

Mobile Packet Core Trends

**IEEE ComSoc: Mobile Packet Core
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The Mobile Packet Core Market

5+ Billion Handsets, needing Internet

Billions of Consumer Devices

Hundreds of Million of Net/ Notebooks

Hundreds of Millions Smart Nodes

Internet - Mother of all Applications

Billions of Websites

Tens of Billions of Video Downloads

Cloud Computing a dominant model



Mobile Operators

\$

\$

\$

Google



hulu

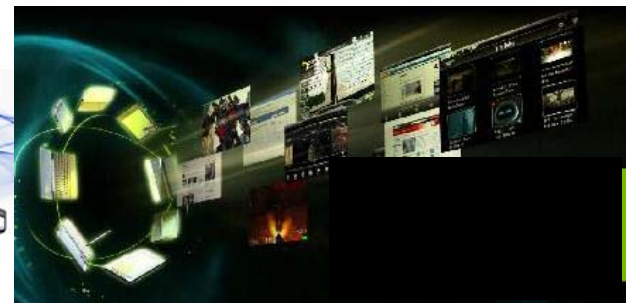
YouTube

facebook

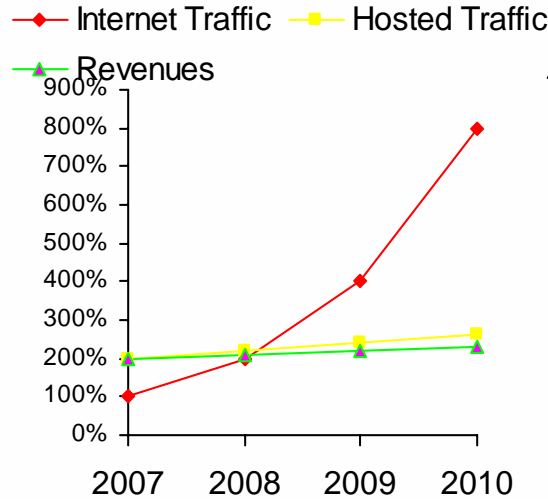
NETFLIX



Bedrock of Services



Pain Point for Mobile Operators - Profitability



Traffic Doubling Every 6 Months in major 3G networks

Gap increasing in ARPU per bit and Cost per bit (Major Pain Point)

Revenue Growth in single or lower double digits

Vodafone, Telefonica, Telenor, 3 UK, China Mobile

OPEX Issue

Spectrum

Backhaul

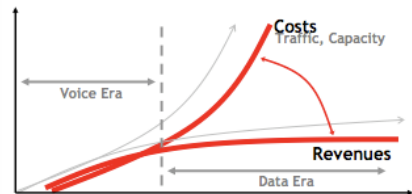
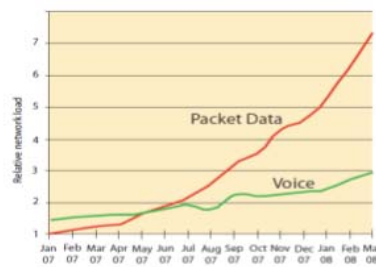
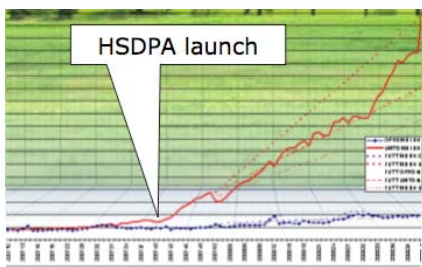
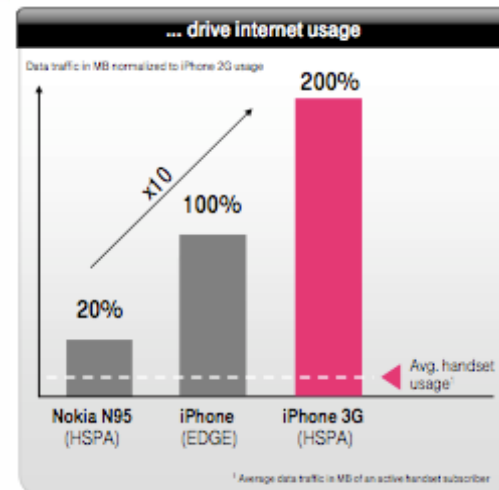
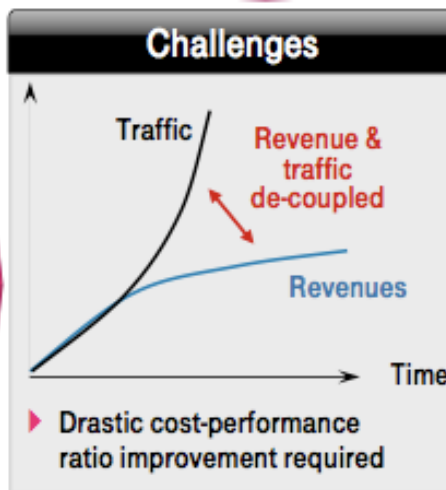
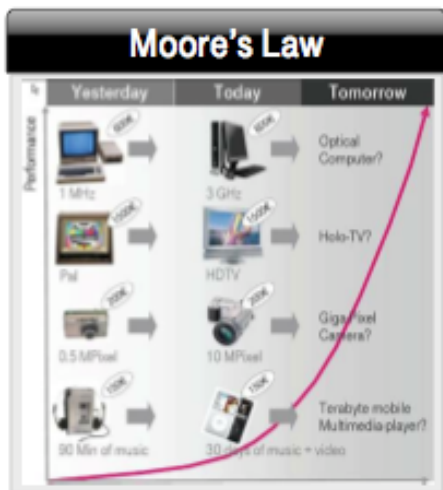
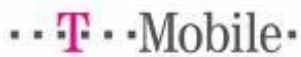
CAPEX Issue

