



Nokia Networks - attacking new growth opportunities

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Strategy and Business
Development
Nokia Networks

Mobile Minds

NOKIA

Contents



- Market outlook
- Network renewal opportunity
- 3G WCDMA Radio Networks
- New Business machinery
- Conclusions

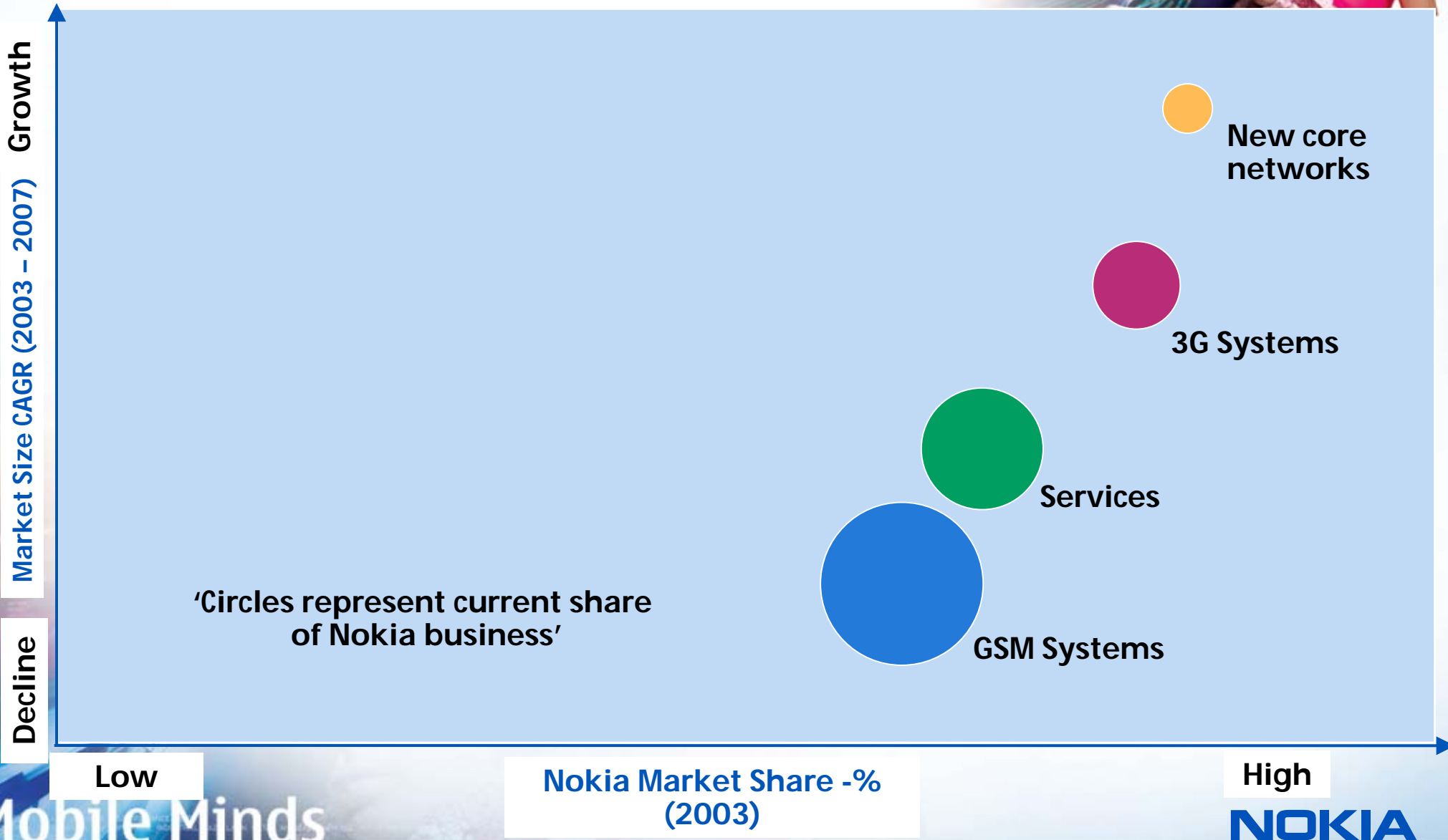
Market outlook 2004



- Market conditions stable – Nokia forecasts 2004 market flat to slightly up from 2003 (in Euro)
- New growth markets bring back strong subscriber growth
- Intensified competition on non-voice services – variety, user experience and branding
- 3GSM family of technologies strengthen its role as the globally dominant service platform
- 2004 will be the year of volume WCDMA 3G network launches

