QUALCOMM
Chipset Roadmap

Joe Lawrence
Senior Director
Qualcomm, Inc.

October 26, 2004
QCT Positioning

Our Value to the Industry Originates with Our Complete Solution

Digital IC
Support
Analog RFIC
Handset and Infrastructure Customers
Tools
Launchpad™ Applications Suite
Software Protocol Stack

QCT – Qualcomm CDMA Technologies
What’s in a QUALCOMM Chipset?

Qualcomm is a Leader in delivering Wireless Solutions
Always striving to achieve Semiconductor Excellence

- Smaller Form Factor
- Enhanced System Performance
- Highly Integrated Applications
- Greater Quality & Reliability
- Reduced Power Consumption
- Lower Overall Costs
- Faster Time to Market
QCT Systems Engineering Approach

There are Many Different Ways to Support Applications & Services in Handsets

We believe the best way to enable convergence is through integration.
Quantity of Handset Components

Qualcomm packs more into a single mobile device – using fewer components!

**WCDMA (UMTS) Component Quantity**

<table>
<thead>
<tr>
<th></th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competitor A</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Competitor B</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Competitor C</strong></td>
<td></td>
</tr>
<tr>
<td><strong>QCT 6250</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- These components include: resistors, capacitors, power amps, TCXO (Temperature Compensated Oscillator), co-processors, etc.
- The quantity of components will impact the yield and manufacturability of the handset.
Many Ways QUALCOMM Helps 3G Operators

Network Performance
Test & Assessments

3G CDMA chipsets
& OEM support

Interoperability
testing

Support tools

Interacting with
operators on feature sets

Sanyo VSA701
Option
UMTS/GPRS
PC Card

QUALCOMM TM6200
Test Phone

QUALCOMM UMTS
SURF Board

Technical training

Applications & Features

brew
QConnect
OmniOne
QChat
MediaFLO™
QCamera
QPoint
brew Chat
Qvideophone

CDMA 2004 Conference
Mobile Station Modems
### MSM Chipset Roadmap Overview

*Delivering on the “Next Generation” of Chipsets – “Always On Time”*

<table>
<thead>
<tr>
<th>Platform</th>
<th>CDMA2000</th>
<th>CDMA2000 + GSM-GPRS</th>
<th>WCDMA (UMTS)</th>
<th>EDGE/HSDPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MULTIMODE</strong></td>
<td>1X</td>
<td>1xEV-DO (Rev. 0)</td>
<td>1xEV-DO (Rev. D)</td>
<td>7500 1Q '05</td>
</tr>
<tr>
<td><strong>CONVERGENCE PLATFORM</strong></td>
<td>1X</td>
<td>1xEV-DV (Rev.A)</td>
<td>+ UMTS/EDGE/HSDPA</td>
<td>7600 2006</td>
</tr>
<tr>
<td><strong>ENHANCED PLATFORM</strong></td>
<td></td>
<td></td>
<td></td>
<td>7200 4Q '05</td>
</tr>
<tr>
<td><strong>MULTIMEDIA PLATFORM</strong></td>
<td></td>
<td></td>
<td></td>
<td>6250 2Q '03</td>
</tr>
<tr>
<td><strong>VALUE PLATFORM</strong></td>
<td></td>
<td></td>
<td></td>
<td>6200 2Q '02</td>
</tr>
<tr>
<td><strong>VALUE PLATFORM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **CDMA2000**
  - 6225 1Q '05
  - 6250 2Q '02
- **CDMA2000 + GSM-GPRS**
  - 6250 2Q '02
  - 6275 4Q '04
- **WCDMA (UMTS)**
  - 7200 4Q '05
  - 6280 2H '05
  - 6250 2Q '03
  - 6225 1Q '05

**Key Features:**
- All GSM/GPRS Capable
- Integrated gpsOne
- Voice & Data
- Voice & Multimedia
- Multimedia & 2D-3D Graphics
- Enhanced Multimedia & Graphics
- Dual CPU On-Chip
Global Roaming Chipsets
Satisfying the demand for Global Roaming