Hosted Services Revenues

Internet

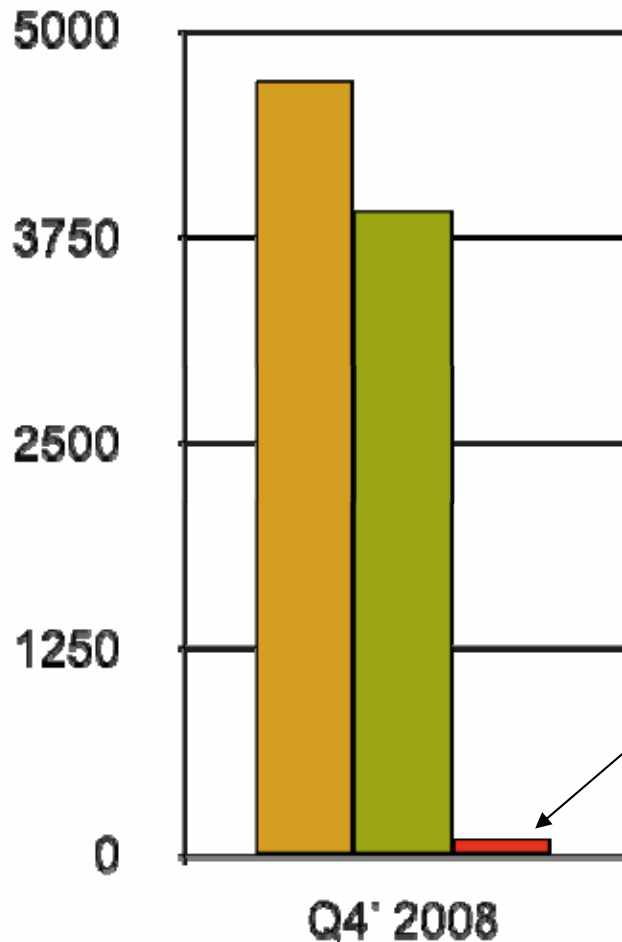
Monetization Issue

Pain Point – In Their Own Words



3GPP HSPA Subscription Status

Subscriptions Q4 '2008 (in Millions)



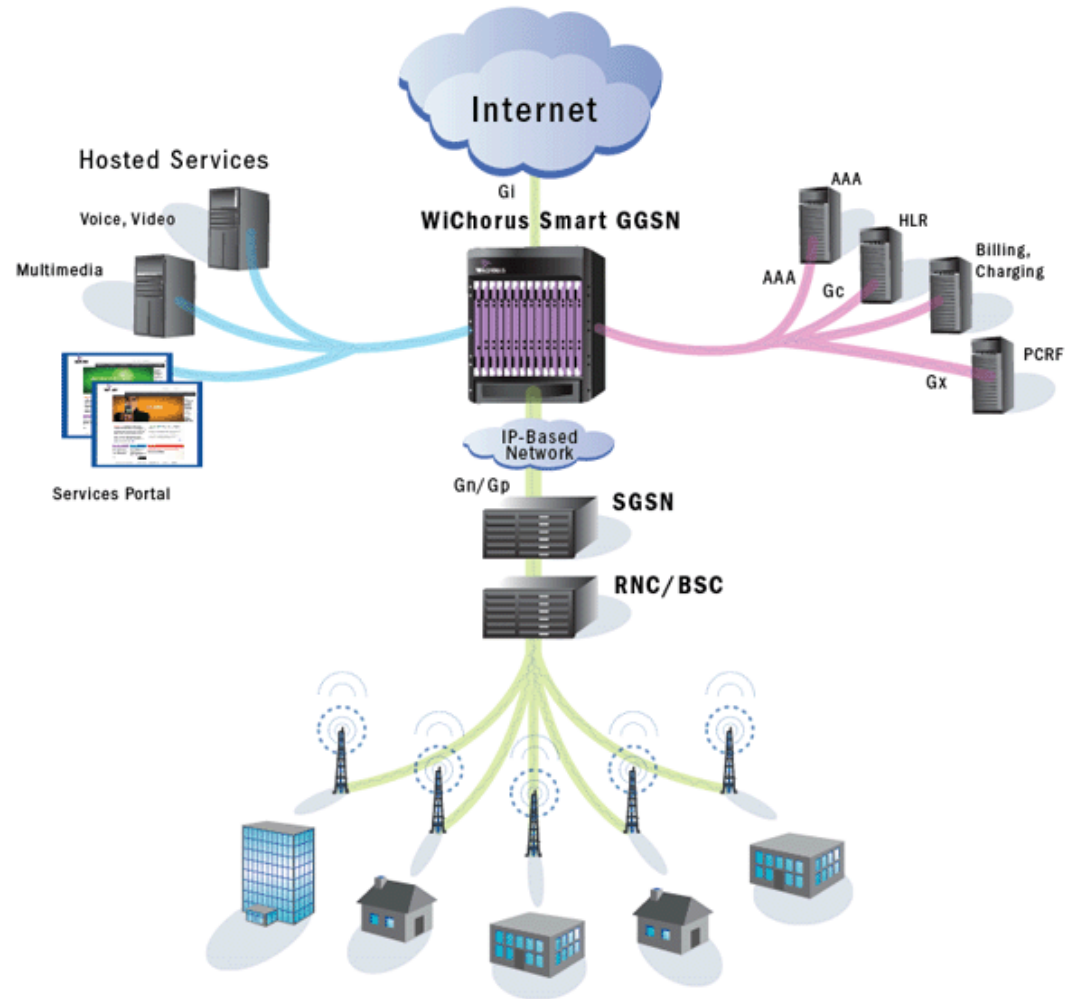
103 Million HSPA Subscribers in Q4 '08
98% still need to get HSPA / Mobile Broadband

