Delivering in Mobile

Mario Rivas
Executive Vice President Communications Businesses
Semiconductor Division
Delivering in mobile

• The mobile Connected Consumer
• Successes of the past year
• Seizing the system solutions growth area
• Future growth drivers
• Positioning for growth in China
• Update on RFID
The next PC
your Personal Communicator

• The mobile phone: one of the largest catalysts of change in our lifetime
• Today, it enables us to share experience and increase personal productivity
• Tomorrow: the personalized device in connected environments
• Multimedia features, MP3, FM, cameras, etc., will drive future growth
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Recent successes - mobile

- Nexperia™ Mobile adopted by market-leading customers
- Nexperia Mobile Multimedia Processor in Sony Ericsson’s P800
- JV with Datang and Samsung to drive TD-SCDMA
- USB On-The-Go solution selected by Sony for its new CLIÉ handheld device
# Connected Consumer markets in mobile

## MOBILE

<table>
<thead>
<tr>
<th>Category</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital cordless baseband devices</td>
<td>#1</td>
</tr>
<tr>
<td>RF Identification (contactless chips)</td>
<td>#1</td>
</tr>
<tr>
<td>Display modules</td>
<td>#2</td>
</tr>
<tr>
<td>Smart card ICs</td>
<td>#2</td>
</tr>
<tr>
<td>GSM baseband devices</td>
<td>#3</td>
</tr>
<tr>
<td>Wireless connectivity</td>
<td>#3</td>
</tr>
</tbody>
</table>

Balanced Segment Communication Sales by Application & Region (excl. MDS)

Sales by Application Type:
- Cellular Terminals: 53%
- Cellular Infrastr.: 25%
- Cordless: 9%
- Connectivity: 7%
- Other: 6%

Sales by Region:
- Europe: 63%
- Asia Pacific: 33%
- North America: 4%

Source: Philips based on 2003 H1 sales
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Mobile phone system solutions market

% of handset units shipped

Source: CSFB 12/02
Nexperia™ Mobile Cellular System Solutions

- Including our Nexperia Mobile Multimedia Baseband, 1 out of 6 GSM/GPRS phones has a Philips base band in 2003
- Well on our way to 1 out of 10 GSM/GPRS phones based on Nexperia Cellular System Solution
<table>
<thead>
<tr>
<th>SAMSUNG ELECTRONICS</th>
<th>Cellon</th>
<th>PHILIPS</th>
<th>BIRD</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Samsung Phones" /></td>
<td><img src="image2.png" alt="Cellon Phone" /></td>
<td><img src="image3.png" alt="Philips Phone" /></td>
<td><img src="image4.png" alt="Bird Phone" /></td>
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<tr>
<td>SIEMENS mobile</td>
<td>DBTEL</td>
<td>Arima</td>
<td>Haier</td>
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<td><img src="image6.png" alt="DBTEL Phones" /></td>
<td><img src="image7.png" alt="Arima Phone" /></td>
<td><img src="image8.png" alt="Haier Phone" /></td>
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- Samsung
- Cellon
- Philips
- Siemens mobile
- DBTEL
- Arima
- Haier
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In cellular shift of key components and value capture

2002
- PA
- RF
- Baseband
- Memory
- Display Drivers
- Display Module
- Microphone / Speaker
- Keypad
- PMU/Battery

2006
- RF
- Baseband
- Application Processor
- Memory
- Companion chips
  - Display Module (panel+light)
  - Display Drivers
  - Imaging Device (Still/Video Camera)
  - Microphone / Speaker
  - Keypad
- PMU
- Battery

Primary function is to transmit and process audio and visual data; applications are downloadable/programmable

Companion chips include:
- display controller
- graphics
- video & audio chips
- SIM card chip
- Bluetooth or 802.11
- NFC
- GPS, etc.; does not include display drivers

Sources: MDS, ARC; Datamonitor; PD-C, MC
Growth opportunities
Penetration of multimedia features in handsets

Source: Philips MRT Cellular, July 2003
Nexperia Mobile Multimedia Processor

- Philips strengths in multimedia come to mobile through features, applications and services
  - Digital pictures (camera)
  - Digital video
  - Mobile gaming
  - MMS (integrated browser)
  - Bluetooth
  - PDA / Organizer functions
  - Digital audio
Imaging / video solutions

- Technology leader in CMOS embedded camera phones and image processing with complete range of flexible solutions
- MPEG4 hardware/software and camera sensors/modules
- Wafer Level Packaging with Integrated Lens
- Leading new developments
  - Automatic zooming (by electrical manipulation of liquids on micron scale)
Audio