- cdmaOne
  - CDMA2000 1X
  - CDMA2000 1xEV-DO (Rel A)
  - GSM/GPRS
  - Q1 2005
- cdmaOne
  - CDMA2000 1X
  - CDMA2000 1xEV-DO (Rel 0)
  - CDMA2000 1xEV-DV
  - GSM/GPRS
  - Q4 2004
- cdmaOne
  - CDMA2000 1X
  - GSM/GPRS
  - Q3 2002
- cdmaOne
  - CDMA2000 1X
  - CDMA2000 1xEV-DO (Rel A)
  - CDMA2000 1xEV-DV (Rel D)
  - WCDMA/HSDPA
  - GSM/GPRS
  - Future
- Samsung
  - SCH-A790 / W109
- Motorola
  - 840
- LG
  - W800

*Production Date
Chips are not drawn to scale
QDSP is integrated into MSM and supports EVRC, MP3, MIDI, CMX, VR, etc.
Radio Frequency Chipsets
# RF Chipset Roadmap Overview

*Delivering on Multi-band Chipsets – Today’s “RF Defined” Radios*

<table>
<thead>
<tr>
<th>CDMA2000</th>
<th>CDMA2000 / GSM-GPRS</th>
<th>WCDMA (UMTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MULTI-BAND + GPS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HEX BAND + GPS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TRI BAND</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DUAL BAND + GPS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SINGLE BAND + GPS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SINGLE BAND</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## CDMA2000

- **1X | DO | REV. D**

## CDMA2000 / GSM-GPRS

- **UMTS**

## WCDMA (UMTS)

- **GSM / GPRS**
- **HSDPA / EDGE**

### Technology Details

- **GSM / GPRS**
- **WCDMA (UMTS)**
- **HSDPA / EDGE**

### Date Details

- **1Q '02**
- **2Q '02**
- **3Q '02**
- **4Q '02**
- **1Q '03**
- **2Q '03**
- **3Q '03**
- **4Q '03**
- **1Q '04**
- **2Q '04**
- **3Q '04**
- **4Q '04**
- **1Q '05**
- **2Q '05**
# WCDMA Multi-band RF Chipsets

Enabling WCDMA to be deployed in most licensed frequency bands

<table>
<thead>
<tr>
<th>Tri band</th>
<th>Hex band + GPS</th>
<th>Hex band with Fewer chips</th>
<th>Hex band with EDGE &amp; HSDPA + 800MHz band</th>
<th>Hex band with EDGE &amp; HSPDA + 1800MHz band</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMTS: 2100MHz</td>
<td>UMTS: [1900 or 2100MHz]</td>
<td>UMTS: [1900 or 2100MHz]</td>
<td>UMTS/HSDPA: 800 + [1900 or 2100MHz]</td>
<td>UMTS/HSDPA: [1800 or 1900 or 2100MHz]</td>
</tr>
<tr>
<td>GPS: 1500 MHz</td>
<td></td>
<td>GPS: 1500MHz</td>
<td>GPS: 1500MHz</td>
<td>GPS: 1500MHz</td>
</tr>
</tbody>
</table>

**RTR** – RF Transceiver  
**RFR** – RF Receiver  
**RFL** – RF LNA  
**RGR** – GPS Receiver  

*Also supports GPS signal*  
*Items in bold are new features*
Secure Chipsets
SecureMSM™

• What is SecureMSM™?
  v0.5 – Fundamental protocols, algorithms, ciphers and message digests
  v1.0 – Simple protection for low-value content. OMA DRM v1.0 compliant
  v2.0 – Trusted device for high-value content. OMA DRM v1.0 & 2.0 compliant
  v3.0 – Next generation trusted device for highly secure and efficient processing

• Why is it needed?
  – Protect the consumer, device and network from malicious attacks
  – Maximize the revenue potential of multimedia and infotainment services
  – Ensure integrity, confidentiality and authenticity of sensitive enterprise and location-based information

An integrated security and digital rights management solution
## SecureMSM™ Roadmap