Selected segments offer good opportunities of growth for Nokia Networks

Nokia Networks Businesses

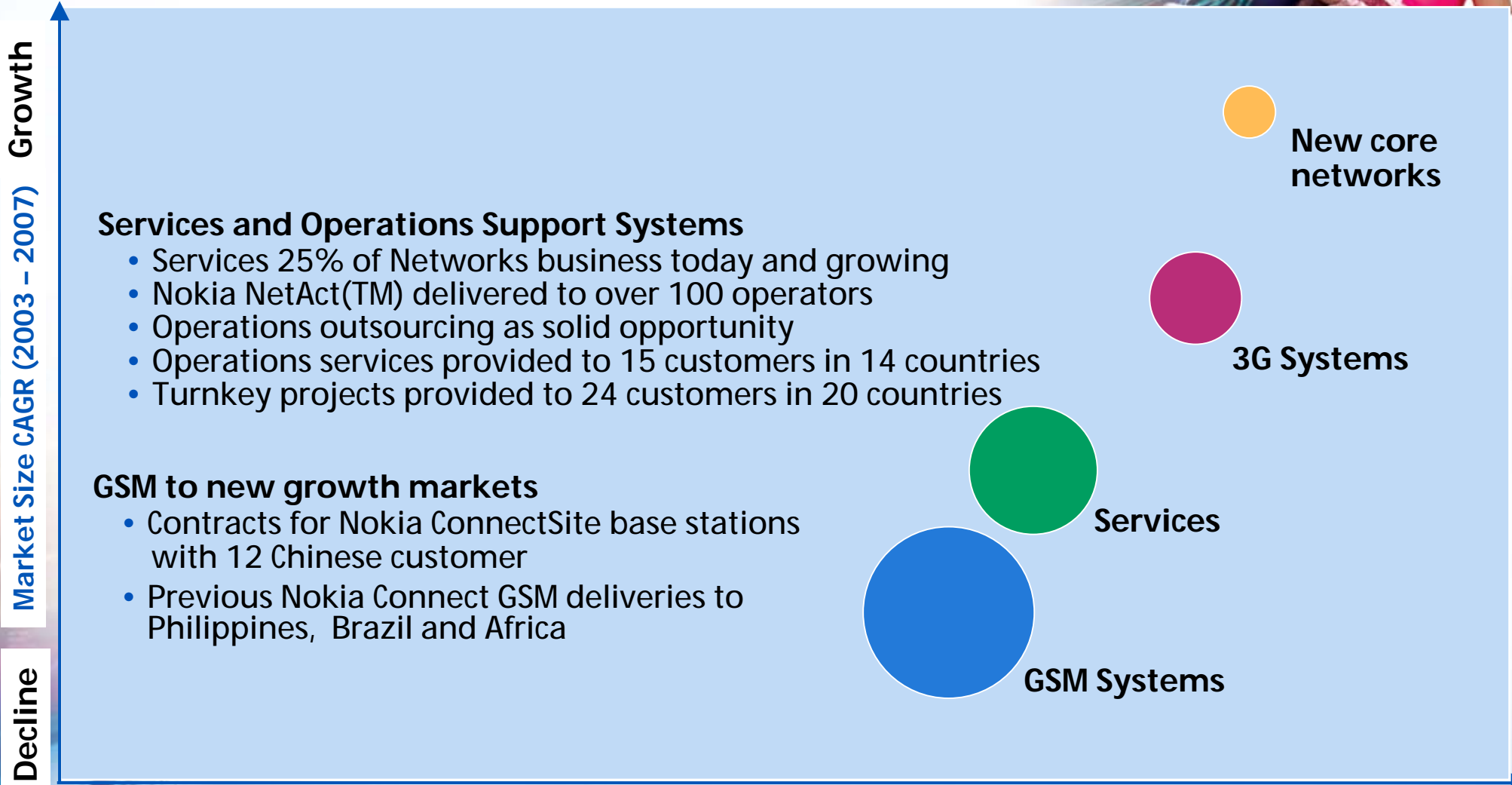


Nokia Networks Businesses



Market Size CAGR (2003 – 2007)

Decline



Services and Operations Support Systems

- Services 25% of Networks business today and growing
- Nokia NetAct(TM) delivered to over 100 operators
- Operations outsourcing as solid opportunity
- Operations services provided to 15 customers in 14 countries
- Turnkey projects provided to 24 customers in 20 countries

GSM to new growth markets

- Contracts for Nokia ConnectSite base stations with 12 Chinese customer
- Previous Nokia Connect GSM deliveries to Philippines, Brazil and Africa

Low

Nokia Market Share -%
(2003)

High

Contents



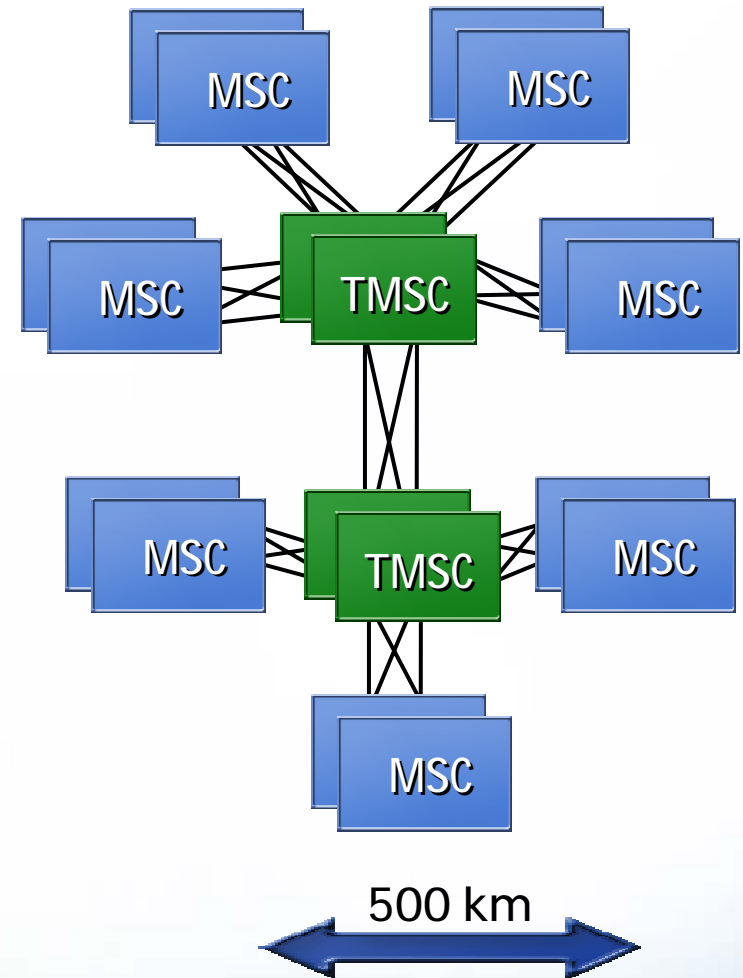
- Market outlook
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Core Network renewal: Typical current network

