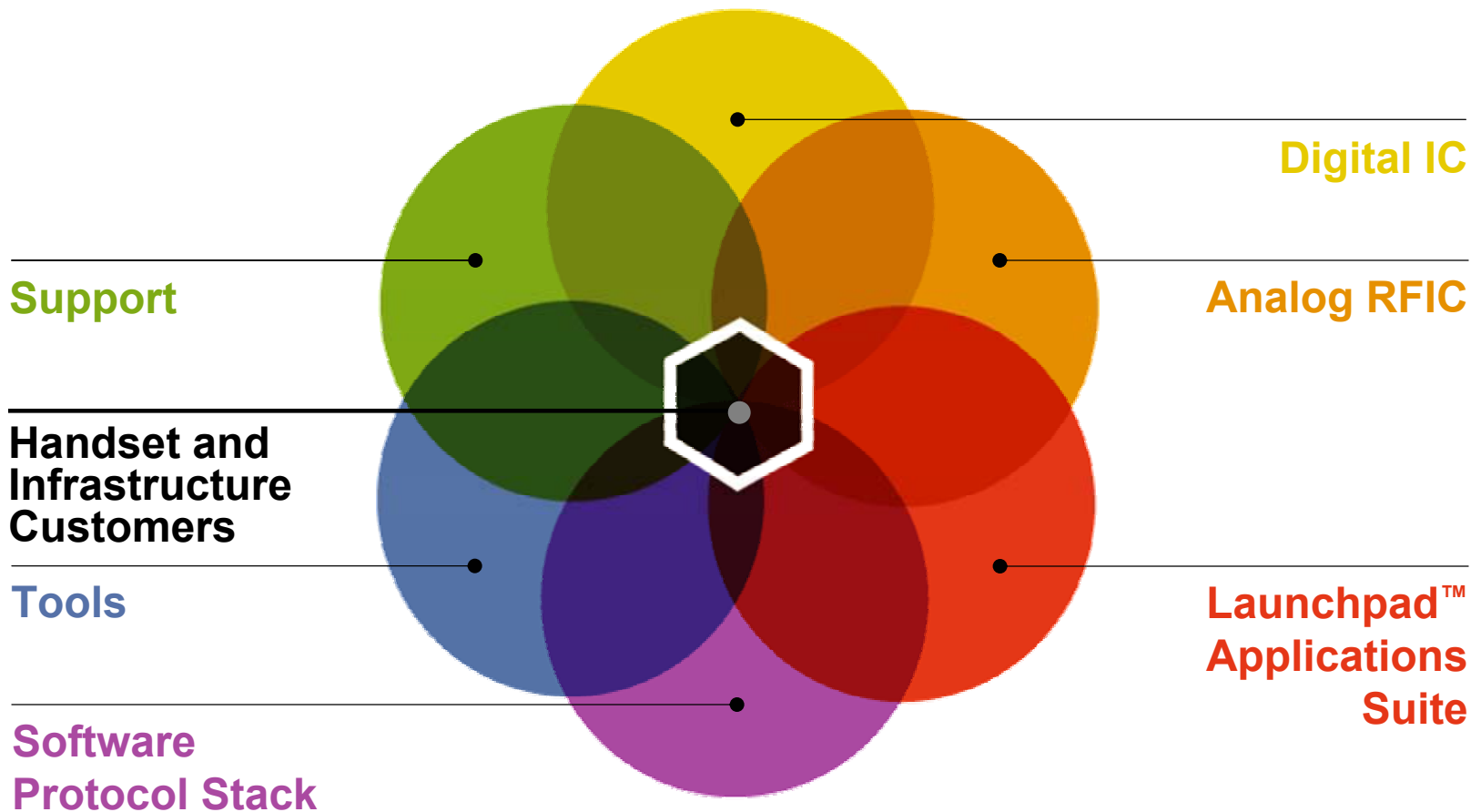
- Agilent
- Alcatel
- DENSO
- Ericsson
- Fujitsu
- Hitachi
- Hyundai
- Kenwood
- Kyocera
- LG Electronics
- Lucent
- Mitsubishi Electric
- Motorola
- NEC
- Nokia
- Nortel Networks
- Panasonic
- Philips
- Samsung
- Sanyo
- Sharp
- Siemens
- Toshiba



