ITU-BDT Seminar on IMT-2000

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Economic Aspects of Evolution Towards IMT-2000

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Presentation Rationale

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Successful business requires analysis of regulatory and market dynamics for whole system life cycle

see ITU Mid – Term Guidelines and Handbook on "Smooth Transition to IMT-2000"

Choice of complete network technologies becomes critical!

- **First steps towards IMT-2000 (3G)**
  - 270 commercial GPRS networks
  - 137 networks deploying GPRS/EDGE
  - 67 commercial EDGE networks (source: GSA, April 5, 2005)
  - 115 commercial Cdma2000 1x networks (source: CDG, April 8, 2005)
- **IMT-2000 (3G)**
  - W-CDMA: 134 licenses awarded
  - 67 commercial W-CDMA networks (source: GSA, April 12, 2005)
  - 20 commercial CDMA 1x EV-DO networks (source: CDG, April 8, 2005)
- **Evolution of IMT-2000 (3G+)**
  - 3GPP has an evolution plan for inclusion of other radio technologies (HSDPA, WiFi, WiMax, …) (source: 3GPP)
  - CDMA 1X EV-DV: Development stopped (source: various press releases)

GSM / UMTS Growth in India
Source: GSA (www.GSACOM.com)

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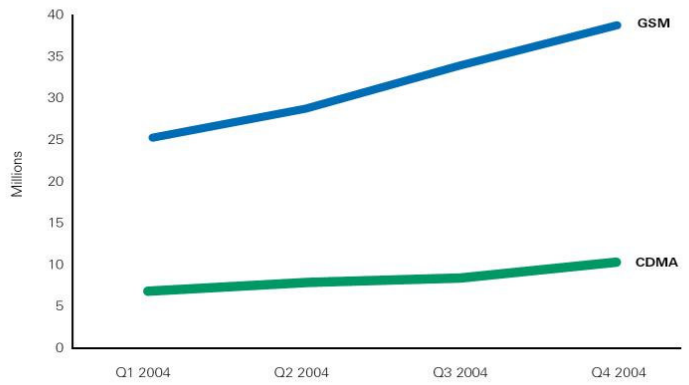
Mobile subscribers growth in India – 31 December 2004

Source of data: Informa Telecoms & Media

GSA



GSM / UMTS Growth in Latin and Central America
Source: GSA (www.GSACOM.com)

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Mobile subscriber growth in Latin and Central America

31 December 2004

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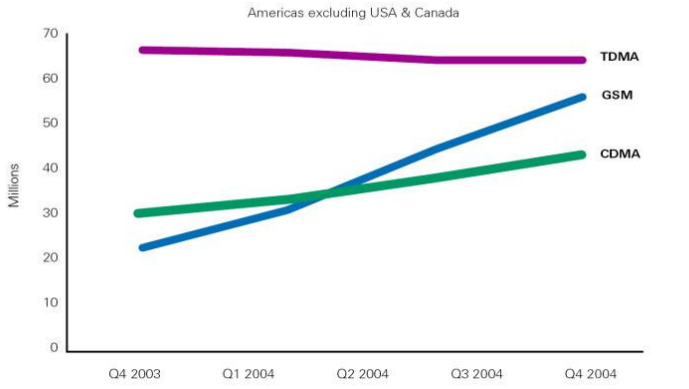

GSM / UMTS Growth in Americas
Source: 3G Americas (www.3gamericas.org)

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- From 17 Million in 2001 to 117 Million in 3/2005
- 160 licensed GSM operators
- Edge commitment: 69 operators in 35 countries
  (outside Americas: 89 operators in 51 countries)
  Total commitment: 158 operators in 86 countries
  Total deployment: 67 operators in 44 countries
- W-CDMA UMTS Launch in USA:
  AT&T wireless/Cingular: Detroit, Phoenix,
  San Francisco, Seattle, Dallas and San Diego
- 15 – 20 Cities by end 2005

GSM / UMTS Growth in China
Source: GSA (www.GSACOM.com)

