CREDIT SUISSE | FIRST BOSTON
Equity Research

SECTOR REVIEW

05 November 2001
European
Wireless Telecommunication Services

European WASPs

Unlocking the value chain

LAUNCHING COVERAGE ON EUROPE'S MOBILE DATA SECTOR

We believe that the role of the wireless application service provider is becoming increasingly important. In this report we launch detailed coverage of three of Europe's listed WASPs—we reiterate our rating on Acotel and initiative coverage of iTouch and Aspiro. Despite their similar operations, we believe that the companies have very different prospects.

OPERATORS INCREASING WILLING TO SHARE REVENUE

It is apparent that Europe's operators are increasingly willing to share revenues with applications developers. We think this is fundamentally good news that will stimulate the long-term development of the WASP sector.

WE HAVE A MIXED VIEW ON EUROPE'S WASPS

Acotel (ACO.MI, Buy, €34.5) – stable profitability is the key to long-term growth, in our view.

iTouch (ITU.L, Strong Buy, 17p) – we believe that a healthy balance sheet and strong operator relationships are not reflected in the company's share price.

Aspiro (ASP.ST, Sell ,SKr 1.20) – is in our view undermined by slow revenue growth and low cash reserves.

Ben Spincer
44 20 7888 6768
ben.spincer@csfb.com

Justin Funnell
Senior European Mobile Analyst
44 20 7888 0268
justin.funnell@csfb.com

Alexander Gunz
44 20 7888 0269
alex.gunz@csfb.com

Paul Sidney
44 20 7888 6015
paul.sidney@csfb.com

Darren Ward
Senior European Wireline Analyst
+44 20 7888 9229
darren.ward@csfb.com

Ottavio Adorisio
+44 20 7888 0883
ottavio.adorisio@csfb.com

Neil Cartwright
Specialist Sales
44 20 7888 0159
neil.cartwright@csfb.com

Alainn Bailey
Specialist Sales
44 20 7888 0285
alainn.bailey@csfb.com

Robert Enslein (NY)
Specialist Sales
1 212 325 4480
Robert.enslein@csfb.com

Table of contents

This report was priced as at close 31 October.

Executive summary

In this report we review the European mobile data market. Mobile operators are increasingly relying upon third-party mobile data developers to supply innovative and compelling applications and appear increasingly willing to share revenues to secure exclusive agreements with their core developers. As a result there is significant growth potential in the wireless application service provider or WASP sector, in our view.

Within the European WASP sector there are a small number of listed stocks. In this report we reiterate our rating on Acotel (ACO.MI, Buy, €34.5), and initiate coverage on iTouch (ITU.L, Strong Buy, 17p) and Aspiro (ASP.ST, Sell, SKr 1.20).

Regardless of the quality of their respective product portfolios, we believe that in the near term, the performance of these companies will be affected by the gloomy economic outlook, and the weak capital markets. As a result, we believe that balance-sheet strength and profitability are of great importance.

In our view, both Acotel and iTouch have strong cash-flow or balance-sheet positions. Acotel already has positive EBITDA margins in excess of 20%, while iTouch has €70m in the bank and is fully funded to free cash flow break even, in our view. However, we think that Aspiro has considerable funding issues. In addition, the company has not been able to grow its revenues as we expected this year. Despite a cut in operating expenses, its cash burn rate is still high, in our view.

Figure 1: **Summary of recommendations**

Stock	RIC	Rec.	Price (31/10/01)	MV	EV	Net cash	12 mo. target	summary
Acotel	ACO.MI	Buy	€34.50	€150.0m	€99.2m	€50.8m	€45	strong financial position, steady growth
iTouch	ITU.L	Strong Buy	17p	€79.8	€12.0m	€67.9m	45p	undervalued, strong growth, global operations
Aspiro	ASP.ST	Sell	SKr 1.20	€6.8m	-€1.4	€8.2m	SKr 1.00	large execution risk, low cash reserves

Source: Reuters, CSFB estimates

Beyond these funding issues, the long-term success of these companies depends on the continued growth in the mobile data sector. While all these companies are currently generating the bulk of their revenues from SMS services, this will be augmented by new technologies such as MMS, GPRS and 3G in the future. We believe that by the end of 2004, data will account for 21% of network operator revenue. We think that SMS revenues will stabilise at a little over 10% of operator revenue and then be cannibalised by 2.5G services. This is where the WASPs come in with operators willing to share a significant proportion of their revenue with successful applications developers that develop successful 2.5G services.

In this report we highlight four features to gauge WASPs by, driving our recommendations. These are:

1. contracts in place with significant operators;
2. sustained revenue growth;.
3. no funding concerns;.
4. well-developed sales channels.

Acotel and iTouch score relatively highly on these measures.

The European Mobile Data service sector

Overview of the sector

During the mobile data boom of 2000, a number of small European mobile data companies went through IPOs. This gave them the opportunity to raise additional capital for further expansion. In this report we initiate coverage on two of these companies—iTouch with a Strong Buy and Aspiro with a Sell—and reiterate our Buy recommendation on another, Acotel. These companies are in contrasting financial positions, with Aspiro under particular financial pressure.

GPRS is now finally selling

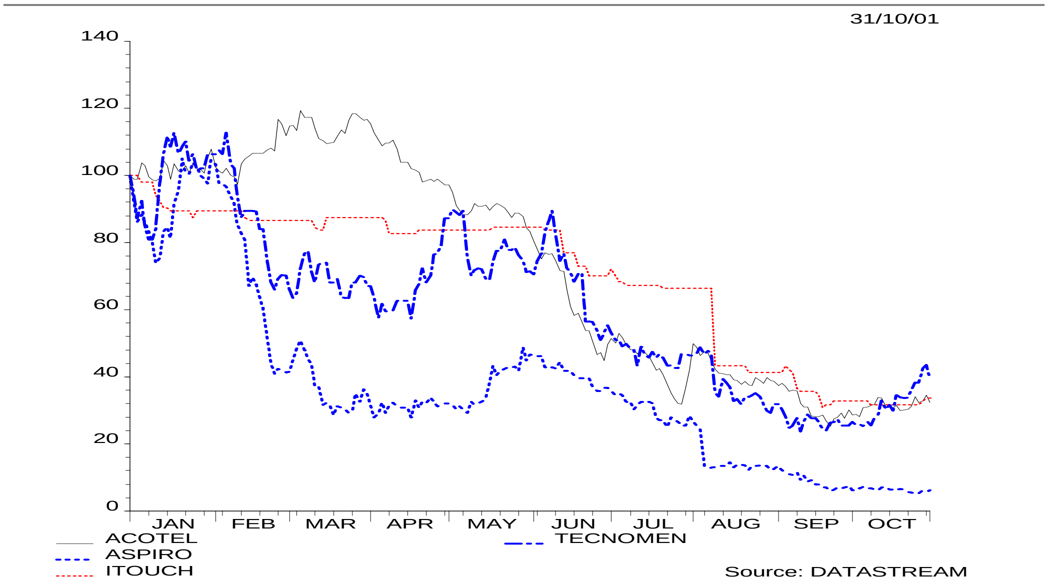
If strong positive momentum returns to the mobile data market all these companies are highly geared to outperform the stock market. On the back of increasingly positive news flow on mobile data, such as operators increasingly accepting they must share revenue with application developers, a range of new GPRS terminals and DoCoMo's 3G launch, we think that parts of the sector now looks attractive on a 12-month view. We believe the financial strength of each company will also partly determine the performance of its stock.

Figure 2: **Summary of recommendations**

Stock	RIC	Rec.	Price (31/10/01)	MV	EV	Net cash	12 mo. target	summary
Acotel	ACO.MI	Buy	€34.50	€150.0m	€99.2m	€50.8m	€45	strong financial position, steady growth
iTouch	ITU.L	Strong Buy	17p	€79.8	€12.0m	€67.9m	45p	undervalued, strong growth, global operations
Aspiro	ASP.ST	Sell	SKr 1.20	€6.8m	-€1.4	€8.2m	SKr 1.00	large execution risk, low cash reserves

Source: CSFB research

Figure 3: **Relative share performance of European mobile data stocks in 2001**



Source: Datastream

As well as the listed companies we discuss in this report, it is important to remember that several of the main competitors are unlisted or based in the US. Companies such as Materna of Germany and Netsize of France are also competing in this industry, and there are many others. While these companies may not have the cash of recently IPO'd companies, they perhaps have more flexibility to adjust their business models to the changes in the market. Meanwhile in the US, the quoted companies Aether Systems, 724 Solutions and i3 Mobile as well as many unlisted companies are all competing for the same European mobile data revenue stream. There is also a risk that some mobile operators will continue to develop mobile data applications in-house. This is a risk, but ultimately we think that the importance of the developer community will be recognised across the industry.

Some mobile data companies have recently been expanding their market reach to offer services directly to a range of customers. However, most of the customer relationships continue to lie with the mobile operators—we firmly believe that they will continue to bill the bulk of mobile data revenues, even if some of this revenue is passed on. The reason for this is that operators today have control of both the customer relationship (to provide voice and basic data services) as well as ownership of the network. We think that the strength of this customer relationship will be crucial for the foreseeable future, with network operators also able to ensure that their networks are dimensioned appropriately for mobile data without a risk to voice quality.

Is there a role for the WASP?

Acotel, iTouch and Aspiro can all be defined as mobile or wireless application service providers (WASPs). A WASP is defined in this report simply as a supplier of applications and services that can be offered to end-users either directly or to end-users through third parties. The end-users may be both the enterprise and consumer markets while the third party is commonly a mobile operator or corporate customer.

But the operators need partners to develop new services

Eighteen months ago, many mobile network operators in Europe believed that they were in a position to develop the necessary mobile data applications in-house. While some of this still lingers (as seen in the European operators' continued support of their own portals), more recently most operators are becoming aware that their core expertise lies more in service provisioning, than in the implementation and maintenance of mobile data technology platforms or the development of new data services. The operators are becoming happier to be just a 'pipe'. As a result, there is a growing market for third-party wireless applications service providers in the implementation and maintenance of 'white label' platforms and applications to operators. Crucially operators appear ready to share an increasing proportion of service revenue with such third parties. This is central to mobile data companies generating long-term revenues and represents the core market opportunity for the companies we consider in this report.

A recurrent theme at our first Fatphone conference on 29 June was the need for operators to adopt a more flexible approach to revenue sharing to stimulate the mobile data market. It was clear that operators have not been helping themselves by trying to keep as much of the revenue pie as possible—several panellists at the conference felt that the network operators must adopt a more flexible approach to revenue sharing to ensure that successful new applications are developed. In addition, operators must avoid making the same mistake marketing GPRS as some did marketing WAP—namely they must market a *service*, not a technology.

At our conference, Yahoo! in particular said the mobile operators must take a leaf out of DoCoMo's book and become more flexible in their approach to revenue sharing. The company believes the potential market is more than large enough to accommodate operators, portals and a range of applications and technology providers. However, the independent applications providers lack the bargaining power to secure lucrative revenue-sharing deals with operators.

Aspiro agreed that operators must become more flexible in their approach to revenue sharing, noting that in Japan, i-mode pays away 91% of the premium revenue generated by third-party applications providers. In Europe, operators will rarely pay away in excess of 50%, according to iTouch.

T-Motion stated that the solution lies in a changed approach to billing for data services. At present the value only lies in providing access, and this is of course provided by the operators. In the future, T-Motion thinks that value will lie in the services and content as well, and a premium must ultimately be paid for these. DoCoMo adopted this approach from inception. T-Motion made the further point that having paid €120bn-plus for 3G spectrum, the network operators are fighting to keep every cent of mobile data revenue for themselves. This currently represents a major barrier to new, more flexible revenue-sharing deals, but ultimately they must come if European mobile data is to flourish.

iTouch believes ultimately that operators will be forced to outsource increasingly large parts of their data services to third parties. This will ensure that operators reduce the time-to-market for new applications, but will give the applications providers the power to negotiate a share of ongoing revenue as well as upfront fees.

In a clear recognition of the importance that operators now ascribe to WASPs and the entire developer community, a number of mobile operator-led developer forums have emerged. The aim of these forums is to provide applications developers with access to the operator's test-beds and each other's expertise. In return, operators hope to see the development of a range of new services that they can run on their network. Applications providers see these forums as an ideal opportunity to carve out a long-term niche in the market.

For instance, BT Cellnet in the UK launched the Expidas forum in March. BT Cellnet has pruned the number of companies in Expidas to a little over 10. However, these companies are afforded considerable support and greatly reduced time and cost in getting new applications into the market. Orange has also unveiled an application developers' forum in the UK. In this case it has several hundred-member companies, and the focus is on promoting collaboration between these companies. In addition, Orange appears to use the forum to aid development of applications requested by major corporate customers, rather than do the work in-house as it would in the past. From the perspective of companies within the forums, they receive access to the respective mobile networks, putting them at a considerable advantage to outside companies attempting to compete for applications contracts.

Will today's WASPs survive?

The successful WASPs of today generate revenues out of SMS and Interactive Voice Response (IVR) applications. There is an argument that every new technology will see a new range of WASPs emerging, with the success of any particular company being very transient. The contra argument is that the successful companies in the long term will build close relationships with operators and corporates early, initially by offering successful SMS applications and then migrating to each new technology. We believe that the trust and working relationship that develops will mean these existing 2G WASPs are in an ideal position to integrate new services and applications as new technology develops, while maintaining legacy services. For instance, the transition from SMS to MMS-based services will take several years as the penetration of MMS handsets increases only slowly (MMS requires GPRS or 3G terminals to work effectively). Operators will want to migrate customers seamlessly onto these new services, not via a major service discontinuity.

We believe that this means some early WASP success stories will turn into long-term winners. The problem is, how to pick these winners and how much value can be ascribed to a WASP in the rapidly evolving mobile data market.

Consequence of an economic downturn

WASPs are reliant on the continued growth in mobile data revenues at mobile operators to sustain their growth. There is a concern that the current economic slowdown may lead both to reduced operator spending on new services plus redundancies, and lower consumer confidence might lead to slower mobile data revenue growth. In a downturn, mobile customers may be less willing to subscribe to new services requiring extra payment. And as previously mentioned, corporates may also be quick to cut mobile data services in a recessionary cost-cutting drive. The WASPs are certainly not as defensive as other parts of the telecoms services industry. However, we think there is sufficient organic growth potential for well-positioned WASPs to survive.

The mobile data value chain

Before analysing Europe’s WASPs in more detail it is important to understand the sector’s value chain.

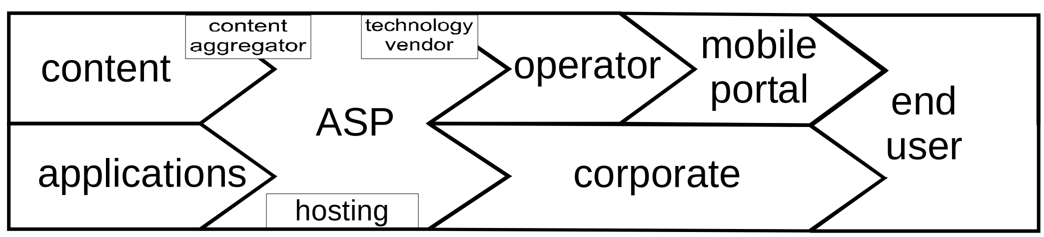
The mobile data market has a complex value chain with companies filling a wide variety of different roles. All of the smaller companies we cover in this report are operating in a small area of this value chain—namely the wireless application service provider (WASP) market. The target markets for these WASPs are typically the mobile operator and the corporate market. The former market offers the scope for more lucrative contracts, while the latter has the scope for a diversified customer base.

As well as supplying the applications in the first place, the WASP may offer hosting services and continued maintenance of the applications enabling a customer to offer own-branded applications without the pressure to develop and manage them. As such, WASPs are attempting to fill a significant market niche—allowing companies such as mobile operators to offer services that fall outside their core expertise (that is to say, provisioning voice services in the case of an operator).

Many WASPs are also developing their own technology platforms on which the application sits. The WASPs would perhaps hope that such platforms could have the effect of locking-in the mobile operator, but we think that in the long term the development of an open technology platform is key to the successful deployment of WASP services. In the case of Aspiro, the company’s own platform is used by a large number of smaller content and applications suppliers as an aggregation point to allow them to access a broader range of customers. Crucially, the Aspiro platform can also be integrated with the platforms of major vendors such as Ericsson, rather than being a fully proprietary solution. By opening up access to its platform, Aspiro is able to meet the demands of operators for a variety of different services from different WASPs. Acotel has also indicated an increasing awareness of the importance of a scaleable and semi-proprietary platform through the February acquisition of Irish technology vendor, Jinny Software. We believe that the ability of these small WASPs to develop advances and semi-proprietary platforms within the framework of industry standards such as WAP, Java and SMS will ultimately prove to be the key to their long-term success.

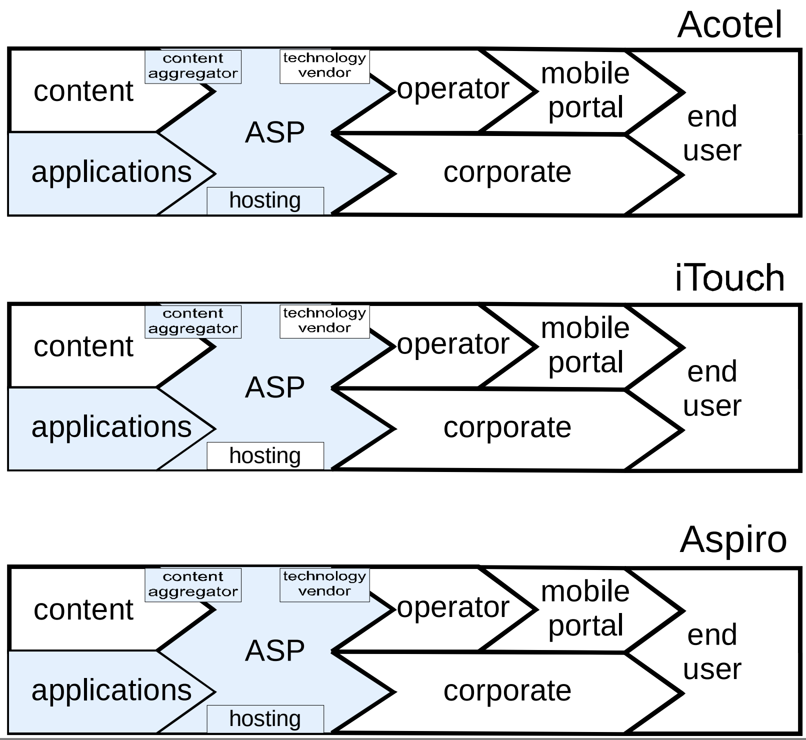
Within this WASP market, each company we consider in this report offers a slightly difference range of services. Aspiro and iTouch are active content aggregators, consolidating content from a wide range of sources that can then be offered to customers. Aspiro, iTouch and Acotel all offer applications development and hosting solutions, while Acotel and Aspiro are also emphasising their capabilities as vendors of advanced technology platforms. In our view, Aspiro is attempting to operate in a wider range of the value-chain than either Acotel or iTouch, despite its smaller size. We believe this might be a contributing factor to the relatively high cash-burn of the company and in turn suggests how the company might attempt to solve its funding problem.

Figure 4: **Simplified mobile data value chain**



Source: CSFB research

Figure 5: Value chain positioning of stocks covered in this report



Source: CSFB research

How to pick the winners

This is the key question to be addressed. There are numerous European WASPs in the market place (although few are quoted). Many boast a high technical expertise and considerable innovation. However, in the present climate, that may not be enough to guarantee long-term success. We believe that there are four key criteria to judge these companies by:

1. **Operator contracts**—it is clear that many WASPs have only signed a limited number of operator contracts, and some none at all. Many ‘close relationships’ appear to come to nothing, while other operators seem to approach several different developers for the same applications. We regard long-term operator relationships as key to a WASP’s success in signing lucrative revenue-sharing deals. While corporate users are also of value, we regard these as more transient relationships and so of much lower value. Many small applications developers are able to attract corporate customers, but these are some of the first contracts to be terminated following an economic downturn. Gaining revenue-generating contracts with operators is therefore a key test of the WASP’s underlying value.

2. **Revenue growth**—an obvious requirement for applications developers is revenue growth. This indicates a company’s ability to develop successful services, manage existing customer relationships and develop new ones. WASPs that are able to maintain revenue growth through the current

difficult economic climate and slow mobile data market would be particularly geared for long-term success, in our view.

3. **Funding**—there has been considerable press coverage recently regarding the precarious financial position of many mobile data companies, and a number (including WAPit) have gone into administration. There is therefore value in companies that are either profitable, or funded to profitability, regardless of the quality of applications being developed. It appears that many of the more profitable WASPs realised the importance of cost control over a year ago and did not indulge in major international expansion in an attempt to develop new revenue streams.

4. **Sales channels**—the final criteria to judge Europe's WASPs by is their sales channels. This is vital in the development of new customers. Extensive sales forces can prove extremely costly, so several WASPs are attempting to use the sales channels of larger vendors (for example Aspiro and Comverse) to offer their services as an 'add-on'. While this may extend the sales reach, this approach also risks diluting the value of any customer relationship that develops.

Figure 6: **Business strengths of Europe's listed WASPs**

Criteria	Acotel	iTouch	Aspiro
Operator contracts	✓✓	✓✓	✓
Revenue growth	✓	✓✓✓	
Funding	✓✓✓	✓✓	
Sales channel	✓	✓✓	✓✓✓

Source: CSFB research

Development of the mobile data market

Will new technologies herald a new dawn?

Despite a few legacy operations, Acotel, iTouch and Aspiro are all operating primarily in the mobile data marketplace. As a result, each company is highly geared to the performance of the mobile data sector and its ability to generate revenue. The development path from 2G to 3G is generally well understood, but the exact timetable remains uncertain.

One basic service that is already generating revenues for Europe's WASPs is interactive voice response, or IVR. IVR uses a series of menus on a voice call to direct a user to the service they require. Revenue is generated by the use of a premium rate phone number and this has proved particularly successful for applications such as ringtone downloads.

With the explosive growth of SMS, every GSM terminal is already equipped to handle simple mobile data services. SMS services now represent around 10% of ARPU or €2.5–€3.0 per total customer per month. The next stage—WAP—was expected to drive another stream of revenues with operators such as Orange last year predicting that 50% of revenues would come from mobile data by 2005. Over the last year, slow WAP take-up and the limitations of WAP over GSM have set in and operators are now more conservative in their expectations. For instance in March, Orange revised it 2005 mobile data revenue prediction to 25%.

But we still expect growth. In our recently published European Mobile Quarterly (*ARPU—on the turn?*, dated 28 September 2001), we presented a detailed model of ARPU development across Europe over the next five years. Our conclusion is that mobile data as a proportion of ARPU will increase from 12.4% at the end of 2001 to 23.3% in 2005.

