

Outlook #02.2006

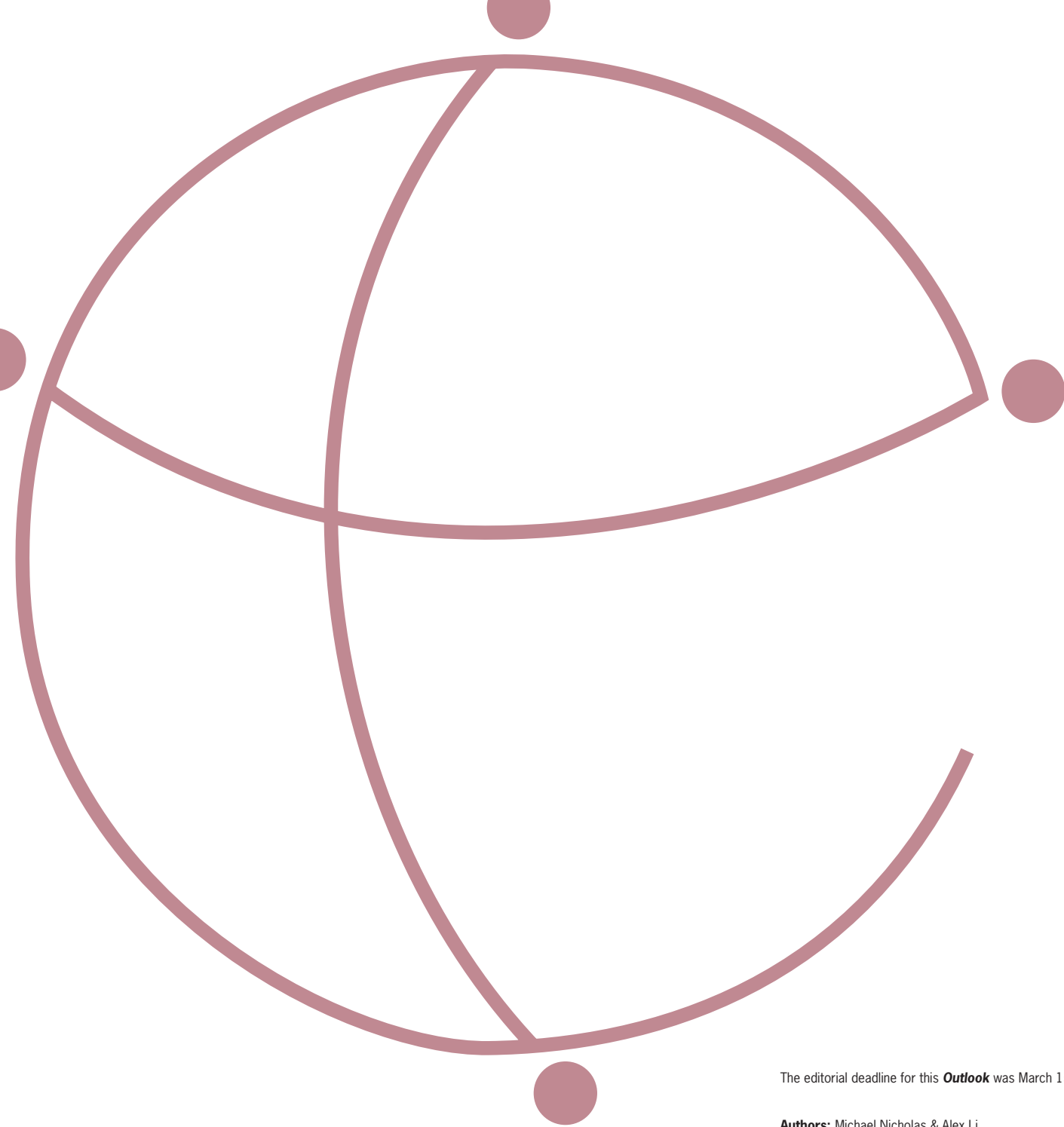


Singapore Wireless Operator and Market Outlook 2006 – 2010



- **Wireless Telecommunications**
- Health Care
- Financial Services
- Government