Delivering on Secure Mobile Devices – To Protect New Revenue Streams

<table>
<thead>
<tr>
<th>Binding content to Multiple IDs</th>
<th>Current</th>
<th>Q1 ’04</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q1 ’05</th>
<th>Q2</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRM</td>
<td>NO</td>
<td>OMA DRM v1.0</td>
<td></td>
<td></td>
<td>OMA DRM v1.0 and v2.0 + CPRM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unique ID and SFS key</td>
<td>NO</td>
<td>OMA DRM v1.0</td>
<td></td>
<td></td>
<td>Fused 128 bit secret random number</td>
<td>Fused 40 bit unique value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trusted boot</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure File System</td>
<td>NO</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
<td>YES, Hardware protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MD5, SHA-1, SHA-256</td>
<td></td>
<td>YES, DSP accelerated</td>
<td></td>
<td></td>
<td>YES, DSP accelerated</td>
<td>SHA-1 Hardware accelerated</td>
<td>YES, Hardware accelerated</td>
<td></td>
</tr>
<tr>
<td>SSL, TLS, IPSec, WTLS</td>
<td></td>
<td>YES, DSP accelerated</td>
<td></td>
<td></td>
<td>YES, Hardware accelerated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DES, 3DES, RC4, AES, C2</td>
<td></td>
<td>YES, DSP accelerated</td>
<td></td>
<td></td>
<td>YES, Hardware accelerated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secure processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPRM</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YES</td>
</tr>
</tbody>
</table>
Embedded Software, Extensions & Application APIs
Launchpad™ Suite
A design suite to enable operators to create new enhanced products & services

The Leading Feature Set for Wireless Product Development:
- Available for all 3G CDMA air interfaces
- Consistent use across all product lines
- Enables broad product segmentation & differentiation
- Adopted by global carriers
Integrated Multimedia Solutions

Making revenue-generating services accessible via the MSM chip & BREWapi

CMX™ - Compact Media Extensions™

Qtunes™ - Playback of music (audio) recordings

Q3Dimension™ - 3D transformations, lighting, shading, animation...

Qcamera™ - Digital camera imaging

QCLIMB™ – Color image enhancement

Qtv™ - Streaming video & audio multimedia

Qcamcorder™ - Video recordings

QVideophone™ - Video telephony

QVM™ - Java J2METM Virtual Machine

BREW™ - Execution Environment

QPoint™ – Location based services
Launchpad™ Multimedia Codec Support

Qualcomm’s multimedia solutions support all major codecs and protocols

• 3GPP/3GPP2 Standard based codecs
  – MPEG-4 Video
  – H.263 Video
  – H.264 Video
  – MP3 Audio
  – QCELP (13K) Audio
  – EVRC Audio
  – AMR Audio
  – AAC Audio
  – aacPlus Audio

• Proprietary or not yet fully standards based codecs & file formats
  – Real Networks Video & Audio
  – Windows Media Video & Audio
  – Apple’s QuickTime Video & Audio

Qualcomm is a leader in the delivery of mobile multimedia solutions
A MIDI-based engine and software suite that creates a time-synchronized multimedia experience

- CMX uses the CMF file format to combine and time-synchronize the following media formats:
  - MIDI-based music
  - Text
  - PNG or JPEG graphics
  - Simple Animation Format (SAF) – 6 fps
  - QCELP and ADPCM (Speech & Sound effects)

- Delivers exceptional high quality audio solution (PC quality)

- Plays back other MIDI-based file formats such as:
  - SP-MIDI
  - General MIDI Level 1 and 2 (Standard MIDI Format)
  - SMAF Audio

- CMX Applications include: Ringers, Animated Ring-tones, Screen saves, Karaoke and Messaging

*Over 55M phone have been deployed with CMX software worldwide*
A high quality stereo audio decoder that enables mobile devices to play high-fidelity digital music

- Supports MP3 and MPEG-4 AAC music file formats
- CD quality, stereo, music playback
  - Playback rates from 16 kHz to 44.1 kHz
- Small-code-size, low resource, software solution
  - No dedicated or special hardware requirements
- Optimized for Qualcomm’s QDSP™ digital signal processor platforms
- Provides quick and affordable enhancements to current music applications
- Support of personal music libraries
A high performance 2D & 3D graphics platform

- Offers a high performance, accelerated 2D and 3D rendering solution
- Designed for mobile handsets – low power, small footprint
- Based on OpenGL ES standard
- Integrated into baseband MSM with video, photo, GPS & audio Launchpad engines
- Texture, lighting, shading, clipping, perspective & hidden surface removal

- Games
  - 3D Mapping
  - 400K pixels/sec
- Smooth shading
  - Higher geometric detail
  - Fully textured polygons
- 50K triangles/sec
  - Shadows
  - Complex lighting
An integrated high-resolution digital camera solution

- Encodes digital images
  - JPEG & PNG
  - QCIF -> QVGA -> VGA (up to 6 Megapixels)
  - Up to 30 frames per second viewfinder

- Full digital camera functionality
  - Zoom
  - Auto focus
  - Flash
  - White balance
  - Red-eye reduction
  - Variable compression

- Full suite of UI and text tools
  - On-device Image Processing
  - Photo Editing Suite
  - Photo Albums
  - Images can be integrated with GPS position location information

- Transmit photos over the air or save the images to Flash or MMC
A feature rich video decoder that enables mobile devices to stream & playback content files.

