

The Mobile Commercial Challenge

Licenses have been acquired to develop, build and operate 2½G and 3G services. The cash paid is about 150 billion Euro in Europe. This means roughly €1000 per capita in the countries involved. Since the license auctions, a number of UMTS experiments have taken place which have resulted in virtually nothing but postponements of the real thing. Some companies have started with GPRS (2½G) services including i-mode. The lack of suitable mobile handsets with sufficient battery power to support the colour-based applications and the absence of international roaming are major set-backs for GPRS. Fortunately, the licenses—at least in some countries—allow for GPRS as a forerunner or maybe as the final stage. The infrastructure investments to have the UMTS service ready for operations are of the same order as the license costs. Cell density is a factor four higher and finding aerial locations becomes increasingly difficult. Can UMTS be a profitable service when there will be no single killer application. This paper discusses these topics and valuates the chances of success.

Brief Historic Overview

In the second half of the 1990s, everyone in the telecommunications industry lived under the impression that the sky was the limit and that nothing could go wrong. In turn the governments found it irresistible to get a piece of this pie. The telecommunications providers had ideas, driven by fantasy, daredevil attitudes, sheer stupidity and unfounded commercial and marketing expectations, that a new broadband packet-switched version of GSM was absolutely needed by the market. Customers would line up to use everything the application builders could invent and they would pay for it royally.

Governments organised auctions in their frantic drive to create and stimulate competition. Since the sky seemed the limit, prices for these licences soared indeed sky-high. In Europe the total amount paid for these UMTS or 3G licences amounted up to 150 billion dollar (€). With these licences came the obligation to build and operate the UMTS services within defined time boundaries. This means that with a population in the relevant countries of about 160 million the average initial investment per living

head is about €1000. If the very young and very old are taken out there remains an investment of €2000 per potential customer, where the total number of potential customers adds up to about 80 million heads.

To fulfil these obligations operators need to make investments for new infrastructures which are of the same order of magnitude as the licence fees. The cell density for UMTS is a factor four higher than for GSM, while new technologies and mechanisms (customer relationship management (CRM), billing engines) must be developed, tested and implemented.

It is also clear that the new technology of UMTS delivering a 'broadband' mobile Internet type service requires a new generation of handsets, having bigger and high-resolution colour screens and even more demanding, high battery capacities. It is estimated that prices for these terminals would initially start at levels around €500–750.

When all this just reached its peak in the hype, the whole telecommunications industry came to a grinding halt. Interest on banking loans could not be paid off, the whole industry was working at serious losses, installed long-distance cable systems were 10% filled, a large number of companies went bankrupt and the industry laid-off about 500 000 workers.

What Must Be Done

In order to bring the industry back on its feet some important goals have to be achieved:

- 1 The industry must restore its credibility. New funding for developments and investments has to be found, which can only succeed if the financial sector regains its confidence in the industry.
- 2 The industry must work following the principle of the 'Newest Economy = Make Profits' as discussed last year by this author†. It means that the industry can only live and survive when it operates under profitable conditions.
- 3 The industry needs to find services and applications especially suited for mobile UMTS operations and which are valuable to the customers in such a way that the money the customers are prepared to pay is sufficient to fulfil the industry's profit requirement.

† Gerrese, Jos. The Newest Economy. *FITCE Forum*, Apr. 2002.

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How feasible is it that these goals will be achieved? Some companies like Dutch KPN and British BT have demonstrated that they can get back on their feet by cutting away dead wood and focusing on the core business, while others like German Telekom and France Telecom are still facing harsh times according to recent press publications.

Ad 1. A sound and solid business approach and honourable management should do the trick with the financial sector and other investors. In some countries it seems that the government is willing to jump in and restore a de facto monopoly situation.

Ad 2. The competitive environment has killed most competitors and therefore there is an opportunity to bring prices back to a profitable level, which is an unavoidable step. There is however a danger that the price the customers are prepared to pay does not reach the level of profitability for the service providers.

The fundamental law of service pricing applies here—the selling price for any service or good lies between:

- the minimum level to reach a defined profit for the provider, and
- the maximum level being the added value a service or good brings to the customer.

Ad 3. The big question is whether it is possible to develop a range of services for mobile UMTS which will satisfy existing or created customer demand and generate enough cash to render the required profits. The terms for making this profitable are explored further in this article.

The services most mentioned are messaging and gaming because of the success in GSM. The question must be raised whether these will still be successful if the UMTS higher pricing is applied. The idea of one or two killer applications has been abandoned by the industry and marketing experts. If this is true it means that UMTS can only succeed by a large number of niche/customer-specific high-value services. Do attractive new services require the UMTS capabilities and will they be affordable with the UMTS technology?