Functions of a **Smart** Packet Core



3G/HSPA

Traditional HSPA Deployment

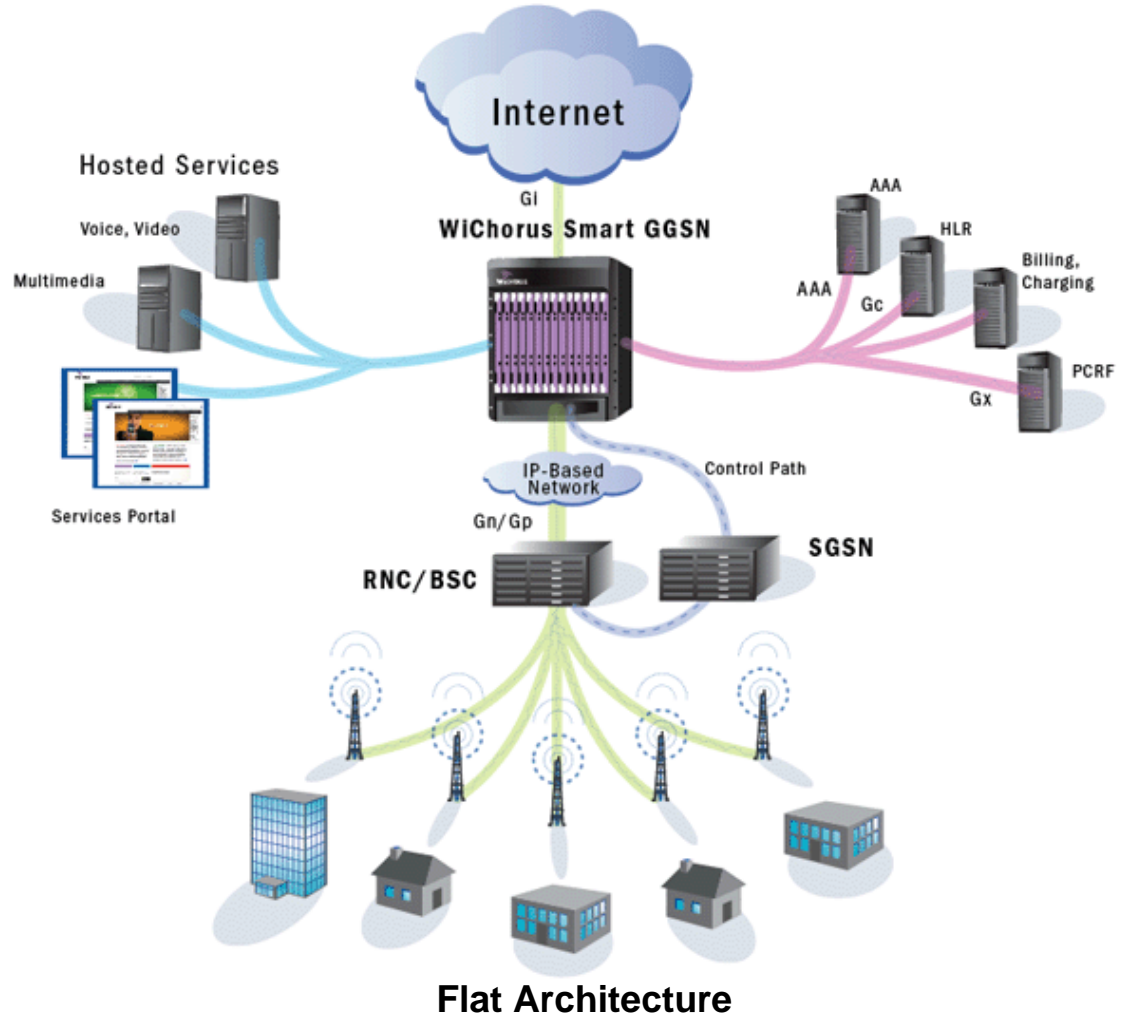


3G/HSPA Direct Tunnel

Traditional HSPA Deployment

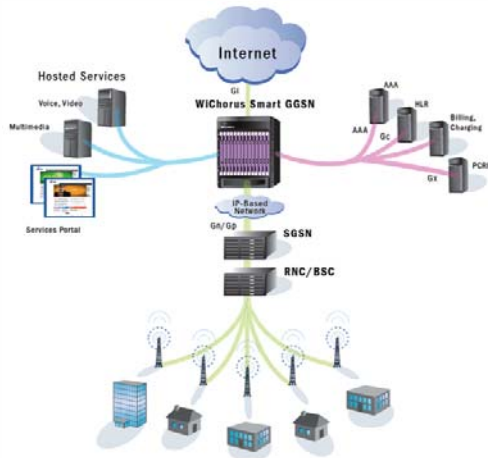


Direct Tunnel Deployment

