

Economic Aspects of Evolution Towards IMT-2000

Kiritkumar Lathia, C.Eng., F.I.E.E.,
ITU-T SSG Vice Chairman

Vice President - Standards & Fora
Strategic Product Planning
Siemens Mobile Communications S.p.A.
Italy
E-mail: kirit.lathia@siemens.com

Presentation Scope

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

Choice of technology becomes critical!

IMT-2000 licence scorecard (June, 2003):

- **34 countries have awarded licences:**
- **103 operators have chosen UMTS**
- **5 operators have chosen CDMA-2000**
- **4 operators have returned their
licence (regulatory / financial reasons)**

Contents

- What do users want?
- What do operators need to know?
- European Regulatory Environment
- Standards / Technology Environment
- Evolution towards UMTS/IMT-2000
- Business model for the life-cycle (~ year 2015)
- Conclusions

User Needs – users do not buy technology!

■ 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 across EU
- eEurope
- ...

■ Ease of use across different networks (VHE)

■ Global roaming for voice and data (~ 20% revenue!)

■ SMS / MMS capability across networks (tourism!)

■ Simple billing and/or pre-paid capabilities

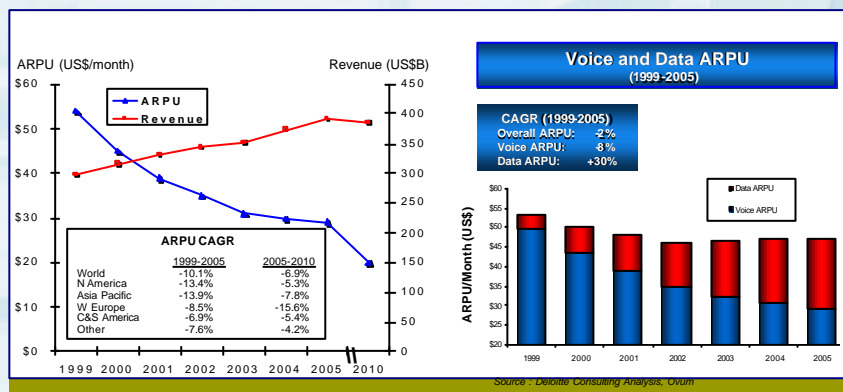
These capabilities are only possible within the same IMT-2000 family member – see SSG work; this means that today GSM/GPRS/UMTS can not work with CDMA2000.

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Pressures on ARPU and Overall Revenue

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



Operator Issues

- 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

EU Environment

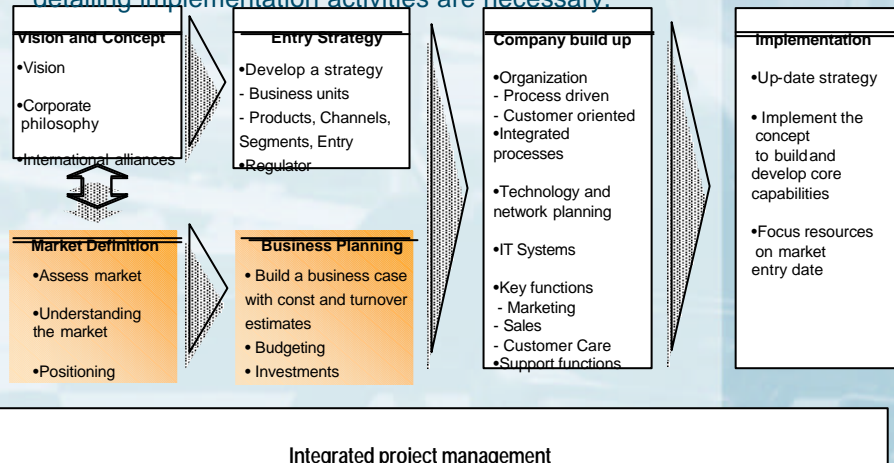
Market /client
segmentation

~ 20% revenue

Compatibility
is an issue

Strategy and Business Plan Development

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



Business Plan Development – Customers benefit

Business Development Process

Typical questions to be answered

- We intend to buy a 2G/3G license.
Could the project be feasible from a financial point of view?
- How does market, penetration, ARPU etc. look like? Can investors expectations be met?
- Is our strategy in line with my financial expectations?
- When do we have to consider technology migration?
- What new services do we need to improve financial performance?