- Streaming Video, Streaming Audio, VOD, Live Cams & Video Mail Services
- High Performance Decoding: 15fps, QCIF @128kbps to 30fps, VGA @ 384kbps
- Based on Open Standards: 3GPP, 3GPP2 & MPEG-4
- Multiple Video Codec Support: MPEG-4 & H.263
- Multiple Audio Codec Support: MP3, QCELP, EVRC, AMR & MPEG4 AAC
- Multiple Display Size Support: 96x80, sQCIF, QCIF, QVGA & VGA
- Play, Stop, Pause & Random Positioning
- Brightness, Looping & Contrast Control
- Server/Client Bandwidth Adjustment
A video real-time encoding solution that enables video messaging applications

- Camcorder Video Recording & Playback - Record, Stop, Pause & Play Functions
- High Performance, Constant Bit Rate, Encoding: 15fps, QCIF @128kbps to 30fps, VGA @ 384kbps
- Viewfinder & Video Preview Mode
- Zoom, Brightness & Contrast Control
- Embedded Motion Estimation Hardware Acceleration
- Multiple Video Codec Support: MPEG-4 & H.263
- Multiple Audio Codec Support: QCELP, EVRC & AMR
- Multiple Media Storage Support: Flash & MMC
- Video Editing & Audio Dubbing
A 2-way video & audio conferencing solution that is tailored for 3G networks such as EV-DO and WCDMA (UMTS)

- Video Conferencing between Mobile Devices, as well as PCs
- High Quality Video Conference Performance: 10-15fps, QCIF @ 64kbps
- Call Set-up Time: Less than 6 seconds
- Video talk time: 1 hour
- Push to Video, Picture-in-Picture & Video Zooming
- Hold, Speech Fallback, Video or Audio Mute
- Embedded Motion Estimation Hardware Acceleration
- Multiple Video Codec Support: MPEG-4 & H.263
- Multiple Audio Codec Support: EVRC, G.723 & AMR
- Multiple Display Size Support: sQIF & QCIF

Note: Commercially available in Korea since July 2003
# Launchpad™ Multimedia Roadmap

*Meeting the demand for Mobile Consumer Electronic Devices*

<table>
<thead>
<tr>
<th>Feature Capabilities</th>
<th>Chipsets</th>
<th>15 fps CIF</th>
<th>15 fps QCIF</th>
<th>30 fps VGA</th>
<th>2 - 4 M-Pixel</th>
<th>50k Triangles</th>
<th>100k Triangles</th>
<th>4 million Triangles</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIO</td>
<td>MSM6500</td>
<td>MP3</td>
<td>AAC</td>
<td>AAC Plus</td>
<td>MP3</td>
<td>50k Triangles</td>
<td>100k Triangles</td>
<td>4 million Triangles</td>
</tr>
<tr>
<td>GRAPHICS</td>
<td>MSM6300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAMERA</td>
<td>MSM6250</td>
<td>1 M-Pixel</td>
<td>2 - 4 M-Pixel</td>
<td>4 - 6 M-Pixel</td>
<td>1 M-Pixel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIDEO</td>
<td>MSM6100</td>
<td>15 fps CIF</td>
<td>15 fps QCIF</td>
<td>30 fps VGA</td>
<td>15 fps QCIF</td>
<td>15 fps CIF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSM6800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSM6700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSM6550</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSM6275</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSM6150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSM7xxx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Qualcomm is way ahead in the delivery of mobile consumer electronic solutions*
End-to-End Mobile Applications Platform

All Qualcomm Chipsets come with the BREW™ API

BREW™
iControl, iImage, iFont, iDisplay, iGraphics, iBitmap, etc

ASIC Software
BREW is air-interface independent and can support:
GSM/GPRS/EDGE, WCDMA (UMTS), cdmaOne & CDMA2000 1X/1xEV-DO

