



# **Wireless Thin Clients: Positioning, Rollout and Challenges**

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# Outline

- **Introduction to mmO<sub>2</sub> and wireless industry**
- **End-to-End Architecture for a Mobile Operator**
- **Role of the Thin Client / Mobile Device in E2E Architecture**
- **Thin Clients / Mobile Devices as part of Mobile Service Roll-outs**
- **Requirements and Challenges for Thin Clients / Mobile Devices**

# mmO<sub>2</sub> (formerly BT Wireless)

- De-merged from BT in November 2001
- Currently independent, with stocks listed in London and NY Stock Exchange
- Six 100% owned operators:
  - Cellnet in the U.K.
  - Viag Interkom in Germany
  - Telfort in Holland
  - Digifone in Ireland,
  - Manx Telecom in Isle of Man, and
  - Genie Mobile Portal
- 17+ Million active subscribers
- Leaders in mobile data, GPRS and UMTS / 3G roll-out
- Distinctive new brand, O<sub>2</sub>



# mmO<sub>2</sub> High Level Roadmap

GPRS

- **Optimise current GSM / GPRS implementations today**

- New services & applications being launched with GPRS

3G R3

- **Launch 3G networks starting in 2002**

- New revenues due to large number of new services & applications

- Cost reduction due to use of ATM technologies, replacing TDM

3G R4

3G R5

3G R6

- **All-IP networks in “evolution” phases, starting in 2004**

- Significant number of new services & applications based on real time IP, such as mobile multimedia over IP

- Significant cost reductions due to use of IP technologies all over the networks

**All roads lead to IP !**

O<sub>2</sub>

# Major Paradigm Shifts

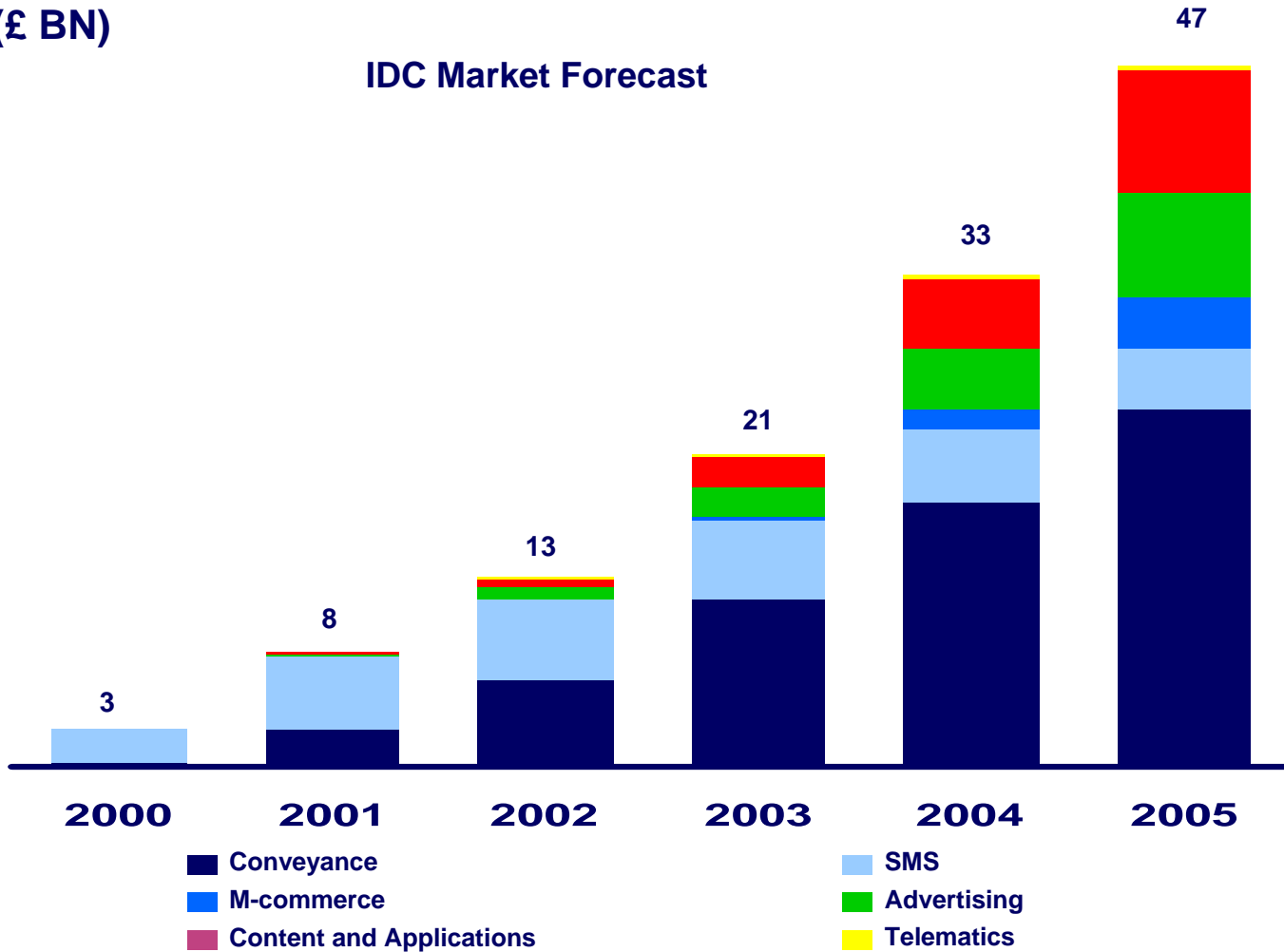
- **Wireless world and IP World are converging**
  - Move to All-IP mobile networks
  - Significant changes to everything, from devices to IT systems
- **We want to go up the value chain and offer mobile multimedia services**
  - No more voice-only or bit-pipe scenarios
  - Finding the compelling applications and retaining the value are major challenges
- **Regional / Global networks and services**
  - Voice roaming was easy!
  - How about location-based, personalised m-commerce service offered on a pan-European basis!