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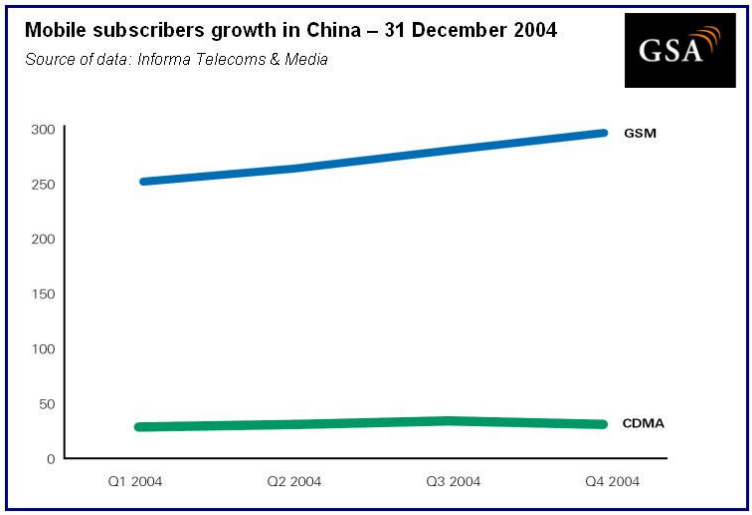

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- What do operators need to know?
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- Business model for the life-cycle (~ year 2015)
- Conclusions

User Needs – users do not buy technology!

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- Enhance (multi-media) life-style experiences
- Additional M2M applications & Services:
  - Machine to Machine
  - Machine to Mobile
  - Mobile to Machine

- "Security"
- Meter readings
- Pay systems
- Vending machines
- Games
- Cargo tracking
- eGovernment
- …

- Ease of use across different networks (VHE)
- Global roaming for voice and data (~ 20% revenue!)
- SMS / MMS capability across networks (tourism!)
- Simple combined billing and/or pre-paid capabilities

These capabilities are only possible within the same IMT-2000 family member – see ITU work; this means that today GSM/GPRS/UMTS can not work with CDMA2000.

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Pressures on ARPU and Overall Revenue

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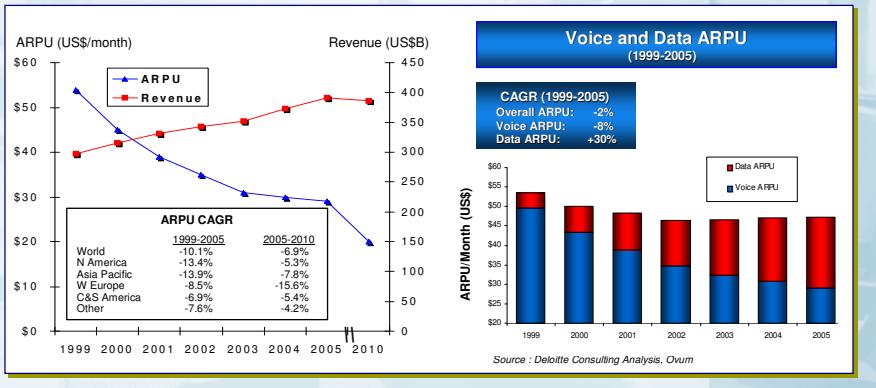
- Competition and demography requirements
- Subscriber Acquisition / Retention Costs and
- attractive services customization & segmentation



Operator Issues

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- Wireless connectivity vs. Content Provisioning
- Infrastructure Ownership / sharing vs. MVNO
- Service Provisioning vs. Partnerships
- Regulatory & Financial Constraints
- Cultural & "disposable income" constraints
- International Roaming & VHE capabilities
- Customer Care Capabilities

T-zones
Vodafone Live!
i-mode
3 (video multimedia
...

financial risk/reward sharing

Spectrum, WTO, ...

Market /client segmentation

~ 20% revenue

Compatibility is an issue

Strategy and Business Plan Development

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Various steps from conceiving a corporate vision up to detailing implementation activities are necessary.

Vision and Concept
- Vision
- Corporate philosophy
- International alliances

Market Definition
- Assess market
- Understanding the market
- Positioning

Entry Strategy
- Develop a strategy
  - Business units
  - Products, Channels, Segments, Entry
- Regulator

Business Planning
- Build a business case with const and turnover estimates
- Budgeting
- Investments

Company build up
- Organization
  - Process driven
  - Customer oriented
- Integrated processes
- Technology and network planning
- IT Systems
- Key functions
  - Marketing
  - Sales
  - Customer Care
- Support functions

Implementation
- Up-date strategy
- Implement the concept to build and develop core capabilities
- Focus resources on market entry date

Integrated project management

Business Plan Development – Customers benefit

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Business Development Process

Typical questions to be answered	Contribution of Siemens
• We intend to buy a 2G/3G license. Could the project be feasible from a financial point of view?	Financial feasibility study
• How does market, penetration, ARPU etc. look like? Can investors expectations be met?	Investors Case
• Is our strategy in line with my financial expectations?	Development of fully comprehensive operators business plan
• When do we have to consider technology migration?	Strategy assessment
• What new services do we need to improve financial performance?	