Contribution of Siemens

- ▶ Financial feasibility study
- ▶ Investors Case
- ▶ Development of fully comprehensive operators business plan
- ▶ Strategy assessment

Contents

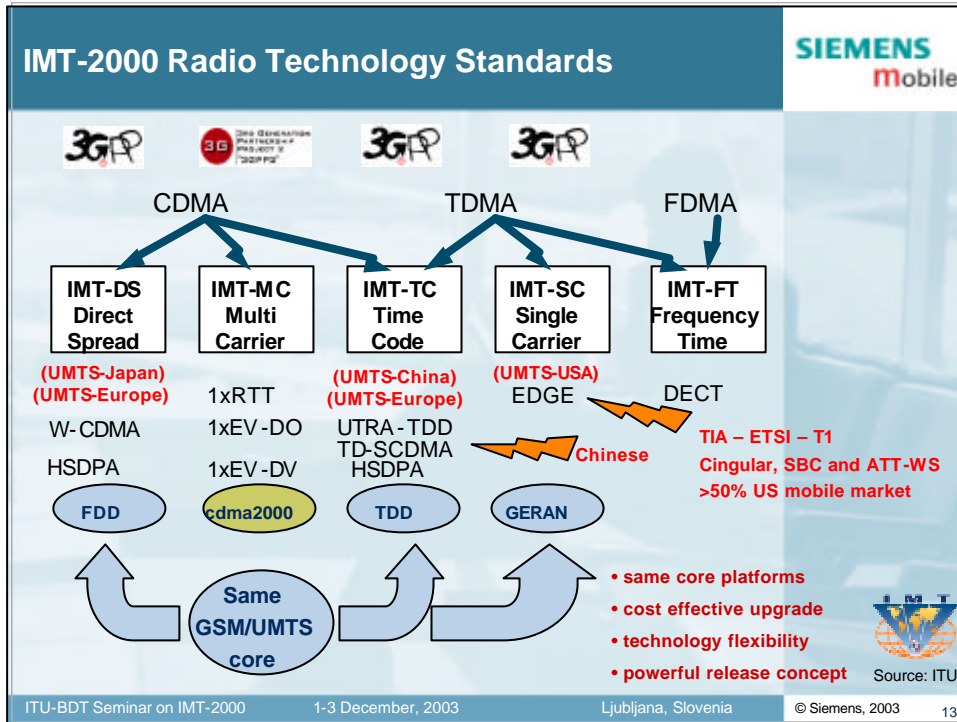
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European Single Market Regulatory Environment