- 2M subscribers

- Many elements and sites
- High O&M cost
- Costly upgrade to WCDMA

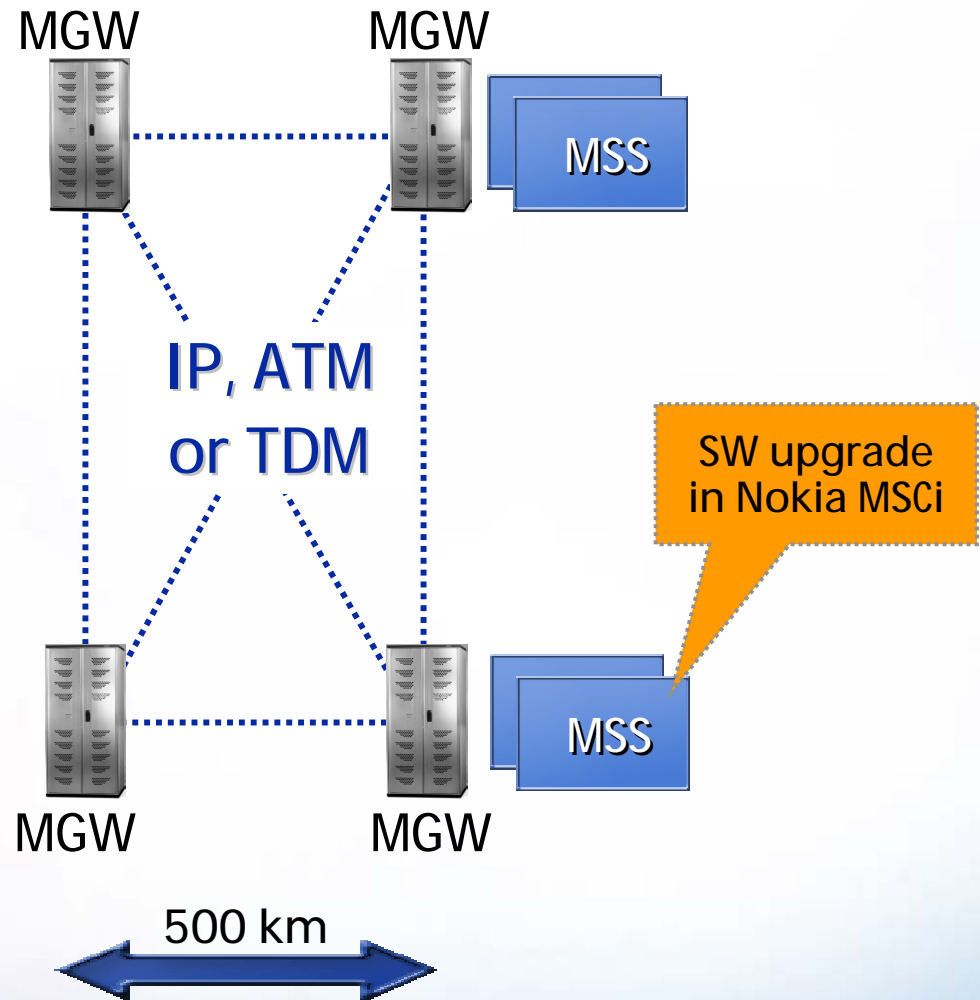
✘ Operator is losing money every day



Core Network renewal: Nokia MSC Server network

- 2 M subscribers

- Less elements, flexible architecture
- Full GSM/EDGE and WCDMA support
- O&M savings by Voice over IP (VoIP)
- Transmission savings
- IP Multimedia support

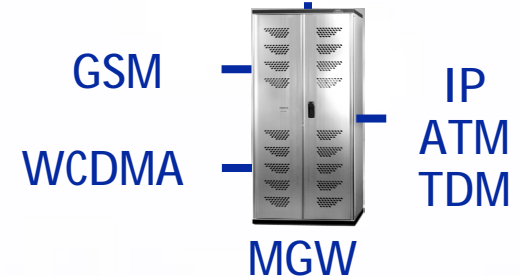


Core Network renewal: Nokia MSC Server (3GPP Rel4) now live in operators' networks