Figure 7: **CSFB model for industry ARPU in western Europe**

eu in millions, unless otherwise stated

	2000E	2001E	2002E	2003E	2004E	2005E
Revenue per user						
Voice	33.0	28.7	28.2	28.4	29.0	29.5
Data	2.3	3.6	5.1	6.3	7.6	8.9
Total	35.3	32.3	33.3	34.7	36.6	38.4
Change in revenue per user	-14.3%	-8.5%	3.0%	4.4%	5.3%	5.1%
ARPU (revenue per device)						
Devices per user	1.08	1.15	1.19	1.21	1.25	1.30
Voice ARPU per device	30.7	24.9	23.8	23.4	23.2	22.7
Data ARPU per device	2.1	3.1	4.3	5.2	6.1	6.9
Implied device ARPU	32.8	28.0	28.1	28.6	29.3	29.5
Change in ARPU	**-18.3%**	**-14.8%**	**0.3%**	**2.0%**	**2.3%**	**0.9%**
Data as a % of ARPU	**6.4%**	**12.4%**	**15.3%**	**18.2%**	**20.1%**	**23.3%**

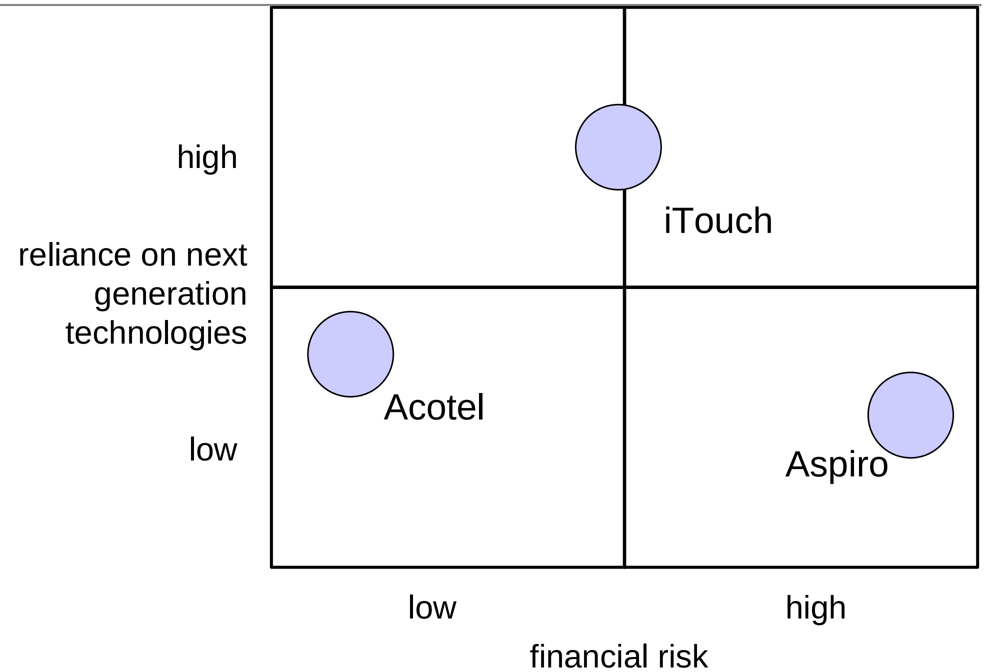
Source: CSFB estimates

Do the operators need GPRS and 3G or is 2G sufficient?

We do not believe that SMS or 2G alone will drive this additional revenue so it is imperative that new technologies—GPRS, 3G and Java in particular—are brought to market. In our view, these technologies coupled with WAP and a range of new terminals should support new applications that should stimulate usage and in turn drive revenue growth for mobile applications developers.

But when will this happen? GPRS services have already been significantly delayed. Those that have launched commercially have suffered teething problems and low handset availability and choice. We believe that volumes and a wider variety of GPRS terminals are becoming available with new terminals from Nokia, Siemens and Ericsson, but significant revenue will not be generated until well into 2002, with GPRS usage contributing 2% of operator revenues during the next year on our forecasts. The applications developers are heavily reliant on the service revenue for their long-term financial security. As a result, those highly exposed to the next generation of technologies may see considerable revenue pressure for at least another six months.

Figure 8: Gearing of mobile data companies to financial and technology risk

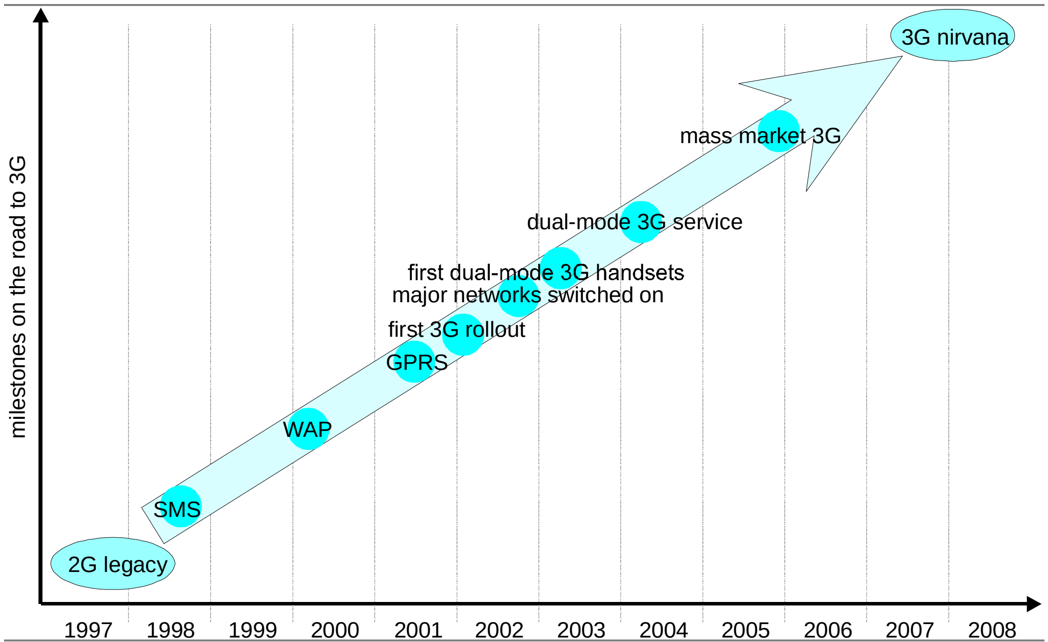


Source: CSFB estimates

The safest plays remain those with the strongest financial position and least dependence on GPRS take-up, which according to Figure 8.is Acotel.

Further ahead it looks certain that 3G will also be significantly delayed. In our recent report, on 3G, *G-Whizz* dated 17 September 2001, we highlight a number of technical hurdles that 3G still faces—in particular we are sceptical that the second-half 2002 delivery targets for working dual-mode terminals can be met. We conclude that commercially viable dual mode terminals will not be selling widely until 2004 at the earliest and it will be 2006 before 3G can be considered a mass-market *service*. While this delay presents a much greater window of opportunity for GPRS, it also represents a delay in the next potential increment in revenue generation for the WASPs.

Figure 9: **Roadmap to ubiquitous and seamless 3G service**

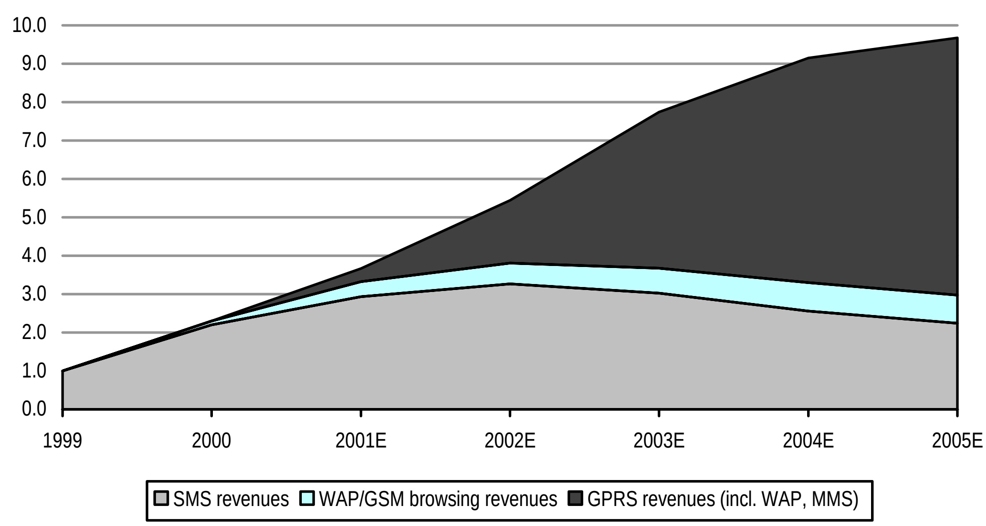


Source: CSFB research

With these implied delays to the rollout of new technology, it seems certain that SMS and IVR will remain the 'cash cow' for WASPs for a number of years. Coupled with its strong financial position this is another reason why we believe Acotel remains a strong long-term investment opportunity. Although it is not yet profitable, iTouch is also geared to both the SMS and IVR markets and continues to show steady revenue growth.

Figure 10: **Mobile data revenues by technology**

eu per sub per month



Source: Company data, CSFB estimates

Mobile data revenue models

WASPs have a number of potential sources of revenue and may charge a combination of different types of fees. In our opinion there are five major revenue models that are being used by WASPs in Europe at present:

1. **Per usage fee**—this model predominates in the market for SMS services where the traffic and revenue generated is easy to measure. This means that the potential revenue from the service and its related costs are easy to calculate. In the case of WAP services, the applications developer can receive a proportion of the airtime revenue. In the near future, we believe that a lot more WAP traffic will be transmitted over GPRS networks. It is unclear how the per usage revenue model can evolve in this case as we expect a lot of GPRS services to transfer to a flat rate or per transaction revenue model. The WASPs may have to do likewise.

2. **Per transaction fee**—an alternative to a usage fee is for applications providers to receive a proportion of any transaction revenue generated by a service. Examples where this would be applicable are ticketing services. However, the very limited number of transactions currently made over mobile devices constrains this revenue model. Examples of relatively successful services include Mobilkom's partnership with Austrian Railways to provide ticketing via SMS but this is the exception to the rather dismal rule currently.

3. **Flat-rate licence fee**—in this case, the application provider receives a regular licence fee for its services. This licence fee would also cover the ongoing management and hosting of a service where applicable. This is becoming quite prevalent where there is not a recurrent cost in supplying a service. We believe that a flat-rate fee could become the dominant revenue model for early GPRS services where the end-user is charged a flat rate, rather than for the value of the content.

4. **Installation fee**—whenever a recurrent revenue is generated from a mobile data service, an applications provider will also typically charge a one-off installation fee. The size of this installation fee relative to the recurrent fees will depend on the complexity of the solution and whether it is for an off-the-shelf or proprietary service. Services provided will include installing and testing necessary hardware and software and ensuring interoperability with billing systems.

5. **One-off fee**—historically this was the dominant revenue model. Operators did not want long-term liabilities and applications providers were unsure of the growth in the market so wanted guaranteed revenues. Recently, a more flexible approach to revenue flow has been adopted with one-off fees generally only paid for bespoke applications installed into an existing technology platform.

In the past, operators were reluctant to enter any revenue sharing agreements, preferring to pay a one-off fee, and if possible a regular fee to manage the service. More recently, the application providers have been able to negotiate revenue-sharing agreements with an installation fee followed by a per usage or per transaction charge. The percentage of revenues that operators are paying away in this way varies from around 25% to up to 70% of service revenues generated, depending on the operator and the service, with implications for the margins of the operators in the future.

The stocks we cover in this report are generating revenues from a combination of these pricing schemes.

Figure 11: **Revenue models of European mobile data companies**

Company	Per usage	Per transaction	Licence fee	Installation fee	One-off fee
Acotel	✓			✓	✓
iTouch	✓	✓	✓	✓	✓
Aspiro	✓	✓	✓	✓	✓

Source: CSFB research

Capital markets and funding

Solvency in the sector

In the present financial climate, mobile data start-ups are clearly finding it difficult to raise additional capital. The IPO route to generating capital for European WASPs has all but dried up for now, and access to venture capital funding is greatly reduced. Therefore, one of the most important short-term criteria to judge small companies within the mobile data sector by is their solvency.

Of the three companies covered in detail in this report only one—Acotel—is currently profitable and cash generative. In our opinion, this company is not currently at significant risk of future insolvency. The other two companies, iTouch and Aspiro, will not be cash-flow positive for a couple of years, by their own guidance. Of these two, we think that iTouch has a relatively healthy cash reserve (€70m) and is enjoying sustained revenue growth. Based on the company's current cash burn rate (€5m per quarter) this reserve should last long enough (3.5 years) to give the company a good chance to reach profitability, in our view. On the other hand, we are concerned that Aspiro has only a little over €8m cash in the bank. We believe that following the profits warning in the summer there is a risk that this cash will soon be exhausted. We are unsure whether Aspiro is in a position to raise additional capital through a new share issue, as it did last year. Recent significant cost cutting may partially mitigate the risk but the stock price does look vulnerable, in our view.

Liquidity in the sector

Another concern for investors considering buying stock in these small mobile data companies is a lack in liquidity in the shares. The daily volume for Acotel is generally around €50,000, with iTouch and Aspiro typically well below this level. Following its joining the main 'O' list in Stockholm, Aspiro hoped that its liquidity would increase and its share price would benefit. In reality the O-listing has been followed by a significant fall in the Aspiro share price following a profits warning from the company. Clearly such stocks are only of interest to the micro-cap investor—at least currently.

Figure 12: **Free float of Europe's mobile data stocks**

eu in millions, unless otherwise stated

Company	Share price	Market Cap	Free float	Value of free float	Av. daily trading volume (shares)
Acotel	eu 34.50	150.0	21%	31.5	5,000
iTouch	17p	79.8	25%	20.0	2,000
Aspiro	SKr 1.20	6.8	100%	6.8	60,000

Source: Company data

Potential for renewed consolidation

In our view there is significant scope for further consolidation amongst the smaller companies in the sector. We believe that a company with a relatively strong balance sheet and/or a portfolio of advanced products with operator contracts would make a potentially suitable acquisition for a company looking to improve either its mobile business footprint and/or to gain a stock market quote. In particular, companies with a strong position in 2G services may look to buy smaller players with products ready for the GPRS and 3G market. These companies are in a position themselves to be active acquisitors. Acotel proved that early in the year through the acquisition of Jinny Software. As we stated at the time (*Fatphone 12;* dated 16 February 2001) we think this was a good deal for Acotel. However, the poor state of the capital markets represents a problem for all, both targets and potential bidders.

Valuing Europe's WASPs

The valuation of Europe's mobile data stocks is a difficult task. Valuation metrics such as DCF, earnings growth and EV/EBITDA are of little, if any value for companies that will have no free cash flow for several years. We have adopted a simplified approach that looks first at the company's profitability, then at the company's cash position going forward. With these criteria we are able to differentiate the positions of Acotel, iTouch and Aspiro and make comparisons with other stocks in the telecoms and mobile technology sectors.

Relative valuation

The European mobile data sector proves difficult to analyse in comparative terms. The two measures that we believe are most applicable are EV/EBITDA and EV/Sales. However, only Acotel has a positive EBITDA so we are forced to look primarily at the sales multiple.

On a sales multiple there is a marked contrast between Acotel, trading on sales multiples comparable to companies such as Nokia and Orange, and both iTouch and Aspiro, both of which are currently trading at a fraction of their annual sales. These multiples imply that the market is discounting both iTouch and Aspiro running out of cash. As discussed in the following section, we are confident that iTouch has sufficient cash to reach cash-flow break-even. This in itself suggests to us that iTouch is currently undervalued.

With its positive net earnings, Acotel allows a number of other comparative metrics to be used. As well as EV/EBITDA multiples, we also look at the company's price to earnings and return on invested capital.

Figure 13 is a basic mobile data comparative multiples table. For comparison, we also provide multiples for a number of wireless technology stocks and European mobile operators.

Figure 13: Mobile data comparatives table (prices correct as of 31 October)

Company	RIC	Share price	CSFB rating	Market cap eu m	Net debt (cash) eu m	EV* eu m	EV/ EBITDA 2000	EV/ EBITDA 2001E	EV/ EBITDA 2002E	EV/ EBITDA 2003E	EV/ EBITDA 2004E	P/E 2002E	EV/Sales 2000	EV/Sales 2001E	EV/Sales 2002E	EV/Sales 2003E	EV/Sales 2004E
Acotel	ACO.MI	eu 35.72	Buy	150	(50.8)	99.2	27.54x	14.06x	8.84x	6.47x	5.25x	38x	9.73x	5.03x	3.36x	2.53x	2.10x
iTouch	ITU.L	17.50p	S. Buy	80	(67.9)	12.0	-	-	-	-	0.80x	-	1.78x	0.50x	0.23x	0.14x	0.09x
Aspiro	ASP.ST	SKr 1.30	Sell	6.8	(8.2)	(1.4)	-	-	-	-	4.51x	-	-0.87x	0.35x	0.56x	0.45x	0.33x
i3 Mobile	IIIM.O	US$2.27	Hold	57	(66.9)	(9.6)	-	-	-	-	-	-	-1.94x	-2.20x	-	-	-
InfoSpace	INSP.O	US$1.68	Hold	401	(221.0)	363.7	-	26.98x	4.42x	-	-	-	3.06x	1.57x	1.07x	-	-
Aether Systems	AETH.O	US$6.68	Buy	291	(381.1)	(81.4)	-	-	-	-	-	-	-1.27x	-0.41x	-0.20x	-0.11x	-
Comverse Tech.	CMVT.O	US$17.77	Hold	3,397	333	3,692	16.32x	13.59x	11.04x	8.28x	-	13x	3.71x	2.78x	2.23x	1.76x	-
Openwave	OPWV.O	US$8.99	Buy	1,518	(450)	1,068	-	104.71x	26.24x	-	-	56x	3.28x	1.91x	1.90x	-	-
Nokia	NOK1V.HE	eu 23.65	S. Buy	108,285	(2,448)	105,837	17.94x	21.60x	21.60x	17.35x	1.49x	32x	3.48x	3.47x	2.99x	2.86x	0.24x
Ericsson	ERICb.ST	SKr 44.4	Hold	38,023	1,739	39,762	12.83x	-	84.60x	22.98x	16.78x	415x	1.45x	1.68x	1.79x	1.60x	1.39x
Vodafone	VOD.L	163.25p	Buy	177,020	25,381	202,401	18.89x	14.39x	11.99x	10.49x	9.18x	31x	5.74x	4.42x	3.72x	3.29x	2.92x
TIM	TIM.MI	eu 6.10	Hold	51,955	1,541	53,496	12.67x	11.96x	11.24x	10.54x	9.76x	31x	5.32x	4.94x	4.58x	4.32x	4.07x
Orange	ORA.PA	eu 9.07	Hold	43,554	9,642	53,196	27.91x	16.34x	12.69x	10.88x	9.68x	-	4.24x	3.54x	3.23x	2.98x	2.80x
Telefónica Móviles	TEM.MC	eu 7.17	Buy	30,609	6,805	37,414	17.51x	13.61x	12.10x	11.27x	10.04x	42x	5.03x	4.68x	4.14x	3.73x	3.37x
Sonera	SRA1V.HE	eu 5.70	Hold	4,235	4,557	8,792	11.40x	10.93x	10.77x	11.47x	12.90x	53x	5.36x	4.92x	4.85x	5.16x	5.80x
Small Euro. Ops**	-	-	-	-	-	-	14.06x	9.90x	8.49x	7.67x	6.77x	-	-	-	-	-	-

** - EV for forward multiples includes a forward debt projection and mobile operators adjusted for no 3G start-up loss and EBITDA discount for non-controlled, emerging market assets*
*** - European small cap operators is arithmetic average of Libertel (LTEL.AS, €8.7, Hold) Telecel (TELN.IN, €8, Buy), Sonae.com (SNCP.IN, €3.3, Buy), Mobistar (MSTAR.BR, €12.5, Hold,) Europolitan (EURO.ST, SKr 68, Hold) and Panafon (PANr.AT, €5.5, Buy).*
Source: Company data, CSFB estimates

Discounted Cash Flow valuation

The European mobile data companies have also been valued on a DCF basis. However, we are reluctant to focus heavily on DCF for a number of reasons:

1. Projecting future cash flows in a high growth market like mobile data requires a large number of assumptions to be employed, which are inevitably going to be proved wrong.
2. Over 75% of the value of these companies lies in the terminal multiple, making the valuation highly sensitive to the long-term market assumptions.
3. Similarly important factors for the DCF such as the beta, WACC, and terminal growth rate for this group of stocks are hard to calculate with any confidence today.
4. With DCF implicitly assuming perfect capital markets it is largely redundant in valuing companies with funding concerns—for example Aspiro. With the current market situation, additional capital may prove difficult to come by. It is important that companies are fully funded.

Nevertheless, we have applied a common set of assumptions across the models for Acotel, iTouch and Aspiro, with each company currently trading at a significant discount to DCF, highlighting the inherent risks in the sector. These assumptions include an Equity Risk Premium of 6%, perpetuity growth rate of 4.5% and beta of 2.0. The 6% ERP is 1.5 times the market ERP, reflecting the perceived risk of this group of stocks.

Figure 14: **Discounted Cash Flow valuations**

Company	REC	Share price	WACC	Perpetuity growth	DCF valuation	Discount to DCF
Acotel	Buy	eu 34.50	16.9%	4.5%	eu 46.4	26%
iTouch	Strong Buy	17p	16.9%	4.5%	44.2p	62%
Aspiro	Sell	SKr 1.20	16.9%	4.5%	SKr 4.3	72%

Source: Reuters, CSFB Research

Figure 15: **Sensitivity of DCF valuations to different Equity Risk Premiums**

		Equity Risk Premium				
Company	Share price	4%	5%	6%	7%	8%
Acotel	eu 34.50	eu 65.1	eu 53.9	eu 46.4	eu 41.0	eu 37.0
iTouch	17p	73.2p	55.6p	44.2p	36.3p	30.7p
Aspiro	SKr 1.20	SKr 9.2	SKr 6.2	SKr 4.3	SKr 3.1	SKr 2.2

Source: Reuters, CSFB Research

Figure 16: **Performance since IPO and cash burn**

Company	Current share price	IPO price	Current discount to IPO price	Net cash/(debt)	Q2 2001 cash burn	Quarters of cash remaining	Quarters to positive EBITDA	Quarters to positive cash flow
Acotel	eu 34.50	eu 54	36%	eu 51m	n/a	n/a	n/a	n/a
iTouch	17p	70p	76%	eu 71.6m	eu 5.0m	14.0	8	11
Aspiro	SKr 1.20	SKr 62.49	98%	eu 7.9m	eu 3.0m	2.6	8	12

Source: Company data, Reuters, CSFB estimates

Acotel valuation – 30% upside

In our view Acotel is in a strong position in the European WASP market. Not only does the company have a strong balance sheet, but it also has an EBITDA margin in excess of 20% and has made a number of sound acquisitions over the last year, allowing the expansion of its business into the high growth Middle East markets.

Compared with both iTouch and Aspiro, Acotel is in a strong financial position. As well as over €50m in the bank, the company is also free cash flow positive. We have few concerns over the company's financial position so we value it on a number of comparative metrics.

Due to its current profitability, we believe that Acotel rightly justifies a significant premium to Europe's other listed mobile data companies. Acotel trades on a 5.03 times 2001E EV/Sales multiple compared with iTouch and Aspiro on 0.50 times and 0.35 times respectively. In 2003, the multiples are 2.53 times, 0.14 times, and 0.45 times.

On EV/EBITDA multiples, Acotel is trading at a discount to Europe's small cap mobile operators such as Libertel, Mobistar and Panafon on forward multiples (EV/EBITDA 2003E and 2004E).

Despite recent attempts to diversify, Acotel's core revenue is still highly dependent on the company's long-term agreement with TIM to provide the Italian operator with VAS solutions. This deal has around two years to run, and at that point there is a significant risk that the contract will not be renewed. We believe that Acotel must ensure that this revenue gap can be filled since a key prop for the company's share price is that it continues to deliver on its business plan.

This risk does justify at least some discount to the small cap operators. But the size of the discount (13% in 2004 estimates) is unwarranted provided Acotel hits our revenue forecasts and continues to diversify away from TIM, in our view.

Our DCF analysis values Acotel at €46.4 per share, representing a 34% upside from its current price. We use a WACC of 16.9% and a terminal growth rate of 4.5%. We have also applied conservative assumptions on the sales growth of Acotel beyond 2001.

We are reiterating our Buy recommendation on Acotel, but taking a conservative 12-month price target of €45 per share. We believe that there is also considerable upside value in Acotel's shares if sentiment towards mobile data and the mobile sector as a whole improves.