Developing, Delivering & Monetizing 3G Applications and Services
QUALCOMM Supports Open Standards

• Qualcomm’s Standards Engineering Group is helping develop a large number of open standards, including:
  – IMT-2000 CDMA-MC – cdma2000 Networks, including IS-835 (1xEV-DO)
  – IMT-2000 CDMA-DS – WCDMA Networks, including Rel5 (HSDPA)
  – IMT-2000 CDMA-TDD – TD-SCDMA
  – TIA 835D – cdma2000 Wireless IP Network
  – TS 23.228 – 3GPP IP Multimedia Subsystem (IMS)
  – X.S0013 – 3GPP2 IP Multimedia Domain
  – 802.11 – Wireless Local Area Networks (WLAN)
  – 802.15 – Wireless Personal Area Networks (PAN)
  – 802.16 – Wireless Metropolitan Area Networks (MAN)
  – 802.20 – Mobile Broadband Wireless Access
  – 802.21 – 802 Handoff Working Group
  – 802.22 – Wireless Regional Area Networks
  – OMA Enablers – MMS, IMPS, DRM V2, PoC, LCS, etc.
  – Etc…
Product Segmentation
Greater Segmentation Addresses All Market Needs

Qualcomm is addressing all market segments with multiple modes & frequencies

Price Tier

High

Voice Devices
Navigation Devices
Smart Phones
Video Conferencing
World Phones
Telemetry Modules

Mid Tier

Karaoke Phones
Music Phones
Video Phones
Game Phones
High Data Rate modems
PDA Phones

Entry Level

Voice Only
Voice+SMS
Browser Phones
Data Cards
Location Trackers
M2M Meters

Data Usage
# QCT Product Segmentation

Focused on providing chipsets for the manufacture of low-cost devices

<table>
<thead>
<tr>
<th>PLATFORMS</th>
<th>PRODUCTS</th>
<th>CORE FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Convergence</strong></td>
<td>7600</td>
<td>▶ Dual CPU</td>
</tr>
<tr>
<td></td>
<td>7500</td>
<td>▶ 6.0 megapixel digital camera</td>
</tr>
<tr>
<td></td>
<td>7200</td>
<td>▶ 30 fps digital video record &amp; playback</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ 4M triangles/sec. 3D graphics acceleration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>▶ High-fidelity digital stereo audio record/playback</td>
</tr>
<tr>
<td><strong>Enhanced</strong></td>
<td>6800</td>
<td>▶ QVGA</td>
</tr>
<tr>
<td></td>
<td>6700</td>
<td>▶ Multimedia, data-centric</td>
</tr>
<tr>
<td></td>
<td>6550</td>
<td>▶ Integrated Launchpad features:</td>
</tr>
<tr>
<td></td>
<td>6275 / 6280</td>
<td>QCamera, CMX, Qtv, gpsOne</td>
</tr>
<tr>
<td><strong>Multimedia</strong></td>
<td>6500</td>
<td>▶ QCIF</td>
</tr>
<tr>
<td></td>
<td>6300</td>
<td>▶ Multimedia</td>
</tr>
<tr>
<td></td>
<td>6250</td>
<td>▶ Integrated Launchpad features:</td>
</tr>
<tr>
<td></td>
<td>6225</td>
<td>QCamera, CMX, Qtv, gpsOne</td>
</tr>
<tr>
<td></td>
<td>6100</td>
<td></td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td>6200</td>
<td>▶ Sub-QCIF</td>
</tr>
<tr>
<td></td>
<td>6050</td>
<td>▶ Voice-centric</td>
</tr>
<tr>
<td></td>
<td>6025</td>
<td>▶ Limited Launchpad support</td>
</tr>
</tbody>
</table>

- 120+ Designs

- ’05 -’06
- ’04 -’05
- ’03 -’04
- ’02 -’03

- ’05 -’06
- ’04 -’05
- ’03 -’04
- ’02 -’03
Market Share is Changing as Technology Evolves to CDMA

It’s no longer a 3 horse race to reach “golden eyeballs”

Source: Analog & TDMA – Gartner Group, 2000; CDMA & GSM – Strategy Analytics, 2004
The Success of 3G is due to its partnerships...

Many corporations are creating significant shareholder value in the world of 3G
Thank You