- MSC Server System is in deliveries now for GSM and WCDMA
- Meets requirements of both GSM and WCDMA simultaneously

Nokia MSC Server



GSM radio renewal: EDGE speeds up the GSM network modernizations

EDGE to GSM networks

- EDGE bitrates can increase the multimedia usage
- Lower cost per bit with EDGE

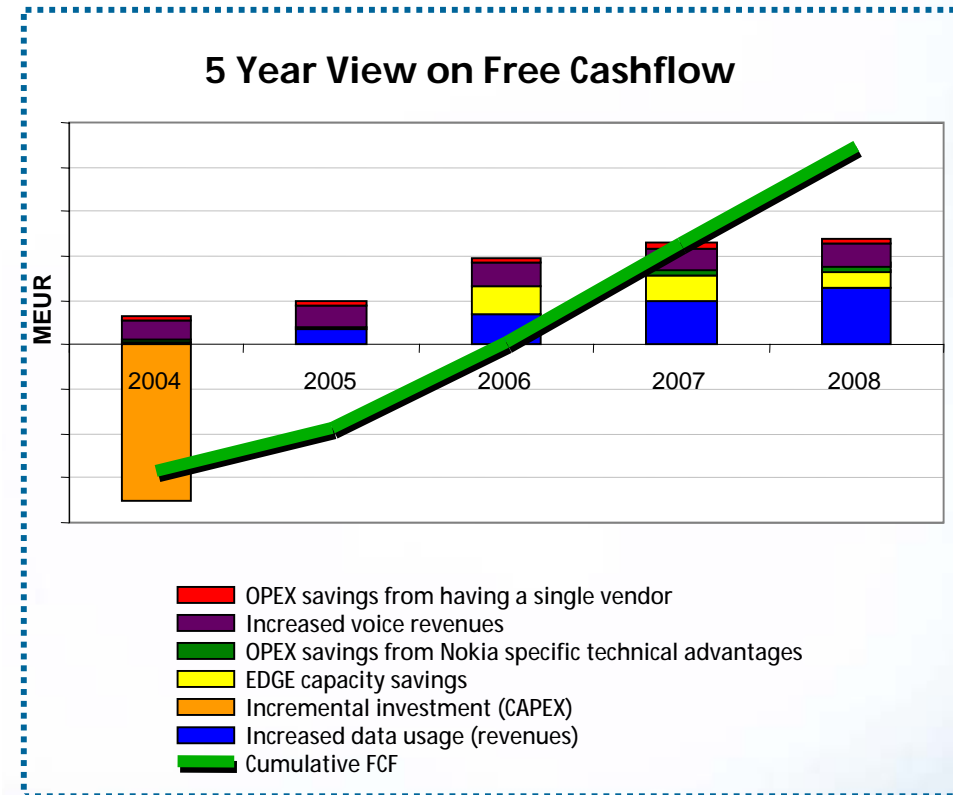
Modernization of GSM

- Improved coverage
- New Nokia GSM/EDGE BSS can deliver up to 15% more voice minutes from day one compared to the old BSS

From GSM to multiradio 3GSM networks

- Education on end users to new multimedia services with EDGE speeds up the WCDMA success
- EDGE can be used as coverage complement to WCDMA