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European Single Market Regulatory Environment

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- All 25 EU Member States need to follow EU Regulations
- Bulgaria, Romania and Turkey are next accession countries and will need to prepare for EU harmonisation
- Mandatory to follow Directives, Decisions, … which de-facto implies:
  - At least one UMTS operator (Single Market roaming)
  - ITU Harmonised core bands for IMT-2000
  - Number portability
  - "Open Network" Provisioning (Access Directive)
  - Conformance to ETSI Standards
  - Compliance to R&TTE Directive
- EU Harmonised Spectrum Allocation and usage for PAMR/PMR and emergency/security/public services (Police, Fire, Health, disaster Relief, …)

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IMT-2000 Radio Technology Standards

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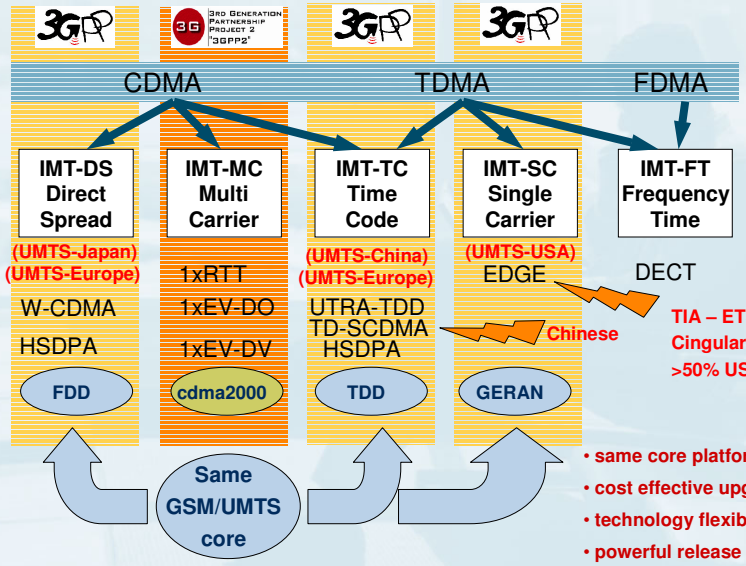

TIA – ETSI – T1
Cingular, SBC and ATT-WS
>50% US mobile market

- same core platforms
- cost effective upgrade
- technology flexibility
- powerful release concept

Source: ITU

UMTS/IMT-2000 Standards

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- Principle body is 3GPP – a partnership between China, ETSI, Japan, Korea and USA (ATIS) SDOs
- ITU-R WP8F and ITU-T SG19 transpose results
- Guarentees use of ITU Harmonised spectrum
- Follows release management concepts of GSM
- Guarantees multi-vendor interoperability
- Guarantees terminal roaming & compliance across networks and countries

3GPP	ITU-T
•R-99	(Q.1741.1)
• R4	(Q.1741.2)
• R5	(Q.1741.3)
• R6	(Q.1741.4)

GSM-A and EICTA work together to define ETSI test specifications

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Why Evolve to UMTS/IMT-2000?

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	Drivers for 3G	Things yet to do for 3G
 End user	➢ Prestige / Image for the 3G user ➢ Personalization and localization of services and content anytime, anywhere ➢ Multimedia capability (pictures, videos, etc. on colored screens)	➢ Costs for handsets and usage of new services and content ➢ Full coverage and network interoperability
 Mobile Network Operator	➢ New applications and content addressing business customers as well as consumer life styles ➢ New revenue streams and revitalized, increasing ARPU	➢ Frequency clearance, regulatory issues ➢ Successful migration of existing customer base towards 3G ➢ Convincing services and applications (“killer application”) to create customer´s demand
 Supplier	➢ Value-based selling by providing End-to-end solutions ➢ Operators “need” to invest in order to fulfill coverage requirements of the regulator	➢ Standardization of interfaces ➢ UMTS handsets for mass market rollout

Challenges for the Mobile Network Operator

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	Exceeding user expectations	Reducing – Total Cost of Ownership
Voice	■ Voice quality ■ Availability ■ Low time-to-market (3G)	■ Investment protecting 3G introduction ■ OPEX reduction ■ Flexibility in network adaptation
Real-time Multimedia	■ Successful launch of attractive multimedia services	■ Optimal traffic routing for peer-to-peer multimedia services
Data	■ Excellent service quality and throughput	■ Cost efficient management of strong traffic growth