- Competitive Intelligence •
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- Public Opinion Research •



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Key Market Indicators:
2005-2006

Installed Base

Installed Base: 4.1 Million
Prepaid Installed Base: 1.4 Million
Postpaid Installed Base: 2.7 Million
Data Users: 2.5 Million

Handset Sales by Technology

Total Handset Sales: 1.7 Million
GSM Handset Sales: 0.3 Million
GPRS Handset Sales: 1.3 Million
WCDMA Handset Sales: 0.1 Million

ARPU

Service Revenue: \$ 1.6 Billion
Monthly ARPU: \$ 34.01
Monthly ARPU (Voice): \$ 27.84
Monthly ARPU (Data): \$ 11.47

**Carrier Market Shares
(by Installed Base)**

Singtel Mobile: 38.6%
StarHub: 31.7%
MobileOne: 29.7%

Source: IEMR

Market Forecasts:
2005 - 2010

IEMR FORECAST							
	2005	2006	2007	2008	2009	2010	CAGR, 2005 - 2010
Total Installed Base (Thousands)	4,032	4,180	4,266	4,329	4,329	4,397	1.7%
Penetration Rate, %	93.2%	94.9%	96.4%	97.5%	98.2%	98.7%	1.3%
Total Monthly ARPU (\$)	34.01	35.56	33.44	36.30	32.44	37.65	2.1%
Total Service Revenue (\$ Millions)	1,615	1,612	1,579	1,548	1,536	1,538	-1.0%
Data Users (Thousands)	2,467	2,636	2,795	2,944	3,084	3,215	5.4%
Monthly ARPU on Data per Data User (\$)	11.47	11.37	11.23	11.20	11.22	11.23	-0.4%
Total Handset Sales (Thousands)	1,730	1,591	1,275	1,210	1,297	1,836	1.2%
Handset Sales by Technology (Thousands)							
<i>GSM Migration Path</i>							
GSM Handset Sales	335	240	147	56	0	0	-100%
GPRS Handset Sales	1,295	1,036	370	5	0	0	-100%
WCDMA Handset Sales	100	315	758	1,149	1,297	1,836	89.6%

Source: IEMR

1. Executive Summary

Singapore is a Mature Market with Limited Growth Prospects

With a population base of 4.3 million and mobile penetration rates of 92%, Singapore is one of the most mature mobile markets in the world. Our forecasting model calls for the total installed base in Singapore to grow at a CAGR of just 1.7%, reflecting the mature nature of the market and the already high levels of market penetration.

After growing at a CAGR of more than 12% between 2001 - 2005, we are projecting growth in service revenues will level out and decline slightly by a CAGR of -1.0%, starting in 2006. Singapore is the only Asian market we cover where we are projecting a decline in total service revenue during the forecast period. We forecast the blended ARPU in Singapore will rise slightly over the forecast period at a CAGR of 2.1%, but far less than most other Asian markets.

Any growth in total revenue for operators will come from their ability to bundle other services, such as cable TV, broadband internet, and fixed-line telephone charges, with mobile services. Both StarHub and SingTel have seen some traction for this business model in the recent past, resulting in increased subscriber growth, while MobileOne's status as the only pure-play mobile operator has resulted in lower subscriber growth.

WCDMA will be Successful in Singapore

All three incumbent operators have now rolled out their 3G networks, and are using a WCDMA platform. While initial take-up has been slow, we expect Singapore's 3G installed base to grow significantly over the next five years, accounting for 93.2% of the installed base by 2010.

Singapore operators launched their 3G services with a price war and large marketing campaigns. Part of the reason why operators have promoted 3G in such a big way is because they were not burdened by huge licensing costs. Each spent only S\$100 million on 3G licenses, and have budgeted at least S\$200 million to install and expand their WCDMA networks.

