

Business Considerations for Migration/Evolution to IMT-2000

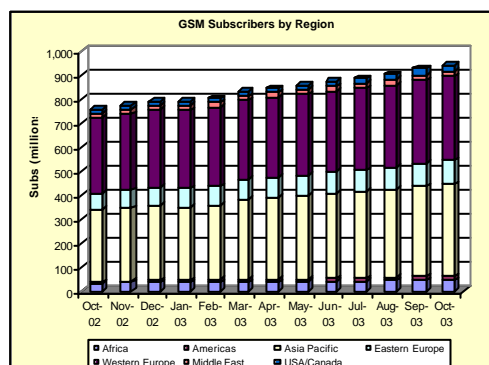
Chris Jackson
3G Director
The GSM Association

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GSM Association: Who are we?

- Making wireless work globally
- 598 Mobile Operators
- 206 countries/territories
- 940 million users today, 957 million by end 2003
 - 99 million in Eastern Europe today
- GSM added 184 million users in the last year (Oct 02 – Oct 03)
- Approaching...



ONE BILLION CUSTOMERS

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Source: EMC World Cellular Database, October 2003 (includes WCDMA subs)



Strategic focus & global perspective



Craig Ehrlich, Hutchison Whampoa
Rob Conway, GSM Association
Lu Xiangdong, China Mobile
Lu Jianguo, China Unicom
Dr. Cho Young Chu, KTF
Lucas Chow, SingTel Mobile
Bruce Hicks, SUNDAY Communications
Kiyoyuki Tsujimura, NTT DoCoMo

Dato Jamaludin Ibrahim, Maxis Mobile
Ave Johansen, Telenor Mobile
Harri Koponen, Telia/Sonera
Naguib Sawiris, Orascom
Nikesh Arora, T-Mobile
Richard Brennan, Orange
David McGlade, mmO2

Frank Esser, SFR-Cegetel
Joseph Fan, Taiwan Cellular
Alan Harper, Vodafone
Ignacio Camarero Garcia, Telefonica
Mohan Gyani, AT&T Wireless
Muzaffer Akpinar, Turkcell
Mauro Sentinelli, TIM

“The GSMA has a newly formed board that looks like the who’s who of the mobile business...”

Citigroup Global Markets, July 2003

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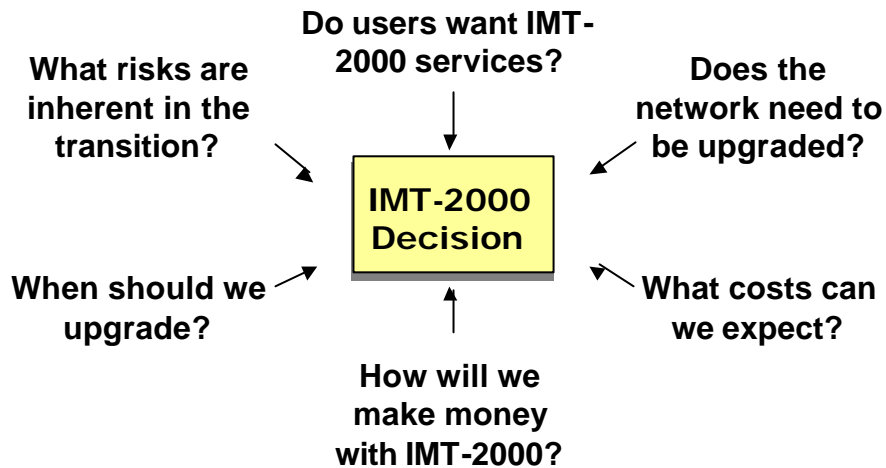
GSMA's 3G credentials

- 3G licenses held by 96 current members
 - 62 through auctions
 - 34 through beauty contests
- Approx \$105 billion invested in licenses (to Dec 02)
- Market Representation Partner to 3GPP
- Offering advice and experience to governments formulating 3G policy
- Actively driving 3G interoperability/inter-working
 - 3G essential features
 - 3G international roaming

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Transitioning to IMT-2000: Key business considerations