GSM/GPRS to EDGE / UMTS

Variable service access

Easy service introduction

Flexible network optimization

Reduced costs by network simplification

Economically Cost Effective Evolution Paths

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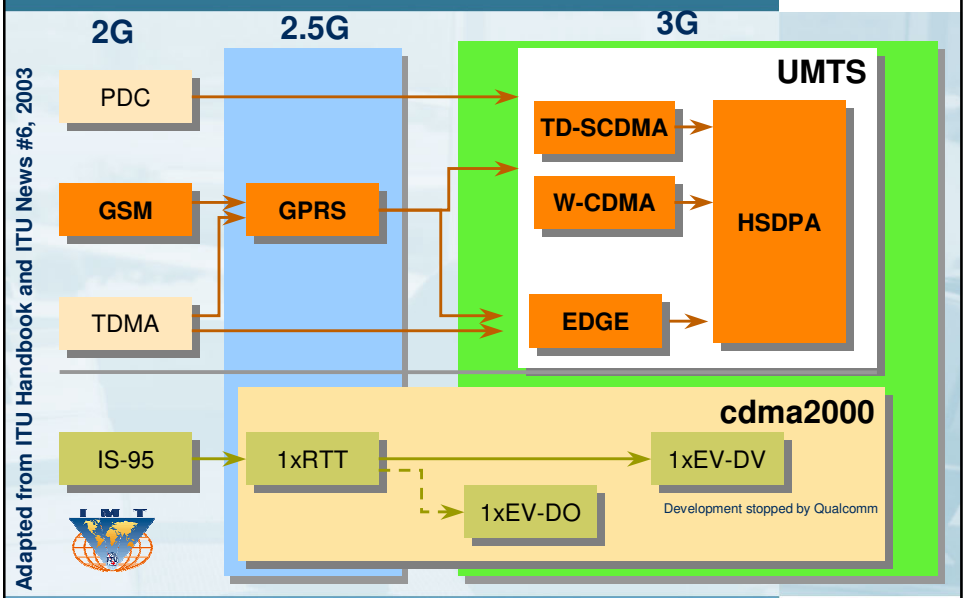

Mobile vs. Fixed and Mobile subscribers by technology

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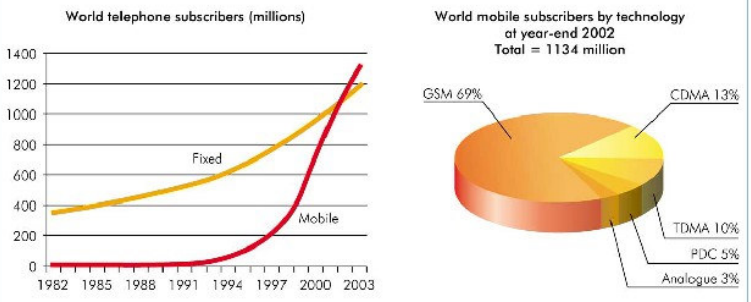
Figure 1 — Mobile overtakes fixed

Number of fixed and mobile telephone subscribers worldwide (1982–2003) and distribution of mobile subscribers worldwide by technology (December 2002)



Source: Left chart: ITU World Telecommunication Indicator database.
Right chart: ITU adapted from GSM Association.

Source:
ITU News #6, 2003

IMS – new multi-media services

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Communication
- Push-to-talk / push-to-see
- Instant Messaging
- Multi-Party Chat
- Video Telephony
- Multimedia Conferencing

Entertainment
- Person-to-Person Gaming
- Audio and Video Streaming
- Interactive Shows and Events
- Multi-Media Mobile Advertisem

Enterprise and on the road
- Dynamic Info Services
- Interactive guidance
- Remote Facility Control
- Collaborative working
- Interactive learning

IMS: Fixed / Mobile Service Convergence (NGN)

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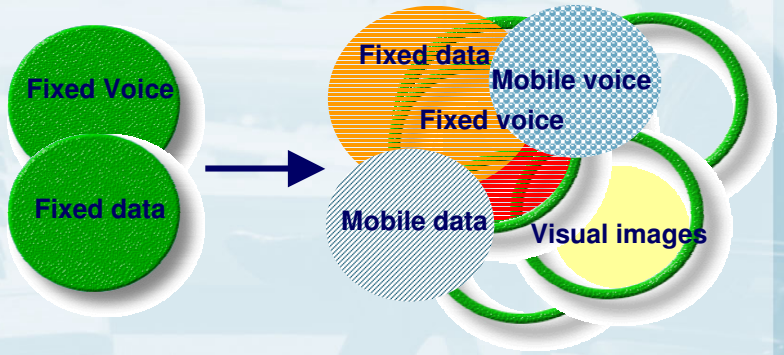
3GPP IMS permits Services Convergence: Same "look and feel"



ITU NGN studies are based on 3GPP IMS

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Subscriber Migration to new Technology: 2G Networks will be with us for a long time!