**More Revolution than Evolution**

# Wireless Data in Western Europe

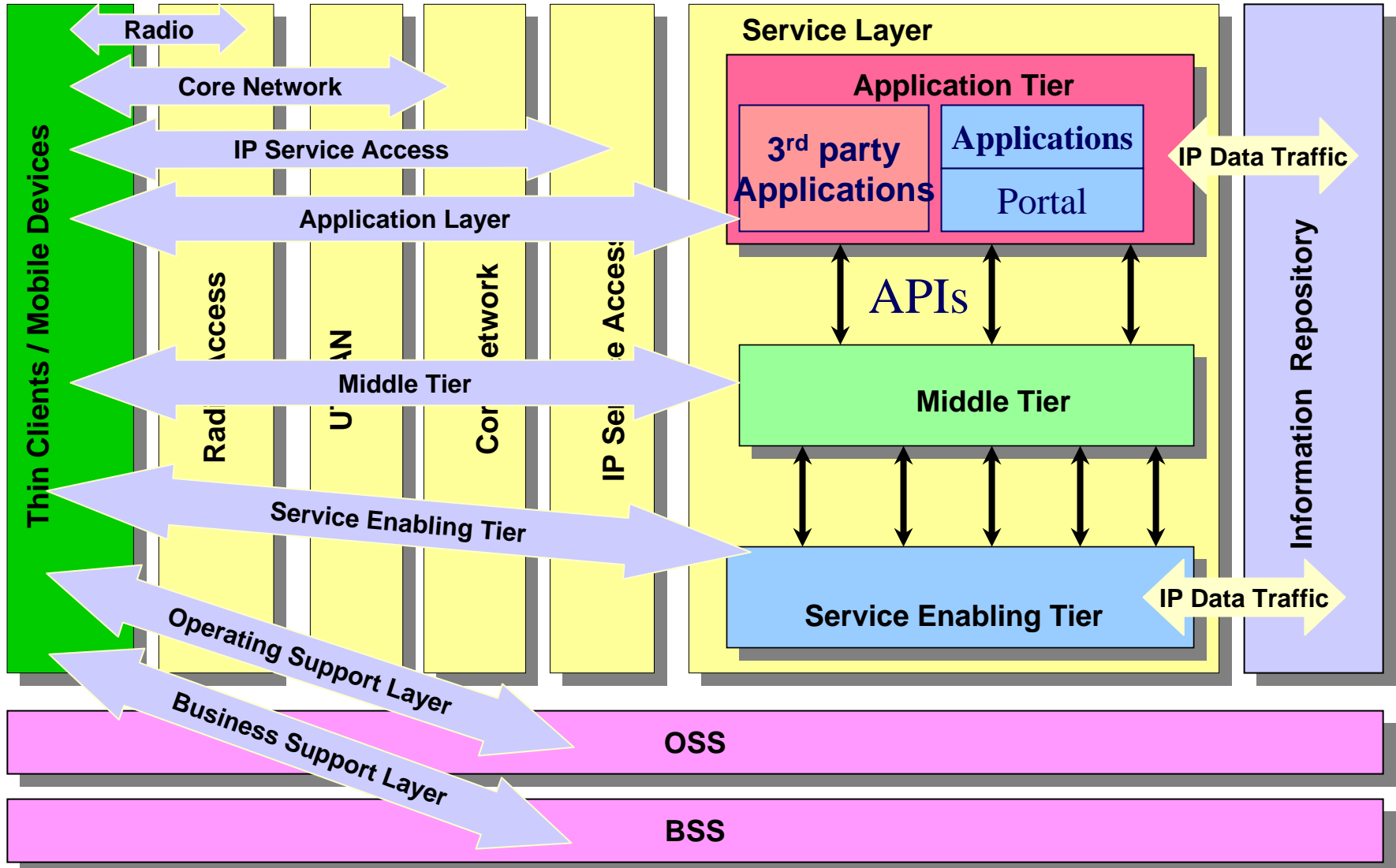
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IDC Market Forecast