Ultimately, we think WCDMA will be successful in Singapore, primarily because consumers there are demanding converged services. All three operators are offering a diverse range of content, from radio, to music, to video, which will condition consumer expectations in the medium term, and result in greater demand for 3G services.

Operator Strategic Outlook

MobileOne's Business Case is looking more difficult, while StarHub has the Momentum

We think MobileOne's management has done an excellent job in developing the firm into Singapore's leading operator. Nonetheless, recent operational numbers do not look encouraging. In 2005, MobileOne's total subscriber base increased by only 7.2% (y-o-y), while StarHub saw its subscriber growth rise by 22.5% (y-o-y). Even though most of StarHub's subscriber growth was in pre-paid users (which rose by 43.1%), the company still managed to increase its post-paid subscriber numbers by 9.6%, compared to MobileOne's paltry 1.1%.

We think the momentum is in StarHub's favour, primarily because it has differentiated itself sufficiently in a crowded space. MobileOne, on the other hand, has become a

pure-play domestic mobile operator, and in a mature market like Singapore's, we think that MobileOne is a good dividend play.

StarHub Likely to Merge with MobileOne in 2006 – 2007

The biggest strategic issue facing the wireless operators in Singapore is the potential merger of StarHub and MobileOne. In our view, such a merger will provide synergies and economies of scale to the merged entity. Should the merger occur, the merged entity can expect savings of S\$300 – 450 million over the next 10 years on network CAPEX, and annual savings of S\$45 million on operating expenditures. This will have a negative impact on Nokia, since both StarHub and MobileOne chose Nokia as their network partner. The merger will also provide the resulting entity with the type of scale it needs to make limited overseas investments.

The merged entity will likely adopt the StarHub business model, known as “hubbing,” since this is the differentiator from the leader, SingTel. Under hubbing, customers are offered a package of mobile, cable, and broadband internet services in an attractive bundle, with focused content. We think hubbing provides StarHub with enough of a differentiator to create a captive market in Singapore, and effectively compete with SingTel locally.

Should a merger not occur, our view is that MobileOne will see its subscriber base erode, in the absence of overseas expansion or domestic diversification of its services. Perhaps anticipating this scenario, the Infocomm Development Authority (IDA, the regulator) decided to force operators to share their infrastructure for broadcasting services. This decision was seen as a positive for MobileOne and a negative for StarHub. It may also be a signal that IDA may not be willing to entertain a merger at this stage.

SingTel's Regional Expansion is Paying Dividends

With a presence in seven regional markets and a gross subscriber base of 78 million, SingTel is the largest multi-market mobile operator in the Asia-Pacific. In our view, SingTel's regional strategy has been a success so far, with associated firms accounting for 82.3% of group EBITDA as of the end of December, 2005. Unlike DoCoMo, SingTel divested itself of its European investments and decided to focus on a “life cycle” approach, through which it has the right blend of exposure to mature (Singapore and Australia), high growth (Thailand and Philippines), and emerging (Indonesia, India, and Bangladesh) markets.

Nonetheless, unlike global players such as Vodafone and Hutchison, SingTel has been largely unsuccessful at achieving consistency of brand, services, platforms, language input, or functionality across its group. SingTel has also been unable to customize handsets or truly differentiate services across the region - benefits that global operators, such as Vodafone and Hutchison, have used to their advantage.

We think that this is an opportunity for vendors to sell through the SingTel channel, as the company evolves into an Asia-Pacific brand. SingTel will likely seek to build a brand for itself in the region and this will involve everything from brand building to platform integration to value added services across its investments.