Case: whole GSM BSS modernized - pays back in 2 years



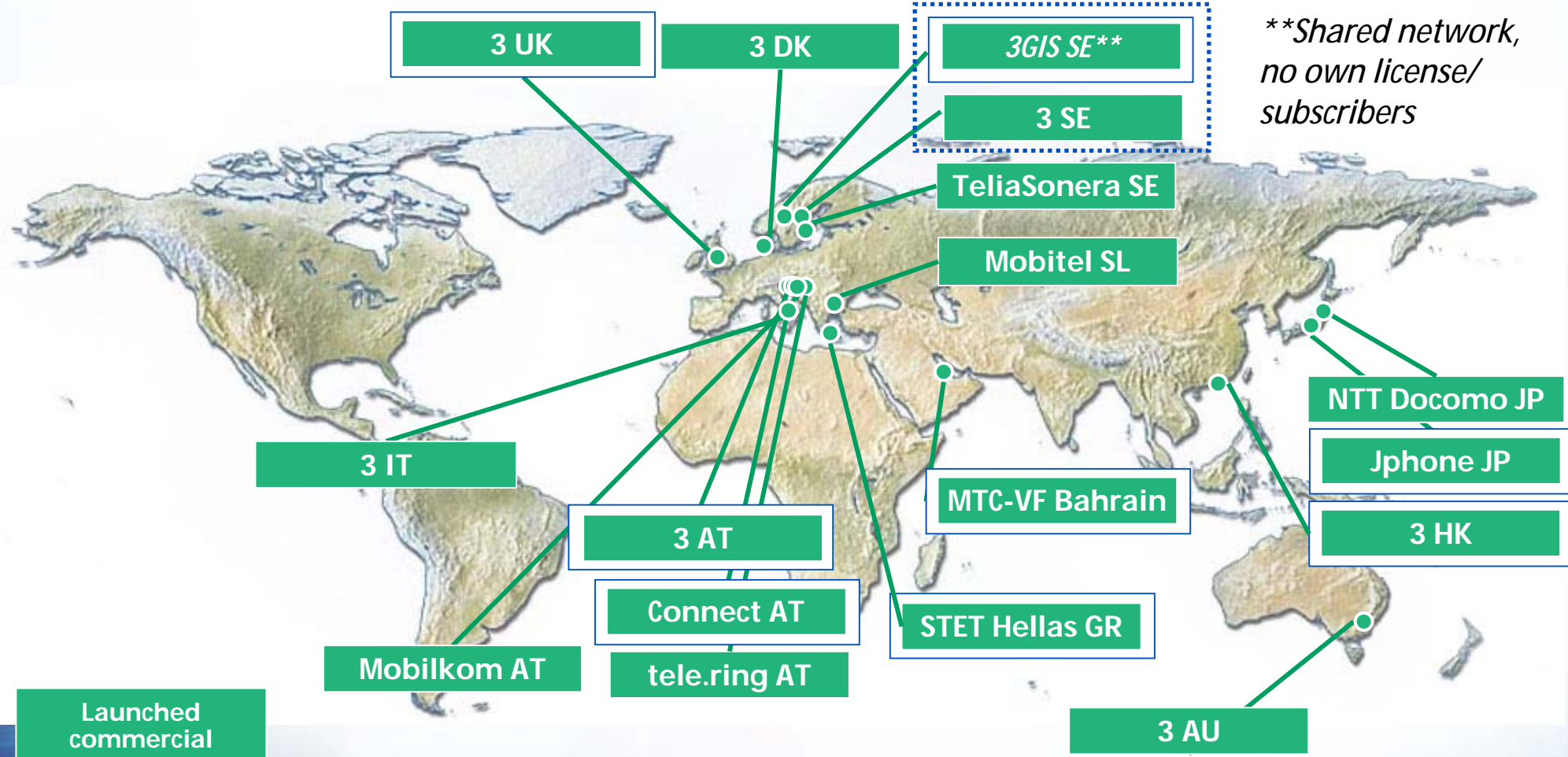
Contents



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16 Commercial WCDMA networks