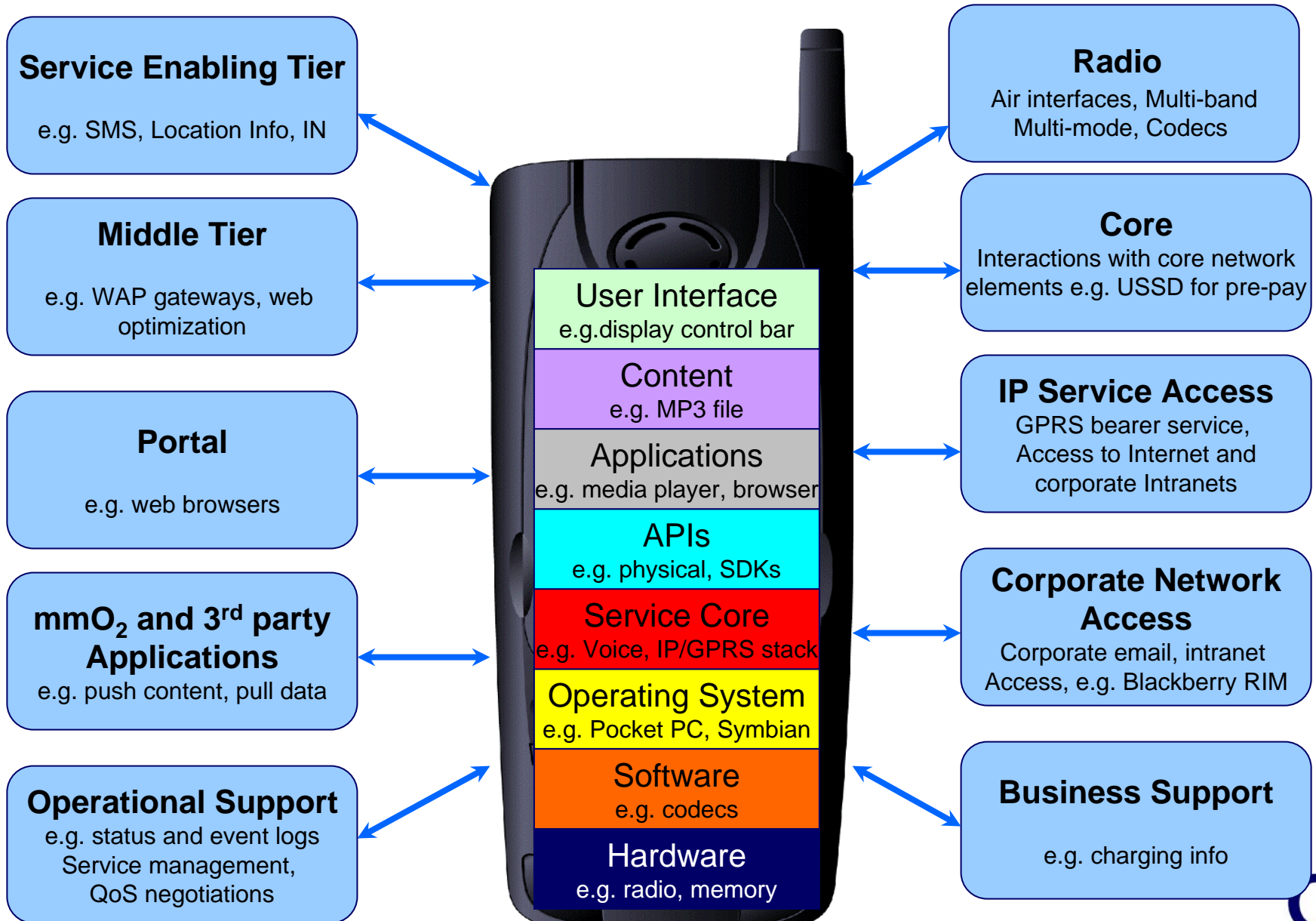
Source: IDC

# End-to-End Architecture

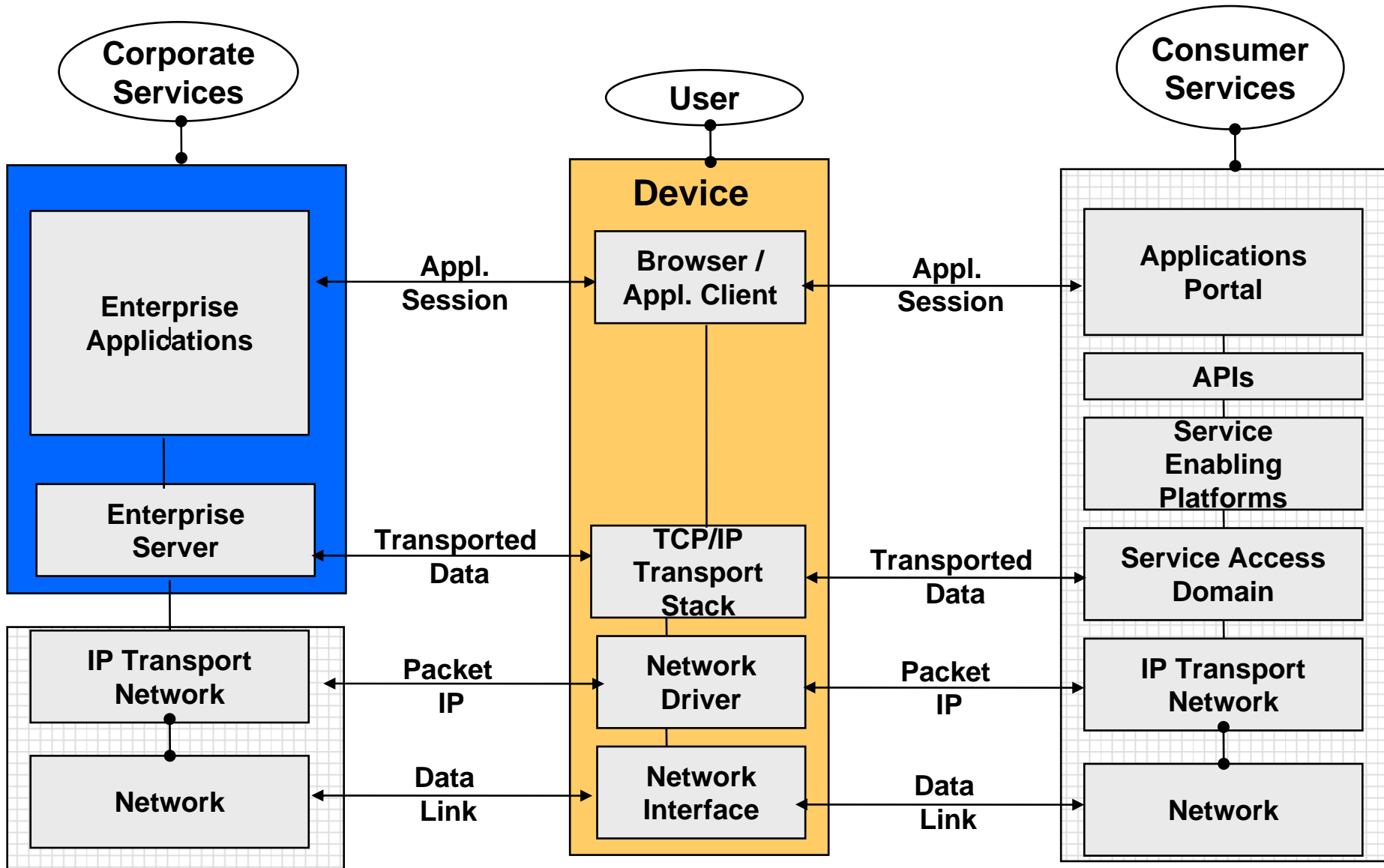




# Device / Thin Client Interfaces



# Device to Service Layer Interactions



# mmO<sub>2</sub> Business Products



**Blackberry RIM**



**XDA**



**Handspring Treo**

# Business Oriented Services – RIM Blackberry

- Always on, always connected via GPRS
- Real-time, secure wireless e-mail solution
- Services include
  - Push email, contacts, schedule
  - Exchange / Outlook
  - Lotus Notes
  - Cradle synchronization
  - Triple DES security
  - WAP browser (under development)
- About \$600 / device, \$60 / month flat fee
- Rolled out throughout mmO<sub>2</sub> operators in Europe, UK, Germany, Holland & Ireland



# Business Oriented Services – Wireless PDA

- GSM and GPRS PDA
- Developed in partnership with Microsoft
- Microsoft Pocket PC 2002
- Color screen
- Mobile phone, email and fax
- Internet Browser
- Over-the-Air synchronization
- Outlook for calendar, contacts, e-mail
- Sync with Word, Excel on Packet PC
- AvantGo, download web content
- Roll-out starting in Spring



# Business Oriented Services – Handspring Treo



- Being developed in partnership with Handspring