A risk faced by SingTel is the fact that its largest shareholder is the Government of Singapore. This has prevented SingTel from acquiring players in some lucrative markets, such as Malaysia, and prevented it from gaining majority interest in other markets, such as India. Therefore, in the medium term, we expect SingTel to pressure the Singapore government to divest more of its holdings. At the same time, we expect SingTel to continue its regional expansion strategy, given its retained earnings/reserves position of S\$17.1 billion.

2. Forecasts of Singapore Wireless Sector, 2006 – 2010

2.1. Headline Market Forecasts

2.1.1. Installed Base, Monthly ARPU and Service Revenue

We expect the total installed base in Singapore to grow at a CAGR of 1.7%, reflecting the mature nature of the market and the already high levels of market penetration. The total installed base in 2005 passed the 4.1 million subscriber mark, reflecting a penetration rate of about 92%. Much of the expected growth will come from the pre-paid installed base, which is expected to grow at a CAGR of 3.8% over the forecast period, compared with the post-paid base growth at a CAGR of 0.8%. Over the last five years, the number of pre-paid users has grown to 34% of the total installed base in 2005. The less profitable pre-paid subscribers make up a smaller percentage of users in Singapore than is found in most other Asian markets, but is still far higher than Japan and Korea.

Singapore's blended monthly ARPU of \$34 is somewhat higher than most other Asian markets, except Japan and Korea. SingTel, the market leader, is able to maintain a slightly higher ARPU, while MobileOne has an ARPU that is slightly less than average. Both SingTel's and MobileOne's ARPUs have remained fairly stable, while StarHub's ARPU dropped by about 7.2% in 2005. We project that the blended ARPU will rise slightly over the forecast period, at a CAGR of 2.1%.

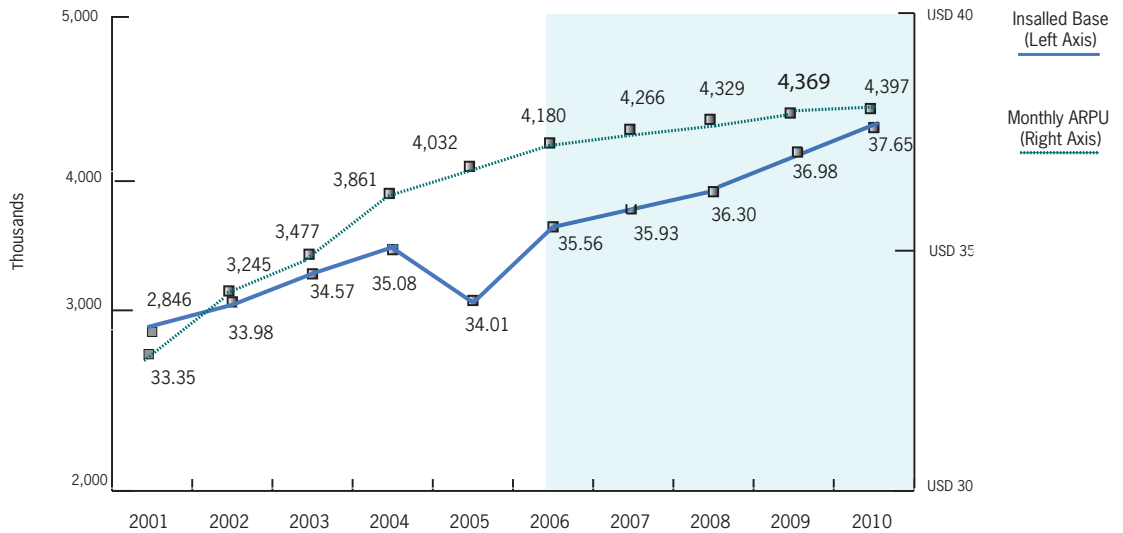
With a small population of 4.3 million, total service revenues for operators in Singapore are among the lowest in Asia, at \$1.6 billion. After growing at a CAGR of more than 12% from 2001 - 2005, we are projecting growth in service revenues to level out and decline slightly, starting in 2006. In fact, Singapore is the only Asian market where we are projecting a decline in total service revenue during the forecast period. Essentially, we are making the call that Singapore operators will be unable to capitalize on the promise of their 3G roll-outs and translate this to higher headline revenue figures. Singapore operators have long realized the limitations of a small domestic market and some, especially SingTel, have decided to look overseas for further revenue growth.