Figure 17: Acotel cash flow and DCF

eu in thousands, unless otherwise stated

	2000A	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E
EBITDA	5.20	4.98	8.60	12.41	15.27	17.14	18.53	19.52	20.49	21.42	22.29
Capex	1.17	4.88	5.46	5.36	6.28	7.12	7.92	8.69	9.54	10.48	11.51
Increase in share capital	254.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax paid	(1.25)	0.42	(1.07)	(1.62)	(2.08)	(2.35)	(2.52)	(2.62)	(2.71)	(2.80)	(2.86)
Free cash flow	259.21	10.28	12.99	16.16	19.47	21.92	23.93	25.60	27.32	29.10	30.93

Discount rate		16.40%	16.90%	17.40%
NPV of cash flows		96.47	94.19	91.99
Terminal Value	4.0%	49.77	47.48	45.30
	4.5%	52.02	49.63	47.35
	5.0%	54.47	51.96	49.58
Enterprise Value	4.0%	146.24	141.67	137.29
	4.5%	148.49	143.82	139.35
	5.0%	150.94	146.15	141.57
Debt/(cash) at end Q2 2001		(51.04)	(51.04)	(51.04)
Equity Value	4.0%	197.28	192.71	188.34
	5.0%	199.54	194.86	190.39
	6.0%	201.98	197.20	192.62
Number of shares (m)		4.2	4.2	4.2
Value per share (€)	4.0%	47.0	45.9	44.8
	5.0%	47.5	**46.4**	45.3
	6.0%	48.1	47.0	45.9

WACC	16.9%
Rf	4.9%
ERP	6.0%
Beta	2.00
Spread	0.75%
Tax rate	35%
Gearing	0%

Terminal growth rate	4.0%	4.5%	5.0%
Terminal cashflow multiple	8.1	8.4	8.8
Terminal EBITDA multiple	11.5	12.0	12.6

Source: CSFB research

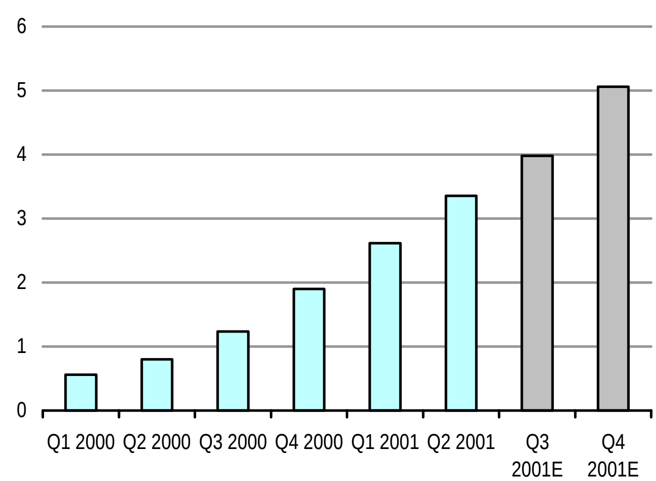
iTouch valuation – 165% upside

In our opinion, iTouch's careful international rollout and commitment to product development is beginning to bear fruit. The company achieved 28% quarterly revenue growth from March to June 2000 and it has largely preserved the €70m raised in its IPO.

As with any company making an operating loss, a primary concern is iTouch's path to profitability—will the company deliver on its estimate of positive free cash flow in 2004? This is the key question facing potential investors in iTouch. With a 2002E EV/Sales multiple of 0.23 times the market is discounting a view that iTouch will run out of cash. In our view this is a mistake and for this reason the shares are heavily undervalued.

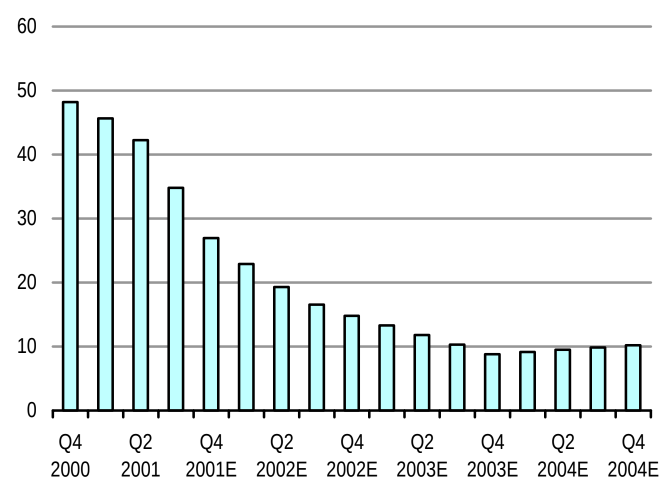
We believe that this profitability target is very achievable. In its more mature markets (South Africa and Ireland), we think iTouch should reach positive monthly EBITDA before the end of 2001, and as a group by mid 2003. iTouch targets break-even in 36 months for each operation, but it believes it is set to comfortably beat that target in Australia and south-east Asia. However, the large UK market continues to prove problematic, according to the company. Clearly it is revenue growth and OPEX control that will drive this cash flow. We believe that iTouch has already controlled its operating expenditure, and its cash pile should support the company even if revenue growth slows significantly. However, we are also confident this will not happen, despite the risk of a global recession.

Figure 18: iTouch revenue growth
£ in millions



Source: Company data, CSFB estimates

Figure 19: iTouch net cash position
£ in millions



Source: Company data, CSFB estimates

Our DCF valuation for iTouch is 44.2p, representing over 160% upside from its current price. We use a WACC of 16.9% and a terminal growth rate of 4.5%. We have also applied conservative assumptions on the sales growth of iTouch beyond 2001.

We are confident that iTouch can deliver on its business plan, and believe that it has sufficient cash to reach profitability. We rate iTouch a Strong Buy with a 12-month price target of 45p.

Figure 20: iTouch cash flow and DCF

£ in thousands, unless otherwise stated

	2000A	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E	2010E	2011E
EBITDA	(9,144)	(11,998)	(8,111)	(761)	9,342	22,032	36,987	45,038	49,928	65,591	73,053	81,42
CAPEX	(1,974)	(2,250)	(4,040)	(5,207)	(7,957)	(11,032)	(13,503)	(15,914)	(18,014)	(20,404)	(23,125)	(26,224
Increase in share capital/acquistion	43,500	(3,500)										
Tax paid	0	0	0	0	0	0	0	0	(5,673)	(13,922)	(15,606)	(17,469
Free cash flow	32,382	(17,748)	(12,151)	(5,968)	1,385	11,000	23,484	29,124	26,241	31,265	34,321	37,73

Discount rate		16.40%	16.90%	17.40%
NPV of cash flows		27,778	26,102	24,498
Terminal Value	4.0%	57,234	54,598	52,094
	5.0%	59,828	57,072	54,455
	6.0%	62,640	59,755	57,014
Enterprise Value	4.0%	85,011	80,700	76,592
	5.0%	87,605	83,175	78,953
	6.0%	90,417	85,857	81,512
Debt/(cash) end Q2 2001		(42,255)	(42,255)	(42,255)
Equity Value	4.0%	127,266	122,955	118,847
	5.0%	129,860	125,430	121,208
	6.0%	132,672	128,112	123,767
Number of shares (m)		283.8	283.8	283.8
Value per share (p)	4.0%	44.8	43.3	41.9
	5.0%	45.8	**44.2**	42.7
	6.0%	46.7	45.1	43.6

WACC	16.9%
Rf	4.9%
ERP	6.0%
Beta	2.00
Spread	0.75%
Tax rate	30%
Gearing	0%

Terminal growth rate	4.0%	4.5%	5.0%
Terminal cashflow multiple	8.1	8.4	8.8
Terminal EBITDA multiple	3.7	3.9	4.1

Source: CSFB research

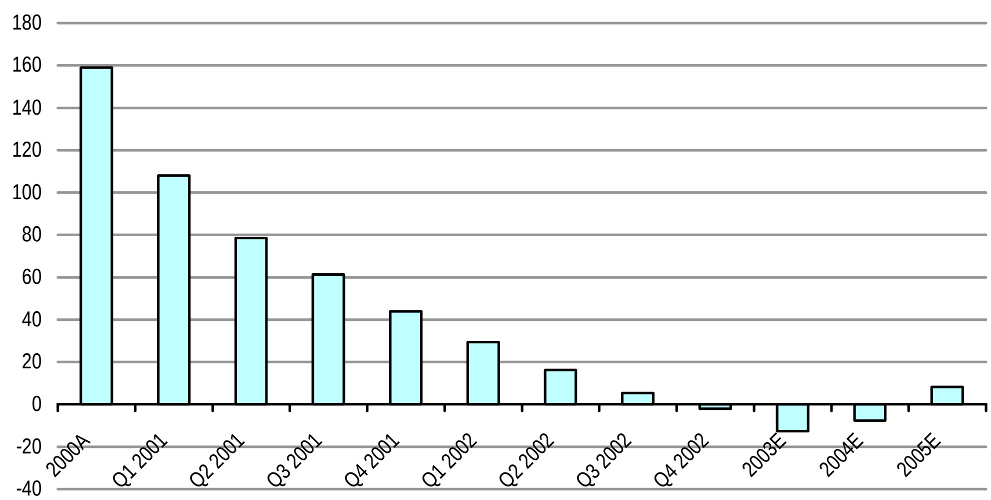
Aspiro valuation – 17% downside

As is the case with iTouch, the share price of Aspiro is being driven by investor concerns over the company's financial position, and the ability of the company to reach cash-flow break-even. This concern has been highlighted by the 80% decline in Aspiro's share price following a profits warning in August. At present, Aspiro is trading with an EV around zero—the market value being equivalent to the net cash. By 2002E, the EV/Sales multiple is still only 0.56 times.

It is our opinion that Aspiro is not fully funded through to profitability. There are a number of very large risks and growth targets that must be exceeded if the company is not to burn all of its cash in the next four or five quarters. In addition, at the present share price, the company may find it difficult to raise new capital, with Aspiro not reaching free cash flow break-even until the end of 2004.

We believe that 2001 revenue will be around SKr 60m, allowing for increased competition and market slowdown. Despite Aspiro's recent cut to its operating expenditure through staff cuts and closure of several offices, we believe the company will not reach monthly EBITDA break-even in the second half of 2003E.

Figure 21: Aspiro net cash position
SKr in millions



Source: Company data, CSFB estimates

Our DCF valuation for Aspiro is SKr 4.3, representing 260% upside from its current share price. We use a WACC of 16.9% and a terminal growth rate of 4.5%. We have also applied conservative assumptions on the sales growth of Aspiro beyond 2001.

However, this DCF assumes that the company has sufficient financing (or potential financing) to reach break-even. We believe this assumption looks high risk today, undermining the whole DCF approach in the case of Aspiro.

Due to the considerable execution risks at Aspiro, we rate the company a Sell with a 12-month price target of SKr 1.00.

Figure 22: Aspiro cash flow and DCF

SKr in thousands, unless otherwise stated

	2000A	2001E	2002E	2003E	2004E	2005E	2006E	2007E	2008E	2009E
EBITDA	(162,957)	(107,647)	(34,808)	(1,978)	16,115	29,541	31,533	34,553	51,141	84,819
Capex	(5,946)	(7,503)	(11,037)	(8,723)	(11,141)	(13,590)	(15,778)	(18,384)	(22,101)	(27,182)
Increase in share capital	254,086	0	0	0	0	0	0	0	0	0
Tax paid	0	0	0	0	0	0	0	0	0	0
Free cash flow	85,183	(115,150)	(45,845)	(10,701)	4,974	15,951	15,755	16,169	29,039	57,637

Discount rate		16.40%	16.90%	17.40%
NPV of cash flows		(47,423)	(50,058)	(52,552)
Terminal Value	4.0%	188,329	179,656	171,416
	4.5%	196,865	187,798	179,185
	5.0%	206,118	196,625	187,607
Enterprise Value	4.0%	140,906	129,598	118,864
	4.5%	149,442	137,741	126,633
	5.0%	158,695	146,568	135,055
Debt/(cash) at end Q2 2001		(78,603)	(78,603)	(78,603)
Equity Value	4.0%	219,509	208,201	197,467
	5.0%	228,045	216,344	205,236
	6.0%	237,298	225,171	213,658
Number of shares (m)		50.0	50.0	50.0
Value per share (SEK)	4.0%	4.4	4.2	3.9
	5.0%	4.6	**4.3**	4.1
	6.0%	4.7	4.5	4.3

WACC	**16.9%**
Rf	4.9%
ERP	6.0%
Beta	2.00
Spread	0.75%
Tax rate	28%
Gearing	0%

Terminal growth rate	4.0%	4.5%	5.0%
Terminal cashflow multiple	8.1	8.4	8.8
Terminal EBITDA multiple	4.4	4.6	4.9

Source: CSFB research

This page has intentionally been left blank.

Acotel ACO.MI

BUY

Price (31 Oct 01)				34.50 (eu)
Target price (12 months)				45.00 (eu)
Year	12/99A	12/00A	12/01E	12/02E
Revenues (eu m)	4.1	10.6	18.9	27.3
EBITDA (eu m)	1.9	5.2	5.0	8.6
Net income (eu m)	0.7	1.4	2.5	4.3
IC (eu m)	—	74.76	77.28	81.55
EPS (CSFB adj., eu)	0.16	0.33	0.60	1.02
ROIC (%)	—	1.8	3.3	5.2
P/E (x)	212.01	103.03	56.30	33.26
P/E rel (%)	—	—	—	—

Dividend 2000 (eu)	—	Free float (%)	21
Dividend yield (%)	—	Number of shares (m)	4.20
Net debt/equity (12/01E, %)	—	Current WACC	17%

Historical Valuation

Year	12/99A	12/00A	12/01E	12/02E
Y/E closing price (eu)	—	—	34.50	34.50
Market cap. (eu m)	—	428.4	142.0	142.0
End year debt	—	-51.0	-51.5	-53.5
Other liabilities	—	—	—	—
Enterprise value (eu m)	—	377.44	90.47	88.47

Key Historical Ratios

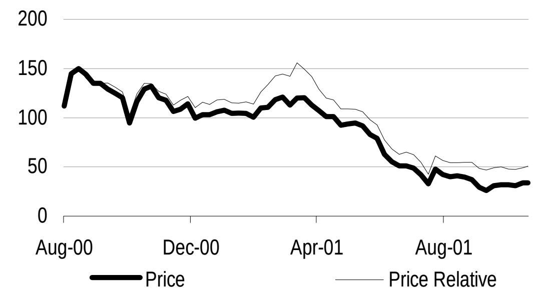
EV/Revenue (x)	—	35.6	4.8	3.2
EV/EBITDA (x)	—	72.5	18.2	10.3
EV/IC (x)	—	5.0	1.2	1.1
P/E at closing price (x)	—	—	56.3	33.3

Strategic Analysis

Existing Strengths: Strong, sustained positive EBITDA margins.
Existing Weaknesses: Heavy reliance on TIM contract.
Existing Opportunities: Development of technical platform following acquisitions.
Existing Threats: Major growth is coming from the Middle-East.

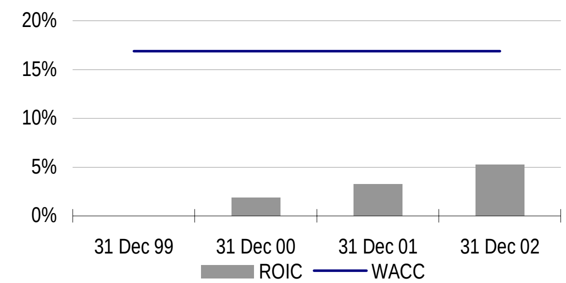
Company Description

Acotel is an Italian mobile applications provider. The company offers a range of applications via SMS to major operators and enterprises in Italy. The company is increasingly changing its focus to providing technology solutions following the acquisitions.

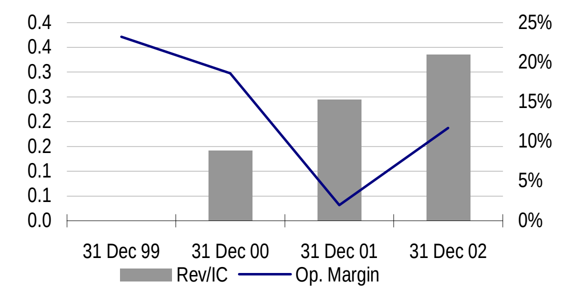


Performance over	1mth	3mths	12mths
Absolute (%)	—	—	—
Relative (%)	—	—	—

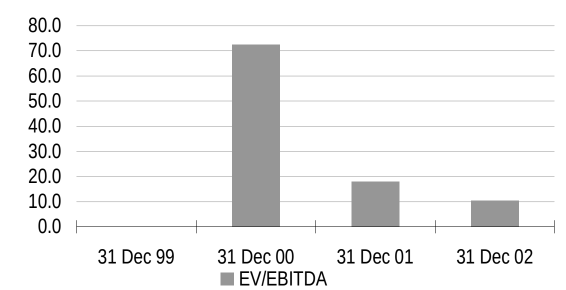
ROIC / WACC



REV / IC Op. Margin



EV / EBITDA (at historical prices)



Source: FTI, Company data, Datastream, CSFB (EUROPE) LTD. Estimates.
The price relative chart measures performance against the DJEU index.
On 31/10/01 the DJEU index closed at 288.2.
On 31/10/01 the spot exchange rate was eu1.11 /US$1.

Acotel (ACO.MI, Buy)

Acotel is an Italian mobile application service provider, listed on the Milan Stock Exchange and by current market capitalisation, Acotel can lay claim to being Europe's largest quoted mobile data company. Acotel was IPO'd by CSFB in 2000. Over the past few years, Acotel has developed a strong financial position, with EBITDA margins of 27% in the first half of 2001 and has leveraged its leading position with a number of acquisitions, such as Jinny Software and Info2Cell. The jewel in the crown of the Acotel Group is a long-term agreement to supply value-added services to TIM. With two years left on the TIM contract, the deal will continue to secure Acotel's revenues through to at least 2003, while the company seeks to diversify into new products and markets.

Investment summary

With a market capitalisation in excess of €150m, Acotel Group can lay claim to being the largest pure-play mobile data company listed in Europe. Following its IPO in August 2000 at €54 per share, the price rapidly rose to nearly €160, before settling in the €100–€110 range. Recently, the share price has dropped with the sector below to the IPO price and is now trading around €35 per share. However, Acotel has still outperformed its peers since its IPO. Acotel's ability to deliver revenue growth while maintaining significant EBITDA margins in excess of 35% has been a key to the support of its share price. Recent concern over declining margins looks misplaced as we believe it is largely due to increased operating expenses as Acotel's recent acquisitions are integrated before revenue growth from these acquisitions kicks in. We expect these margins to improve.

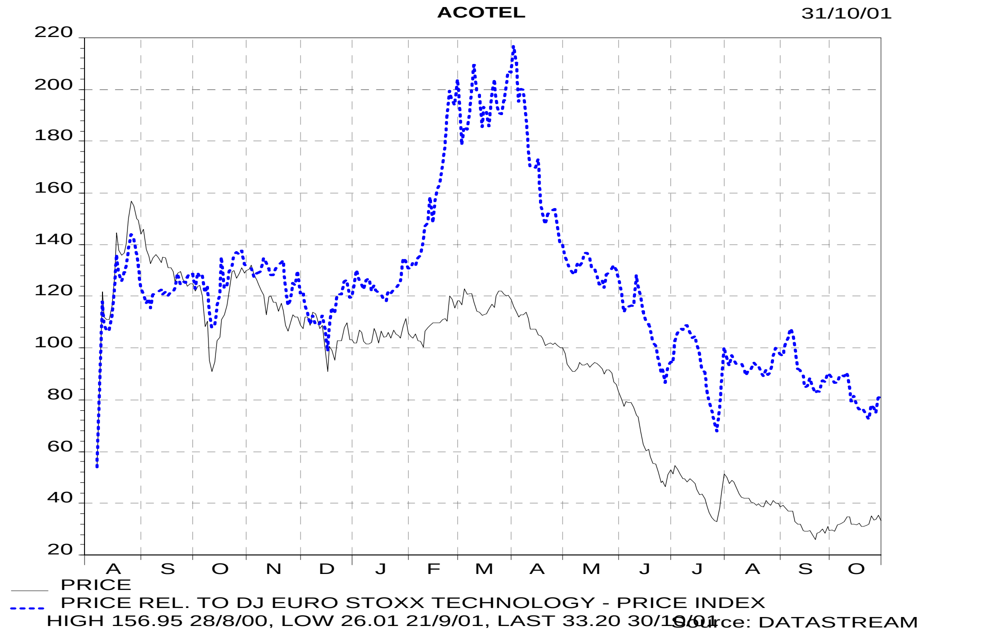
Figure 23: Acotel - key financial data

eu in millions, unless otherwise stated

	2000A	2001E	2002E	2003E	2004E	2005E
Revenues	10.59	18.90	27.32	35.77	41.85	47.48
Revenue growth	*156%*	*78%*	*45%*	*31%*	*17%*	*13%*
EBITDA	5.20	4.98	8.60	12.41	15.27	17.14
EBITDA margin	*49%*	*26%*	*31%*	*35%*	*36%*	*36%*
EBITDA growth	*176%*	*-4%*	*73%*	*44%*	*23%*	*12%*
CAPEX	1.17	4.88	5.46	5.36	6.28	7.12
Free cash flow	2.78	0.52	2.06	5.43	6.91	7.67
Net cash (debt)	50.96	51.49	53.55	58.98	65.89	73.57

Source: Company data, CSFB estimates

Figure 24: Acotel share price since IPO



Source: Datastream

In its second-quarter results, Acotel posted sales of €4.2m, against €3.3m in the first quarter of 2001 (no second-quarter 2000 results were reported by the company). What appears a strong increase of 28% in the quarter was largely expected due to the consolidation of new acquisitions such as Jinny and Info2Cell. Underlying like-for-like revenue growth over the same period was 9%. The revenue increase was matched by a 64% increase in operating expenses in the quarter, reducing the EBITDA margin to 20% for the period from 37% in the first quarter and reflecting the extra costs within the acquired companies. However, 20% margins are still in excess of Acotel's peers and emphasise the company's position as the most financially secure of Europe's mobile data companies.

Following the acquisition of the technology companies Info2Cell and Jinny Software, Acotel is successfully altering its revenue mix. In the second quarter, sales of value-added services to operators accounted for 45% of revenues (80% in full-year 2000) and sales of the technology platforms accounted for 40% of sales (against 8% in 2000). The remaining 15% of Acotel's revenue comes from its original security solutions business and corporate mobile data services.

At the core of Acotel's business is a long-running agreement to supply VAS to the largest Italian mobile operator, TIM. This agreement extends not only to TIM in Italy but also its operations in Brazil. In addition, we believe Acotel has a stable, experienced management team and tight control on operating expenses.

Acotel was the first in the Italian market to support push and trigger functionality (able to tailor service to customers' needs), offer wireless advertising, develop personalised information services, devise mobile commerce services and enable users to update their profiles via the internet.

Established base of users

Services provided through Acotel's commercial applications are selling more than ten million SMS per month worldwide, reaching 3.5 million customers who have used services co-branded by Acotel at least once. Usage is increasing, driven by the gradual 'learning-by-using' curve experienced by customers. Acotel has also had success selling its services to the corporate market and the company's current client base includes Alitalia, Diners Club, Autostrade, IBM, Mediolanum, Europ Assistance and Numera. By developing its vertical applications, Acotel is deepening these relationships by helping to facilitate clients' core business.

Acotel also has strong strategic relationships with content providers (which makes Acotel the leading content aggregator in a wireless environment in Italy). Its content partners include Reuters, Milano Finanza, Il Sole 24Ore, ANSA and La Hora.

Key issues

Why is Acotel trading at a premium?

The most important factor maintaining the Acotel share price is the company's profitability. With a 27% EBITDA margin in the first half of 2001, Acotel is in a unique position compared with its peers. This profitability is largely due to the company's operational efficiencies—it is a long-established company with a major 'cash cow' contract with TIM that runs for another two years at least. Furthermore, Acotel is free cash flow positive.

The profitability has given investors some confidence in the long-term future of Acotel. In addition, the €50m raised through last year's IPO is not being burnt through on-going operations, but is enabling Acotel to make strategic acquisitions and undertake a controlled international expansion.

Can revenue growth be maintained?