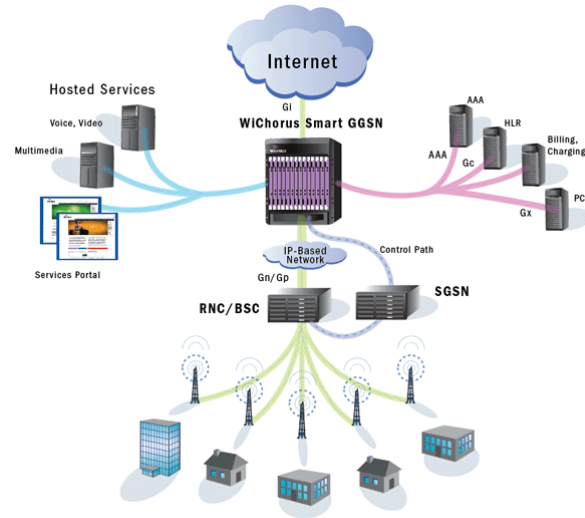


Migration to 4G/LTE SAE

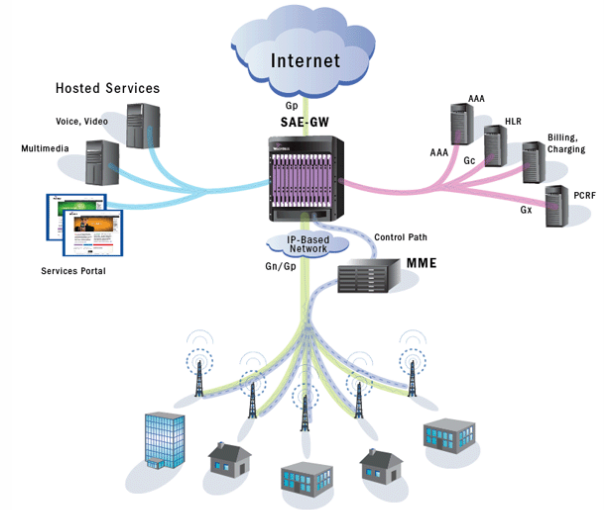
Traditional HSPA Deployment



Direct Tunnel Deployment

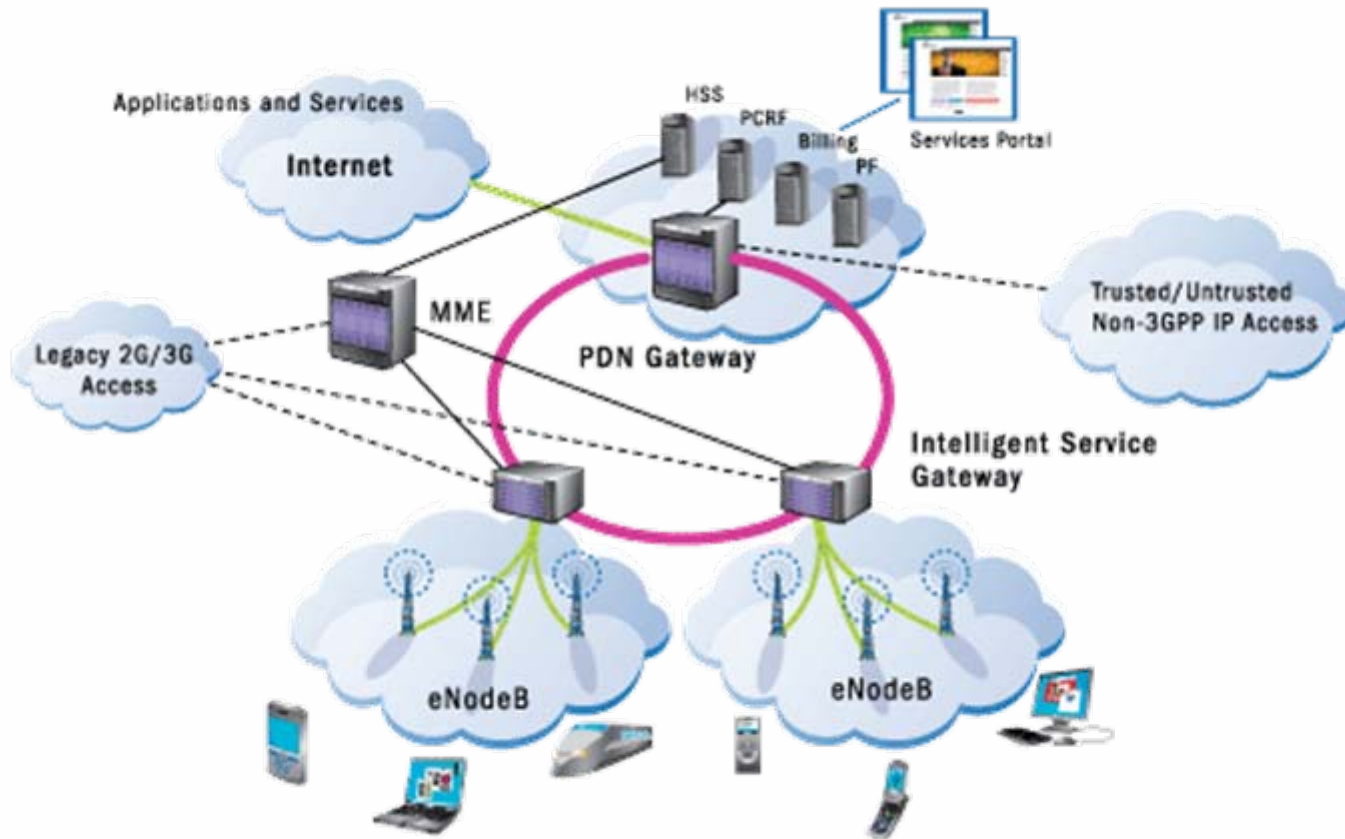


LTE SAE

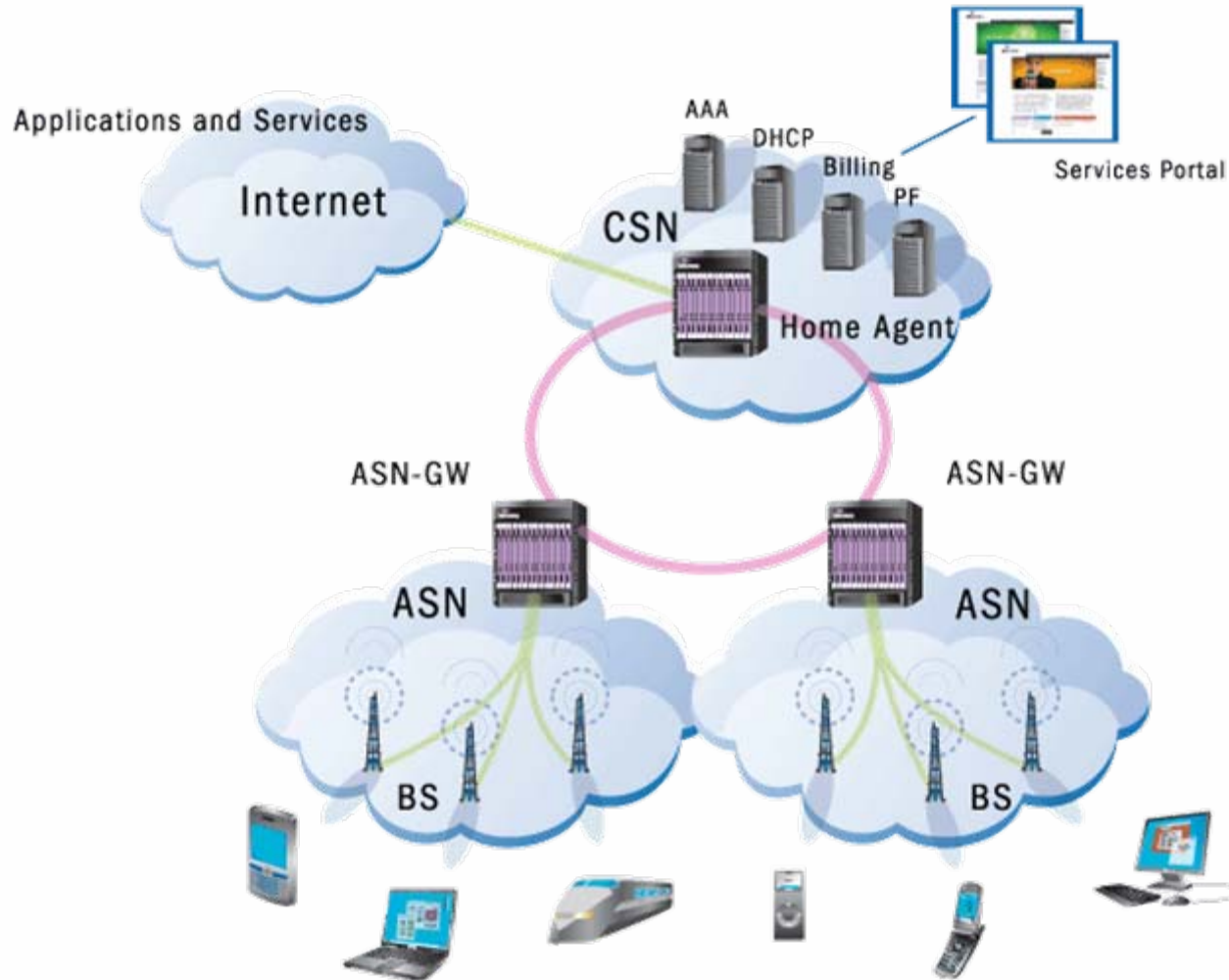


Flat Architecture