Before all this can become reality the operators have to fulfil the obligation to build and operate the services defined under the 3G licence. In some licences it seems possible to create a sort of staging by starting with 2½G type GPRS services. There is a widespread feeling that this could be successful as it delivers a packet-switched and higher-capacity service compared to GSM. It can be just the trigger step needed for launch. It also creates the

time to reconsider the UMTS situation. International roaming will be a key success factor, which is still missing.

As these UMTS licences have an expiry time the services must be profitable within that time frame. The continuation of the service will require a new licence and a new investment.

In real life we see that GSM is reaching saturation in subscribers but is developing with successful applications like for instance Vodafone Life. Services like i-mode are taking off very slowly in Europe and are far behind expectations. Serious delays are happening in building the infrastructure for UMTS. On the whole it must be concluded that this is not a pleasant picture.

The Infrastructure Aspects

The cell structure

3G technology has a cell structure which is four times denser than for GSM. That means that new sites have to be plotted on the map, physically found and practically negotiated with the location ownership. From an aesthetic point of view this new forest of antennas is not the nicest sight one can wish; more problematic is the tendency that inhabitants increasingly reject the antennas because of fear of radiation influence and damage. This can at least delay permit procedures significantly. In some countries, for instance The Netherlands, legislation has been changed so that these permits are easier to obtain. It would indeed be very strange when the government obliges operators to build a service while at the same time making it very difficult to get permits for the cell sites.

As the bandwidth for mobile services increases the downstream and upstream traffic flows for each cell increase. The underlying terrestrial cable infrastructure will grow in capacity and density as well. Creating the necessary efficiency by using network technology instead of plain leased lines or telephone lines will be an additional task. In fact this is an almost unexplored field and it could create new expertise and a lot of new jobs.

The handset

To enjoy the high-capacity services the subscribers must have suitable terminals. This means terminals with larger displays, colour and sufficient density to show the graphics, pictures and movies in sufficient detail. These larger colour screens together with the applications cannot work properly or long enough with the current battery technology. New developments are neces-

sary to strengthen the battery power. The result will be that these terminals are bigger, heavier and most likely very expensive.

The Commercial Aspects

Earning the money back

The basic challenge is the recovery of the licence and infrastructure investments by selling the services to 2½G and 3G mobile customers. This must be achieved within the expiry time of the licence. In order to get a feeling for the kind of revenues and number of customers required, a ball-park approach is carried out using the net present value method for the territory of Europe where licences have been auctioned—UK, NL and GE (Figure 1).

Some simple assumptions are used:

- 1 Interest rate is set at 7.5%.
- 2 Average revenue per customer per year: €1200.
- 3 Infrastructure investments are done in year 4 and 5, since hardly anything has been done so far.
- 4 An annual maintenance investment of €1 billion is foreseen to update and expand infrastructure.
- 5 A series of revenues is assumed which leads to the number of customers required.
- 6 For exploitation numbers one employee per 10 000 customers at a cost of €75 000 per annum is taken.
- 7 At the end of the period every inhabitant which can handle a handset is a subscriber. (The total number of inhabitants in the relevant countries is about 160 million heads; the very young and very old reduce the figure to 80 million.)
- 8 Investments for CRM, billing, etc. are not included in the modelling and would worsen the picture.

It should be noted that a positive NPV means a loss over the calculated period and a negative NPV means a profit over the calculated period.

With this set of assumptions the business does not become profitable within the timeframe. Manipulating the figures demonstrates which steps can be taken to reach profitability. It will need, however, a number like 80–100 million European users to make the service worthwhile. Every individual in the three countries that can hold a UMTS handset has to spend €1200 per year to make this possible. That would mean that all current GSM users migrate to UMTS, which results in revenue substitution.

Another policy could be—and is recommendable—to take the initial licence investment out of the equation by accepting it as a one-time entry fee which can be written off as a general cost (Figure 2). This

Figure 1 NPV method for UMTS

Interest: 7.5%
Annual turnover per customer: €1200

Year	Investments € million	Exploitation € million	Revenues € million	Values € million	Number customers
1999	150 000	10	–	150 010	–
2000	–	10	–	10	–
2001	–	20	–	20	–
2002	50 000	40	–	50 040	–
2003	75 000	31	5 000	70 031	4 166 667
2004	5 000	63	10 000	4 938 –	8 333 333
2005	1 000	188	30 000	28 813 –	25 000 000
2006	1 000	250	40 000	38 750 –	33 333 333
2007	1 000	375	60 000	58 625 –	50 000 000
2008	1 000	500	80 000	78 500 –	66 666 667
2009	1 000	625	100 000	98 375 –	83 333 333
Net Present Value:				€70 460	

5 Hardware developers that provide handsets

They must make it possible for the users to indeed deploy services which are delivered by the UMTS by providing handsets that can handle the wideband services and that will have lasting batteries.