Despite posting impressive EBITDA margins and cash flow, Acotel's long-term future rests with its ability to expand services developed in Italy to other markets and extending the current SMS services to new technology platforms such as WAP and GPRS services. For Acotel the core expansion markets have been Spain and South America, shadowing TIM's international footprint. However, following disappointing early take-up, TIM's Spanish interest, Amena has terminated its contract with Acotel. In addition, the core agreement with TIM has only two years left to run, and TIM has been actively pursuing other mobile data partnerships and products, with companies such as NTT DoCoMo, KPN, and Openwave, plus its own TIM.it portal. We believe there is a risk that Acotel's agreements to supply VAS to TIM may ultimately lapse.

On the positive side, Acotel has signalled its intent to move aggressively into new international markets through a series of acquisitions. In particular the purchase of Info2Cell and Jinny Software has given Acotel a strong presence in both Ireland and the Middle East, plus a range of advanced technical platforms from Jinny. We expect Acotel to make further acquisitions like these.

Recommendation

Following its IPO in August 2000, Acotel outperformed both its peers and the technology and telecom sectors as a whole for nine months. Some of the reasons for this were the company's strong financial position, its contract with TIM and its proven ability to deliver healthy EBITDA and cash flow. More recently on the back of bearish sentiment towards telecoms earlier this year, and a slowdown in SMS volume growth, there has been increasing selling pressure on Acotel stock and it has fallen from €80 at the end of May to €35 currently.

We feel that Acotel's strong financial position justifies a considerable premium to its peers, although the company must continue to make its revenue forecasts and diversify its operations. We are reiterating our Buy rating on the stock with a 12-month target of €45.

Company history

Acotel was founded in 1981 as a designer and manufacturer of security systems based in Italy. From 1992, the company started developing platforms and applications for mobile networks, and in 1997 launched its first SMS information service with TIM in Italy. More recently the company has expanded its operations to Spain, Brazil and Chile. Following the post-IPO acquisitions of Info2Cell and Jinny Software, Acotel has been able to move into the Middle East and Irish markets while also considerably strengthening its technical platform, via its acquisitions.

Company management

Since its inception in the early 1980s, Acotel's founder, Claudio Carnevale, has taken an active interest in running the company, through direct executive responsibilities. As Acotel has expanded the scale of its business, new professional management has been taken on board to manage growth and provide the required expertise to expand in new areas. The founder is still in charge of Acotel's group strategy, and takes an active role in devising new commercial applications for the proprietary platform. All the other business and technical functions have gradually been delegated to the remaining members of the management team. We believe that Acotel has a high quality and experienced management team that has recently been augmented by the management of Jinny Software, which also boasts considerable and complementary experience.

Company operations

Acotel has evolved from its role of vendor of technology to become a prominent provider of applications to be run across mobile networks—working both with network operators and third parties. Acotel has a proven ability to devise successful commercial SMS and mobile data services (such as ScripTIM in Italy) over its proprietary platform. New solutions tailored to corporate clients are rapidly gaining momentum thanks to the low capital investment required and tighter cost management. For instance, in Italy, Acotel has enabled the placing of wireless bets on the SuperEnalotto lottery, independent of the country's four mobile operators.

Following the commercial success of Acotel's SMS services, the company has expanded into the WAP market with the launch in summer 2000 of the Acotel developed WAPTIM portal. By the end of November 2000, Acotel was processing 4.5 million SMS messages a month and the WAPTIM portal reported over 60,000 subs at that time. However, TIM reported that it had 300,000 active WAP users at the end of 2000, so Acotel was attracting only 20% of them to WAPTIM. Through 2001, we do not believe that the Acotel's WAP services in Italy have developed appreciably, since we believe that the bulk of subscribers are accessing the TIM.it portal as a default. However, this is compensated for by an increase in WAP business in Acotel's markets outside Italy such as Ireland and the Middle East.

The ability of Acotel to sign co-branded agreements with TIM is evidence of the company's success in building differentiated platforms and services. However, the exclusive deal with TIM is only effective for another two years. As a result, Acotel continues to develop new services for TIM, while looking to develop a broader base of revenue streams. So far, this is being achieved with some success—largely via acquisition—the acquisition of Jinny is an important step. But Acotel has a multi-faceted approach to its expansion, with four key strategies going forward:

- Establish local affiliate companies—Acotel Spain, Acotel Brazil and Info2Cell are already active. The recent acquisition of Jinny Software from Ireland will expand the reach of affiliates in the Middle East and Ireland.
- Further operator alliances in Latin America and the Middle East in particular.
- Work closely with SIM manufacturers and banks to develop new and secure mobile applications.
- Continued acquisitions to obtain local market knowledge and expand Acotel's client base.

The exclusive agreements

Telecom Italia Mobile (TIM) and Acotel guarantee mutual exclusivity for all the information services to TIM's clients via SMS, voice and data (currently WAP) billed directly by TIM. They have also agreed to co-brand these services. The contract expires on 20 October 2003.

The opportunity to deal on equal terms with the telecoms group dominant in its domestic market (with 48% subscriber market share) and with a significant presence overseas, is perhaps a measure of the quality and reputation that Acotel's business solutions enjoy among customers. It should be noted that neither the Telecom Italia group nor TIM has ever held an equity interest in Acotel so the incentive to purchase Acotel's solutions was dictated by quality and ability to deliver alone. Acotel has been providing electronic security services to the TI Group and expanded its relationship from there.

International dimension

To promote its international expansion, Acotel has leveraged on its relationship with the Telecom Italia Group and now provides services to a number of its affiliates overseas, including Entel (Chile) and Maxitel (Brazil). Local operators' existing customer bases offers a captive audience for Acotel's (mostly SMS) services, which have been tailored to the local wireless transmission network.

The modular design of its platform allows Acotel to directly operate most of these international services from its headquarters in Rome with the help of local servers for the storage (that is, caching) of dedicated local content. Satellite links (offered through Acotel's subsidiary, Millennium) allow a real-time connection with servers in Rome, which should continue to host most of the applications and work as a caching back-up in case of service disruptions.

Chile

Acotel has been present in Chile since 1998 with an SMS-based offering branded *e-movil*. Billing problems have stopped Entel (the local operator and Acotel's partner in *e-movil*) offering the SMS service to pre-paid customers, who represent the majority of its customer base. Despite these limitations, *e-movil* delivers an average 200,000 SMS per month.

Brazil

Brazil represents a potentially lucrative market for Acotel because of its large population, and the presence that the Telecom Italia Group has achieved (by acquiring and operating three leading local wireless operators—TIM Norde, TIM Sud and Maxitel) and several GSM licenses. The versatility of Acotel's platform has proved very important in Brazil because the wireless operators (part of the Telecom Italia Group) with which Acotel works, use different network technologies (TDMA as opposed to GSM).

To gain critical mass and build valuable traffic on the portals, TIM has recently integrated the different WAP strategies of the three Brazilian operators in a unique offering, TIMNET, which should ultimately represent the WAP portal of Telecom Italia Group in Latin America. Acotel has been asked by TIM to develop and provide technological support to the portal. This portal should not only aggregate content, but also allow customers to create their own profiles to continue using Acotel's SMS service on a trigger basis. As explained in the valuation section, Acotel should benefit (on a recurring basis) from the new revenue streams underpinned by this WAP portal.

Middle East

Following the acquisitions of Info2Cell and Jinny Software, Acotel has put a major effort into expansion in the Middle East with contracts in countries such as the Jordan, Kuwait and Bahrain. The Middle East interests are providing an increasing proportion of Acotel's revenues—20% in the first quarter of 2001, rising to 30% in the second quarter. With increasing competition in European markets, we believe that these new regions will prove vital to Acotel's long-term revenue growth. We do not expect these contracts to be terminally affected by the current Afghan conflict, although this is clearly a risk factor.

Ireland

Through the acquisition of Jinny, Acotel has also gained a foothold in the Irish market. Jinny has a close relationship with the largest operator in Ireland, the Vodafone-controlled Eircell, to supply value-added service platforms such as WAP gateways, SMS Centres and mobile commerce solutions. While the Irish market is in itself not large, the close relationship with Eircell could ultimately be leveraged into a closer relationship for Acotel with the rest of the Vodafone Group.

Future growth

In particular, the acquisition of Jinny Software is a major step towards achieving several of the above goals, in our view.

While Acotel's primary focus has been the development and provisioning of proprietary mobile data platforms and applications, Jinny Software has invested heavily in the development of more generic infrastructure solutions such as WAP gateways and Short Message Service Centres (SMSCs).

At acquisition, Jinny employed 47 staff. It is headquartered in Dublin, Ireland, with a technology centre in Beirut, Lebanon. The company develops bespoke messaging and mobile commerce solutions for operators, banks and large corporates and offers a range of 'off-the-shelf' products such as a WAP Gateway, SMSC and Unified Messaging server. More recently Jinny has also launched a VoiceXML gateway to enhance its email-to-voice applications.

In a similar way to Acotel, Jinny Software has pursued exclusive deals with its operator partners. As well as deals with several Middle East mobile network operators, Jinny's key partnership is with Ireland's largest operator, Eircell (recently acquired by Vodafone). Jinny is the preferred supplier for Eircell's mobile data services and is providing a number of services such as mobile email, ringtone downloads, SMS information push and pull and 'Etrieve' that allows a users to listen to emails over the phone, and reply to them by voice (similar to TIM's UNI.TIM concept).

In the corporate market, Jinny has focused to date on the banking sector. For instance, it has introduced mobile banking services for the largest Irish Bank, AIB, utilising a proprietary security solution.

Many of Jinny's primary competitors are the major vendors offering similar products only as part of broader solutions. These competitors would be companies such as Openwave, Nokia, Ericsson, Alcatel, Comverse and Logica. In our view, while remaining a small company in a highly competitive market, Jinny has been able to leverage a high quality technical solution with considerable success. Seven-month revenues of €2.5m are testament to this.

In our opinion, the acquisition of Jinny presented Acotel with new expertise, new customer relationships and new market opportunities in excess of the €15m cost. These synergies include:

- Leverage of Jinny's existing relationships to enhance Acotel's customer reach;
- improve vertical integration and improve Acotel's positioning along the ASP value chain;
- add a mobile payment and billing capability to Acotel's offerings; and
- strengthened brand.

Competitive environment

In its core Italian market, Acotel has clearly got a competitive advantage—it is long established and has a close relationship with the country's largest mobile operator, TIM. The company has also developed an impressive list of corporate clients in that country. In Ireland, Jinny Software has a similarly close relationship with Eircell, the leading operator in that smaller market. However, Acotel's future growth relies on its ability to develop its international business. As well as competing with its peers such as iTouch, Aspiro, Netsize, InfoSpace and Materna, Acotel is also able to install and provision a more complete end-to-end mobile data solution. At this point it may find itself competing against the much larger suppliers—Nokia, Ericsson, Comverse, CMG, Logica and the like. Early indications from the number of deals announced are that the new products have been successful generating business from smaller operators with these operators sometimes unwilling to lock in with larger, more powerful systems suppliers. But given the need to expand beyond the TIM contract and to migrate to GPRS and 3G services, the future for Acotel is not without its challenges.

Financials

Figure 25: Acotel - forecasts to 2005

eu in millions, unless otherwise stated

	2000A	2001E	2002E	2003E	2004E	2005E	Q1 2001A	Q2 2001A	Q3 2001E	Q4 2001E
Consumer mobile data	6.91	8.68	10.85	13.56	15.59	17.54	1.96	1.93	2.23	2.56
Mobile technology solutions	2.18	7.95	13.91	19.47	23.37	26.87	1.00	1.74	2.26	2.94
Corporate mobile data	0.65	1.19	1.43	1.57	1.73	1.90	0.18	0.25	0.33	0.43
Other (e.g. security solutions)	0.85	1.08	1.14	1.16	1.16	1.16	0.15	0.28	0.31	0.34
Revenues	**10.59**	**18.90**	**27.32**	**35.77**	**41.85**	**47.48**	**3.28**	**4.21**	**5.13**	**6.27**
Revenue growth	*156%*	*78%*	*45%*	*31%*	*17%*	*13%*	*-24%*	*28%*	*22%*	*22%*
Cost of sales	(3.44)	(8.14)	(10.93)	(13.41)	(14.65)	(16.62)	(1.36)	(1.65)	(2.31)	(2.82)
Personnel costs	(1.44)	(4.71)	(6.35)	(8.10)	(9.72)	(11.18)	(0.58)	(1.31)	(1.37)	(1.44)
Leases and rents	(0.25)	(0.63)	(0.85)	(1.08)	(1.29)	(1.49)	(0.11)	(0.15)	(0.17)	(0.19)
Other expenses	(0.26)	(0.44)	(0.60)	(0.76)	(0.91)	(1.05)	(0.02)	(0.26)	(0.08)	(0.09)
Operating Expenses	**(5.39)**	**(13.91)**	**(18.72)**	**(23.35)**	**(26.58)**	**(30.34)**	**(2.06)**	**(3.37)**	**(3.93)**	**(4.54)**
Opex growth	140%	158%	35%	25%	14%	14%	12%	64%	16%	16%
EBITDA	**5.20**	**4.98**	**8.60**	**12.41**	**15.27**	**17.14**	**1.22**	**0.84**	**1.20**	**1.73**
EBITDA margin	*49%*	*26%*	*31%*	*35%*	*36%*	*36%*	*37%*	*20%*	*23%*	*28%*
Depreciation	(0.43)	(0.80)	(1.60)	(2.87)	(3.70)	(4.55)	(0.09)	(0.21)	(0.21)	(0.30)
Amortisation	(2.74)	(3.80)	(3.80)	(3.80)	(3.80)	(3.80)	(0.69)	(1.04)	(1.04)	(1.04)
Exceptional costs	(0.06)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operating Profit	**1.97**	**0.37**	**3.19**	**5.74**	**7.78**	**8.79**	**0.44**	**(0.41)**	**(0.05)**	**0.39**
interest rec/(paid)	0.69	1.36	2.14	2.36	2.64	2.94	0.57	(0.23)	0.51	0.51
Extraordinary costs	(0.02)	0.37	0.00	0.00	0.00	0.00	0.03	0.13	0.10	0.10
PBT	**2.63**	**2.10**	**5.34**	**8.09**	**10.41**	**11.73**	**1.05**	**(0.51)**	**0.56**	**1.00**
Tax credit/(paid)	(1.25)	0.42	(1.07)	(1.62)	(2.08)	(2.35)	0.10	0.10	0.10	0.10
PAT	**1.38**	**2.52**	**4.27**	**6.48**	**8.33**	**9.39**	**1.15**	**(0.40)**	**0.66**	**1.11**
Minorities	(0.002)	0.003	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001
Net profit/(loss)	**1.38**	**2.52**	**4.27**	**6.48**	**8.33**	**9.39**	**1.04**	**(0.40)**	**0.66**	**1.11**
Shares outstanding (m)	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20
EPS (eu)	**0.33**	**0.60**	**1.02**	**1.54**	**1.98**	**2.24**	**0.25**	**(0.10)**	**0.16**	**0.26**
Net tangible fixed assets	0.76	4.84	8.71	11.20	13.78	16.35	1.75	2.66	3.73	4.84
Capex	1.17	4.88	5.46	5.36	6.28	7.12	1.07	1.12	1.28	1.41
Capex as % sales	*11%*	*26%*	*20%*	*15%*	*15%*	*15%*	*33%*	*27%*	*25%*	*23%*
Net (debt) cash bfwd	(0.02)	50.96	51.49	53.55	58.98	65.89	50.96	51.22	51.04	51.06
Free cash flow	2.78	0.52	2.06	5.43	6.91	7.67	0.25	(0.18)	0.02	0.42
IPO proceeds	54.93									
Net (debt) cash cfwd	50.96	51.49	53.55	58.98	65.89	73.57	51.22	51.04	51.06	51.49

Source: Company data, CSFB estimates

Figure 26: **Acotel balance sheet**

eu in thousands

	30/6/2001	31/12/2000	30/6/2000
Intangible assets	15,467	3,380	1,314
Tangible fixed assets	2,658	764	614
Financial fixed assets	3,917	0	18
Current assets			
Cash	44,163	51,831	10,728
Current receivables	7,942	7,820	3,478
Inventories	611	611	668
Net Assets	**74,758**	**64,406**	**16,822**
Shareholders' equity	58,473	57,785	12,924
Provisions	186	265	244
Long-term liabilities	553	509	603
Short-term liabilities	15,546	5,847	3,051
Equity and liabilities	**74,758**	**64,406**	**16,822**

Source: Company data

Acotel is due to report its third-quarter results in the middle of November. We are expecting 22% quarter-on-quarter revenue growth to €5.13m. The revenue growth will reflect increasing consumer usage of services in Italy and sales of technology platforms in the Middle East. However, Acotel operating expenditure is also expected to increase, keeping EBITDA margins at 23%, with €1.2m of EBITDA generated in the third quarter of 2001. Following a slight net loss in the second quarter, we expect EPS to return to €0.02 for the third quarter from (€0.18) in the second quarter.

Conclusions

With its strong financial position and close relationship with TIM, we think that Acotel is in a relatively strong position amongst its peers. The acquisitions of Jinny Software and Info2Cell have further strengthened the company's portfolio of products and opened up potentially lucrative opportunities in the Middle East. Further such acquisitions look likely, in our view. Furthermore, Acotel has also continued to sign lucrative deals with a number of corporates in Italy, most recently with lottery group, Sisal.

We think that Acotel is well positioned to continue its dominance of the WASP market in Italy and grow its operations in the Middle East and South America. On valuation it is trading at relatively low EV/Sales multiples compared with other successful mobile data companies such as Comverse and also the mobile operators from whom Acotel's revenues largely derive. With both Acotel and the operators dependent on the success of mobile data for their growth, this valuation disparity suggests some upside for Acotel. As a result we are reiterating our Buy rating on the company with a 12-month price target of €45.

iTouch ITU.L

STRONG BUY

Price (31 Oct 01)				17p
Target price (12 months)				45.00p

Year	12/99A	12/00A	12/01E	12/02E
Revenues (£m)	—	4.2	15.0	31.8
EBITDA (£m)	—	-9.1	-12.0	-8.1
Pre-tax profit (£m)	—	-15.9	-17.6	-15.0
IC (p m)	—	85.85	68.86	54.35
EPS (CSFB adj., p)	0.00	-5.42	-5.99	-5.11
ROIC (%)	—	-17.9	-24.7	-26.7
P/E (x)	—	-3.14	-2.84	-3.33
P/E rel (%)	—	-17.80	-18.08	-23.51

Dividend 2000 (p)	—	Free float (%)	25
Dividend yield (%)	—	Number of shares (m)	283.80
Net debt/equity (12/01E, %)	-36.4	Current WACC	17%

Historical Valuation

Year	12/99A	12/00A	12/01E	12/02E
Y/E closing price (p)	—	51.00	17.00	17.00
Market cap. (£m)	—	144.7	48.2	48.2
End year debt	—	-48.2	-26.9	-14.8
Other liabilities	—	—	—	—
Enterprise value	—	96.52	21.31	33.4

Key Historical Ratios

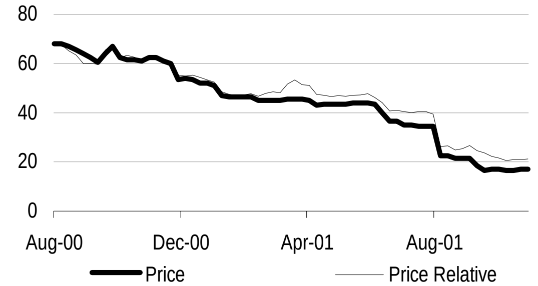
EV/Revenue (x)	—	23.1	1.4	1.1
EV/EBITDA (x)	—	-10.6	-1.8	-4.1
EV/IC (x)	—	1.1	0.3	0.6
P/E at closing price (x)	—	-9.4	-2.8	-3.3

Strategic Analysis

Existing Strengths: Strong cash balance and continued revenue growth.
Existing Weaknesses: Operates in very disparate markets.
Existing Opportunities: Building close relationships with a number of operators.
Existing Threats: Revenue growth stagnates as SMS and IVR market matures.

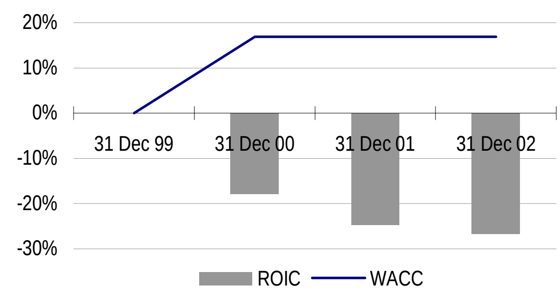
Company Description

iTouch is a London-based mobile applications service provider. The company is 51% owned by Independent News and Media, and iTouch's international expansion has focused on the Independent's market. The strategy of building close operator relationships and leveraging media appears to be bearing fruit.

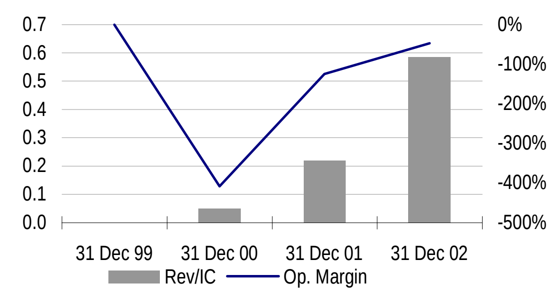


Performance over	1mth	3mths	12mths
Absolute (%)	—	-50.7	-72.1
Relative (%)	-6.0	-45.9	-65.1

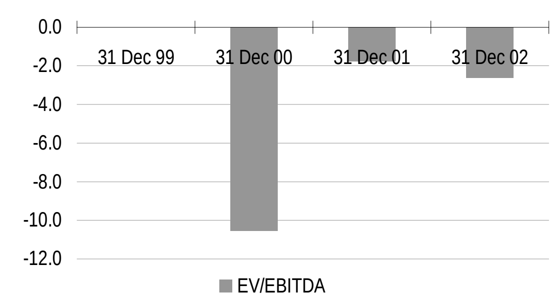
ROIC / WACC



REV / IC Op. Margin



EV / EBITDA (at historical prices)



Source: FTI, Company data, Datastream, CSFB (EUROPE) LTD. Estimates.
The price relative chart measures performance against the FTAS index.
On 02/11/01 the FTAS index closed at 2452.2.
On 02/11/01 the spot exchange rate was £0.62/eu 1. - eu0.90/US$1.

iTouch (ITU.L, Strong Buy)

iTouch is attempting to offer services across the nascent mobile data market, both to corporates and consumers. The company offers services in countries across the globe—from the UK and Ireland to South Africa, Australia and Indonesia. Within these markets, services offered range from own-brand content-based services to managed operator portals, and a portfolio of wireless ASP services for corporate users. Increasingly iTouch is focusing on these white-label services and has successfully grown its customer base and revenues through small strategic acquisitions and organic growth. At the same time the company has strictly adhered to a policy of preserving the cash pile raised through its IPO. While this may have seemed overly conservative a year ago, this policy now looks extremely prudent. At present, iTouch still has around €70m of net cash, more than sufficient to fund the company to cash-flow break-even, in our view this will be in 2004.

