Semiconductor Evolution to 4G

IEEE ComSoC

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Wavesat – Broadband Everywhere

- **Private fabless semiconductor company**
  - Founded in 1994
  - Well-funded
  - Seasoned, stable team of 80+
  - Located in Montreal, with offices in Silicon Valley, Ottawa, Taiwan, Japan and India
  - Over 300 man years of OFDM/OFDMA development; holder of dozens of related patents

- **Leading supplier of mobile and fixed 4G silicon**
  - WiMAX 802.16d – since 2005
  - WiMAX 802.16e Wave 2 – since 2008
  - XGP – since 2008
  - LTE in early Q1

- **Innovator in multimode 4G baseband chipsets**
  - Wavesat Odyssey architecture: one chipset supports WiMAX 802.16e, LTE and XGP

- **Well-established product ecosystem**
  - Distribution and support channels worldwide
  - Wavesat-enabled devices available from top-tier OEMs and ODMs
  - Direct partnerships with carriers and wireless infrastructure providers
4G Wireless Standards – how many?
4G market segments

- Notebook
- MID
- UMPC
- Handset

- Security Cameras
- Game consoles
- Wireless HDMI
- Digital cameras

- VOIP
- GSM
- CDMA

- Last Mile backhaul
- DSL replacement
- Femtocells
Product diversity
Silicon Processes & Wireless

Advanced Technology nodes
• Very dense process geometry
• Very low power
• Mixed signal availability on bulk CMOS
• CMOS volume drives pricing
• Dense geometries allow significant integration

Consumers want ever increasing levels of performance and functionality.
Example: Smart Phones today:
▪ High Performance
▪ Feature Laden
▪ Long battery life
▪ Affordable
Advanced Technology Nodes

Source: TSMC 2008
Most Flexible OFDMA Solution

Wavesat Odyssey Architecture

- Software Programmable Air-Interface offers flexibility and uncompromised performance
  - Programmable 4G PHY
  - WiMAX Wave 2 (MIMO Matrix A & B, beam-forming and H-ARQ), LTE Cat 3, XG-P 1.0
  - TDD & FDD with channelization of up to 20 MHz
  - Adaptive modulation schemes (up to QAM-256 in DL & UL), up to 1K FFT, multi-zone support per frame and advanced FEC techniques
  - Enhanced Security Protocol (EAP, AES and PKMv2)
  - OTA In-field programmable