- FM radio: Global leader in FM radio with the smallest solution, almost 100% market share
- MP3: Small, low-cost, easy-to-integrate MP3 solution (10x10 mm in 2003)
- Acoustic features: Handset speech/music enrichment algorithms (LifeVibes family)
• Global leader in Telecom acoustic solutions for mobile phones and PDA’s (2002: 50% market share)

• Technology leadership and acoustic competence
  – Setting industry standards in miniaturization: 8 and 13 mm speakers

• OEM / ODM Customer partnering in all business levels
  – Application support, advanced acoustic simulation technique
  – Brief time to high volume and customisation, volume flexibility
  – Excellent quality and prices at market level
Growth opportunities - Mobile displays

- From monochrome to color
- From passive to active matrix

Source: DisplaySearch
Mobile displays

• Unique position: in-house solutions from drivers to complete modules

• First to demonstrate and ship PolyLED modules

• Market leader in telecom LCD modules with broad range of display technologies

• Complete color modules to support Nexperia Cellular System Solutions
Mobile displays

• Continuous innovation through leading research processes……
  – Color STN LCD Technology used in Motorola T720 phone

• Improvements to front-of-screen performance, power consumption, size and cost
Growth opportunities
Penetration of connectivity features in handsets

Source: Philips MRT Cellular, July 2003
Wireless connectivity as a driver for mobile multimedia

• Partnership with Sony to develop NFC (Near Field Communication) technology
• Licensing agreement with Ericsson for Bluetooth 1.2 solution
• Bluetooth wireless technology - 20% market share 2002
Wireless connectivity (continued)

• Low power 802.11b solution
  – The lowest standby power consumption
  – Smallest form factor
  – Lowest bill of materials / highest integration

• High performance 802.11a/g chipset
  – Highly integrated solution
  – Industry’s highest throughput
  – Built-in “detect and connect” functionality
RF expertise

• Applying our strength in RF
  – Cellular (2/2.5/3G), digital cordless, NFC, Bluetooth, 802.11x, UWB, RFID

• Extensive in-house RF design expertise

• Process technologies for cost optimization and integration, System-in-a-Package (SiP)

• Modular approach, with roadmap to full radio module
Power management solutions

- Differentiating technology for intelligent power management in Nexperia Mobile
- Clear cost leadership through in-house low-cost mixed-signal high voltage CMOS technologies
- Ability to integrate all mixed-signal functions onto a single analog baseband chip
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End-user cellular handset consumption worldwide and in China

By 2005, almost 50% of worldwide cellular handset production will be in HK/China.
Nexperia Cellular System Solution support

6 locations with over 250 engineers

- Shenzhen, Shanghai, Beijing, Taipei
  - Started in 1999 for local GSM customer support and strongly backed up by our expert teams worldwide
  - Expertise in BB, RF, MMI, industrialization, validation, field test

- Bangalore
  - SW expertise center involved in MMI, GSM and GPRS stacks

- Le Mans center for GSM system expertise
  - Originating from former PCC
  - Essential GSM patent holder and active player since the beginning of the GSM story
  - Expertise in GSM handset product development and telecom terminals manufacturing
China’s own 3G standard
TD-SCDMA

3G market penetration forecast

Source: Norcon
Introducing \(T^3G\) - a new joint venture

\(T^3G\) is likely to provide the world’s first complete TD-SCDMA chipset solution, reference design and the associated software.
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Identification
the locks and keys for the Connected Consumer

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<th>Keys, Security</th>
<th>Locks, Privacy, Convenience</th>
<th>Access, Gates</th>
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<tr>
<td><img src="image1" alt="Image" /></td>
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Recent successes - RFID

• MoU signed with VISA on contactless payment

• Supply Chain Management in Metro Future Store

• MIFARE for public transport used in London Transport and over 40 cities in China

• Keyless entry for automotive key brands

• Vienna Technical Museum for an interactive digital museum visit
ID - Where are we today?

• Automotive
  – number one in passive keyless entry / keyless go and tire pressure monitoring
• Smart cards
  – number one in banking and payment, transport ticketing and contactless and dual-interface ICs
• Tags and labels
  – growing our business by partnering with the retail industry
• Readers
  – number one in contactless reader ICs and contact reader ICs for set-top boxes
ID
The way ahead

• Continue to position with established partners

• Maintain momentum to introduce new products and base technology

• Build on more than 500 million Philips RFID ICs already sold worldwide
Conclusion

• Capable of providing a full systems solution
• Emphasis on multimedia functionality
• Well positioned in China
• RFID continues to be a growth opportunity
• Traction of our Nexperia solutions