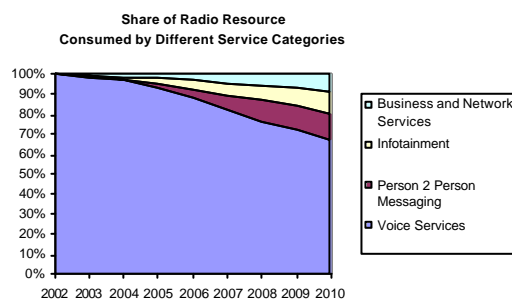


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User demand for IMT-2000

- What new services do users want? - business vs. consumer
- What current services will they expect to continue?
- When they will want them?
- How much will they pay for advanced services?



Good quality voice service will remain the most important requirement from customers

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Source: Operator analysis



What factors will drive 3G take-up?

- Simple services that work predictably
 - What you need, when you need it, wherever you are
- Social network effects
 - One-to-one and one-to-many communication
- Competitive and clear pricing
 - Users do not like surprises at the end of the month
- Services that target mobility
 - E.g. purchasing movie tickets, transport information, order entry for sales force
- Numerous high quality, affordable terminals

Different customer segments will be early adopters in 3G than in 2G

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Source: *iSociety, Mobile UK – Mobile Phones in Everyday Life, March 2003*



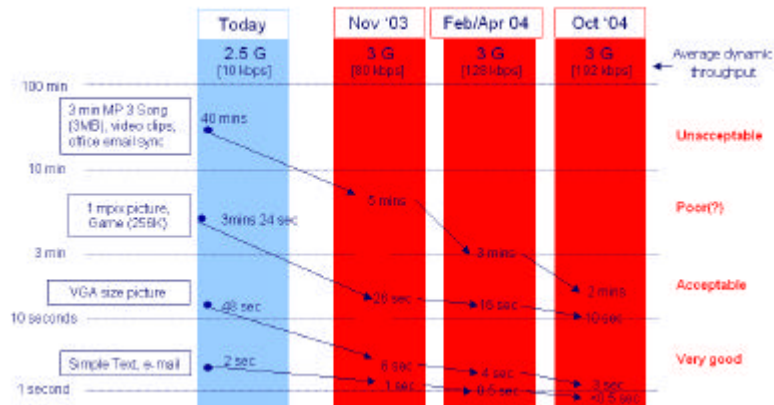
Network upgrade decision

- Does the network allow you to provide next-generation services?
 - Age of infrastructure
- Are you capacity constrained by your current network or spectrum allocation?
 - Serve growing customer base with existing mobile services (principally voice and text messaging)
 - Provide additional data capabilities to serve growing service needs of customers
- Do you need to improve the performance, reliability, cost or QoS of your network?

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New services require new bearer capabilities



Connection speed and capacity are the key drivers



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Source: Operator analysis

Costs of transitioning

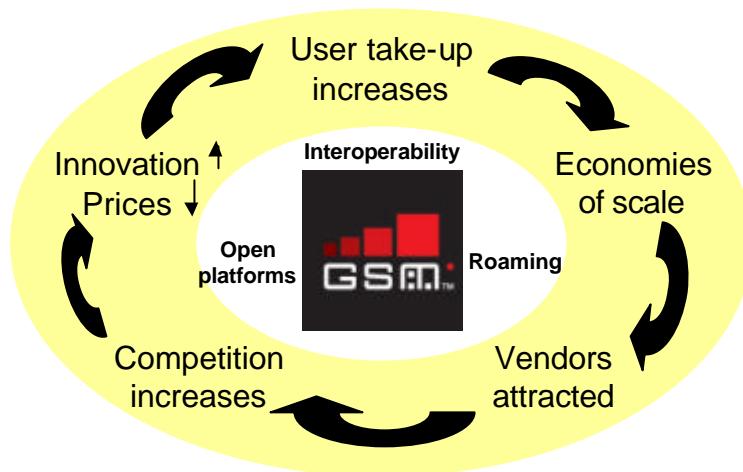
- Implementation
 - Current radio network
 - Desired/required geographic coverage
 - Population density
 - Topography
- Operational
 - Cost of service
 - Terminals
 - Migration costs