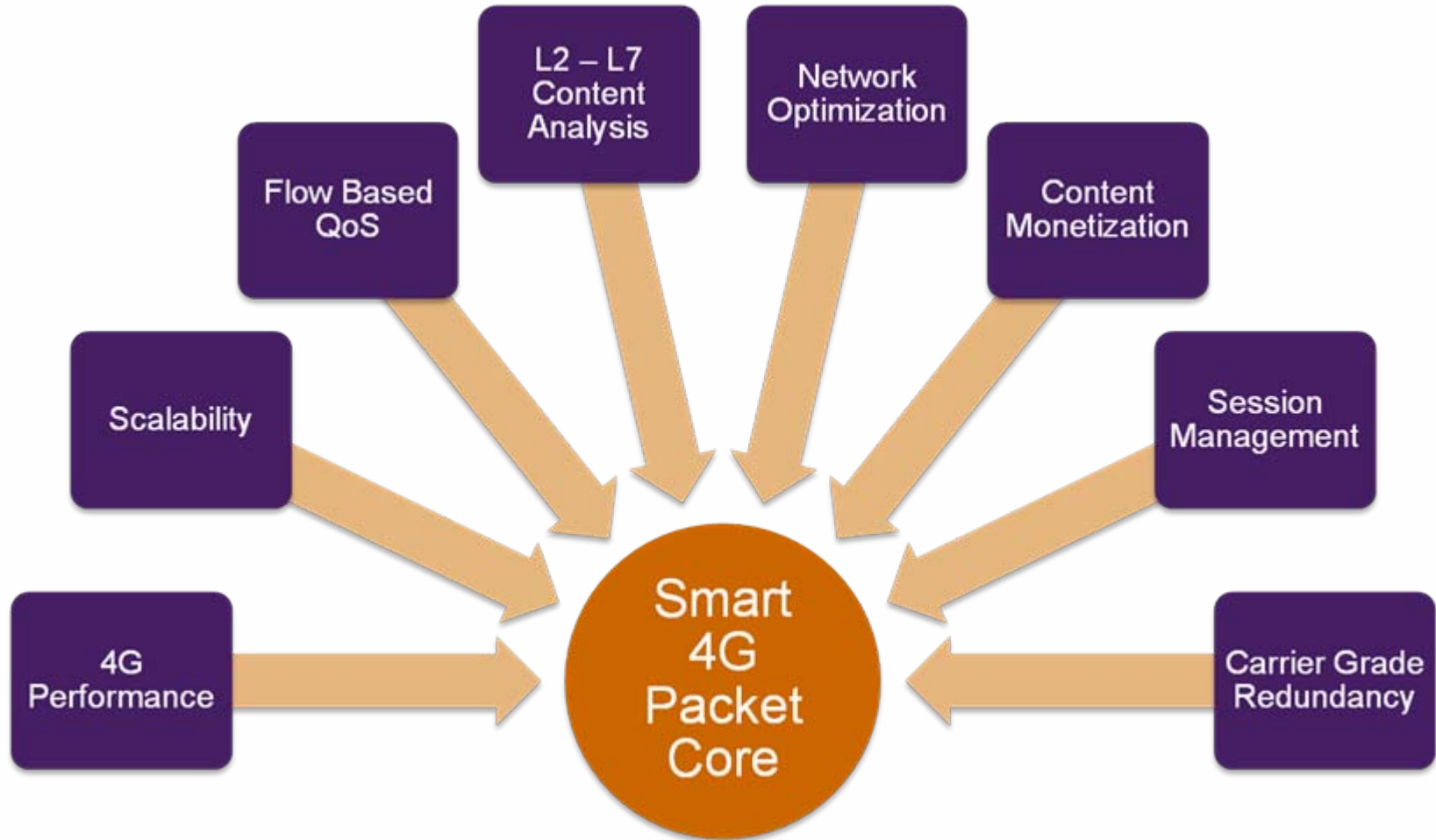
LTE EPC



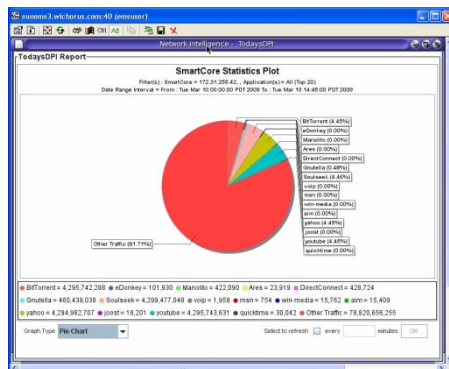
WiMAX Packet Core



Smart 4G Packet Core Requirements

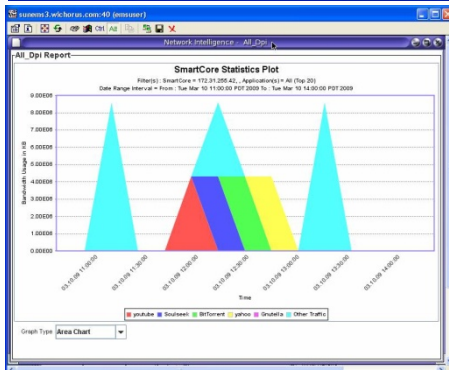


Network & Mobile Analytics and Controls