8 supplied by Nokia



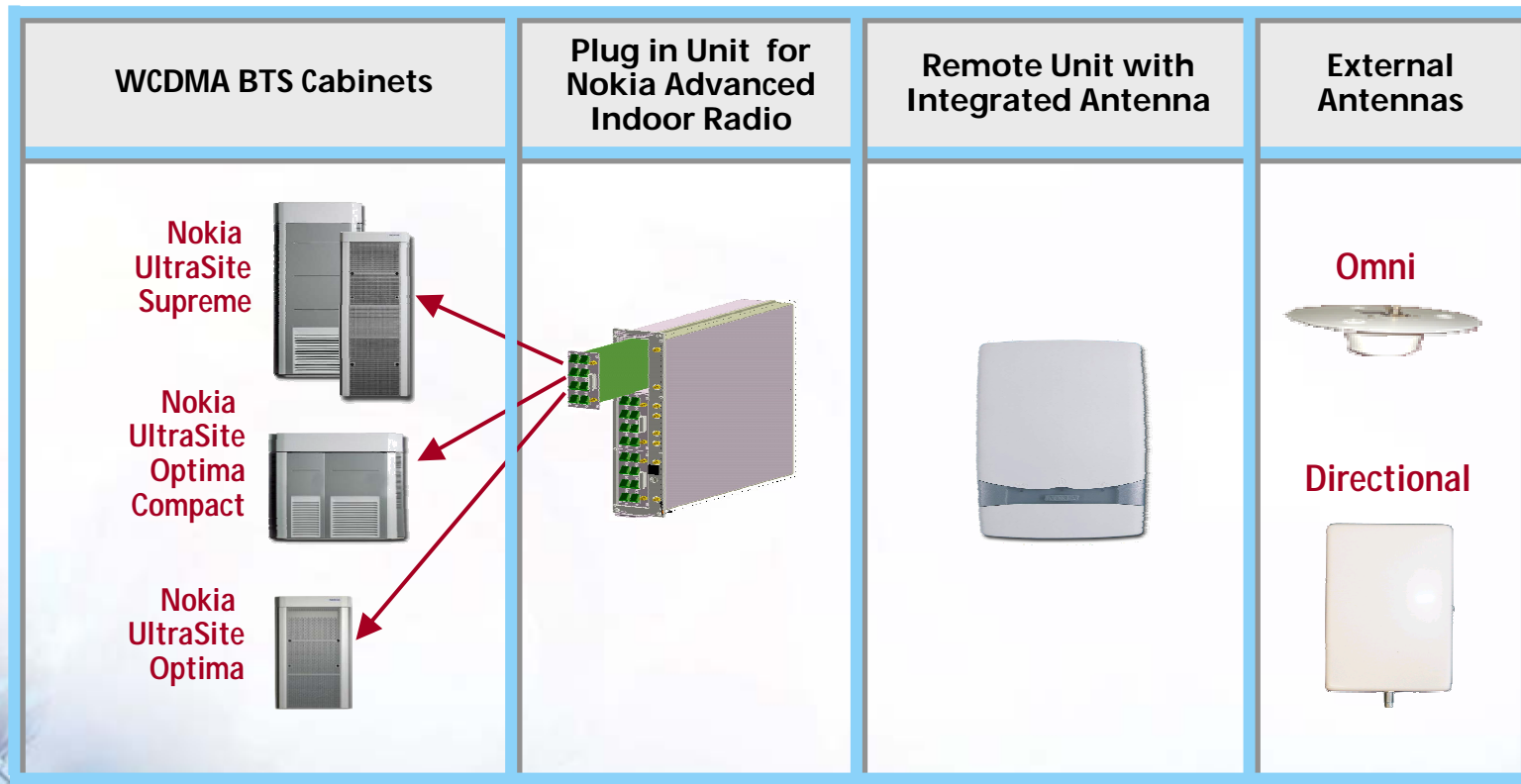
Launched commercial

Supplied by Nokia

Nokia Advanced Indoor Radio



- Introduction of remote unit and one new plug in unit
- Evolution path to HSDPA indoor cell without any new AIR hardware
- Compliant with 3GPP specification for local area BTS



Highest data rates and capacity with WCDMA boosted by HSDPA



- High Speed Downlink Packet Access
 - 2–5-fold data rates, 2-fold BTS capacity
 - dynamically optimized data rates in changing radio environment - with new modulation introduced, 16QAM
 - fast scheduling and data retransmission managed by BTS
- HSDPA is a simple evolution in Nokia WCDMA
- Nokia Advanced Indoor Radio is ready for HSDPA from the beginning