Revenue Possibilities

There are only a few activities that can generate revenue:

- periodic subscriptions to the basic service;
- mobile air time (per minute or second);
- subscriptions to special services (voice, special information services etc.); and
- pay-for-use type of services with automatic payments.

It is obvious that any combination of actors and revenue options could work. It should, however, be noted that the profit statement should work for each actor individually. That means that if the operation is carried out in a so-called *value chain*, the overall value of this chain—the price the customer is prepared to pay in the end—must be divided over the actors pro-ratio to their added value in the chain (Figure 3).

An important saying: ‘a chain is as strong as its weakest link’ should be kept in mind. The risk of chain-type operations is the concept of profits over profits. This concept leads to too high pricing and in the end to failure.

The best chain is probably the one-link chain. In this situation one organisation has all the capabilities and capacities in the technical, commercial and operations field. These organisations are rather rare.

A potential better structure is where each party acts under its own responsibilities. It can interact with other suppliers/providers but it can also do business directly with customers and customer segments, depending on the specialities and niches available. It means that the customer has a choice to contract its complete end-to-end

Figure 2 NPV method for UMTS with first licence write-off

Interest: 7.5%
Annual turnover per customer: €1200

Year	Investments € million	Exploitation € million	Revenues € million	Values € million	Number customers
1999	–	10	–	10	–
2000	–	10	–	10	–
2001	–	20	–	20	–
2002	50 000	40	–	50 040	–
2003	75 000	31	5 000	70 031	4 166 667
2004	5 000	63	10 000	4 938 –	8 333 333
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2007	1 000	375	60 000	58 625 –	50 000 000
2008	1 000	500	80 000	78 500 –	66 666 667
2009	1 000	625	100 000	98 375 –	83 333 333
Net Present Value:				€69 075 –	

means that the operation over the years should earn the renewal of the licence. Since all players will be a lot more clever, these costs should be considerably lower than the first time.

Sharing the costs of building the infrastructure in terms of aerial locations/towers/housing and joined cabling can be an important cost reduction factor.

Commercial models

Actors in the theatre

To come to grips with this new business it is important to understand which parties play which roles, because only with this understanding will it be possible to build models that fulfil the task to satisfy customers and to run a profitable business (if at all possible).

- 1 The government or licence providers**
They will keep track on progress to install and run the services and will police the licence terms. They are a risk factor because they are unstable due to political changes.
- 2 The telecommunications operators which have bought these licences**
They must build the infrastructure and operate the service.

- 3 The telecommunications operators that own infrastructure**
These are not necessarily the same as those under point 2. They could lease or build on behalf elements of the infrastructure, including the tools for CRM, billing, etc.
- 4 Application developers for the mobile industry**
They will have the ideas for interesting applications for various segments of the market. They must find ways to get these applications to their potential users.

Figure 3 Value chain model

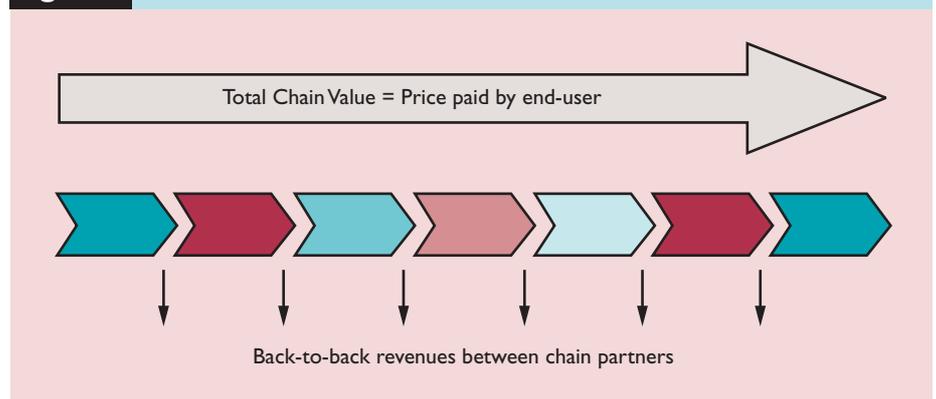
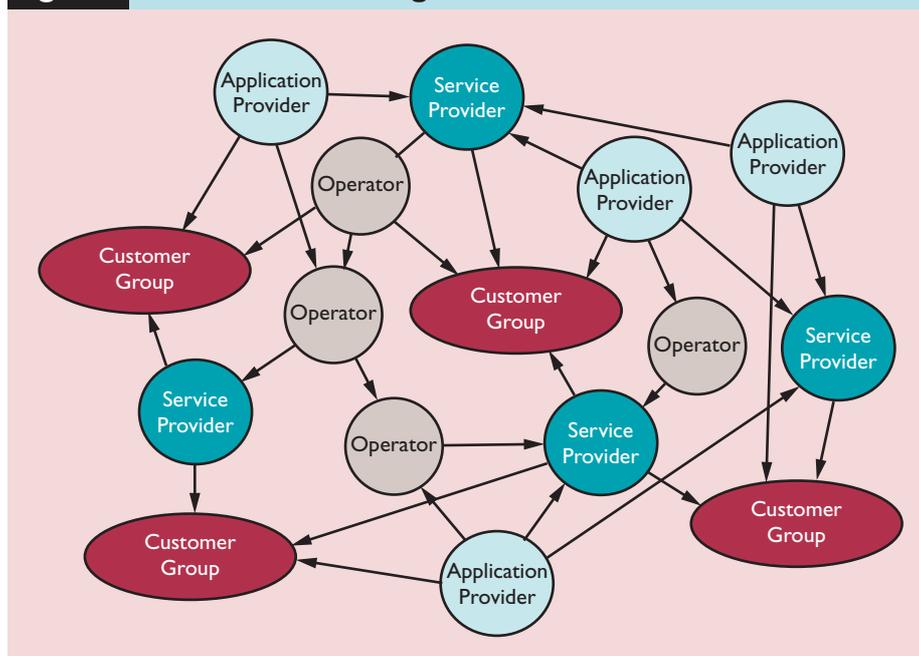


