

Next Generation Mobile Wireless Internet Technology

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What is Mobile Wireless Internet?

Anywhere anytime Internet connectivity

Typically over licensed spectrum

- Seamless extension of the Internet: end-to-end IP
- Support for voice and broadband data
- Provide QoS (Quality of Service)
- Affordable to end users

Is 2.5/3G the Answer?

United States --- CDMA 2000

Europe --- GPRS (TDMA) / UMTS (W-CDMA)

- Circuit switched approach, complex network
- Not seamless, Internet protocols don't work
- Circuit voice, packet data
- No interactive data support, no QoS support
- Expensive to end users

Is OFDM Technology the Answer?

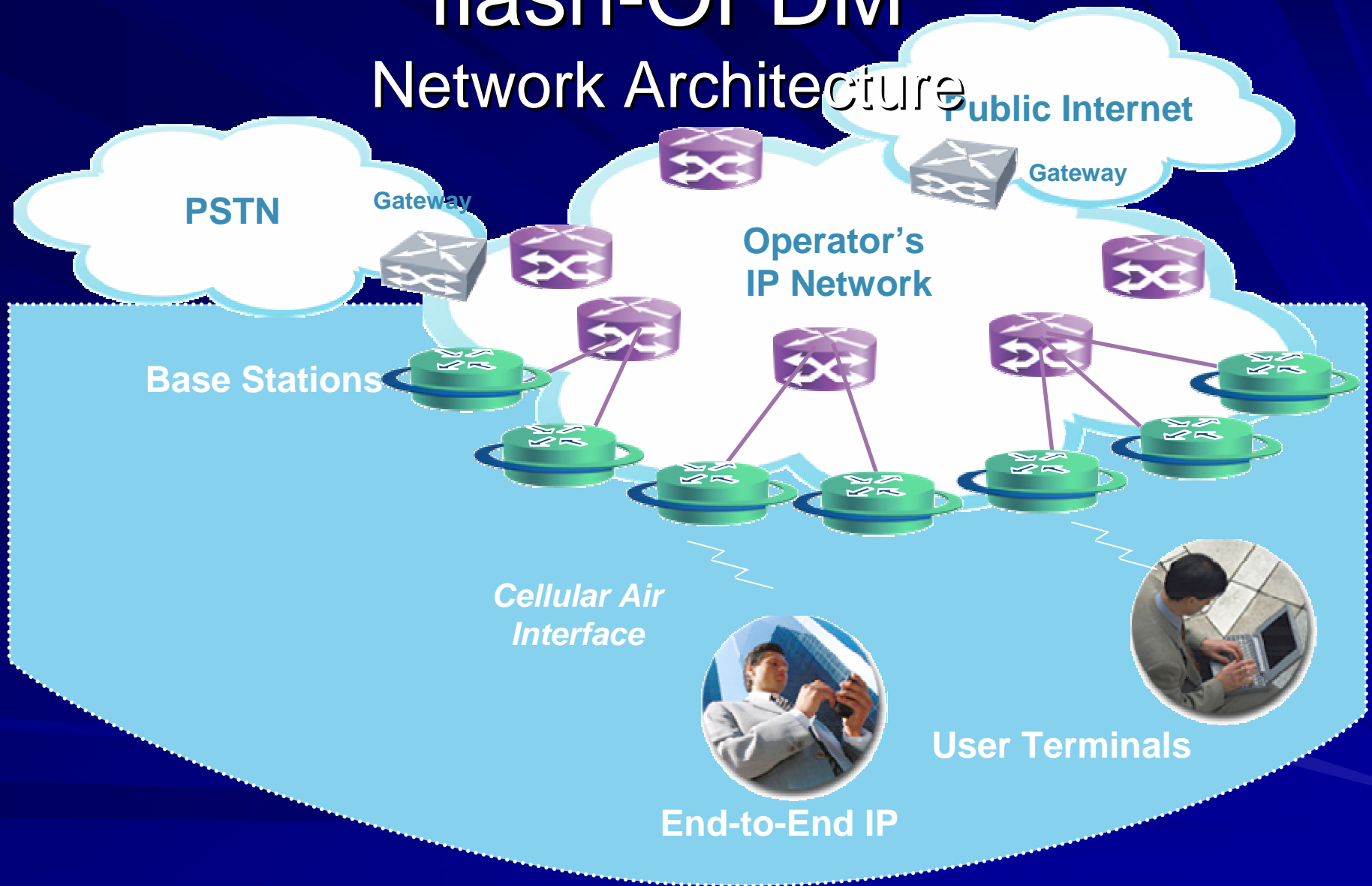
OFDM Based Wireless Technology The Right Answer

Flarion Technologies has developed flash-OFDM™, a new packet data air-interface technology for mobile wireless Internet.



flash-OFDM

Network Architecture



flash-OFDM

Air-Interface Advantage

■ Circuit switched systems

- Create pipes (physical layer)

• Packet data systems

- Create fat pipe (physical layer)
- Share pipe efficiently between users (MAC layer)
- Create reliable links for data (link layer)
- Send packet data over links (higher layers)