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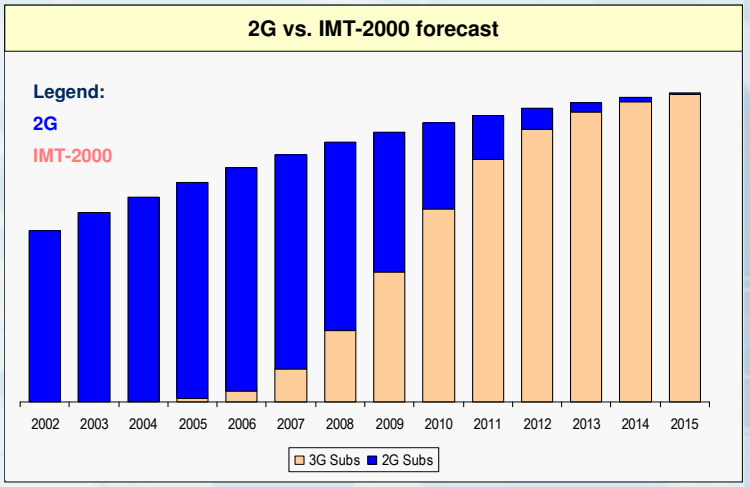

Learning curve,
Interworking with existing networks,
Migration Timing,
Affordability,
Technology churn,
Coverage,
Evolution path,
...

Many New market players – "mass market" standardized platform and Interoperability

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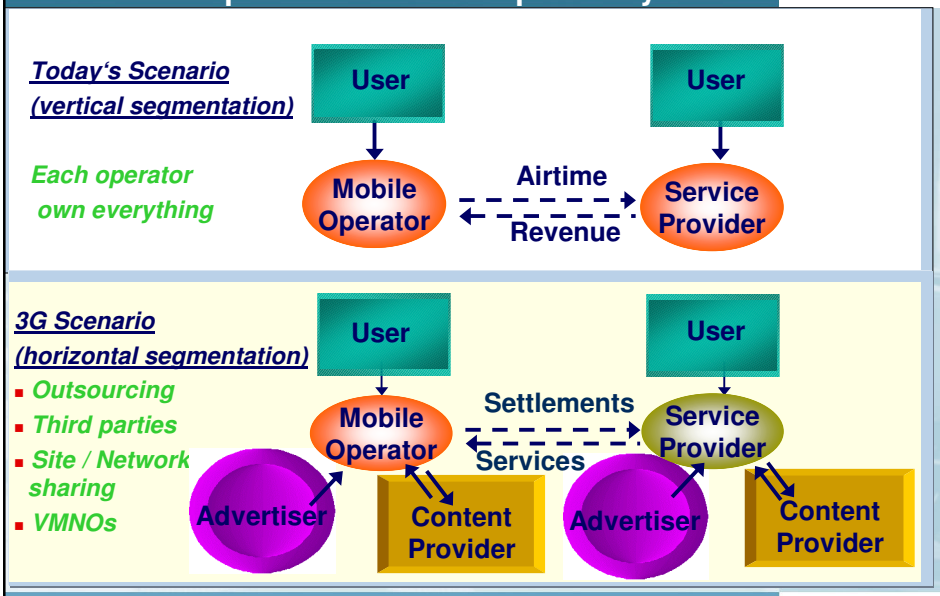

Structure of Siemens Business Plan model

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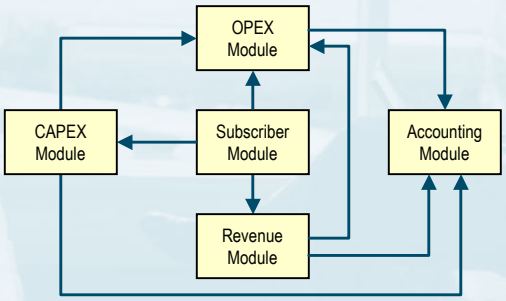

From market share growth to:
- **Reduce Churn**
- **Increase ARPU**
- **Increase use of services**
- **Affordable new services**