Contents

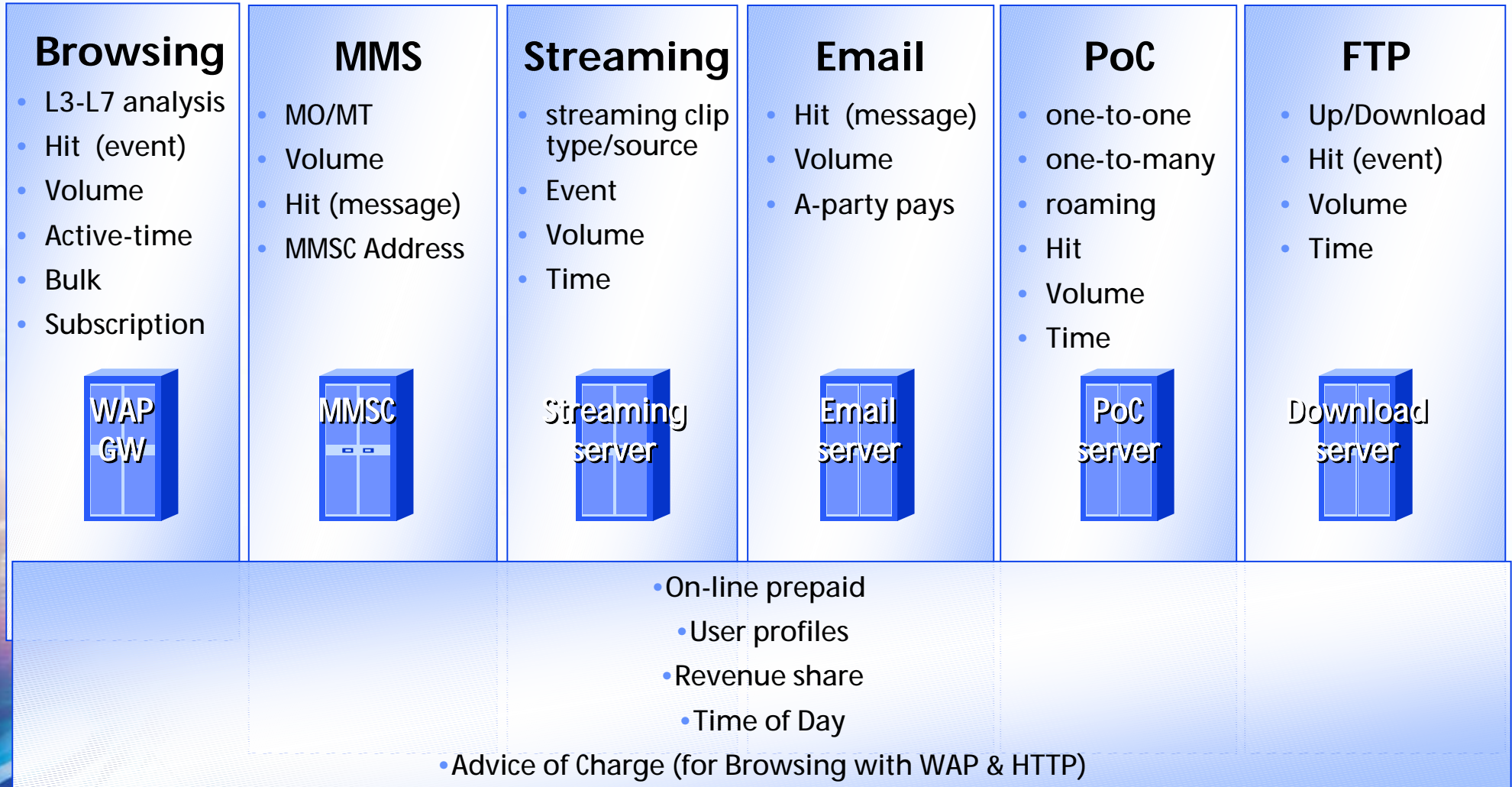


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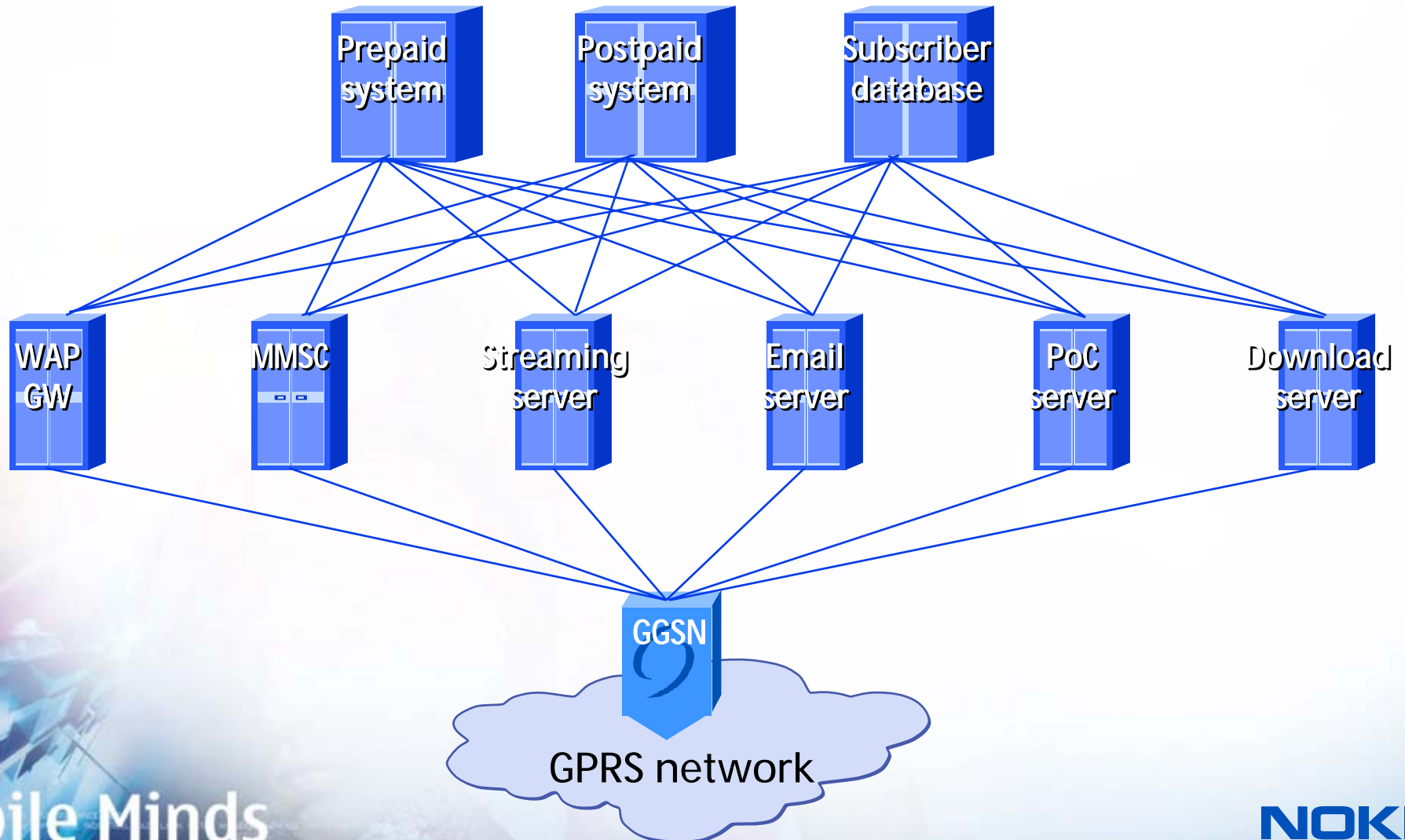
What's on the operator's agenda today?