Table 1:
Headline Market Forecasts:
Singapore, 2005-2010

IEMR FORECAST							
	2005	2006	2007	2008	2009	2010	CAGR 05 - 10
Total Installed Base (Thousands)	4,032	4,180	4,266	4,329	4,369	4,397	2.0%
Penetration Rate, %	92.3%	94.9%	96.4%	97.5%	98.2%	98.7%	2.2%
Pre-Paid Installed Base (Thousands)	1,368	1,471	1,534	1,579	1,608	1,629	3.8%
Post-Paid Installed Base (Thousands)	2,664	2,709	2,733	2,750	2,761	2,768	0.8%
Total Monthly ARPU (\$)	34.01	35.56	35.93	36.30	36.98	37.65	2.1%
Total Service Revenue (\$ Millions)	1,615	1,612	1,579	1,548	1,536	1,538	-1.0%

Source: IEMR

Figure 1:
Singapore Installed Base and
ARPU Forecast,
2001 - 2010



Source: IEMR. Shaded region represents Forecast Period.

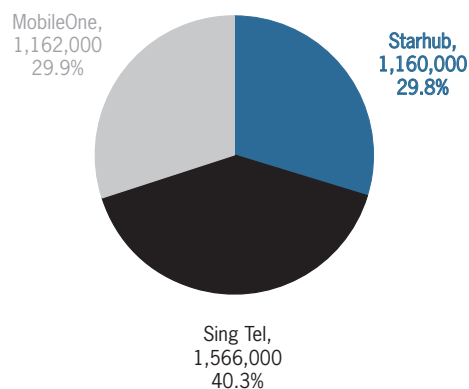
2.2. Technology Forecasts: Installed Base

2.2.1. GSM Migration Path: WCDMA

The first half of 2005 saw the roll-out of 3G technology by all three major Singaporean operators, all within a couple months of each other. SingTel and MobileOne both launched their 3G services in February 2005, with StarHub following suit two months later. The number of 3G subscribers has grown to around 100,000 by year-end. All three service providers are using a WCDMA platform, and we expect this installed base to grow significantly over the next five years, accounting for 93.2% of the installed base by 2010.

GSM was the universal platform technology in Singapore until 2001, when GPRS was launched and began to enjoy widespread take-up. There were approximately 3 million GSM subscribers in Singapore in 2002 when the number of users peaked, and this has been declining steadily since. We project this decline will continue through the forecast period, with about 7% of subscribers remaining in 2010. We also believe a number of subscribers, particularly in the older age groups, will continue to use GSM phones for basic voice services.

Figure 2: Singapore Market Share, 2005



Source: Source: Company Websites

Since its launch in 2002, GPRS technology has enjoyed considerable success; however, with the launch of WCDMA last year, we expect the number of GPRS users to peak at about 2.4 million in 2006, and then decline steadily over the forecast period, as WCDMA becomes the dominant technology for more demanding users.