Considerations:
- **Regulations (old & new)**
- **Purchasing Power (pre-paid)**
- **GDP and major trade partners**
- **Virtual Home Environment**

Siemens Business Plan Support is modular

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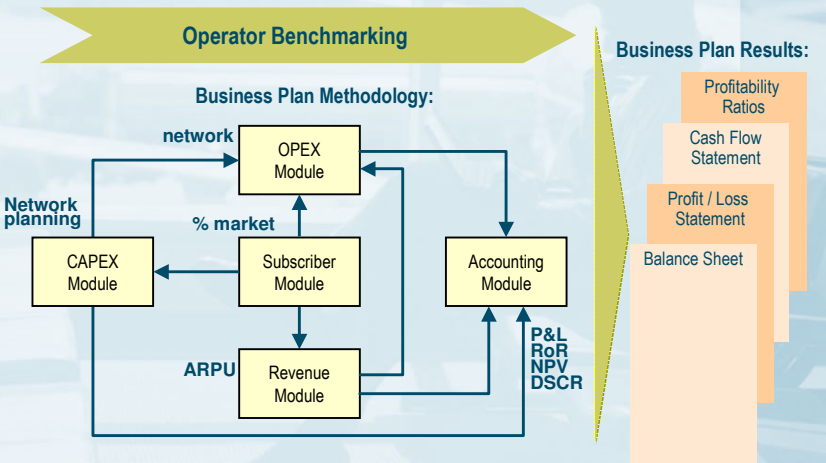
The market and revenue simulations are the key modules of our business plan tool.



Our services cover all market phases from late 2G entrant to future IMT-2000 incumbent

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Customer Market Phase

New entrant in delayed market	Investors' case Fully comprehensive business plan	⇨ Stimulate investors
Migration 2G → IMT-2000	Detailed subscriber model Migration benefits, operators' market attractiveness, competitive churn, technology churn, retention mechanisms	⇨ Position against "new comers"
"2nd wave UMTS" - UMTS new entrant	Data revenues, applications/solutions centric, bottom-up scenario modeling	⇨ Build key strategic relationships
"2nd wave UMTS" - UMTS incumbent	Supplier/product related incremental revenues, OPEX, CAPEX Link to product business plans	⇨ Evaluate alternative relationships

Recipe for success: Flexibility and Cost-Efficiency

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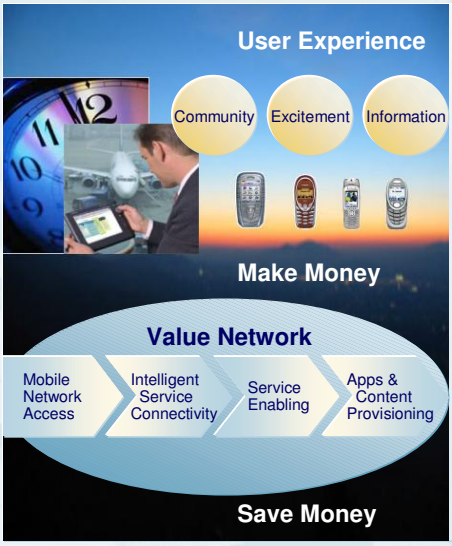

Networks and solutions are built around primary business drivers:

- **Superior User Experience**
  Best possible customer retention and differentiation on the basis of personalized, attractive services;
- **Make Money**
  Safe introduction of new data and multimedia services and industry-leading charging capabilities
- **Save Money**
  Maximum reliability, solid upgrade path, high flexibility and cost-efficiency

Mastering Both Opportunities and Challenges: Making and Saving Money with Your Mobile Network

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Personalization
- Meet user demand by offering personalized services tailored to preferences and terminals

Flexibility
- Stay ahead of unpredictable changes by fast creation of new services and business models

Innovation
- Get ready for fast and safe launches of innovative and attractive real-time multimedia

Simplification
- Stay in control of increasing complexity of multi-service network

Smooth migration
- Gain upper hand in cost efficient migration steps towards 3G

Performance & Reliability
- Satisfy bandwidth hunger of new real-time multimedia services efficiently

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Conclusions

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- Users will choose mass market technology
- M2M and cross border roaming, services, etc. towards major trading partners and tourists
- Develop 2.5G (GSM/GPRS) for transition to 3G
- Evolution to UMTS/IMT-2000 requires a new business model of "horizontal" partnerships
- Business model for the 10 year life-cycle
- Remember "back-office" applications

UMTS is the only economical choice for Africa region!

Business and Technology Partnership with

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Thank You very much!

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