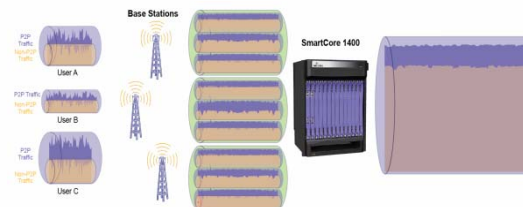
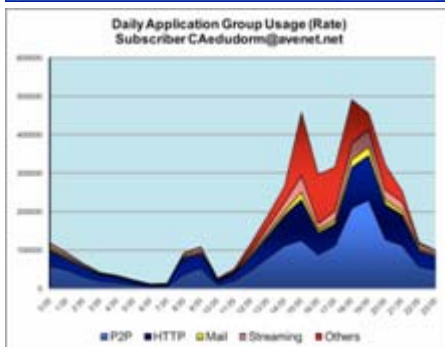


Intelligence about **Content and Application**, at:

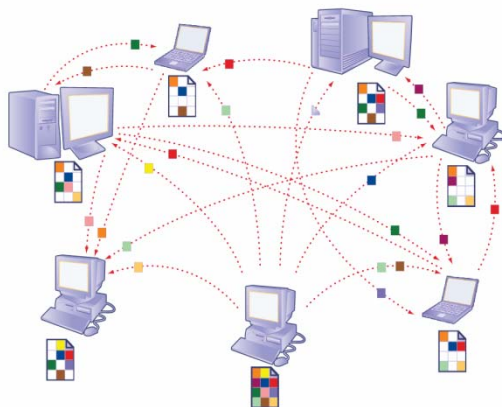
- Network Level
- Geographic & BTS Level
- Interface, Port or User Level