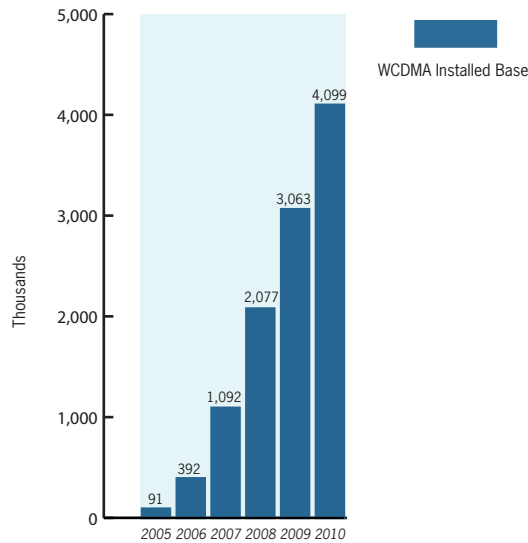
In January 2005, DoCoMo and StarHub announced a strategic partnership, under which StarHub launched i-mode services, exclusively in Singapore, in Q4 2005. Under this agreement, StarHub now offers i-mode services over both its 2.5G and 3G networks, with DoCoMo providing its expertise in patents, branding, marketing, and technology. Singapore is the fifth market in Asia to launch commercial 3G services, after Japan, South Korea, Taiwan, and Hong Kong, and operators are learning lessons from these earlier launches. Following the initial period of familiarization, we expect the adoption of WCDMA technology to accelerate in 2006 and 2007, until it is the dominant platform in 2008 with 2.1 million subscribers.

It will take awhile for consumers everywhere to understand the benefits of this technology, and for additional content and services to be rolled out. Most Singapore operators have emphasized 3G technology in their branding, such as SingTel's 3loGy ("it's 3G and beyond") and StarHub3G. Widespread adoption of this technology will require operators to go beyond simply promotion of the technology to delivering value to customers. Operators must promote why the service is useful rather than just the fact that it is a newer technology.

Unlike the European WCDMA operators, Singapore's three mobile operators were not burdened by massive licence fees costing billions of dollars. They spent S\$100 million each on 3G licences, and have budgeted at least S\$200 million each to install and expand their WCDMA networks. Singapore's WCDMA network operators launched their services with a price war and large marketing campaigns. SingTel unveiled its strategy for making the transition from 2G to 3G services by commercially launching its 3loGy initiative and promoting 3G services across mobile, fixed-line and broadband platforms. SingTel's rates are cheaper than those of its rival, MobileOne. For local video calls, SingTel is charging the same rate as for its voice calls. Calls cost S\$ 0.20 (\$ 0.12) per minute during peak hours, and as little as S\$ 0.10 (\$ 0.06) during off-peak times. It also offers free incoming calls. To attract more customers onto its WCDMA network, SingTel is offering data charges over its WCDMA network that are 30% lower than over GPRS.

MobileOne also launched its 3G service in February 2005, offering video calls at S\$ 0.40 (\$ 0.24) per minute, but video streaming, MP3 downloads and internet surfing remained free of charge until March 31, 2005. MobileOne customers can upgrade to 3G services on their current tariffs by buying a WCDMA handset and switching to a 3G SIM card. In March 2005, MobileOne started offering its customers free video calls and competitive data rates. From April 1, 2005 until the end of 2005, the first five minutes of every video call between MobileOne customers and other network operators (incoming and outgoing) was free. A rate of S\$ 0.15 (\$ 0.09) per minute is charged after the first five minutes.

Figure 3: Singapore WCDMA Installed Base, 2001- 2010



Source: IEMR. Shaded Region represents Forecast Period.

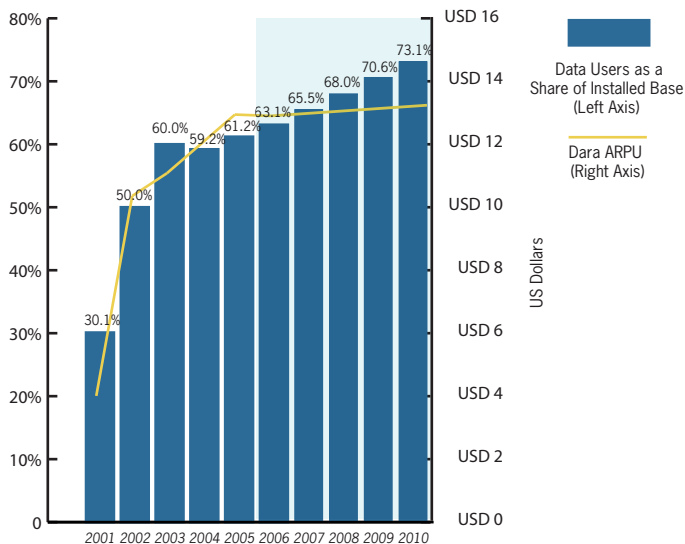
2.3. Singapore Voice and Data Services Forecasts, 2006 - 2010