The ability to re-use your large parts core radio network and future economies of scale are major drivers of cost



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The 'virtuous circle': Users ultimately benefit



The benefits seen in GSM will continue
in the 3GSM world

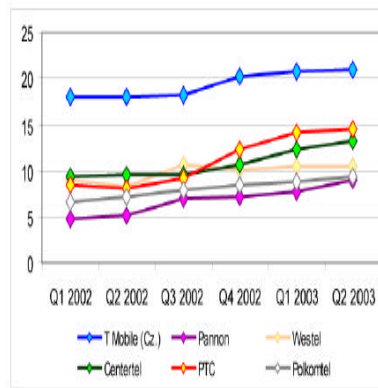
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Revenue opportunities

- Voice
 - Voice will continue to drive ARPU
 - Increased margins on 'cheaper' WCDMA voice costs
- Data
 - Predicted to be around 30% of operator revenues in the next five years
 - WCDMA networks are more efficient in mixed voice/data environments
- Roaming
 - Benefits from users being able to roam into and out of your markets
 - Handover between 2G and 3G networks dependent on backward compatibility

Data as a % of revenues,
Selected CEE operators



Source: EMC World Cellular Data Metrics

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Timing the transition

- Customer demand – especially early adopter segments
 - When does it become economically viable
- Competitive environment
- Financial position of the company
 - Ability to take-on new capital expenditure
 - Cash flow
 - Desire to ‘work’ existing 2G assets
- Licensing decisions and regulatory requirements

The evolution path chosen should enable staged rollout to reduce initial investments



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Risks

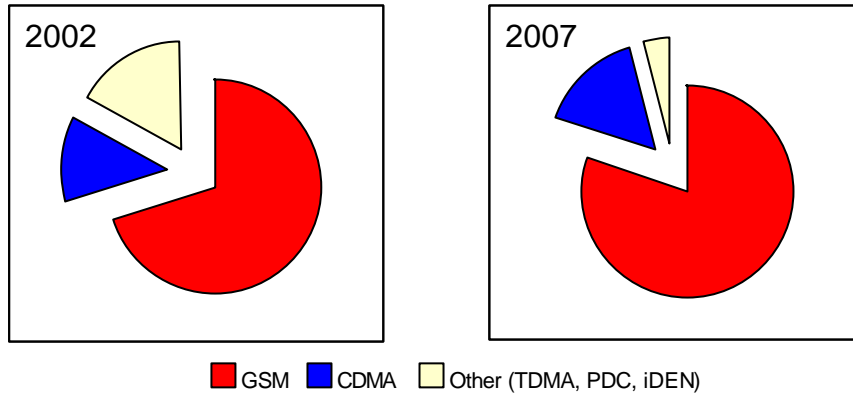
- Where will the biggest user base be?
 - Avoid using a niche technology
- What is the vendor community backing?
 - Infrastructure and terminals
- Where are other players in the industry chain putting their effort?
 - Applications and services
- What are other operators doing, at home and abroad?
 - Impact on roaming
- Who/what will drive future development of the platform?
 - Open or proprietary



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GSM will continue its success

Mobile Subscribers



The continuation of economies of scale in 3GSM

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Source: Yankee Group Forecast



Who is backing 3GSM?

Only the world's top operators...

China Mobile	3GSM	Asia
Vodafone Group	3GSM	Global
China Unicom	???	Asia
T-Mobile Int'l	3GSM	Europe/Americas
NTT DoCoMo	3GSM	Asia
Orange Group	3GSM	Europe/Asia
Verizon	CDMA	Americas
TIM Group	3GSM	Europe/Americas
AT&T Wireless	3GSM	Americas
Singtel Group	3GSM	Asia
Cingular	3GSM	Americas

Plus key vendors...