- First integrated Palm OS wireless communicator
- Covers 3 models, Treo 180, 180g and 270 colour model
- Mobile phone, wireless email, SMS, and Internet access
- Microsoft Outlook and Lotus Notes
- Roll-out starting in 1Q 2002 with GSM and 2Q 2002 with GPRS

# Requirements and Challenges (1)

- **Hardware**
  - MCU, DSP < Memory, RF section
  - Display Technologies, LCD, SLED, touch screen
  - Imaging Technologies, CMOS cameras
  - Power Management, battery technologies
- **Radio**
  - GSM 900/EGSM/GSM1800, GPRS, EDGE, WB-CDMA, FDD/TDD
  - Combined WB-CDMA/GSM 900/EGSM/GSM1800 terminal
  - Handover requirements, Codec requirements
  - Other multi-band technologies, e.g. WLAN/ Bluetooth
- **Operating System**
  - Windows, Palm OS, Symbian
- **User Interface**
  - Text input technologies, Hand writing recognition, Touch screen
  - Voice / speech recognition

# Requirements and Challenges (2)

- **IP Technologies**
  - IPv4 stack, Dual IPv4 / IPv6 stack, Mobile IP, QoS, SIP
- **Security**
  - SIM / USIM, MExE
  - WPKI, Digital Signature, Certificate Authority (CA's), IP Sec
- **Java**
  - J2ME
- **WAP**
  - WAP 2.0
- **Over-the-Air (OTA)**
  - SIM OTA
  - Application downloads
- **Bandwidth Management Technologies**
  - Bandwidth optimization

# Requirements and Challenges (3)

- **Messaging**
  - SMS Evolution to MMS
  - Instant Messaging
- **Business Applications**
  - PIM, Outlook, Lotus
- **Synchronization Techniques**
  - SyncML
- **Location Based Applications**
  - Cell-Id, E-OTD,
  - GPS assisted
- **Streaming Applications**
  - Digital Rights Management

# Conclusions

- Wireless thin clients / mobile devices are very critical for growth of Wireless Internet
- Mobile operators, like mmO<sub>2</sub>, are counting on delivering compelling value propositions to business users and consumers; thin clients / mobile devices play a significant role in these value propositions
- As part of our GPRS roll-out, we are supporting a large number of GPRS devices, as well as O<sub>2</sub> branded devices, such as Blackberry RIM, XDA and Handspring Treo
- Long list of technical requirements and challenges
- “Operator pain test” for large or small suppliers / start-ups:
  - How does your product help us increase revenue, e.g. new services, time-to-market?
  - How does your product help us reduce cost, e.g. simplicity, bandwidth savings, churn reduction?