The disparate nature of its international operations may prove a challenge and will require high quality, independent regional management, but the company is continuing to leverage its South African origins and the reach of its 51% shareholder, Independent News and Media, and appears to have gained a strong footprint in markets such as Australia, Ireland and Indonesia and South Africa

Investment summary

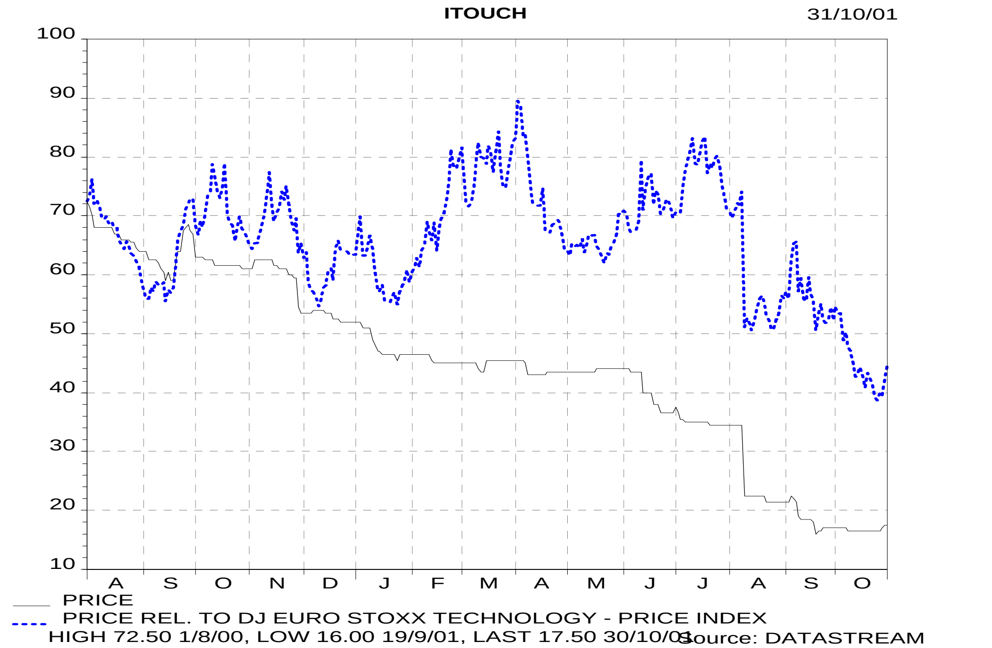
iTouch plc considers itself a leading provider of services and applications to the mobile world. Through operations in eight countries, iTouch offers proprietary services over IVR, SMS, WAP and PDA/GPRS platforms. These are offered to consumers, operators and corporate customer through a variety of channels.

iTouch was IPOd on 2 August 2000 (not by CSFB) with 25% of the company's equity listed on the London Stock Exchange at 70p per share. This raised the company over £43.5m (€73m) in cash, hallmarked for capital expenditure (25%) and operating expenditure (75%) over the following four years. Since August, iTouch shares have fallen steadily with the telecom sector, before stabilising around the 45p level through the first half of the year. Recent profit warnings from competitors such as Aspiro and the slow take-up of mobile data services outside Japan have pushed the shares lower to below 20p, giving iTouch a current enterprise value of only £12m (€20m). Second-quarter results saw iTouch maintain its revenue growth for the sixth consecutive quarter, but this was not enough to arrest the price decline.

iTouch is undergoing a rapid, yet controlled expansion of its product portfolio and footprints. This has been achieved through selective acquisition and R&D in the company's 'iTouch Labs' in South Africa. As a result, the company has achieved healthy revenue growth (29% from first-quarter 2001 to second-quarter 2001) without significantly eroding its IPO funds. With net cash in excess of £40m (€65m), we believe that iTouch is fully funded. On what we consider to be realistic forecasts of the company's growth, we believe iTouch will reach monthly EBITDA break-even in the middle of 2003 and turn an operating profit and be free cash flow positive in the second half of 2004 when net cash should have fallen to around £10m (€15m). This is in-line with consensus forecasts on the company. However, operations in South Africa and

Ireland should be cash positive by the end of 2001. We rate iTouch a Strong Buy with a 12-month price target of 45p and 160% upside to the current share price.

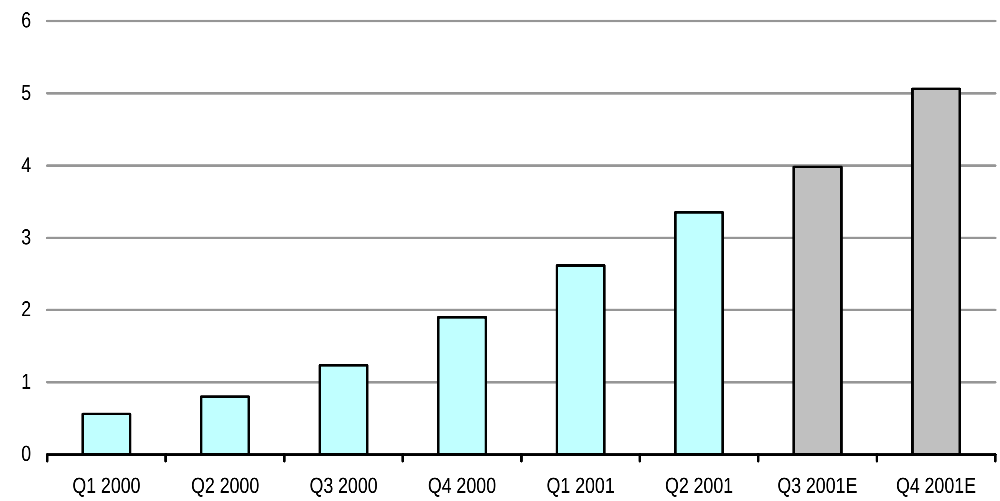
Figure 27: iTouch share price since IPO
price in pence



Source: Datastream.

In 2000, iTouch achieved a healthy 121% increase in revenue to £4.2m (€7.2m). In 2001, the company's guidance is for around 260% of revenue growth to £15m. While this looks ambitious, iTouch recorded 36% quarter-on-quarter revenue growth in the first quarter and 28% in the second quarter so we believe that the target is achievable. Given the poor operating performance in the first half of a number of iTouch's competitors (such as Aspiro), we think there is some potential for iTouch to beat its current year-end revenue target. However, there is a secondary concern that the threat of a global recession could harm sales in the second half of the year and beyond.

Figure 28: iTouch revenue growth
£ in millions



Source: Company data, CSFB estimates

In its third-quarter results we estimate that iTouch will post revenues of £4m (€6.7m) with most of the growth in Australia and South Africa and an EBITDA loss of £3.3m (€5.5m) for the quarter. We estimate the net loss for the quarter at £4.8m (€8.0m) and net cash of £34.8m (€60m).

Figure 29: iTouch - key financial data
£ in thousands, unless otherwise stated

	1999A	2000A	2001E	2002E	2003E	2004E	2005E
Revenues	2,034	4,172	15,011	31,799	52,065	79,572	110,322
Revenue growth (%)		*105%*	*260%*	*112%*	*64%*	*53%*	*39%*
EBITDA	534	(9,144)	(11,998)	(8,111)	(761)	9,342	22,032
EBITDA margin (%)	*26%*	*-219%*	*-80%*	*-26%*	*-1%*	*12%*	*20%*
EBITDA growth (%)		*-1,812%*	*31%*	*-32%*	*-91%*	*-1327%*	*136%*
CAPEX		1,974	2,250	4,040	5,207	7,957	11,032
Free Cash Flow	(1,800)	(11,118)	(14,248)	(12,151)	(5,968)	1,385	11,000

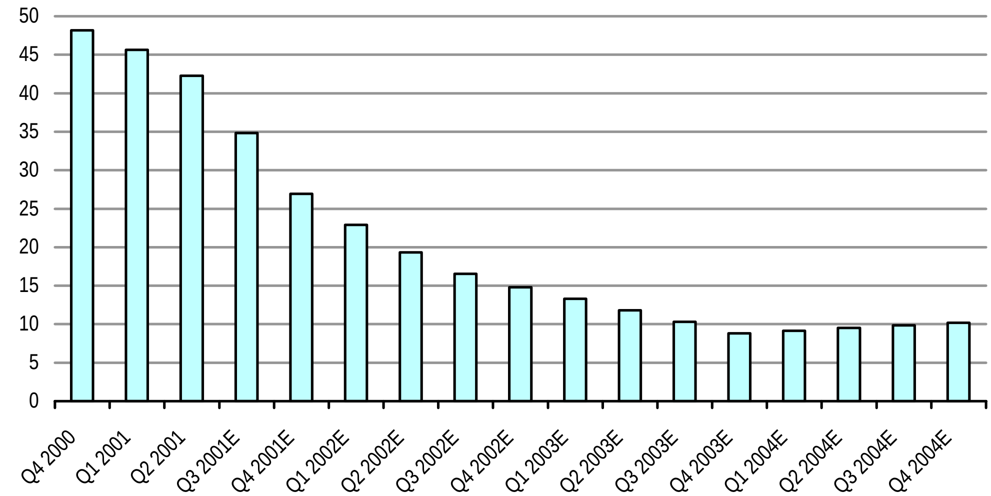
Source: Company data, CSFB estimates

Key issues

Is iTouch funded to profitability?

iTouch posted an EBITDA loss in excess of nearly £10m (€16m) in 2000 and had £48.2m (€80m) of cash in the bank. By the end of the second quarter of 2001, the company had reduced the monthly loss from £1m at the time of the IPO to around £800,000 through continued revenue growth on a slowly climbing cost base, despite the slowdown reported by almost every other company in the market (for instance Aspiro). We think that iTouch can continue this high growth for some years and is on target to post a monthly EBITDA break-even in mid-2003. Furthermore, we believe that iTouch can achieve this with cash falling to only around £10m (€15m)—providing a healthy buffer against a further downturn in the market.

Figure 30: iTouch net cash
£ in millions



Source: Company data, CSFB estimates

There is clearly some concern amongst investors that iTouch may not be able to continuing growing revenues or controlling operating expenses. Risks include the actions of iTouch's competitors, the ability of iTouch to adapt to evolving technologies and platforms and securing recurring revenue from existing customers. We think that iTouch has shown an ability to manage long-term client relationships, and we remain confident that the company will reach profitability without seeking additional capital.

Where is the relationship with Vodafone heading?

iTouch has deals with Vodafone subsidiaries in the UK (Vizzavi), Ireland (Eircell). South Africa (Vodacom), Australia and New Zealand. This raises the question of whether this Vodafone relationship will prove a long-term boon or burden to iTouch.

On the positive side, it is well known that Vodafone is keen to sign global technology partners for mobile data services. iTouch is clearly in a relatively good position here with its deals including the outsourced management of the WAP portal of 31.5% Vodafone-owned, Vodacom in South Africa. However, we believe that the majority of Vodafone's global platform decisions are being made out of Germany, where iTouch has no market presence.

Furthermore, there is clearly a risk that by striking deals with such a major company, iTouch might be closing the doors to other operators. However, with 18 operators already signing deals with iTouch, this does not in fact appear to be a problem. For instance, in Australia a deal with Vodafone has been followed with similar arrangements with the main competitors, Telstra, Optus and Orange.

Disjointed global footprint

One unique feature of iTouch is the breadth of its international markets. While many competitors of comparable size operate in core markets in the same region and timezone, iTouch has followed the Independent News and Media and MIH footprints. It operates wholly-owned subsidiaries in South Africa, UK, Ireland, Australia and New Zealand, with additional partnerships in Israel, Greece and Asia Pacific.

While Independent and MIH gives iTouch access to abundant content and marketing channels, we have to note how disjointed the nature of this global footprint makes its operations. It is imperative that the group's management continue to maintain tight control on the sales, marketing and development in the subsidiaries. We consider such control vital for the continued development of iTouch. 18 operator clients across the globe testify to the success of the global strategy so far.

Revenue sharing deals

iTouch's business is currently focused on building long-term partnerships with corporate customers, web portals and media companies and mobile operators. In the latter case, iTouch has been able to leverage the success of its services to obtain healthy revenue-sharing deals. In contrast with many competitors, iTouch commonly receives between 50% and 70% of revenues generated by its services from operators.

It appears that iTouch is able to sign relatively generous revenue-sharing deals at the moment. While this could be due partially to its strong presence in some developing markets, it could also be an indication that iTouch is offering an above average quality of applications to its customers.

Recommendation

We believe that iTouch is well positioned to take advantage of the developing mobile internet market. The company has shown an ability to evolve its business model over the last year.

With around €70m cash in the bank, we think that iTouch is fully funded and will be able to move to monthly profitability by mid 2003. The major risk of a continued downturn in the market should be alleviated by iTouch's strong portfolio of SMS products and long-term operator contracts. At present, iTouch is being valued by investors at similar multiples to Aspiro with a 2001E EV/Sales of 0.50 times. Investors are discounting that iTouch and Aspiro are in similar financial positions. We do not believe this is the case, with iTouch showing resilient revenue growth and maintaining its strong cash balance. As a result we rate iTouch a Strong Buy with a 12-month price target of 45p

Company history

iTouch was founded in South Africa in 1995 by the present Joint Managing Directors, Avi Azulai and Wayne Pitout. The company was incorporated on 18 January 2000, following the purchase of a majority stake by Independent News and Media. The company was IPOd in London on 2 August 2000 and currently has a 25% free float, with Independent's stake diluted to 50.3%.

Independent News and Media is a privately-owned Irish media group with operations across a number of countries. In general the international expansion of iTouch has mirrored the Independent footprint, and iTouch has been able to leverage the printed and broadcast media interests for branding and marketing.

Since IPO, iTouch has partnered with a number of other media groups including MIH in Asia Pacific and Greece and the Globes newspaper in Israel. In addition, iTouch has completed a number of small acquisitions including the New Zealand PDA developer, Holliday Group, Australian IVR and SMS service provider, Telequity and the interactive media division of UK-based Thus.

Company management

The management of iTouch is heavily weighted towards majority owners, Independent News and Media, plus the company's two founders. As a result there is clearly a lot of media experience in the team. In addition, several of the regional managers and the founders have a background in telecommunications and with its disparate global offices, iTouch employs independent regional managers. The strong performance of the company's south-east Asian businesses suggests to us that those local management teams are working well at present.

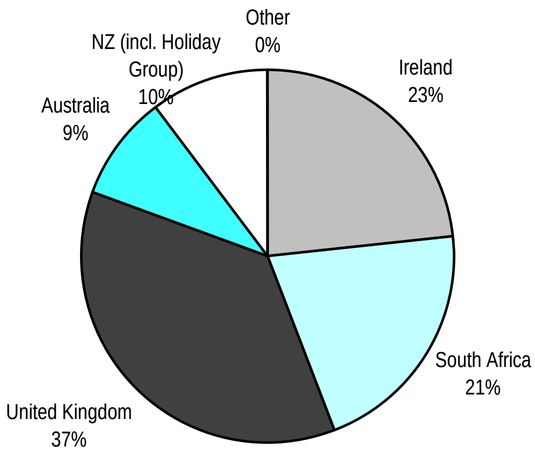
Company operations

iTouch has developed a range of mobile applications based around IVR, SMS, WAP and PDA technology. The company is augmenting these applications with exclusive content and marketing services from the Independent News and Media and MIH groups. It is currently marketing three classes of service. First, the company is offering services such as ringtones directly to consumers. Second, it is offering branded or white-label content and applications to local operators, web portals and media companies. Finally, iTouch is positioning itself as a wireless ASP to offer bespoke applications to corporate clients. In all, over 400 companies have signed up as customers for iTouch's SMS and mobile office applications. Looking ahead, iTouch is planning to focus on bespoke mobile portal services and the mobile ASP market.

In particular, iTouch is focusing research and development on new technologies, rather than resting on its IVR and SMS laurels. The two technologies that most excite iTouch are GPRS (with a successful trial service already underway in New Zealand) and Java. CSFB holds a similar view.

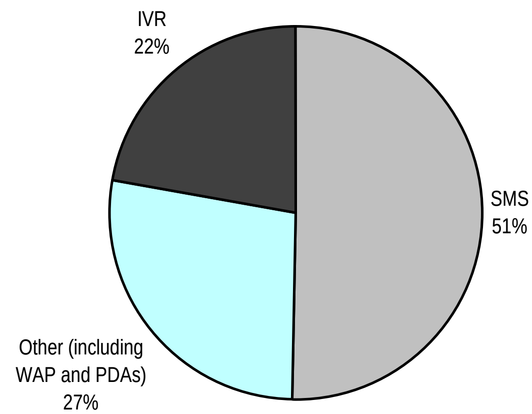
Initially, iTouch's operations focused on South Africa and Ireland. More recently the company has extended its operations to the UK, Australia, New Zealand, Israel, Indonesia, and Thailand through organic growth, with the corporate headquarters now in London. Further international expansion is planned in Asia Pacific and mainland Europe (trials are already running in the Netherlands), and maybe the US, but iTouch will not rush its expansion and thereby weaken its cash position.

Figure 31: **iTouch second-quarter revenues by market**



Source: Company data, CSFB research

Figure 32: **iTouch second-quarter revenues by service**



Source: Company data, CSFB research

Deals with Vodafone operations

Although there is no formal agreement at a group level, iTouch has developed a close relationship with a number of Vodafone subsidiaries. This includes Vodafone UK, Vodafone New Zealand, Vodafone Australia, Eircell in Ireland and Vodacom in South Africa. While there is clearly a concern that such a close relationship could hinder deals with other operators, it clearly puts iTouch in a position of strength with Vodafone, which is keen to develop global suppliers for its Vizzavi platform. In addition, iTouch has demonstrated its independence through deals with 13 other operators.

iTouch's key operating units are:

South Africa

South Africa is iTouch's longest established market. In 2000, revenues from the country were £1.57m, slightly behind Ireland as the company's largest market and iTouch expects to reach cash flow break-even before the end of 2001. The company's development laboratory is also in South Africa, so the majority of new products and services are typically launched with Vodacom in South Africa first. In particular, corporate SMS has proved successful, with 435 corporate SMS customers by the end of the second quarter 2001.

The other key to iTouch's South African operations is the long-term agreement with the leading mobile operator, Vodacom. Since 1996, iTouch has provided value-added services to the operator. Recently this service has included the design and management of Vodacom's mobile portal. With the complexities involved in developing a mobile portal and adding new services to the platform, we believe that such outsourcing arrangements could prove a successful offering for other small operators, especially considering the abundant content from Independent that iTouch is able to provide. In the case of Vodacom, iTouch has secured a management fee and a significant proportion of revenues from information services call traffic—currently 70% of net revenues. This is significantly above the 40–50% revenue share that we believe WASPs are able to negotiate in Europe at present.

Recently iTouch has also launched mobile originated SMS services for Vodacom. According to the company, this ability to originate information requests from a mobile, with the user now charged for them has stimulated a traffic and revenue increase far in excess of its expectations.

Ireland

At the end of 2000, Ireland was iTouch's largest market by revenues, although it has subsequently been overtaken by the UK and Australia (following the Telequity acquisition). iTouch branded operations in Ireland commenced in March 2000 with the purchase of the IVR business division of Independent News and Media although this business was already successful.

At present IVR services such as the 'Weatherdial' service for Irish farmers remains one of the core revenue streams for iTouch Ireland. Nevertheless, further growth in this market has come from the launch of new services and iTouch is actively launching its other mobile services in the country.

Despite strong revenue growth in 2000, during 2001, revenue growth in Ireland has levelled off, with the UK overtaking Ireland as iTouch's largest market. As with South Africa, iTouch Ireland expects to reach cash flow break-even before the end of the year.

UK

In the first quarter of 2001, the UK market became iTouch's largest market, generating over £1m (€1.67m) of revenue, up from £0.4m (€0.66m) for the full-year 2000. Going forward, iTouch predicts that the UK will remain the company's core market. Growth in the UK has been dominated by smart messaging services—delivery of ringtones and logos to Nokia and Motorola terminals. IVR and corporate SMS services are also proving successful.

Future growth is expected to come through:

- expansion of mobile office services, through the relationship with Vodafone and BT Cellnet;
- mobile entertainment services through customers such as Dial-a-phone, Metro and the BBC; and
- developing new channels to market through service partners such as DCI and Affinity.

As part of the plan to further develop its UK business, at the end of September iTouch announced the acquisition of the interactive media division of Thus for £3.5m (€5m) of cash. The acquisition will significantly increase iTouch's suite of IVR products and also brings a range of new content that the company hopes to distribute via WAP, SMS and PDA. For instance, the new business' content partners includes the Leeds, Chelsea and Liverpool football clubs. As well as opportunities in the UK, iTouch hopes to leverage these brands via its South African operations and in south-east Asia through MIH.

In the five months to the end of August 2001, the new division achieved revenues of £4m (€6.5m), and an estimated operating profit of £0.6m (€1m). iTouch hopes that the new division will contribute around £8.5m of revenues in 2002, and be broadly neutral to earnings. In the long term this acquisition should strengthen iTouch's revenue base without significantly affecting the cash reserves and we think it is good purchase for iTouch.

Australia

Australia is rapidly developing into a key market and major growth opportunity for iTouch. First-quarter revenues were just £112,000 (€190,000), rising 177% to £311,000 (€520,000) in the second quarter, and iTouch is now offering its smart messaging services to all three major GSM operators (Telstra, Optus, Vodafone), plus the country's largest web portal, NineMSN. Mobile office services are rolling out and iTouch hopes to soon cement a closer relationship with one of the major operators for the provisioning of extensive VAS services.

In July, iTouch announced the acquisition of 75% of Telequity, an Australian IVR and SMS company for A$4.4m (€2.4m). Through the integration of the Telequity business, iTouch has been able to build a closer relationship with the country's number-two operator, Optus—including SMS-based paging and IVR-based pre-paid recharge services.

New Zealand

In New Zealand, iTouch's primary business is via a partnership with Vodafone's mobile portal, Vizzavi where iTouch supplies a range of smart messaging services and WAP content. In future, iTouch will focus on the New Zealand corporate market with its messaging and mobile office services.

Additionally, iTouch acquired the New Zealand-based Holliday Group Ltd (HGL) in December 2000. HGL had developed a range of PDA-based mobile office solutions which iTouch is rolling out to all its international subsidiaries.

MIH

In January 2001, iTouch announced a licensing and revenue sharing agreement with MIH Asia for the supply of mobile data technology. MIH (MIHL.O, n/r, US$8.1) is active in several countries with a portfolio of paid TV and internet products. iTouch will not incur ongoing costs for provisioning IVR and SMS applications for MIH, but it will receive 25% of the revenue after operator and content costs. In 2000, MIH's turnover was £723m—it is a significant player, so this is clearly a significant opportunity for iTouch. At present, iTouch has launched services with MIH in Indonesia and Thailand with Greece to follow in the fourth quarter.

Revenue model

The iTouch revenue model involves the collection of usage fees for all services except mobile commerce where a transaction fee is collected instead. Operators are normally happy to negotiate such deals since the cost to them depends on the success of the service. It is also good for applications providers such as iTouch since it provides a long-term revenue stream. Depending on the service, iTouch will also collect subscription, licence or management fees from customers. We believe that the revenue percentage due to iTouch varies between 25% in the case of the deals with MIH to 70% for IVR and smart messaging deals with operators.

Figure 33: iTouch revenue model

	current products							future products			
	IVR	SMS content	WAP	smart messaging	commerce	corporate SMS	mobile office	enhanced messaging	mobile entertainment	location services	voice portal
usage fee	Y	Y	Y	Y		Y	Y	Y	Y		Y
subscription fee						Y	Y				
licence fee							Y		Y		
transaction fee					Y					Y	
management fee		Y*	Y*						Y	Y	

** - deals in place with three operators*
Source: iTouch

Competitive environment

iTouch highlights US-based applications provider, InfoSpace (INSP.O, Hold, US$1.85) as a significant competitor. With an enterprise value in excess of €1.2bn and partnerships with a number of the largest mobile portals, InfoSpace is clearly a significant company. However, its mobile services are somewhat secondary to its core web offerings.

Other potential competitors would include Germany's Materna and Sweden's Aspiro, although both these companies are focusing on European markets, with a rather different product portfolio.

Despite these competitive pressures, we feel that iTouch's range of products, international footprint and Independent's content successfully put it in a strong position to develop its revenue and cash flow.