Figure 4 Meshed interworking model



service from one supplier and pay the price for the mediation role; the customer could also shop around and use its own skills to build a service out of several contracted elements. Since service level agreements (SLAs) are not a very hot item at present this could probably work very well.

The most likely successful combinations are structures where parties of interest are the stakeholders. These stakeholders make contracts between each other for certain activities and have separate roles towards their customer interest groups. The chain model gets replaced by a meshed model. This can be very complex and chaotic, especially in a diagram, but in practice it is working already (Figure 4).

A good examples is the cooperation between two operators in The Netherlands to construct the basic cell-infrastructure together, while keeping the commercial activities carefully separated. UMTS providers of mobile airtime should work together with industry segments like segment representative bodies to distribute segment specific data with value allowing payment for it.

Services

The industry should still find out which services from the fixed and current GSM services work better with UMTS and are nevertheless affordable; they should also find out which new services absolutely need UMTS and generate enough customer interest to become commercial successes.

Those applications must combine elements like: immediate need, graphic data, valuable information, etc. Maintenance for high-value and critical technical production processes, instant weather/tide information in professional and amateur water transportation, spot market pricing for goods on sale

in the agricultural sector are just a number of examples which could be feasible.

Conclusions

- Greedy governments, a hyped industry and forcefully introduced competition have brought the telecommunications industry on its knees.
- Creating a profitable service out of the €150 billion licences will be a serious challenge.
- All capable European individuals must use the service.
- It is recommendable to consider the costs for the first licences as an entry fee which should be depreciated as fast as possible. This will hurt the balance sheets but is a step towards healthiness.
- Value chains in the business should be as short as possible and should where possible be replaced with meshed-type interworking. Commercial success requires new combinations of partners. Each partner should be a stakeholder in its own right with responsibilities to its customers and or suppliers.

Warning

It is clear what hype, greed and government-forced competition has done to the telecommunications industry. The same is predicted to happen in the power/electricity supply sector, where competition has been forced and where competitive wars for the customers have started and are fierce. Already signals of failing systems are leaking through.

If ICT is the oxygen of the society, than electricity supply is the blood vessels of the society and without those we cannot handle oxygen.

Biography



Jos Gerrese
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Jos Gerrese graduated in 1973 from the Technical University of Delft—Telecommunications Technologies. Currently he is president-owner of GANESHA consult, which he started in August 2001, operating in the telecommunications/ICT and interim management arena. He began his career with PTT Telecommunications—now KPN—and held a large range of positions in research, marketing, organisation development and new services introduction. From 1984–89 he was director of a post and telecoms consultancy firm Nepostel in Indonesia responsible for South East Asia. From 1989 onwards he held senior product- and marketing-management positions in KPN, AT&T-Unisource and latest Iplsys until May 2001. From 1990–93 he was president of a European telecommunications operators consortium EBIT, later GLOBAND, building the first switched broadband network over Europe. Jos is a frequent speaker at telecommunications seminars throughout Europe on a wide range of topics over the last years. He is a long-time member of FITCE in which he held several positions.