NTT DoCoMo

# Complete System Solutions Provider

## *Focus on Customers*

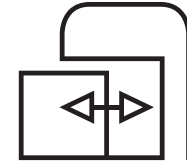



# LAUNCHPAD™ Suite of Integrated Applications

Enabling faster path to 3G

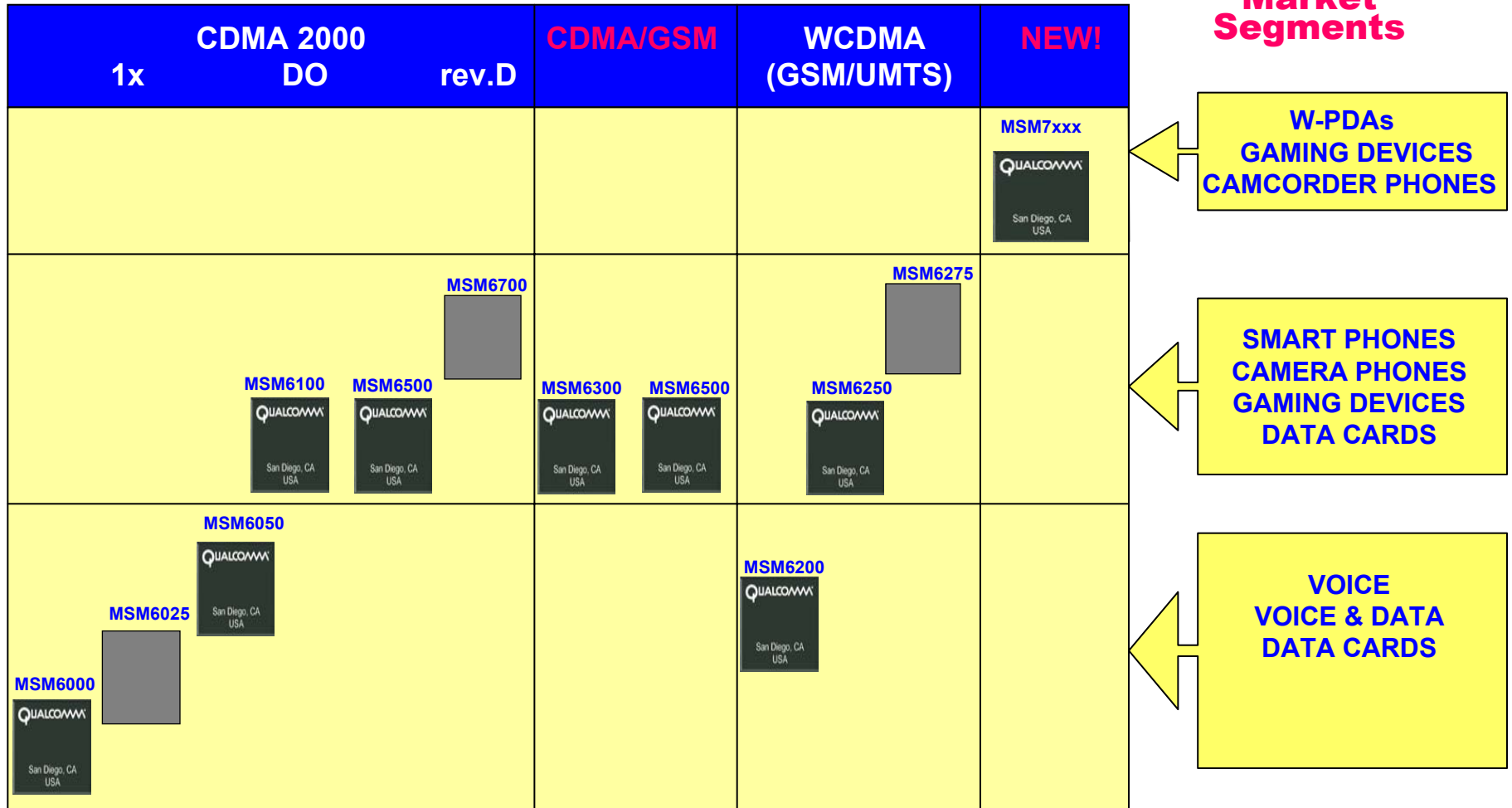


Broad access to advanced data applications and services



multimedia	connectivity	position location	user interface	storage
<ul style="list-style-type: none"> <li>• Qsynth™</li> <li>• MIDI player</li> <li>• CMX™ Compact Media Extension</li> <li>• Qtunes™</li> <li>• Qtv™</li> <li>• Still Image Decoders</li> <li>• PNG, JPEG, GIF</li> <li>• 2D/3D Graphic Acceleration</li> <li>• Games/Entertainment</li> </ul>	<ul style="list-style-type: none"> <li>• USB</li> <li>• USB Host (On the Go)</li> <li>• Bluetooth</li> <li>• PureVoice Mail™</li> <li>• IP Protocol stack</li> <li>• WAP Interface</li> <li>• MMS client</li> <li>• SSL Encryption</li> <li>• BREW™ Integration Support</li> <li>• JAVA J2ME</li> <li>• 802.11</li> </ul>	<ul style="list-style-type: none"> <li>• Snaptrack / gpsOne™</li> </ul> <p style="text-align: center;"><b>Over 10 Million gpsOne™ Capable Handsets Sold</b></p> 	<ul style="list-style-type: none"> <li>• PureVoice VR</li> <li>• PureVoice Recorder</li> <li>• PureVoice Audio AGC</li> <li>• SIM/UIM Card interface</li> <li>• CMOS/CCD image sensor interface</li> <li>• Color LCD interface</li> </ul>	<ul style="list-style-type: none"> <li>• MIMC</li> <li>• SD-Card</li> </ul>

# MSM 6xxx Solutions & Market Segments



# QUALCOMM CDMA Products and Expertise Leveraging UMTS (WCDMA) Development



Sanyo

Novatel Wireless

LGE

Samsung

## Transition to Multimedia services

- Cultural transition from voice-centric service to data centric services
- Service push rather than technology push
- Segmentation of user terminals
- Interoperability
- Absence of an homogeneous » *echo system* » setting the relations among the different parts of the value chain



# BREW™ - the Complete End-to-End Solution



**Handset Manufacturers**

Open platform on chips for manufacturers

**Application Developers**

SDK

**Mobile Subscribers**

Downloadable Applications

## Operators Utilize Standard, Global BREW Implementations

- Operators implement data strategies faster
- Applications are brought to market faster on a global scale
- Operators are increasing ARPUs with BREW
- Users get more selection
- Developers motivated to create new content

Vivo  
Brazil

Verizon  
USA

KDDI  
Japan

Telstra  
Australia

Unicom  
China

Distribution

1 Standard BREW Download System

Operators can choose a standard server to deliver apps

Global  
Application  
Market

150+ Application Developers

Application developers send Applications to a UAM server to Be viewed by ALL BREW operators\*