2.3.1. Voice & Data Services Installed Base, Monthly ARPU and Service Revenue

Singapore is among the world's most data-intensive markets. Our calculations show it is currently second in Asia, after Japan, in realized monthly ARPU per data user, at \$ 11.47 for 2005. This figure has risen considerably from just \$ 2.61 in 2000, but we forecast data ARPU has peaked, and will remain about the same level over the next five years. The current share of the installed base using data is 61.2%. This has grown from 30.1% in 2001, and should rise about another 10% over the next five years, providing some growth in the overall revenue of the data services market of Singapore operators.

Data services are being driven by the increasing penetration of MMS-enabled handsets, the marketing push for data services, more affordable data tariffs, and the increased roll-out of 3G networks in Singapore. We predict data services revenue will grow from the current \$ 328 million to about \$ 410 million by 2010. The share of total revenue from data services has grown from 2.5% in 2001, to about 20% in 2005. Growth of this share will slow, and we estimate data will make up about 26% of total revenue in 2010.

Figure 4: Singapore Data Users and Data ARPU, 2001 - 2010



Source: IEMR. Shaded Region represents Forecast Period.

3. Singapore Mobile Handset Sales Forecasts, 2005 - 2010

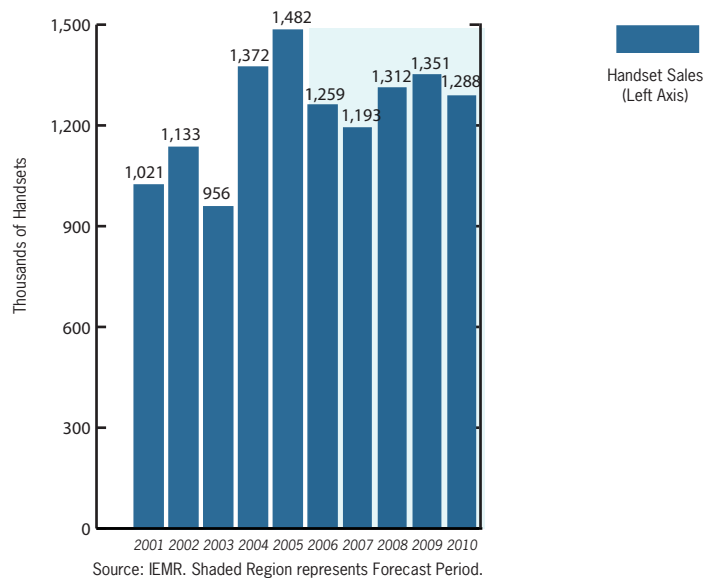
3.1. Singapore Handset Shipments

Sales of GSM handsets in Singapore have been on a long slide for the last five years, and we project this trend to continue. This decline in GSM handset sales will be offset by GPRS handset sales and, subsequently, WCDMA sales.

In our view, GPRS handset sales in Singapore peaked in 2005 at about 1.3 million units, and will decline somewhat in 2006, before dropping away sharply in 2007. Rising from just a few hundred thousand units in 2005 and 2006, we expect WCDMA handset sales to accelerate sharply in 2007, and hit about 1.3 million units in 2009.

Handsets were one of the chief obstacles facing WCDMA adoption two or three years ago. The few models available were expensive, clunky, and heavy compared to 2.5G handsets. As well, they were very difficult to navigate and so power-hungry that a few video calls could reduce battery life in only a couple of hours. Since then, WCDMA handsets have made considerable progress on all fronts, but still have a ways to go before they can achieve the same kind of consumer acceptance as 2.5G handsets.