Company Financials

Figure 34: iTouch - forecasts to 2005

£ in thousands, unless otherwise stated

	2000A	2001E	2002E	2003E	2004E	2005E	Q1 2001A	Q2 2001A	Q3 2001E	Q4 2001E
Ireland	1,985	3,120	3,977	4,971	5,965	6,860	783	779	779	779
South Africa	1,568	2,912	4,855	7,282	10,195	13,763	524	701	841	845
United Kingdom	386	5,273	12,408	18,612	26,057	35,177	1,023	1,223	1,101	1,926
Australia	119	2,055	5,840	10,220	14,307	19,315	112	311	725	907
Other	114	1,651	5,134	10,981	23,048	35,207	171	343	534	604
Revenues	**4,172**	**15,011**	**31,799**	**52,065**	**79,572**	**110,322**	**2,617**	**3,353**	**3,980**	**5,061**
eu'000s	6,7139	24,156	51,173	83,787	128,052	177,537	4,211	5,395	6,404	8,144
Revenue growth	*105%*	*260%*	*112%*	*64%*	*53%*	*39%*	*38%*	*28%*	*19%*	*27%*
Cost of sales	(1,642)	(7,316)	(14,310)	(20,826)	(31,829)	(44,129)	(1,249)	(1,547)	(1,990)	(2,531)
Gross Margin	*61%*	*51%*	*55%*	*60%*	*60%*	*60%*	*52%*	*54%*	*50%*	*50%*
Selling expenses	(1,915)	(3,152)	(4,097)	(5,121)	(6,146)	(7,068)	(497)	(802)	(882)	(970)
SG&A expenses	(9,760)	(16,541)	(21,503)	(26,879)	(32,255)	(37,093)	(2,887)	(3,868)	(4,448)	(5,338)
Operating expenses	**(13,316)**	**(27,009)**	**(39,910)**	**(52,827)**	**(70,229)**	**(88,290)**	**(4,633)**	**(6,217)**	**(7,320)**	**(8,839)**
EBITDA	**(9,144)**	**(11,998)**	**(8,111)**	**(761)**	**9,342**	**22,032**	**(2,016)**	**(2,864)**	**(3,341)**	**(3,778)**
EBITDA margin	-219%	-80%	-26%	-1%	12%	20%	-77%	-85%	-84%	-75%
Depreciation	(444)	(565)	(834)	(2,937)	(4,182)	(5,882)	(118)	(135)	(149)	(163)
Amortisation	(5,210)	(5,967)	(5,967)	(5,967)	(5,967)	(5,967)	(1,442)	(1,441)	(1,542)	(1,542)
Exceptional costs	(2,228)	(213)	(234)	(258)	(284)	(312)	(213)	0	0	0
Operating profit	**(17,026)**	**(18,743)**	**(15,146)**	**(9,923)**	**(1,091)**	**9,872**	**(3,789)**	**(4,440)**	**(5,031)**	**(5,483)**
Share of JV and associates	(371)	(541)	(841)	(1,051)	(1,314)	(1,642)	(142)	(115)	(132)	(152)
interest received/(paid)	1,501	1,722	1,254	846	743	1,022	651	421	350	300
Interest rate	*4.7%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
PBT	**(15,896)**	**(17,562)**	**(15,048)**	**(10,443)**	**(1,976)**	**8,936**	**(3,280)**	**(4,134)**	**(4,813)**	**(5,335)**
Tax credit/(paid)	0	0	0	0	0	0	16	(16)	0	0
PAT	**(15,896)**	**(17,562)**	**(15,048)**	**(10,443)**	**(1,976)**	**8,936**	**(3,264)**	**(4,150)**	**(4,813)**	**(5,335)**
Minorities	518	572	530	338	35	-21	91	93	143	143
Net profit/(loss)	**(15,379)**	**(16,991)**	**(14,203)**	**(9,790)**	**(1,626)**	**9,231**	**(3,173)**	**(4,057)**	**(4,670)**	**(5,192)**
EPS (p)	**(5.42)**	**(5.99)**	**(5.11)**	**(3.55)**	**(0.68)**	**3.14**				
Net tangible fixed assets	1,739	3,424	6,630	8,900	12,674	17,824	1,668	1,910	2,101	2,311
Capex	1,974	2,250	4,040	5,207	7,957	11,032	500	550	600	600
Capex as % sales	*47%*	*15%*	*13%*	*10%*	*10%*	*10%*	*19%*	*16%*	*15%*	*12%*
Net (debt) cash bfwd	15,803	48,185	33,937	21,786	15,818	17,203	48,185	45,653	42,255	38,314
Free cash flow	(11,118)	(14,248)	(12,151)	(5,968)	1,385	11,000	(2,532)	(3,398)	(3,941)	(4,378)
IPO proceeds/acquisitions	43,500	(3,500)	0	0	0	0	0	0	(3,500)	0
Net (debt) cash cfwd	48,185	26,937	14,786	8,818	10,203	21,204	45,653	42,255	34,814	30,437

Source: Company data, CSFB estimates

iTouch is due to report third-quarter results on 19 November. We are expecting the company to again post a strong result with 20% quarter-on-quarter revenue growth to £4.0m. We also expect the company's EBITDA loss to peak in the quarter at minus £2.8m. For the first time this should force iTouch to break into the cash raised through IPO, but we still expect the company to have £35m at the end of the quarter.

Figure 35: iTouch balance sheet

£ in thousands

	Q2 2001	Q1 2001	Q2 2000
Fixed assets			
Intangible assets	43,085	44,600	38,278
Tangible assets	1,910	1,700	1,244
Financial assets	446	400	-
Current assets			
Stock	15	-	-
Debtors	3,364	3,200	1,209
Cash	44,494	46,287	9,262
Short-term creditors	(5,438)	(4,400)	(1,528)
Long-term creditors/provisions	(4,025)	(3,900)	(1,015)
	83,851	87,878	47,450
Share capital	70,959	70,959	50,000
Share premium	33,319	33,319	-
Profit and loss account	(22,517)	(18,400)	(2,858)
Other reserves	2,006	1,800	(343)
Minorities	84	200	651
	85,851	87,878	47,450

Source: Company data

Conclusions

Despite being two years away from EBITDA profitability, iTouch is our top pick in the European mobile data space. We believe the company combines a strong management team with well-established operations in a number of markets. iTouch has not attempted to break into the highly competitive European market, preferring to focus on second-tier markets, using relationships with the company's media partnership to assist market entry. In these markets it is quickly becoming one of the most dominant of the new wave of WASPs.

We are confident that the financial prudence of iTouch since its IPO will ensure that the company is fully funded to profitability. As a result we believe that iTouch's shares are undervalued at there present levels. We are initiating on the company with a Strong Buy recommendation and a 12-month price target of 45p.

This page has intentionally been left blank.

Aspiro ASP.ST

SELL

Price (31 Oct 01)				**1.20 (SKr)**
Target price (12 months)				**1.00 (SKr)**

Year	12/99A	12/00A	12/01E	12/02E
Revenues (SKr m)	**7.5**	**15.7**	**59.6**	**119.2**
EBITDA (SKr m)	**-45.3**	**-163.0**	**-107.6**	**-34.8**
Net income (SKr m)	**-52.4**	**-131.5**	**-109.3**	**-39.9**
IC (SKr m)	**—**	**355.78**	**246.48**	**206.59**
EPS (CSFB adj., SKr)	**0.00**	**-2.63**	**-2.19**	**-0.80**
ROIC (%)	**—**	**-37.0**	**-44.3**	**-19.3**
P/E (x)	**—**	**-0.46**	**-0.55**	**-1.50**
P/E rel (%)	**—**	**-3.58**	**-4.58**	**-13.16**

Dividend 2000 (SKr)	**—**	Free float (%)	**100**
Dividend yield (%)	**—**	Number of shares (m)	**50.02**
Net debt/equity (12/01E, %)	**—**	Current WACC	**17%**

Historical Valuation

Year	12/99A	12/00A	12/01E	12/02E
Y/E closing price (SKr)	**—**	**—**	**1.20**	**1.20**
Market cap. (SKr m)	**—**	**446.9**	**60.0**	**60.0**
End year debt	**—**	**-159.0**	**-43.9**	**2.0**
Other liabilities	**—**	**—**	**—**	**—**
Enterprise value (eu m)	**—**	**287.86**	**16.16**	**62.00**

Key Historical Ratios

EV/Revenue (x)	**—**	**18.3**	**0.3**	**0.5**
EV/EBITDA (x)	**—**	**-1.8**	**-0.2**	**-1.8**
EV/IC (x)	**—**	**0.8**	**0.1**	**10.3**
P/E at closing price (x)	**—**	**—**	**-0.5**	**-1.6**

Strategic Analysis

Existing Strengths: Advanced platform, strong strategic partners.

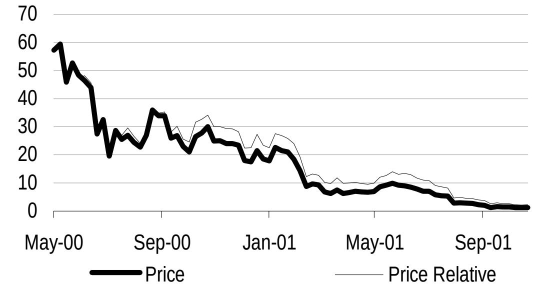
Existing Weaknesses: Dependent on growth of the mobile data market.

Existing Opportunities: Expansion of revenue base through major vendor sales channels.

Existing Threats: Risk the company will run out of cash.

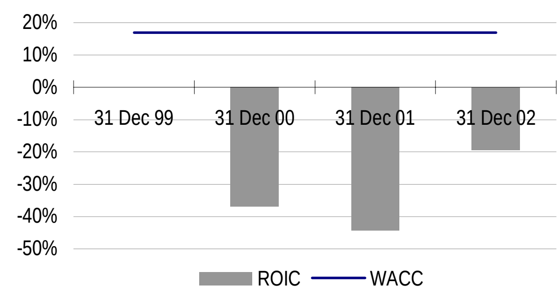
Company Description

Aspiro is a Swedish mobile data application provider. The company offers a range of content and applications via SMS and WAP in a number of markets. Sales are currently focussed in the Nordic region, but are expanding rapidly in Western Europe and the US.

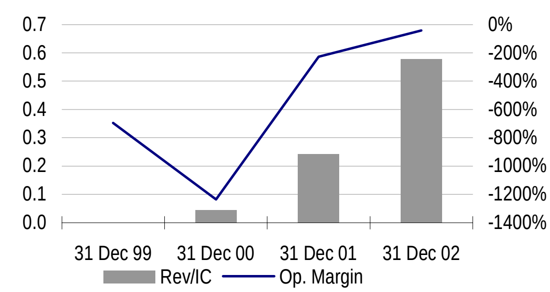


Performance over	1mth	3mths	12mths
Absolute (%)	**-10.3**	**-76.4**	**-95.4**
Relative (%)	**-17.1**	**-73.1**	**-93.1**

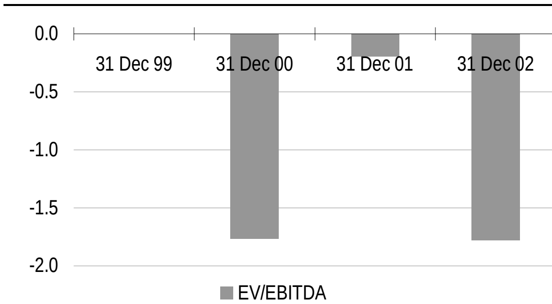
ROIC / WACC



REV / IC Op. Margin



EV / EBITDA (at historical prices)



Source: FTI, Company data, Datastream, CSFB (EUROPE) LTD. Estimates.
The price relative chart measures performance against the SWAL index.
On 02/11/01 the SWAL index closed at 204.75.
On 02/11/01 the spot exchange rate was SKr9.55/eu 1. - eu0.90/US$1.

Aspiro (ASP.ST, Sell)

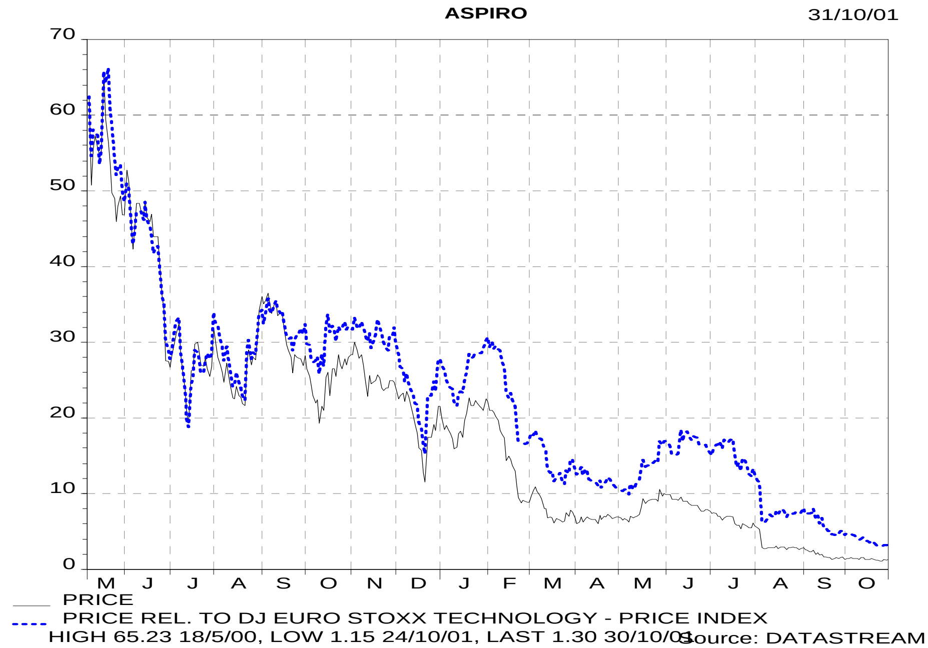
Aspiro is a Swedish mobile data application provider. The company offers a range of content and applications via SMS and WAP in a number of markets. Sales are currently focused in the Nordic region, but are expanding rapidly in western Europe and the US. The company's vision is to create a virtual department store where operators, portals and enterprises can acquire relevant services from a portfolio of around 200 products developed by both Aspiro and third parties which run on the company's own mobile data platform.

Investment summary

On 6 June 2000, Aspiro achieved a listing on the OM Stockholm stock exchange main 'O' list. The company's shares had been trading on the exchanges Nya Marknaden (New Market) since its IPO on 9 May 2000. The move to the 'O' list gives Aspiro additional liquidity and access to a range of new capital, but also opened the equity to a rapid sell-off when its results disappointed.

Aspiro has been listed on the Stockholm Nya Marknaden (equivalent to the AIM in London) since 9 May 2000. After reaching a peak of SKr 65 per share, Aspiro shares have steadily declined with the technology sector, hitting SKr 6.3 exactly a year after their listing, and are currently trading at SKr 1.20—only 2% of the issue price, and implying a negative enterprise value for the company. In that time the market capitalisation has fallen from over €350m to €6m, and the enterprise value is currently negative €1.4m. Investor concerns revolve around the company's ability to meet its revenue projections and preserve is cash position. This was highlighted in August when the company cut its year-end revenue target to SKr 60m from SKr 175–190m citing a longer sales cycle, lower-than-expected usage and the tough economic climate. We think that there is still considerable execution risk associated with the company, and our concerns will only be allayed if the company delivers on the promised operational savings and shows renewed revenue growth. The first target will be the third-quarter numbers, due for release in November, where we expect revenues of SKr 15m for the quarter. The company needs to outperform considerably for several quarters before we can become more confident about the company's future. In the light of this we rate Aspiro a Sell. Nevertheless, we also consider Aspiro to have a high quality management team and product portfolio. There is scope for a considerable upside to our projections if the company is able to meet its revenue projections.

Figure 36: Aspiro share price since IPO
Price in SKr



Source: Datastream

Figure 37: Aspiro - key financial data
eu in thousands, unless otherwise stated

	1999A	2000A	2001E	2002E	2003E	2004E	2005E
Revenues	762	1,589	6,023	12,043	17,626	22,512	27,460
Revenue growth (%)		*109%*	*279%*	*100%*	*46%*	*28%*	*22%*
EBITDA	(4,573)	(16,464)	(10,876)	(3,517)	(200)	1,628	2,985
EBITDA margin (%)	*-600%*	*-1,036%*	*-181%*	*-29%*	*-1%*	*7%*	*11%*
EBITDA growth (%)		*260%*	*-768%*	*-68%*	*-94%*	*-915%*	*83%*
CAPEX		601	758	1,115	881	1,126	1,373
Free cash flow		7,821	(11,634)	(4,632)	(1,081)	503	1,612
Net cash (debt)		16,066	4,432	(200)	(1,281)	(779)	833

Source: Company data, CSFB estimates

Aspiro's business model is to offer a range of mobile data applications and services to the mobile operator, portal and enterprise markets. The company is positioning itself as a mobile application 'department store', offering a range of services from third parties and in-house developers. In addition, Aspiro describes itself as an 'SMS operator', selling bulk SMS to portals and enterprises that it acquires wholesale from Danish operator, Sonofon.

At present, Aspiro's portfolio comprises around 180 applications that have been sold to over 40 customers in ten countries. The revenue from these customers are split between mobile portals (59%), mobile operators (24%) and enterprises (17%).

On the back of a disappointing first half to the year, Aspiro announced a major profits warning in August, citing an unforeseen slowdown in the European market. The previous guidance of 2001 revenue of SKr 175–190m (€19–21m) was but to a mere

SKr 60m (€6m). Despite a contemporaneous announcement of a major cost-cutting programme, the share price declined significantly as investors became increasingly concerned that Aspiro might run out of cash.

However, there are a number of strong positives in the Aspiro story. With a range of strong strategic partners and an experienced management in place, there may be considerable upside to the value of Aspiro if it is able to deliver on its guidance.

We view Aspiro's key strengths as:

- established and experienced management team;
- willingness to control operating expenditure;
- strong strategic partners such as Ericsson, Nokia and Comverse; and
- in-house technical expertise to develop billing, mobile commerce and mobile locations applications.

In our view the company's key challenges include:

- very demanding revenue growth requirement;
- geared to the success of mobile data services, and cost structure of SMS;
- over-dependence on small Swedish market; and
- high operating cost.

If Aspiro is able to raise investor confidence in its long-term solvency, it may prove undervalued. However, although it appears that Aspiro has been successful in reducing its staff, there remains risk that Aspiro is unable to reach its current revenue targets in order to reduce its EBITDA losses. As a result we are unable to take a positive view on the stock at the moment in advance of third-quarter results and a sustained improvement in sentiment towards the mobile sector.

Key issues

Will Aspiro run out of cash?

This is the key question that must be answered about Aspiro. We believe the company's first-quarter figures were encouraging, given the state of the market during that time. At the end of that quarter, Aspiro said it already had SKr 60m of revenue guaranteed for the year. However, at the start of August, Aspiro cut its revenue target in 2001 to a mere SKr 60m, and announced cost cutting measures (such as a halving of the workforce) aimed at saving SKr 50m a year from the end of 2001. The SKr 13.3m in the first quarter implies very little revenue growth through the year, and suggests to us that the SKr 60m of guaranteed revenue in 2001 given in the first-quarter results was a little ambitious.

At the end of second quarter of 2001, Aspiro has less than €8m of cash and cash equivalents on the balance sheet, and it burnt around €3m in that quarter alone. That was not sustainable with the markedly slower-than-expected revenue growth so Aspiro was forced to undertake a drastic programme of cost cutting. In effect this was an attempt to shore up the short-term finances at the expense of long-term growth, but is it enough?

It looks as if Aspiro has been able to reduce overheads quite rapidly, but we still believe that the company is burning cash at the rate of nearly €2m a quarter. Although this reduces as increased revenue kicks-in in 2002, we currently believe that Aspiro will run out of cash in the fourth quarter of 2002. It is unclear if Aspiro will be able to raise additional capital without a significant improvement in sentiment toward the whole mobile data sector. This concern is the primary reason why we are unable to take a positive view on Aspiro stock at present.

Aspiro joins Stockholm's O-list

On 6 June Aspiro moved from the Nya Marknaden on to the main O-list of the Stockholm stock market. This was positive news for Aspiro for a number of reasons:

- The company had to undergo a strenuous financial audit from the Exchange. Before acceptance, the Exchange had to be confident of the long-term viability of Aspiro.
- There will be increased liquidity in Aspiro shares, although in the first four months on the O-list, the shares have fallen considerably.
- A range of new funds will be able to invest in Aspiro, include some index trackers that will be required to invest.

Since the announcement on 18 May that the company would join the O-list, its shares have fallen 86% from €8.70 to €1.20.

Is Aspiro an acquisition target?

As a relatively small company with a good range of customers, applications and partners, Aspiro might be considered an acquisition target. In addition, the company's share price is currently at a very depressed level so could be acquired relatively cheaply. A larger acquiring company could also absorb the potential problem with cash flow as Aspiro moves to profitability.

It is always difficult to second-guess the sort of company that might look to acquire Aspiro. Potential buyers might be any of Aspiro's major partners, or a fixed-line applications developer seeking to buy a strong position in the mobile industry. However, the ability of Aspiro to react quickly to the market could diminish within a larger corporation.

Aspiro has a 100% free float with only Credit Agricole Indosuez in Luxembourg owning more that 10% of the share capital at 12.9%. With the ten-largest shareholders owning 52% of the company, a committed acquirer would we believe probably stand a good chance of success.

Overall, Aspiro's model to act as a 'department store' for the applications of others may reduce its attractiveness. There is a question mark over whether its technical platform is ahead of the pack or not, so we rate the probability of Aspiro being bought within a two-year timeframe at around 25%.

Recommendation

The upside to Aspiro's value lies in the company's strong international presence, advanced platform, experienced management team and potential for being acquired. If the company is able to deliver on its promised revenue growth and cost cutting there is considerable upside potential to the share price at these levels. A positive is the speed with which Aspiro has reduced its headcount and closed down several offices, although this could also hinder long-term sales growth. However, we remained concerned over the company's revenue predictions and its ability to achieve a positive monthly result in the near term. For this reason we are initiating Aspiro with a Sell recommendation. If the company is still operating as an independent entity in 12 months and there is improved sentiment towards mobile data, there could be considerable upside. For instance, putting Aspiro on the same 2003E EV/sales ratio as Acotel would value the company at SKr 6.7 per share.

Company history

Aspiro was founded in Sweden in 1998 by Philip Forsgren, Klas Hallqvist and Christer Hånsson—three former Ericsson employees with additional experience at several Nordic operators. A rapid expansion followed in an attempt to position Aspiro as a global force in the mobile internet market. The company maintains offices in Sweden and the US, and employs around 70 people, down from 175 personnel a year ago and 138 in the middle of the year. Initial venture capital funding lasted until the company listed its shares in Stockholm New Market in May 2000. Further capital has been raised by the issue of additional shares, but this has had the effect of depressing Aspiro's share price. On 6 June 6 2001, Aspiro joined the main O-list of the Stockholm stock market. This had the effect of increasing the potential liquidity and investor base in the stock, but has been followed by a major decline in the company's share price.

Company management

In our view a major strength of Aspiro is the experience of its management team—the founders and management team have in excess of 100 years industry experience between them with vendors and, crucially, mobile operators. In addition, the board of directors has extensive experience in the industrial, legal and banking sectors. This team is well qualified to guide Aspiro through its current problems, and if this is accomplished successfully, to provide a basis for extensive future growth.

Company operations

Through a combination of internal R&D and partnership deals with other applications developers, Aspiro is seeking to develop a portfolio of mobile data products that can be sold to mobile operators and the corporate market.

Aspiro has announced a swathe of deals with operators and portals across Europe. Many of these are white-label shipments to unnamed operators, but the company appears to be focusing on the second-tier operators. For instance, Aspiro announced in March an agreement to supply mobile games to Europolitan. In total, Aspiro has delivered services to 40 major operators, portals and enterprises.

Product portfolio

Aspiro's stated aim is to become "the leading virtual department store for mobile services on a global market place". To this end the company is attempting to build a large portfolio of mobile data application from both internal developers, and external partnerships. At the end of 2000, Aspiro's 17 content providers were delivering information for 50 services, while six application providers supplied 15 services to the Aspiro department store. Additional providers continue to be signed up during 2001, including US-based Screaming Media's news and information from over 3000 sources.

Figure 38: **Aspiro commercial partners**

Content providers	Content provided	Application providers	Applications provided
AFP	News	Akumiitti	RingTone and Icon app.
AFX	Financial News	Small Planet	Games
WES	Ringtones and Icons Puzzles, Quiz and King	iomo	Games
Bulls Presstjänst	Features Comic	Massive Mobile	Games
Funtestiq	Fun&Facts Services	Sandstone	Translation service
Infomedia	TV Guide	Global Dining	Restaurant Guide
SMHI	Weather		
Screaming Media	Content aggregator		
Sport network	Sports news		
Sports.com	Sports news		
Standard & Poor	Market data		
Maporama	Maps & Itinerary		
HMM	Ring tones and Icons		
PIB	Comic Strips		
AFP	News		

Source: Company data

As well as this range of consumer-orientated services, Aspiro has developed a solution for the enterprise market. Particular focus is on major vertical markets, through products such as the award winning Fleet Manager product. The success of Fleet Manager has greatly exceeded Aspiro's expectations over the last six months.