800+ BREW Applications

BREW operators can shop for BREW apps from a UAM over the internet

70+ BREW Handsets

Standard BREW handsets are available to all BREW operators



\* Carriers can negotiate for exclusivity

# BREW™ Applications Across Air-Interface Technologies!

GPRS



Maxon 7830

CDMA-IS95A



Sharp Z-800

CDMA2000 1X



Motorola T-720

CDMA2000 1xEV-DO



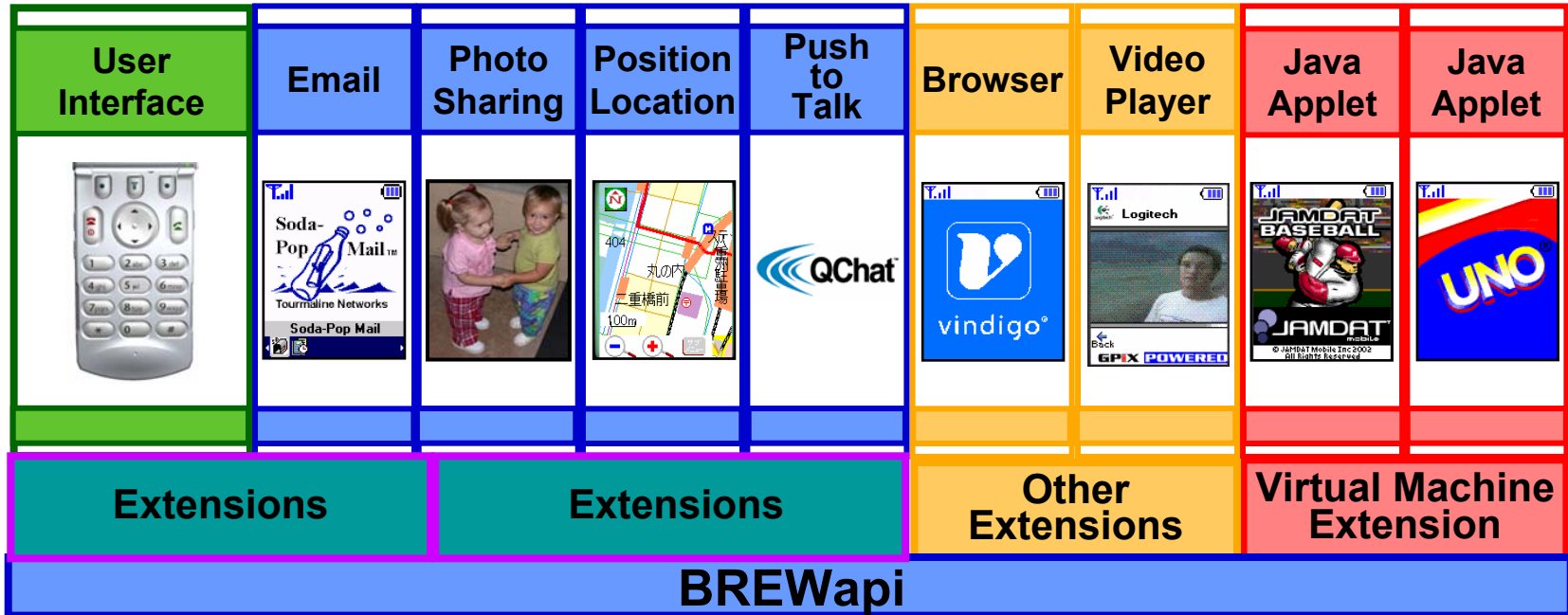
LG-KH5000

WCDMA



Sanyo

# BREW™ Device Architecture







## MSM System Software

cdmaOne, CDMA2000 1X/1xEV-DO, GSM/GPRS, UMTS

# Operators are in Control of Their Branding

With BREW™, the operator (not the handset manufacturer) acts as a software retailer - choosing products and setting prices

# Brands Behind BREW



SONY MUSIC



# Handsets

**verizon**wireless

- Get It Now Launched: September 2002

- As of **June 2003**:

- Handsets sold: **3.2M+**

- Downloads: **12M+**

- Commercial handset models: **8**
  - Coming soon...

- Verizon Get It Now ARPU: **\$7.50**,

- ARPU increase with BREW: **+15%**

- Commercial applications: **200+**

- 2003 YTD: **41%** of all handsets sold through VZW direct distribution channel are Get It Now enabled



**NOKIA**  
CONNECTING PEOPLE

**CURITEL**



**LG** LG Electronics  
VX-6000



**SAMSUNG**  
ELECTRONICS  
SCH-A530



**TOSHIBA**  
CDM-9500

Sources: Verizon Wireless, BREW 2003, Verizon Wireless press release 6-05-03