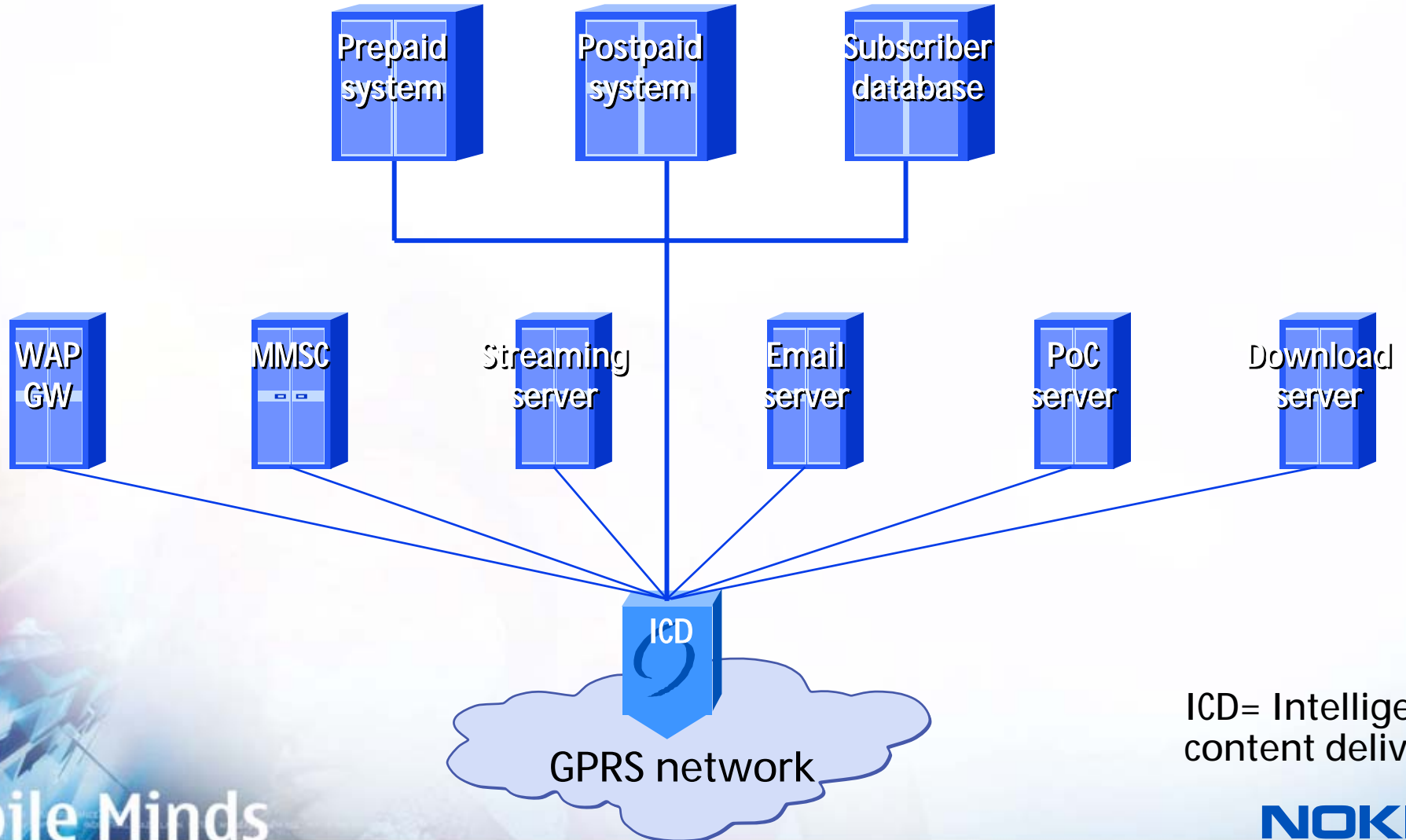
Advanced traffic and content charging is needed for differentiation



You can do this the hard way...



...or the easy and cost-efficient way



ICD= Intelligent content delivery

Nokia ICD adds service and subscriber awareness with one access point



- Differentiated service charging
- Subscriber specific access control
- Service based Quality of Service
- Secure connectivity for corporate customers



Nokia
ICD

Intelligent traffic and
content charging



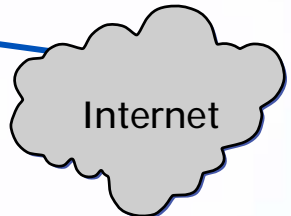
Operator.net

Intelligent traffic and
content charging



Partners.net

On-net / Off-net
charging



Internet

Secure connectivity



Corporates/
SMEs

ICD = Intelligent Content Delivery

Push to talk Over Cellular



Nokia 5140



5-8 models in 2004

2005 onwards - a standard feature in all new GPRS/WCDMA terminals

SIP SDK for S60



Nokia PoC release 1

Nokia PoC release 2

OMA standardisation

Industry specification

Industry Consortia

Nokia, Ericsson, Siemens, Motorola

2003

2004

2005

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Nokia Networks Businesses



Market Size CAGR (2003 – 2007)

Decline

Growth

NEW CORE NETWORKS

- Nokia first with PoC, infra shipping, terminal shipping in 2Q
- 4 commercial push-to-talk deals announced
- PoC trials with 30 customers globally
- Intelligent Content Delivery integrated by 15 Nokia customers worldwide
- Nokia IP Multimedia Subsystem, trialled globally, available 2Q/2004

 **New core networks**

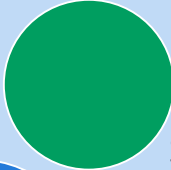
WCDMA 3G

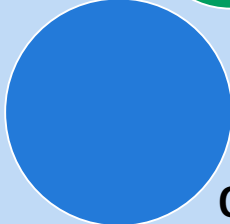
- T-Mobile Netherlands adding Nokia customers to 39
- 16 commercial networks, 8 supplied by Nokia

 **3G Systems**

GSM renewal

- MSC Server in deliveries
- EDGE hardware deliveries to more than 65 customers in 35 countries
- 25 public EDGE references
- Nokia has delivered network to 10 out of 13 commercial EDGE launches

 **Services**

 **GSM Systems**

Low

Nokia Market Share -%
(2003)

High

Nokia Networks

- attacking new growth opportunities

- Mobile operators increasingly active
- Selected infrastructure segments offer growth opportunities
- Nokia in strong position to address such segments
 - New core networks
 - GSM modernization and new growth markets
 - 3G radio network with WCDMA and EDGE
 - Network related services including outsourcing
- Targeting market share gains by broader product portfolio and better market coverage



Thank You!

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