We believe that Aspiro has been successful in developing a range of distribution and sales channels with some of the industry's largest vendors. The company is the first to offer its applications on Ericsson's WISE mobile data platform. Although the deal is non-exclusive, Aspiro should clearly benefit from Ericsson's worldwide sales-force. Additional Aspiro partners include Nokia, HP, SEMA and the unified massaging market leader, Comverse.

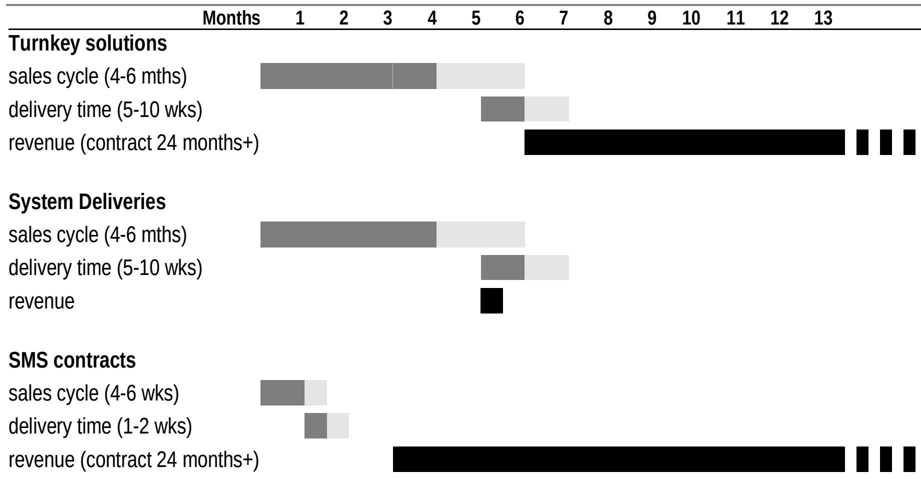
Revenue model

The vast majority of contracts that Aspiro generates are ongoing. While it charges some up-front licence and installation fees, most revenue is long term for maintenance and additional charges depending on usage levels. Of the company's three primary revenue models—turnkey solutions, system deliveries and SMS contracts, only system deliveries involve installation of a product without ongoing support and revenue generation.

Focus on contract length

Aspiro has put a lot of importance behind signing up long-term contracts. In the case of both turnkey solutions and SMS services, contracts run for between one and three years, with an average of two years. According to the company's revenue model, turnkey solutions and system deliveries take up to seven months to deliver from the start of the sales cycle. SMS solutions can be delivered in a mere two months with revenue generated from three months. It is the ongoing revenue from turnkey solutions and SMS contracts that Aspiro expects to provide its core revenues going forward.

Figure 39: Aspiro revenue model



Source: Company data, CSFB research

International presence

Aspiro currently has contracts in 15 countries across Europe and North America. The company believes that this is a key strength, enabling future growth to be sustained. However, we believe that such expansion could also present problems for Aspiro, with operational costs spread over a large number of markets. In addition, it is increasingly clear that breaking into new European markets is proving difficult with increasing competition from both local companies and other multi-nationals. The disappointing growth of revenues in its international businesses was a prime reason for Aspiro's recent profits warning.

Competitive environment

Aspiro is not alone in the development of a range of mobile applications and services. The company itself highlights a number of companies that it considers competitors. These include Sonera's portal subsidiary, Zed, US-based Infospace, French Netsize, and Germany's Materna.

US-based InfoSpace has cut 20% of its workforce over the past few months, despite signing distribution deals will major operators such as Cingular and Virgin Mobile. With a market capitalisation of €1.5bn, the company remains significantly larger than its major competitors, but may not have full-integrated acquisitions such as Saraïde as yet.

Financials

Figure 40: Aspiro - forecasts to 2005

SKr in millions, unless otherwise stated

	1999A	2000A	2001E	2002E	2003E	2004E	2005E	Q1 2001A	Q2 2001A	Q3 2001E	Q4 2001E
SMS		7,262	28,735	59,449	74,311	81,742	81,742	6,367	5,810	7,330	9,229
Other Mobile Data	7,540	8,462	30,879	59,747	100,143	141,072	190,049	6,903	6,346	7,866	9,765
Revenues	**7,540**	**15,724**	**59,614**	**119,195**	**174,454**	**222,814**	**271,791**	**13,269**	**12,156**	**15,195**	**18,994**
Revenue growth		*109%*	*279%*	*100%*	*46%*	*28%*	*22%*				
Services and goods	(2,651)	(7,570)	(20,388)	(23,289)	(26,200)	(30,130)	(34,650)	(5,097)	(4,999)	(4,631)	(5,146)
Other external expenses	(22,480)	(78,297)	(62,638)	(60,081)	(67,591)	(77,730)	(89,389)	(16,136)	(17,000)	(16,226)	(13,276)
Personnel costs	(27,674)	(92,814)	(84,750)	(70,634)	(82,641)	(98,839)	(118,211)	(26,023)	(23,356)	(20,615)	(14,756)
Operating expenses	**(52,805)**	**(178,681)**	**(167,261)**	**(154,003)**	**(176,432)**	**(206,699)**	**(242,250)**	**(47,256)**	**(45,355)**	**(41,472)**	**(33,178)**
Opex growth	*700%*	*1136%*	*-6%*	*-8%*	*13%*	*15%*	*15%*				
EBITDA	**(45,265)**	**(162,957)**	**(107,647)**	**(34,808)**	**(1,978)**	**16,115**	**29,541**	**(33,987)**	**(33,199)**	**(26,277)**	**(14,184)**
EBITDA margin	*-600%*	*-1036%*	*-181%*	*-29%*	*-1%*	*7%*	*11%*	*-256%*	*-273%*	*-172%*	*-75%*
Net tangible fixed assets	6,744	17,190	17,251	20,663	18,982	20,566	23,801	17,087	17,674	17,249	17,251
Capex		5,946	7,503	11,037	8,723	11,141	13,590	1,617	2,467	1,520	1,899
Capex as % sales		*38%*	*13%*	*9%*	*5%*	*5%*	*5%*	*12%*	*20%*	*10%*	*10%*
Depreciation	(1,478)	(4,500)	(7,442)	(7,625)	(10,404)	(9,557)	(10,355)	(1,720)	(1,880)	(1,944)	(1,897)
Amortisation	(5,634)	(5,847)	(5,847)	(5,847)	(5,847)	(5,847)	(5,847)	(1,477)	(1,429)	(1,471)	(1,471)
Exceptional costs	(1)	(20,924)	(14,024)	0	0	0	0	2,590	(16,614)	0	0
Operating profit	**(52,378)**	**(194,228)**	**(134,960)**	**(48,280)**	**(18,229)**	**711**	**13,339**	**(34,594)**	**(53,122)**	**(29,692)**	**(17,552)**
interest	(18)	3,650	6,086	1,257	(440)	(612)	16	2,779	435	1,580	1,293
Interest rate			6%	6%	6%	6%	6%				
PBT	**(52,396)**	**(190,578)**	**(128,873)**	**(47,023)**	**(18,669)**	**99**	**13,356**	**(31,815)**	**(52,687)**	**(28,112)**	**(16,259)**
Tax	(5)	108	0	0	0	0	0	(12)	0	0	0
Net profit/(loss)	**(52,391)**	**(131,470)**	**(109,305)**	**(39,883)**	**(15,834)**	**99**	**13,356**	**(22,927)**	**(44,687)**	**(23,844)**	**(13,790)**
EPS		**(2.63)**	**(2.19)**	**(0.80)**	**(0.32)**	**0.00**	**0.27**				
Net debt (cash) bfwd	0	(81,606)	(159,016)	(43,866)	1,979	12,680	7,706	(159,016)	(108,100)	(78,603)	(61,234)
Free cash flow	0	77,410	(115,150)	(45,845)	(10,701)	4,974	15,951	(50,916)	(29,497)	(17,369)	(17,369)
Net debt (cash) cfwd	(81,606)	(159,016)	(43,866)	1,979	12,680	7,706	(8,246)	(108,100)	(78,603)	(61,234)	(43,866)

Source: Company data, CSFB estimates

Figure 41: Aspiro balance sheet

SKr in thousands

	30/6/2001	31/3/2001	30/6/2000
Intangible assets	65,722	83,551	87,351
Tangible fixed assets	17,674	17,087	12,121
Financial fixed assets	97,212	89,215	39,352
Current Assets			
Cash	13,472	13,522	5,674
Current receivables	21,183	24,344	9,270
Current investments	65,131	94,621	2,911
Net Assets	280,394	322,340	156,679
Shareholder’s equity	228,596	273,537	115,767
Provisions	6,526	6,620	116
Long-term liabilities	7,418	7,270	6,077
Short-term liabilities	37,854	34,913	34,719
Equity and liabilities	280,394	322,340	156,679

Source: Company data

Conclusion

Aspiro boasts a highly experienced management team and close partnerships with major vendors such as Ericsson, Nokia and Comverse. The company has also been able to develop a large portfolio of products to position itself as a major player in the mobile ASP market.

However, since its IPO, Aspiro has undergone a rapid expansion in an increasingly depressed market. The company has not been able to grow its revenue or, until recently, control costs. As a result, there is a very considerable risk that the company will run out of cash in the course of 2002. In the present climate it is difficult to envisage Aspiro either raising additional cash or being part of industry consolidation. Until we see signs of an improved capital structure at the company, we rate Aspiro a Sell with a 12-month price target of SKr 1.00.

Aspiro is also a highly volatile stock. While its share price might rally in the short term, we recommend that it is avoided by investors at the present time.

Appendix - Outlook for mobile data

Throughout 2001, mobile data revenues across Europe have continued to grow despite the slow progress of both WAP and GPRS. SMS continues to make up 95% of mobile data revenues. We estimate that it now makes up over 10% of total mobile revenues across Europe. This is led by operators such as Orange Communications in Switzerland and D2 Vodafone in Germany with 15% and 13.9% respectively of service revenue coming from mobile data.

Figure 42: **Mobile data as a percentage of ARPU in western Europe**

Company	Country	H2 1999	H1 2000	H2 2000	Q1 2001	Q2 2001
Tele.ring	Austria				3	
Radioinja	Finland	9	11.1	11		12.2
Sonera	Finland		10		11.3	12.2
Itineris	France					3
D2 Vodafone	Germany		10	11	16.2	13.9
T-Mobil	Germany		8			
Cosmote	Greece			9.2	13.3	12.3
Panafon Vodafone	Greece					
Omnitel	Italy		5.2		7.2	8.1
TIM	Italy	3	4	5.5	6.5	6.2
KPN	Netherlands		5			
Libertel	Netherlands		3.9		6	
Netcom	Norway		9			
Telenor	Norway					12
Optimus	Portugal				8.4	7.2
Telecel	Portugal		3	4	6	
TMN	Portugal			4		
Amena	Spain			7	11	
Telefonica Moviles	Spain	5	8		9	
Europolitan	Sweden		4			
Orange	Switzerland					15
BT Cellnet	UK		2.3		5.8	9.1
Orange	UK	1.2	3.6	7.2		10
Vodafone	UK		6		7.6	8.7
Average		4.6	6.2	7.4	8.6	9.9

Source: Company data, CSFB research

Recently a couple of question marks have been raised over the continued upward trend in revenues from mobile data. Indeed the D2 Vodafone revenue number has fallen from 16.2% in March to 13.9% in June. Similarly, TIM has reported that mobile data revenue in the second quarter fell to 6.2% from 6.5% in the first quarter of the year. Both operators have cited a one-off decline in wholesale SMS revenue (due to an increase in wholesale termination rates for SMS) for this fall in revenue so it should not continue into the third quarter of the year.

We also know that voice ARPU across Europe has decreased quite significantly over the past couple of years, raising the proportion of revenues from data in the last few years. However, it is encouraging that data is still generally increasing as a percentage of ARPU in the second quarter with voice ARPU now stabilising. In order to model data ARPU going forward we have developed a detailed handset diffusion model (Figure 43) and a generic model for mobile data ARPU going forward (Figure 44). This model predicts that data as a proportion of total ARPU in western Europe will increase from 12.6% in 2002 to 30.2% in 2005. Full details of this model can be found in our recent European Mobile Quarterly (*ARPU—on the turn?*, dated 28 September 2001).

Figure 43: Device diffusion model

	1999E	2000E	2001E	2002E	2003E	2004E	2005E
Pops (m)	347	347	347	347	347	347	347
Device penetration	42.5%	62.5%	75.0%	83.0%	91.0%	98.0%	104.0%
Penetration added		20.0%	12.5%	8.0%	8.0%	7.0%	6.0%
Handset replacement rate	30%	40%	50%	50%	50%	50%	50%
Devices sold (m)		142	163	165	179	188	196
% of devices sold:	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*	*100.0%*
GSM	100.0%	90.0%	55.0%	20.0%	0.0%	0.0%	0.0%
WAP (on GSM)		10.0%	42.0%	55.0%	47.5%	20.0%	10.0%
GPRS		0.0%	3.0%	24.0%	47.5%	65.0%	60.0%
UMTS		0.0%	0.0%	1.0%	5.0%	15.0%	30.0%
Of base (end of year):	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
GSM	100%	95%	75%	50%	27%	15%	9%
WAP (on GSM)	0%	5%	24%	38%	42%	32%	23%
GPRS	0%	0%	2%	12%	28%	44%	51%
UMTS	0%	0%	0%	0%	3%	8%	18%
Of base (average in yr)	*100%*	*100%*	*99%*	*99%*	*100%*	*100%*	*100%*
GSM	100%	97%	85%	62%	38%	21%	12%
WAP (on GSM)	0%	3%	15%	31%	40%	37%	28%
GPRS	0%	0%	0%	5%	20%	36%	48%
UMTS	0%	0%	0%	0%	1%	5%	13%

Source: CSFB estimates

Figure 44: Generic model for mobile data ARPU

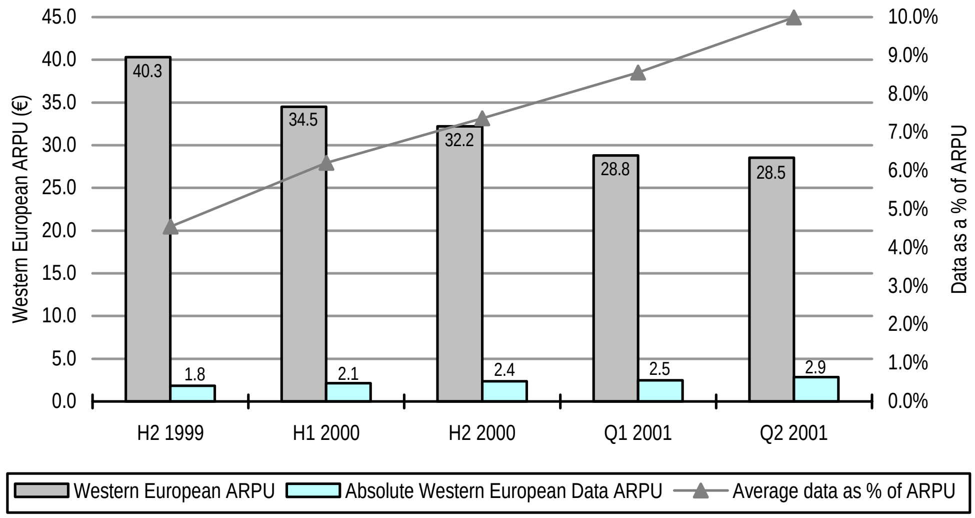
eu per month, unless otherwise stated

	1999E	2000E	2001E	2002E	2003E	2004E	2005E
Split of handsets (average during year)							
GSM	100%	97%	85%	62%	38%	21%	12%
WAP/GSM	0%	3%	15%	31%	40%	37%	28%
GPRS	0%	0%	0%	5%	20%	36%	48%
3G	0%	0%	0%	0%	1%	5%	13%
SMS revenues/month	1.0	2.2	3.2	3.8	3.5	3.0	2.4
Addressable handset base	100%	100%	100%	100%	100%	100%	100%
Messages per addressable user/month	10.0	20.0	27.0	31.1	29.5	26.5	22.6
Growth			35.0%	15.0%	-5.0%	-10.0%	-15.0%
Revenue per message	0.10	0.10	0.10	0.09	0.09	0.08	0.08
Change			-5.0%	-5.0%	-5.0%	-5.0%	-5.0%
Extra revenue from wholesale SMS	0	0.1	25.0%	35.0%	40.0%	40.0%	40.0%
WAP/GSM browsing revenues		0.1	0.4	0.6	0.9	0.8	0.6
Addressable handset base	0%	3%	15%	31%	40%	37%	28%
% of handsets active		50.0%	33.0%	25.0%	25.0%	25.0%	25.0%
Minutes browsing per active handset/month		30.0	33.0	36.3	39.9	43.9	48.3
Growth in minutes			10.0%	10.0%	10.0%	10.0%	10.0%
Average revenue per minute		0.25	0.24	0.23	0.22	0.20	0.18
Change in average revenue per minute			-4.3%	-5.0%	-5.0%	-7.5%	-10.0%
GPRS revenues			0.02	0.59	1.64	2.69	3.28
Addressable handset base	0.0%	0.0%	0.2%	5.3%	19.9%	36.2%	47.8%
% of handsets active			50.0%	50.0%	50.0%	50.0%	50.0%
Average revenue/month			20.00	20.00	15.00	13.50	12.50
Premium revenue/month			2.00	2.00	1.50	1.35	1.25
3G revenues				0.05	0.30	1.07	2.59
Addressable handset base				0.2%	1.5%	5.3%	12.8%
% of handsets active				66.0%	66.0%	66.0%	66.0%
Average rental premium				26.6	26.6	26.6	26.6
Premium revenue				4.0	4.0	4.0	4.0
Total data ARPU/month	1.0	2.3	3.6	5.1	6.3	7.6	8.9
Data as a proportion of ARPU	2.5%	7.0%	12.6%	17.9%	22.4%	26.2%	30.2%

Source: Company data, CSFB estimates

So does available data justify this prediction for data ARPU?

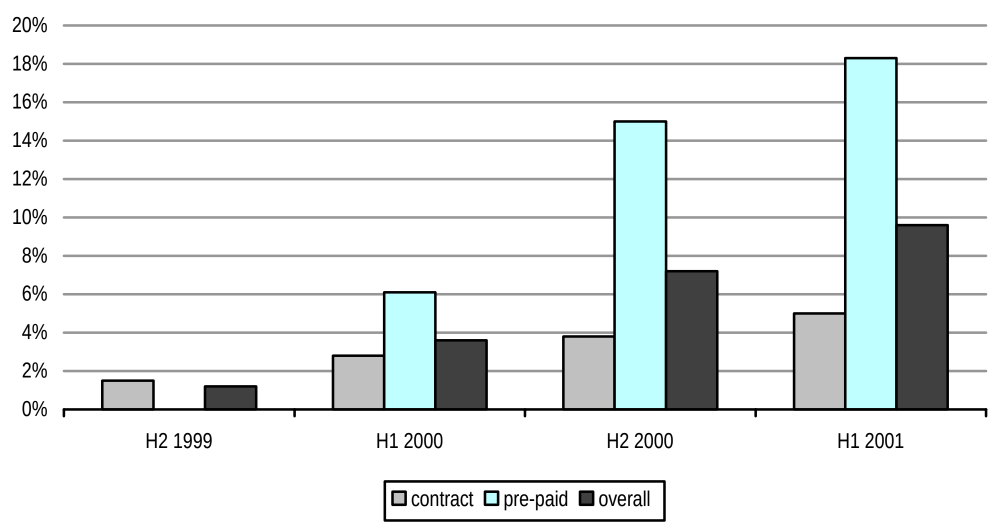
Figure 45: European mobile data APRU increase



Source: Company data, CSFB research

Figure 45 overlays the increase in proportionate mobile data ARPU against the overall ARPU decline that we have seen across Europe in recent years. Despite the decrease in overall ARPU, the graph clearly shows that mobile data per user is on the increase. There is a 30% year-on-year increase between the first-half 2000 and first-half 2001.

Figure 46: Mobile data revenues at Orange UK
Percentage of total revenue

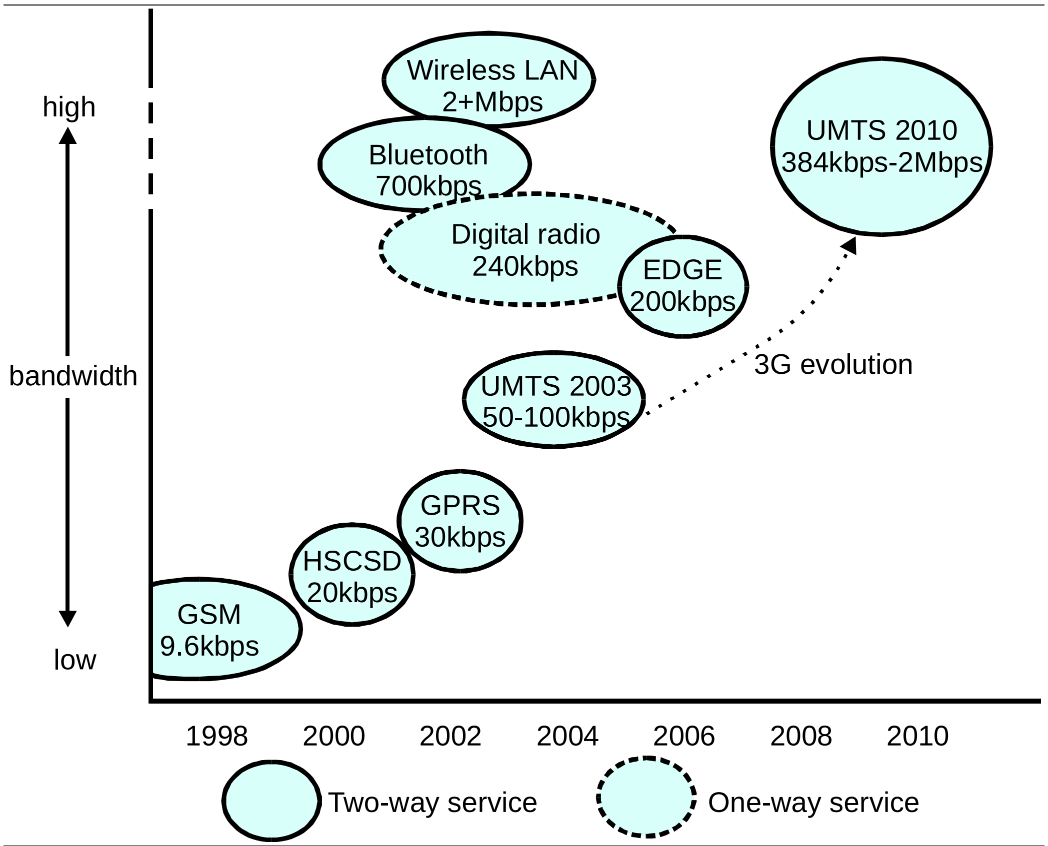


Source: Company data

Orange recently released the split of mobile data revenues in the UK between prepaid and contract subscribers. Orange's information showed that pre-paid subscribers are committing a far greater proportion of their overall mobile spend to mobile data than contract users. This is not surprising considering the popularity of SMS among pre-paid users with inherently lower ARPU. The current mix of subscribers also means that the blended average of data revenue is highly geared to these prepaid users.

At present, mobile data revenue is still dominated by SMS, with WAP and mobile access to the web accounting for only a tiny fraction of the overall revenue. However, in the course of the next year this looks set to change. A range of new technologies such as Java will add functionality to existing WAP and GPRS services. Further ahead, we see technologies such as 3G, digital radio, Bluetooth and wireless LAN adding speed and functionality to mobile networks as a complement to existing network technologies.