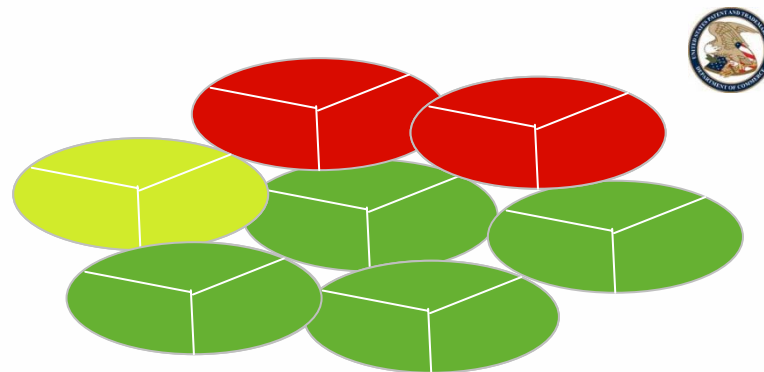
Enforce Policy on Identified Content using granular and powerful QoS engines



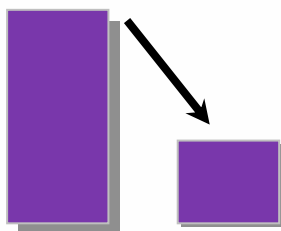
Network Optimization



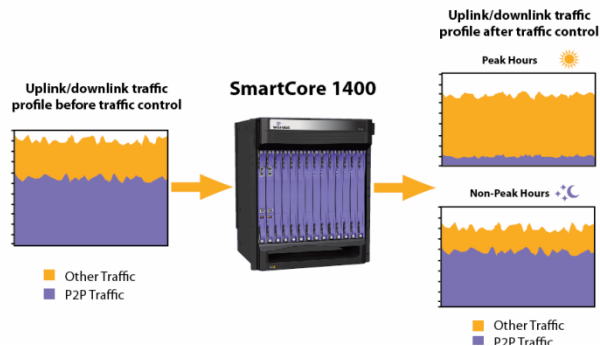
5% of P2P users can suck up 70% of network