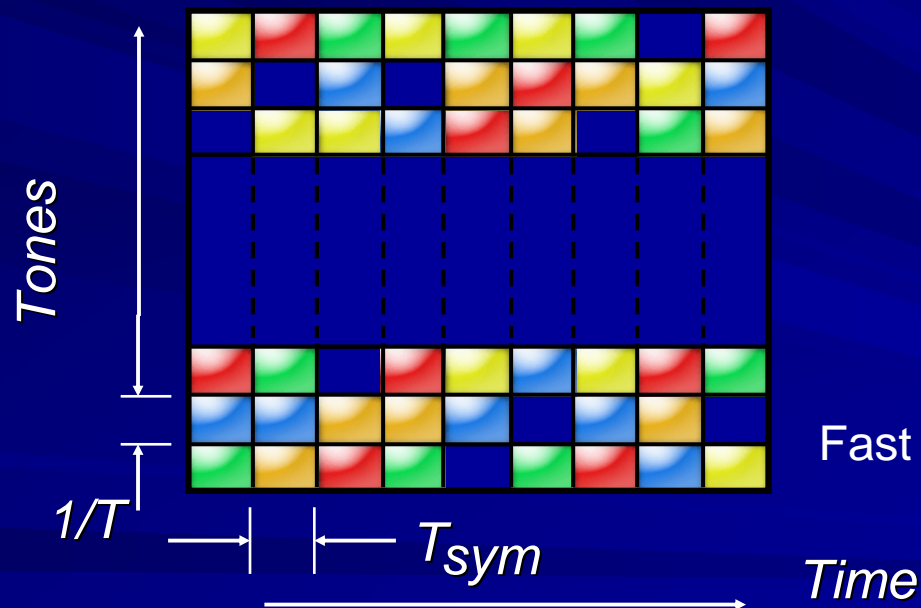


flash-OFDM

Physical Layer Advantage

■ Downlink & Uplink based on OFDM

- Orthogonal --- TDMA benefits
- Spread Spectrum --- CDMA benefits



Fast Hopped - Spread Spectrum

Fat Pipe

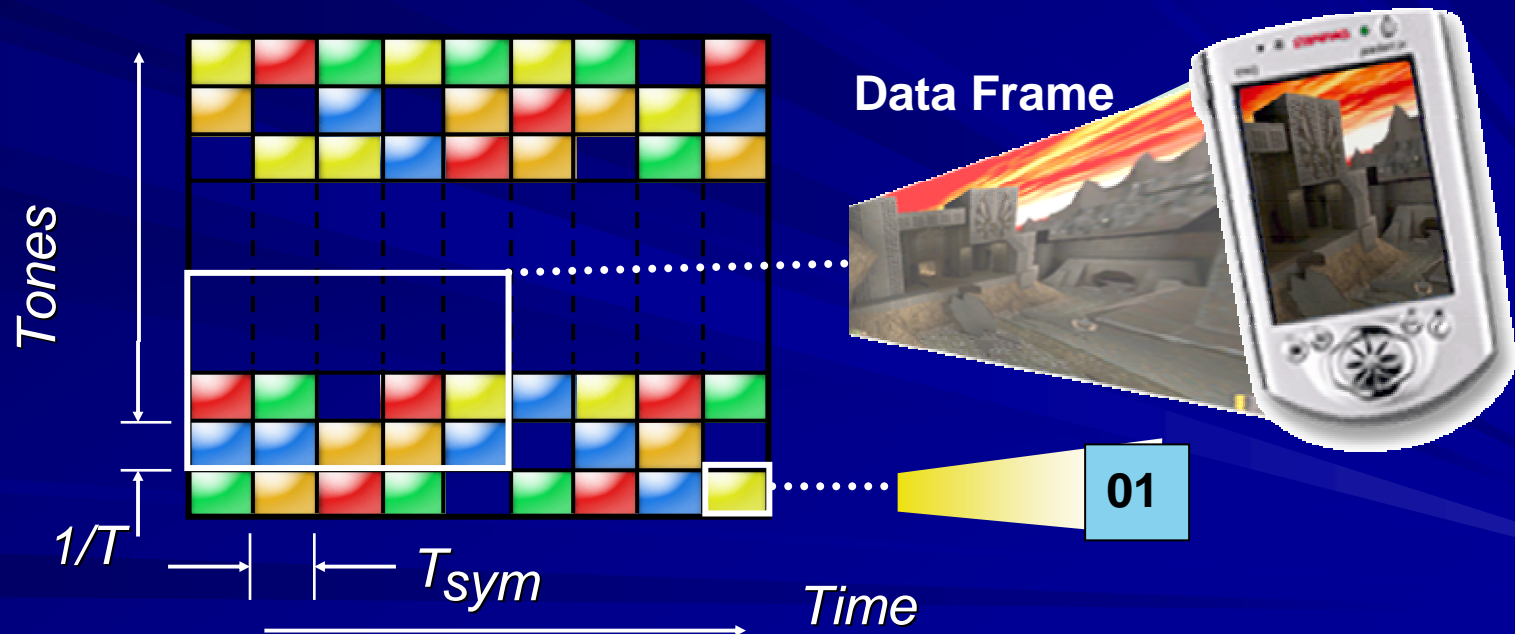


flash-OFDM

MAC/Link Layer Advantage

■ OFDM granular resource partition

- No overhead control messaging
- Data as frames



flash-OFDM

MAC/Link Layer Advantage

- **Fast retransmission over airlink**
 - Few millisecond retransmission loop time
 - Supports interactive applications

Interactive Data

- **Uplink transmission requests**
 - No contention based access
 - Uplink/downlink data frames scheduled

QoS



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Higher Layer Advantage

- **Reliable link**
 - Far fewer end-to-end retransmissions
- **Low delay**
 - Efficient transport layer (TCP/IP)
 - Higher burst rates meaningful
 - Interactive applications supported (VoIP)
- **Mobile IP for hand-off**
 - True make-before-break with no soft-handoff
 - IP to the RadioRouter™
 - Reliable seamless handoffs

**Better
User Experience**



flash-OFDM

System Advantages

- **Transmit antenna and multi-user diversity**
- **Autonomous RadioRouters™**
 - No common timing reference (no GPS)
 - No need for frequency or code planning
 - No knowledge of neighboring RadioRouters™
- **Scalable, flexible architecture**
- **Lower cost:**
 - System planning
 - System deployment
 - Maintenance





“Every Bit Wireless”