- EU Accession countries need to follow EU Regulations (Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Malta, Poland, Slovak Republic, Slovenia.)
- Bulgaria, Romania and Turkey are next accession countries and should prepare for EU harmonisation
- Need to follow Framework Directive and other relevant Directives, Decisions, ... which **de-facto** implies:
 - At least one UMTS operator (Single Market roaming)
 - ITU Harmonised core bands for FDD and TDD
 - 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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- ## UMTS/IMT-2000 Standards
-
- Principle body is 3GPP – a partnership between China, ETSI, Japan, Korea and USA (T1) SDOs
 - ITU-R WP8F and ITU-T SSG transpose results
 - Evolve from GSM/GPRS to UMTS/IMT-2000
 - 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 |
| } | GSM-A and EICTA
work together to
define ETSI test
specifications |
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Why Evolve to UMTS/IMT-2000?		SIEMENS Mobile								
	End user	<table border="1"> <thead> <tr> <th>Drivers for 3G</th> <th>Things yet to do for 3G</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> ➢ Prestige / Image for the 3G user ➢ Personalization and localization of services and content anytime, anywhere ➢ Multimedia capability (pictures, videos, etc. on colored screens) </td> <td> <ul style="list-style-type: none"> ➢ Costs for handsets and usage of new services and content ➢ Full coverage and network interoperability </td> </tr> <tr> <td> <ul style="list-style-type: none"> ➢ New applications and content addressing business customers as well as consumer life styles ➢ New revenue streams and revitalized, increasing ARPU </td> <td> <ul style="list-style-type: none"> ➢ Frequency clearance, regulatory issues ➢ Successful migration of existing customer base towards 3G ➢ Convincing services and applications ("killer application") to create customer's demand </td> </tr> <tr> <td> <ul style="list-style-type: none"> ➢ Value-based selling by providing End-to-end solutions ➢ Operators "need" to invest in order to fulfill coverage requirements of the regulator </td> <td> <ul style="list-style-type: none"> ➢ Standardization of interfaces ➢ UMTS handsets for mass market rollout </td> </tr> </tbody> </table>	Drivers for 3G	Things yet to do for 3G	<ul style="list-style-type: none"> ➢ Prestige / Image for the 3G user ➢ Personalization and localization of services and content anytime, anywhere ➢ Multimedia capability (pictures, videos, etc. on colored screens) 	<ul style="list-style-type: none"> ➢ Costs for handsets and usage of new services and content ➢ Full coverage and network interoperability 	<ul style="list-style-type: none"> ➢ New applications and content addressing business customers as well as consumer life styles ➢ New revenue streams and revitalized, increasing ARPU 	<ul style="list-style-type: none"> ➢ Frequency clearance, regulatory issues ➢ Successful migration of existing customer base towards 3G ➢ Convincing services and applications ("killer application") to create customer's demand 	<ul style="list-style-type: none"> ➢ Value-based selling by providing End-to-end solutions ➢ Operators "need" to invest in order to fulfill coverage requirements of the regulator 	<ul style="list-style-type: none"> ➢ Standardization of interfaces ➢ UMTS handsets for mass market rollout
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	Mobile Network Operator									
	Supplier									
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Challenges for the Mobile Network Operator

	Exceeding user expectations	Reducing – Total Cost of Ownership	
Voice	<ul style="list-style-type: none"> ■ Voice quality ■ Availability ■ Low time-to-market (3G) 	<ul style="list-style-type: none"> ■ Investment protecting 3G introduction ■ OPEX reduction ■ Flexibility in network adaptation 	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> GSM/GPRS to EDGE / UMTS </div> <ul style="list-style-type: none"> Variable service access Easy service introduction Flexible network optimization Reduced costs by network simplification
Real-time Multimedia	<ul style="list-style-type: none"> ■ Successful launch of attractive multimedia services 	<ul style="list-style-type: none"> ■ Optimal traffic routing for peer-to-peer multimedia services 	
Data	<ul style="list-style-type: none"> ■ Excellent service quality and throughput 	<ul style="list-style-type: none"> ■ Cost efficient management of strong traffic growth 	

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Economically Cost Effective Evolution Paths

2G
2.5G
3G

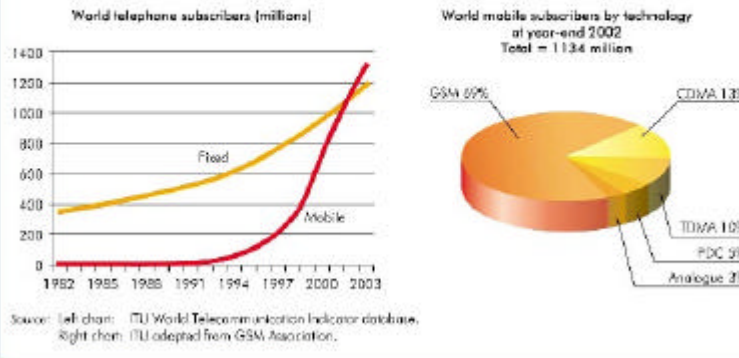
Adapted from ITU News #6, 2003

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Mobile vs. Fixed and Mobile subscribers by technology