Applying Optimizations Only Where Needed



Compression for selective traffic



TOD Adaptive Policies

Content Monetization



Content Based Charging



Contextual Mobile Advertising



Parental Controls



3rd Party Store Front Integration

Best-of-Breed Architectures



Packet Core Key to Profitability

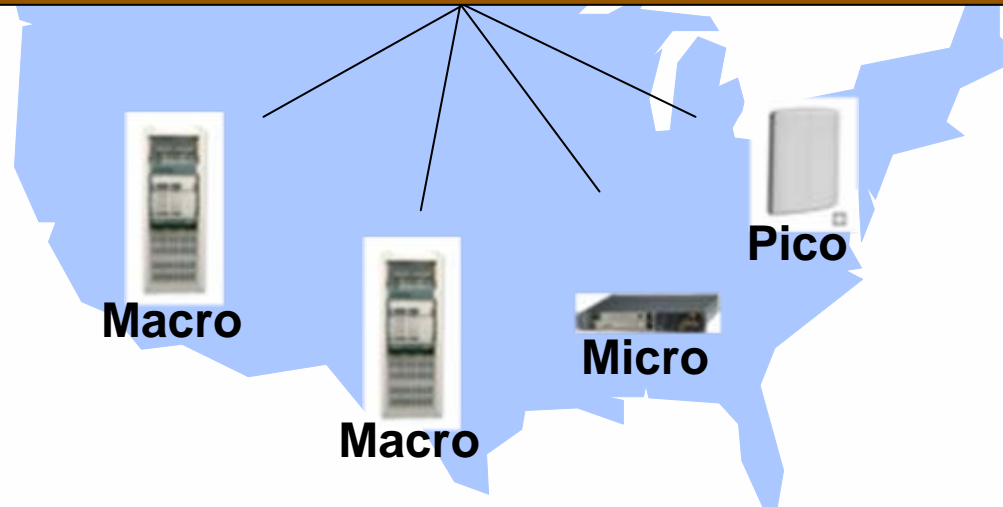
Maximize Innovation



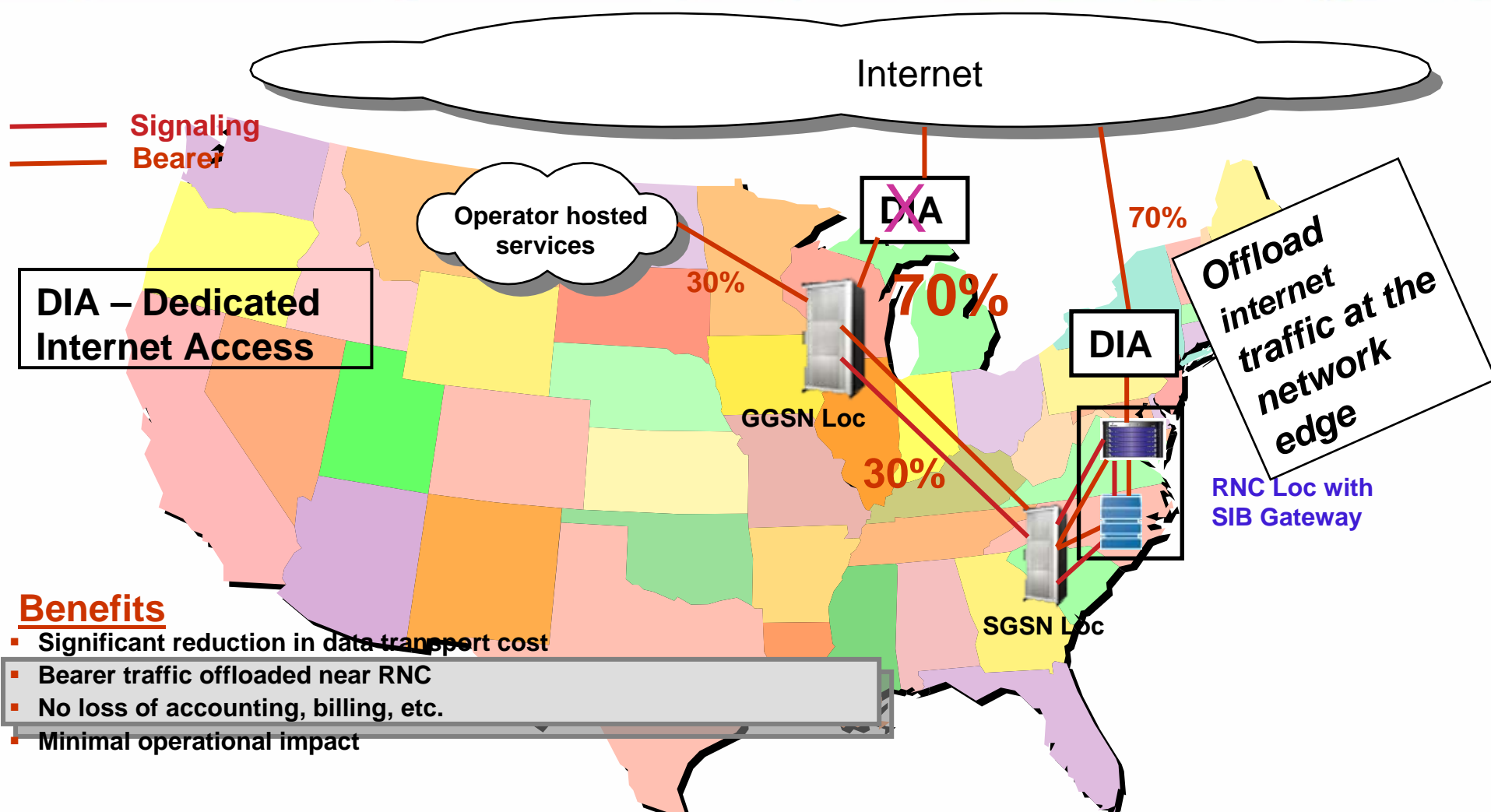
Consistent Layer of Services

Mix & Match Base Stations to Optimize Coverage, Cost

Maximize Flexibility



Distributed Architectures



Significant Reduction in Both CAPEX and OPEX

Summary

- **Migration to flatter, all IP architectures**
- **Mobile Internet having a profound impact**
 - **Unparalleled capacity demand, unique traffic patterns**
 - **New business models emerging**
- **Deployment Trends**
 - **“Smart” networks – content/context/user-aware**
 - **Best of Breed networks**
 - **Distributed core and internet offload**
- **Packet Core critical component to “Smart 4G Networks”**