Figure 47: **European mobile data technology roadmap—commercial availability**



Source: CSFB research

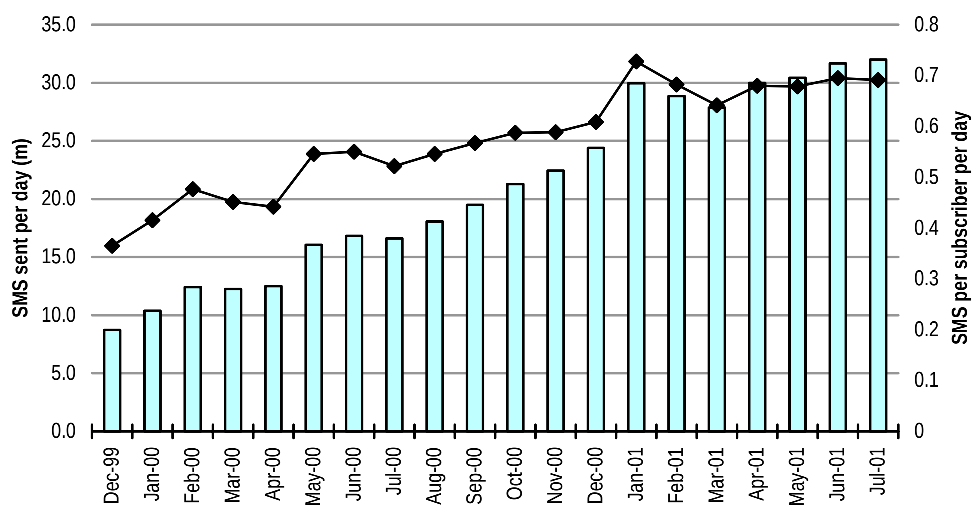
SMS slowing

SMS growth is starting to slow, particularly in the UK. We first reported in January (*Fatphone 9*, dated 8 January 2001) that the growth in SMS usage per subscriber had slowed in the UK, with the increase in traffic due, in the most part, to the increasing subscriber base. This trend has continued through 2001. In February, subscribers sent an average 0.68 messages per day. This had only increased to 0.69 per day in July 2001.

However, in other markets SMS is still growing. Orange in France has reported a rise in both active SMS users and SMS usage per active customer. We believe that this increase is not matched by a decline in the SMS pricing—SMS is still producing incremental ARPU across Europe.

At our Fatphone conference on mobile data in late June there was a consensus among speakers that SMS would continue to grow for the next two years, driven by new SMS applications such as group chat, games, information services, and Microsoft Outlook SMS plug-ins. Operators are generally citing more evidence of such value-added SMS volumes but they are harder to come by than traditional person-to-person SMS traffic. It seems empirically evident that SMS growth is going to grow but at a slower rate than in the past few years. In addition, we believe that emerging technologies such as Enhanced Messaging (EMS) and Multimedia Messaging (MMS) will drive the future growth of the messaging market.

Figure 48: SMS in UK—monthly total and messages per subscriber per day



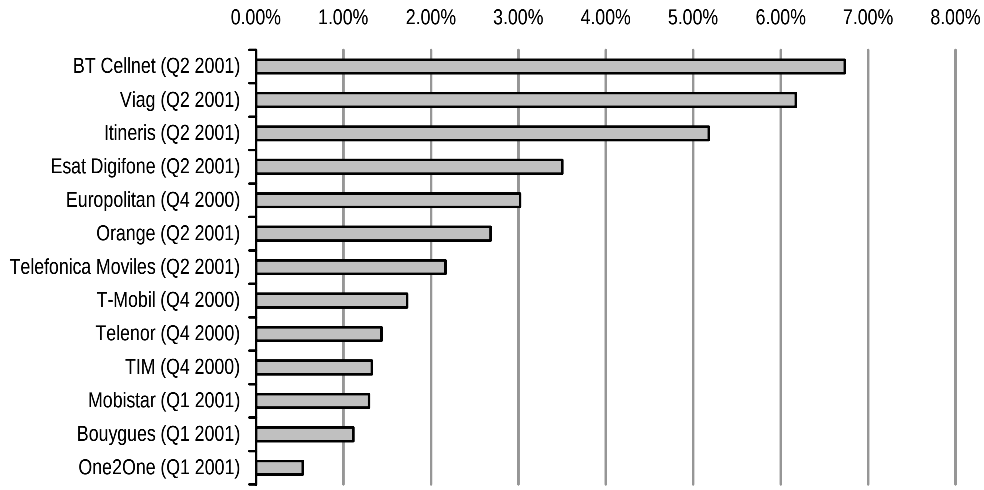
Source: Global Mobile, Mobile Data Association, CSFB research

WAP—3.6% of BT Cellnet traffic in second quarter

The majority of terminals sold across Europe are now WAP-enabled. As a result, some operators are beginning to see some small amounts of revenue from WAP. For instance, BT Cellnet in the UK reported that around 750,000 WAP users generated 113 million minutes of WAP traffic in the second quarter of the year, equivalent to 3.6% of traffic and 1–2% of ARPU in the second quarter for BT Cellnet. Vodafone has also reported 1.1% of second-quarter ARPU from non-SMS data that we believe is largely WAP access.

In Figure 49 we have attempted to quantify the *active* WAP users at major operators. A number of operators are beginning to report this number—total number of WAP terminals sold is an increasingly irrelevant figure, in our opinion, since only a proportion of the many WAP-enabled handsets being sold are being actively used. Revenues from WAP usage will only appear if these phones are used to access WAP services. Where operators have not reported an active user figure but just the number of WAP handsets sold, we have made some simple assumptions. Last year, WAP terminals were premium phones and around half of terminals sold were being actively used. Through the first quarter of this year, the number of people actively using WAP appeared to decline to around 33% of terminals sold as, increasingly, people found themselves owning a WAP phone with no intention to use the mobile data capability. Finally, we believe that this active user base has fallen to around 25% in the second half of the year as the majority of new terminals, including those from Nokia are WAP-enabled.

Figure 49: Active WAP users as proportion of subscriber base
Percentage of total subscriber base



Source: Company data, CSFB research

In early August, the WAP Forum released the specifications for the long-awaited WAP 2.0 standard. We believe that this is an important technology since it uses the XHTML content language. This should ensure compatibility with WAP content (WML), i-mode (cHTML) and the web (HTML and XML). However, according to Openwave, WAP 2.0 compliant devices are not expected on the market until the latter half of 2002.

GPRS—the handsets are starting to sell

We are still confident that GPRS is one of the key technologies that will enable the use of mobile data in Europe. With the launch and uptake of 3G looking delayed (see our recent 3G note, *G-Whizz*, dated 17 September 2001), we think that GPRS has an extended window of opportunity. However, in order for GPRS to deliver, operators must first launch services; second, be able to offer a range of terminals; and third, offer GPRS services at a reasonable cost. With over 60 GPRS networks already live around the globe, the first requirement has largely been fulfilled, in our view.

Figure 50: **Operators with live GPRS networks**

Operator	Country	Timing of GPRS launch	Supplier
BT Cellnet	UK	22 June 2000	Motorola/Cisco
T-Mobil	Germany	23 June 2000	Motorola/Cisco/Ericsson/Lucent
Mobilkom	Austria	2 August 2000	Motorola/Cisco/Nortel
Centertel	Poland	11 August 2000	Nokia/Nortel
Telsim	Turkey	August 2000	Motorola
DiAx	Switzerland	29 September 2000	Nokia
Polkomtel	Poland	September 2000	Nokia
EuroTel Praha	Czech Republic	4 October 2000	Motorola/Nokia
TIM	Italy	5 October 2000	Ericsson, Siemens
Czesky Mobil	Czech Republic	31 October 2000	Ericsson/Siemens
Radiomobil	Czech Republic	October 2000	Nokia
Wind	Italy	Autumn 2000	Alcatel/Ericsson/Siemens
Omnitel Italy	Italy	24 November 2001	Not disclosed
Europolitan	Sweden	1 December 2000	Nokia
Sonera	Finland	11 December 2000	Ericsson/Nokia
Blu	Italy	11 December 2000	Nokia/Nortel
KPN Mobile	Netherlands	12 December 2000	Nokia
Tal	Iceland	end 2000	Nortel
Sonofon	Denmark	2 January 2001	Nokia
Telefonica Moviles	Spain	10 January 2001	Nokia/Motorola
Tele.ring	Austria	18 January 2001	Alcatel
Cosmote	Greece	18 January 2001	Nokia
Tele Danmark	Denmark	24 January 2001	Ericsson/Nokia
Viag Interkom	Germany	24 January 2001	Nokia
D2 Vodafone	Germany	28 January 2001	Ericsson, Siemens
Netcom	Norway	31 January 2001	Siemens
Mobilix	Denmark	January 2001	Nokia
Telenor	Norway	1 February 2001	Nokia
One	Austria	26 February 2001	Nokia
E-Plus	Germany	22 March 2001	Nokia
Panafon	Greece	23 March 2001	Ericsson
Westel	Hungary	March 2001	Motorola/Ericsson
Telfort	Netherlands	1 April 2001	Ericsson/Nokia
Vodafone	UK	2 April 2001	Ericsson
Maxmobil	Austria	6 April 2001	Siemens
Libertel	Netherlands	18 April 2001	Ericsson
Telecel	Portugal	April 2001	Ericsson
Mobistar	Belgium	1 May 2001	Nokia
TMN	Portugal	1 May 2001	Alcatel, Siemens, Ericsson
SFR	France	15 June 2001	Nokia/Alcatel
Islandssimi	Iceland	Second-quarter 2001	Ericsson
STET Hellas	Greece	3 July 2001	Ericsson
HT	Croatia	5 July 2001	Not disclosed
Telia	Sweden	11 September 2001	Ericsson

Source: Company data, CSFB research

Delivery of GPRS terminals is the next major target for manufacturers and operators. There is no doubt that these have been significantly delayed, which has had a detrimental effect on investor perception of GPRS. However, there are increasing signs that a range of phones are now being delivered. In particular, the long-awaited Nokia 8310 is currently under test and has been shipped this week in small quantities with greater volumes due.

We were recently in Sweden and were pleasantly surprised by the number of GPRS terminals available in that country. Europolitan said that it is offering over ten types of GPRS terminals already. Sweden's largest independent mobile phone retailer, GEAB, was offering two Siemens GPRS phones (S45 and ME45), two Ericsson phones (T39, R520), and two Motorolas (T260 and Accompli 008). We were also told that the Motorola v.66 and Nokia 8310 would be available 'within two weeks'—if this proves correct it is further positive news for the rollout of GPRS. GPRS is thought to represent 10% of handsets currently being sold in Sweden.

At the same time as these new network technologies are emerging, a number of new features will begin to improve the functionality of mobile devices. At first we believe that colour will begin to stimulate consumer demand, followed by features such as the mobile messaging service (MMS), cameras and support for video streaming. Coupled with this, the proportion of phones that support GPRS will increase significantly through the first half of next year.

Figure 51: **Vodafone prediction of device availability in Europe**

	Q4 2001E	Q1 2002E	Q2 2002E	Q3 2002E	Q4 2002E
Colour Screen	1	3	6	9	12
Camera	1	2	5	6	8
M-Services	2	3	5	8	13
Picture phone	1	2	5	6	9
Video streaming			2	2	3
GPRS terminals	30	37	42	48	48

Source: Company data and estimates

Java is a particularly important new feature. Mobile Java devices and services are proving a runaway success in Asia at present. In Japan, NTT DoCoMo added Java to its i-mode service in January. It has already sold over five million Java handsets and new ones are being constantly developed.

Java-enabled mobile terminals offer the potential for downloadable, device agnostic applications that can be run locally on a mobile device. In the internet world, Java technology was one of the key enablers of the explosion in web content and traffic in the second half of the 1990s. The two unique selling points of Java in mobile devices are the ability to run applications in a device-agnostic environment and the ability to download updated or new applications into a phone's memory. However, there are several unique problems in the mobile market—terminal capabilities are limited in their memory and processor power, while networks are far more capacity-constrained than in the wireline world. We believe that Java will prove to be a key technology in the next generation of wireless networks and handsets, but in the short term, a range of teething problems should delay widespread adoption of Java-enabled handsets.

The first Java-enabled terminal, the Motorola Accompli 008 has just become available to the European market. There is evidence that increasing numbers of new terminals, particularly those that are GPRS-enabled will include Java support. Motorola announced last year that it expected sales of Java-enabled mobile devices to exceed PC sales by the end of 2003 and recently Nokia said it expects to sell 50m Java phones in 2002 and 100m in 2003. In Europe, Telenor in Norway is already offering Java games to the Motorola Accompli, both Telefónica Móviles and One2One are looking towards Java rollout at the earliest opportunity. One2One is collaborating with Sun Microsystems to develop interactive WAP services, and views Java as key to the future success of mobile data services. We strongly believe that the majority of European operators and application developers are readying services for Java-enabled phones.

Figure 52: **Expected availability and capabilities of GPRS terminals**

Shaded terminals have been delivered; bold terminals are delayed beyond initial launch date

Manufacturer	Phone	Available	Speed	Screen	Weight	Bands	WAP version	Bluetooth	HSCSD	Java	Form Factor	Notes
Motorola	Timeport 260	now	3+1	monochrome, 5 lines	108g	900/1800/ 1900	1.1	N		N	brick with aerial	First commercially available GPRS terminal in Europe
	Timeport 280	Q3 '01	4+1	monochrome, 5 lines	119g	900/1800/ 1900		Y		N	brick with aerial	
	Accompli 008	now	2+1	Grey scale LCD	155g	900/1800		N		Y	clam shell	
	Accompli 009	**July '01**	**2+1**	**256 Colour LCD screen**		**900/1800**		**N**		**Y**	**clam shell**	**Will only be available in US**
	V.66	now		monochrome, 5 lines	79g	900/1800/ 1900		N		N	clam shell	
	Talkabout 192	now		monochrome, 5 lines	117g	900/1800		N		N	brick without aerial	
Nokia	8310	now	3+1	monochrome, 5 lines	84g	900/1800	1.2.1	N	Y	N	brick without aerial	eu 20-30 more than other 8000 series phones
	8390	end '01	3+1	monochrome, 5 lines	84g	900/1900	1.2.1	N	Y	N	brick without aerial	Available for the American market
	6310	Q4 '01	3+1	monochrome, 5 lines	111g	900/1800	1.2.1	Y	Y	N	brick without aerial	Includes SyncML
Ericsson	T39	now	4+1	monochrome, 5 lines		900/1800/ 1900	1.2.1	Y	Y	N	flip cover	
	R520	now	4+1	monochrome, 5 lines	111g	900/1800/ 1900	1.2.1	Y	Y	N	brick with aerial	Commercial shipments after several month of delays
	T65	end '01	4+1	monochrome, 6 lines		900/1800/ 1900	1.2.1	N	N	N	brick without aerial	One button WAP access
	T68	now	4+1	256 colour, 101x80 pixels	85g	900/1800/ 1900	1.2.1	Y	Y	N	brick without aerial	First Ericsson with internal aerial and colour screen
	R600	end '01	3+1	monochrome, 5 lines		900/1800/ 1900	1.2.1	N	N	N	brick without aerial	
Trium	Geo	now	2+1	monochrome, 5 lines		900/1800		N	N	N	flip cover	
	Mondo	now	2+1	Grey scale LCD		900/1800		N	N	Y	PDA	4+1 device available in Q4 '01
	Eclipse	now	4+2	256 colours, 143x120 pixels	110g	900/1800	1.2.1	N	N	N	brick with aerial	
	Sirius	end '01	2+1	monochrome, 5 lines	75g	900/1800	1.1	N	N	N	flip cover	Lightest GPRS terminal so far announced
NEC	DB7000	Sept. '01	4+1	256 colour, 120x160 pixels		900/1800	1.1	N	N	N	clam shell	Includes picture caller line ID
	DB4300	end '01	3+1	monochrome, 5 lines		900/1800		N	N	N	brick with aerial	
Sendo	Z100	end '01	3+1	256 colour, 240x140 pixels	99g	900/1800/ 1900	1.2	add-on	N	N	brick without aerial	Built on Microsoft 'Stinger' platform
Siemens	S45	now		monochrome, 7 lines	93g	900/1800	1.2	N	N	N	brick without aerial	Priced as high-end terminals
	ME45	now		monochrome, 7 lines	99g		1.2	N	N	N	brick without aerial	
	MultiMobile	end '01		65k colour, large LCD		900/1800	1.2	N	N	Y	PDA	Supports MP3
Panasonic	**GD95**	**Jun '01**	**4+1**	**Grey scale LCD, 12 lines**		**900/1800**		**N**	**N**	**N**	**brick with aerial**	
Sagem	MC850	now	4+1	monochrome, 5 lines		900/1800		N	N	N	flip cover	
	WA3050	**June '01**	**4+1**	**Grey scale LCD**		**900/1800**		**N**	**N**	**Y**	**PDA**	**Supports MP3**
Phillips	**Xenium 9660**	**Sept. '01**	**3+1**	**monochrome, 5 lines**		**900/1800**	**1.2**	**N**	**N**	**N**	**brick with aerial**	**ExEn compliant to allow download of new games**
	Fisio 610	2002	3+1	monochrome, 5 lines		900/1800	1.1	N	N	N	brick with aerial	
	Fisio 611	2002	4+2	monochrome, 5 lines		900/1800	1.2	N	N	N	brick with aerial	
	Fisio 612	2002	4+2	monochrome, 5 lines		900/1800	1.2	N	N	N	brick with aerial	
Alcatel	**One Touch '702**	**May '01**	**1+1**	**Grey scale LCD**	**103g**	**900/1800**		**N**	**N**	**N**	**flip cover**	
Samsung	SGH Q100	now	4+1	Grey scale 128x128 pixels	85g	900/1800	1.1	N	N	N	flip cover	
RIM	Blackberry	Oct '01	3+1	Grey scale LCD		900/1800		N	N	Y	PDA	Now expected October 2001

Source: Company data, CSFB research

Finally, we believe that the tariffing of GPRS is crucial to successful uptake. At present, operators are rolling out a range of tariffs to take advantage of the packet-switched capabilities of GPRS. We are concerned that the early tariffs are very expensive, pricing GPRS usage at an equivalent price to circuit-switched data despite the greater efficiency of the technology. Two types of tariffs are dominating at present—billing for the volume downloaded, normally in 10kByte bundles, or a flat rate tariff that typically includes 1Mbyte of inclusive data. We believe this will soon be supplemented by some premium charges for specific content, and we also expect the overall cost of GPRS services to reduce in the coming months as network stability improves. This should act to stimulate usage.

Figure 53: Current GPRS tariffs

Operator	Country	GPRS Tariffs	Exchange rate
Connect Austria	Austria	€7.19/month to 10MB	
Max.Mobil	Austria	€10 for 10MB or €25 for 30MB	
MobilKom	Austria	Sch1.99 peak, 0.99 off-peak, add. if >50MB/month	Sch1=€.66
Tele.ring	Austria	WAP only: €14.50/month (upto 3MB) or WAP and Web at €43.40/month (up to 50MB)	
Mobistar	Belgium	€12 activation, €90 pcm (intranet access to 50MB), €30 (Mobistar's servers, 50MB), €4 per extra MB	
EuroTel Praha	Czech Rep.	Kc0.5 per KB, no monthly charge	Kc100=€2.8
Sonofon	Denmark	€40 fixed per quarter, €2.50-€3 per MB	
TeleDanmark	Denmark	€16 /quarter plus €3.35/MB	
Sonera	Finland	FIM36.27 including 1MB or FIM108.81 including 10MB	FIM1=€0.17
D2	Germany	19.95DM /month, 1MB included, then 0.19DM/10Kb	1 DM = €0.51
E-Plus	Germany	<100KB, 0.69DM/10KB, >100Kb, 0.2DM/10kB	1 DM = €0.51
T-Mobil	Germany	0.69/10KB and 0.49/day or 19.95 plus 0.19/10kB, with 1MB inclusive or 17.2DM flat to 1MB, then 16DM for extra MB	1 DM = €0.51
Viag	Germany	0.09/10KB or 0.09/WAP site and 0.49DM/day. For >5Mb, 20DM basic and 0.06/10KB	1 DM = €0.51
Cosmote	Greece	€29.35/month	
Panafon	Greece	€0.05/kb	
C&W HKT	Hong Kong	HK$198 for 2MB of data	HK$1=€0.15
Westel	Hungary	€15 /month including 5MB	
Blu	Italy	€10/month, 2MB bundled web and 300KB bundled WAP. Prepaid WAP at €0.026/kB and web at €0.005/kB	
TIM	Italy	LIt60,000 upto 60MB/month	LIt2000 = €1
KPN Mobile	Netherlands	€2.27/MB, no monthly fee	
Libertel	Netherlands	€34/month plus €3.46/MB peak, €1.3/MB off peak	
Netcom	Norway	75Nok/month for 1st MB, 25Nok thereafter	
Telenor Mobile	Norway	€0.01/KB up to 1MB, then €0.003/KB	
Centertel	Poland	ZL99 for 50MB per month	Zl1=€.25
Telecel Vodafone	Portugal	Unlimited access to Telecel portal for ESC850/month or ESC7.5 for each access. Internet access outside Telecel portal at ESC1.5/kB and WAP at ESC2.5/kB. Initial access costs ESC30 but includes 20kB and 12kB of internet and WAP access respectively	€1 = ESC200
Telefonica Moviles	Spain	€6 per month incl. 1MB or €30 including 20MB	
Europolitan	Sweden	SKr 200 per month access Data SEK175/month	SKr 1 = €0.11
Tele2	Sweden	SKr 49 per month all in until May 2002	
diAx	Switzerland	€15.75/month	
Chungwa	Thailand	NT$150 per month plus NT$0.06 per 128bytes or NT$300 per month plus NT$0.025 per 128bytes	NT$1 = €0.02
BT Cellnet	UK	£3.99/month, data at 0.02/kbyte or £7.99/month incl. 1MB, and £3.99 for additional MB	£1=€1.65
Vodafone	UK	Free access then £20 per MB or £7.49/month incl. 1MB then £5 per MB. Now billed per kB (all incl. VAT)	£1=€1.65

Source: Company data, Wireless Internet, CSFB research

CREDIT SUISSE | FIRST BOSTON

AMSTERDAM 31 20 5754 890	KUALA LUMPUR 603 2143 0366	SAN FRANCISCO 1 415 836 7600
ATLANTA 1 404 656 9500	LONDON 44 20 7888 8888	SÃO PAULO 55 11 3841 6000
AUCKLAND 64 9 302 5500	MADRID 34 91 423 16 00	SEOUL 82 2 3707 3700
BALTIMORE 1 410 223 3000	MELBOURNE 61 3 9280 1888	SHANGHAI 86 21 6881 8418
BANGKOK 62 614 6000	MEXICO CITY 52 5 283 89 00	SINGAPORE 65 212 2000
BEIJING 86 10 6410 6611	MILAN 39 02 7702 1	SYDNEY 61 2 8205 4433
BOSTON 1 617 556 5500	MOSCOW 7 501 967 8200	TAIPEI 886 2 2715 6388
BUDAPEST 36 1 202 2188	MUMBAI 91 22 230 6333	TOKYO 81 3 5404 9000
BUENOS AIRES 54 11 4394 3100	NEW YORK 1 212 325 2000	TORONTO 1 416 352 4500
CHICAGO 1 312 750 3000	PALO ALTO 1 650 614 5000	WARSAW 48 22 695 0050
FRANKFURT 49 69 75 38 0	PARIS 33 1 53 75 85 00	WASHINGTON 1 202 354 2600
HOUSTON 1 713 220 6700	PASADENA 1 626 395 5100	WELLINGTON 64 4 474 4400
HONG KONG 852 2101 6000	PHILADELPHIA 1 215 851 1000	ZURICH 41 1 333 55 55
JOHANNESBURG 27 11 343 2200	PRAGUE 420 2 210 83111	

CS10812TK

CREDIT SUISSE FIRST BOSTON