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)

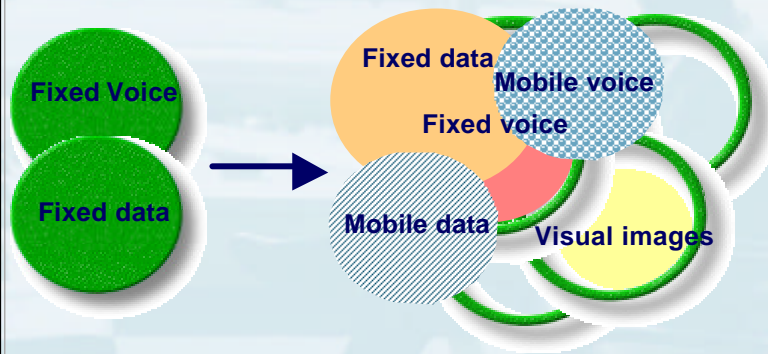


Source: ITU News #6, 2003

IMS – new multi-media services



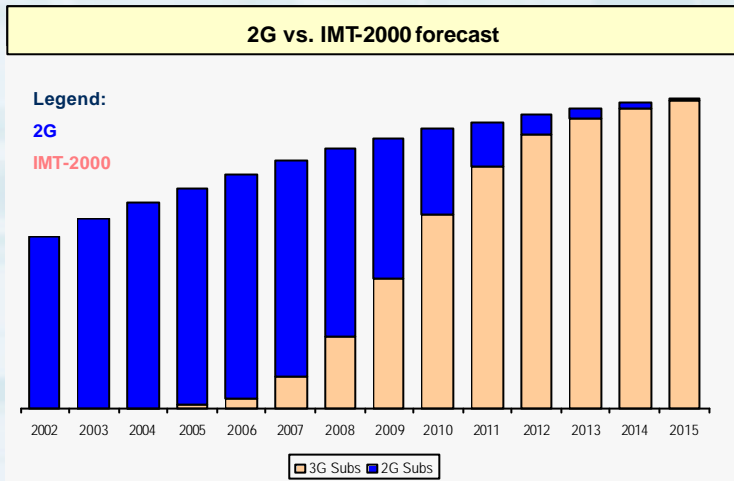
3GPP IMS permits Services Convergence:
Same "look and feel"



ITU NGN studies will be based on 3GPP IMS

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

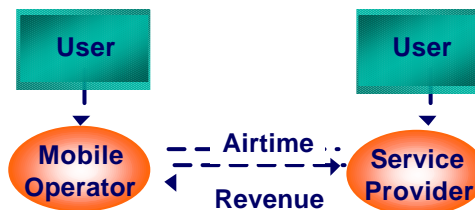


Learning curve
Timing
Technology churn
Coverage

Many New market players – “mass market” standardized platform and Interoperability

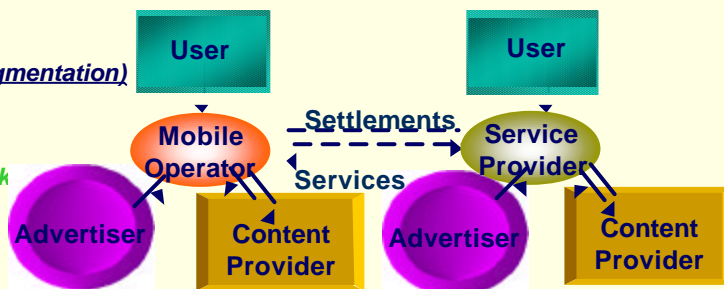
Today's Scenario (vertical segmentation)