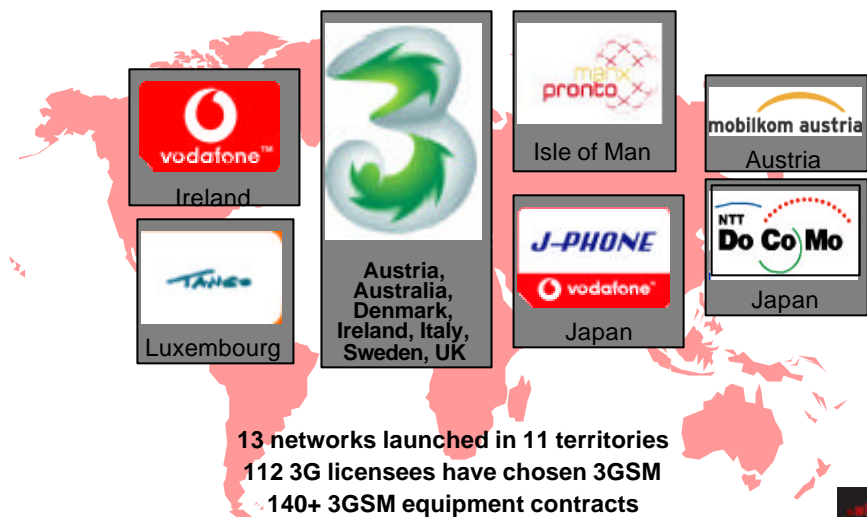


Among others...

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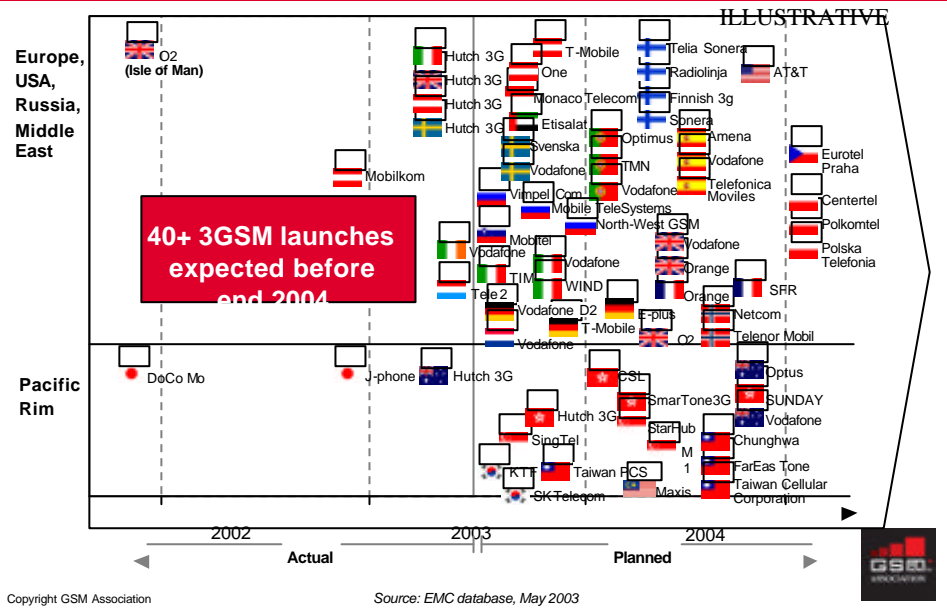
3GSM is already a reality...



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Delivering 3G



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Source: EMC database, May 2003



Conclusion: Focus on commercial success

- Overcoming inter-operability and inter-working issues is critical
 - “Options” undermine the value of “standards”
- Moving from enabler level to market implementation
 - New technologies must drive service revenues
 - No new technology for the sake of technology
- Champion new technologies only when markets are ready
 - No repeats of WAP
 - Measured progress towards 3G

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What is the best choice for you?

“We conclude that a GSM operator with spectrum to deploy WCDMA will choose the WCDMA evolution path. Investment reusability, gradual investments, simpler service migration, more attractive services (primarily roaming) and better long-term terminal market, combine to make this a simple decision. GSM operators who face difficulties in finding spectrum for a WCDMA deployment ... should use EDGE as bridging technology until spectrum for WCDMA becomes available, rather than choosing a CDMA2000 evolution.

Northstream, February 2003

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Thank You

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