Each operator
own everything

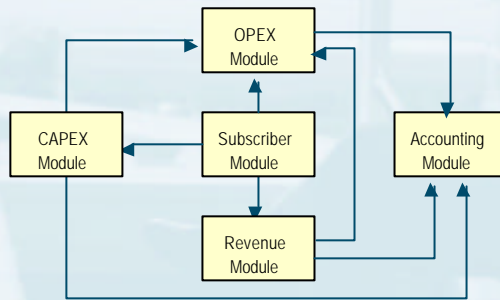


3G Scenario (horizontal segmentation)

- Outsourcing
- Third parties
- Site / Network sharing
- VMNOs



Structure of Siemens Business Plan model



From market share growth to:

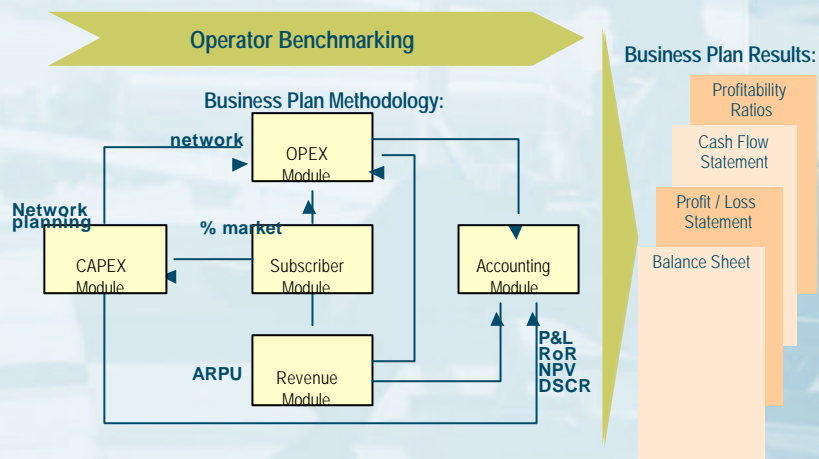
- Reduce Churn
- Increase ARPU
- Increase use of services
- Affordable new services

Considerations:

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

Siemens Business Plan Support is modular

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



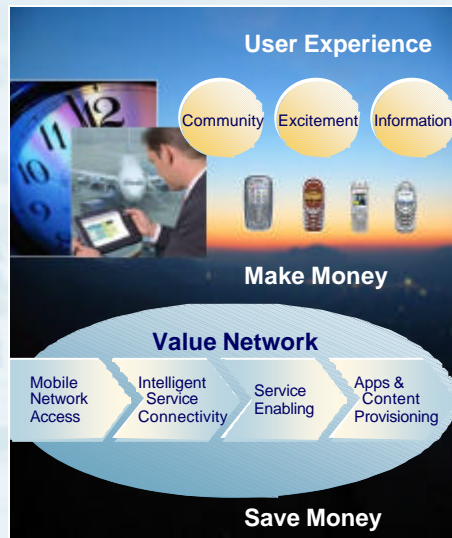
Our services cover all market phases from late 2G entrant to future IMT-2000 incumbent



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

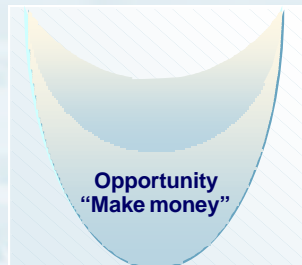
Recipe for success: Flexibility and Cost-Efficiency



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



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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- Users will (and hence operators need to) choose mass market standard
- M2M and cross border roaming, services, etc. towards major trading partners
- Develop 2.5G (GSM/GPRS) for transition to 3G
- UMTS provides required network flexibility (GSM/GPRS/EDGE/FDD/TD-SCDMA/IMS/MBMS ...)
- 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!

Business and Technology Partnership with

***Thank You
very much!***

Kiritkumar Lathia, C.Eng., F.I.E.E,
Vice President - Standards & Fora
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