Figure 5: Singapore Handset Sales Forecasts, 2001 - 2010



In a country such as Singapore, one driver for mobile services is the exclusivity of newer handsets. The need to have the newest and most sophisticated handset has driven some users to 3G, with little attention to the additional cost or the available services and content. This effect will diminish as these handsets, and 3G itself, becomes more commonplace. Following the initial excitement, the affordability of new handsets will become critical to success in the Singapore market, for both operators and handset manufacturers.

In Singapore, the selection of WCDMA handsets is still limited in comparison to the selection of GSM handsets. With its 3G launch in February 2005, SingTel provides the widest selection of models, offering seven different models. WCDMA handsets are

obviously more expensive than GSM handsets, but Singapore operators have been aggressive at subsidizing initial take-up of 3G handsets. As shown in Table 2 below, WCDMA handset prices in Singapore are below prices for the same models in the closest comparable market - Australia. While this may be a reflection of the high average incomes in Singapore, in our view, operators in Singapore realize they must aggressively price WCDMA handsets in order to accelerate greater 3G take-up in the Singapore market. To encourage customers to shift to 3G and to compete with SingTel, MobileOne launched two handsets at a “special price”: the Motorola E1000, at S\$1,196; and the Nokia 6630, selling at S\$798.

Table 2: WCDMA Handset Prices in Singapore and Australia

Handset Model	Prices in Singapore	Prices In Australia
Sony Ericsson Z1010	\$ 452	\$ 632
LG U8100	\$ 427	\$ 459
Motorola A1000	\$ 605	\$ 601
Motorola E1000	\$ 348	\$ 434
Nokia 6630	\$ 544	\$ 575
Nokia 6680	\$ 568	\$ 575
Samsung Z107	\$ 446	\$ 476

Source: SingTel, IEMR

4. Market Demand Drivers for Growth in Singapore Mobile Market, 2005 – 2006

WCDMA has come a long way in the past year and we think that Singapore is going to be a key hotbed to test the potential of this platform. Our analysis shows that as of end January 2006, there were 48.4 million WCDMA subscribers in 42 markets worldwide, growing at a CAGR of 8.1%. Among markets that had WCDMA roll-outs for at least one year, subscriber uptake was strongest in Singapore with some 119,400 gross subscriber adds or a CAGR of 35.9% – higher than any other market in the world.

There has been some innovation in packaging WCDMA in Singapore that we do not see in other markets. For example, SingTel integrated its WCDMA offering with other networks and operators, offering video calls between fixed broadband and mobile networks, and bundled data packages across fixed and mobile networks. StarHub started WCDMA consumer trials in December 2004, with 300 trial users who were able to receive music, news, entertainment and sports including the English Premier League Football and cable TV programmes. For business users, a Blackberry platform can now be used for financial services.

StarHub has invested S\$70 million in its WCDMA network. DoCoMo and StarHub have announced a strategic partnership whereby i-mode services are offered on StarHub's GPRS and WCDMA networks since Q4 2005, with DoCoMo providing its expertise and technology. StarHub has the competitive edge in mobile data services, not only for 3G services but also for 2.5G, because of its ability to leverage content expertise and entrenched associations in the cable TV area.

At this early stage, operators in Singapore do not see 3G as an immediate revenue booster. They see it as an important investment in the medium- to long-term, with the potential to offer richer multimedia content and a better customer experience to drive mobile data usage. With Singapore nearing the saturation point in terms of subscriber penetration, the only way for its operators to expand the market is to encourage subscribers to spend more. Operators are cautious when promoting 3G services in Singapore, as they do not wish to follow the pattern they did with WAP in 2000, promising too much and failing to deliver. Our channel enquiries suggest the overall consensus among operators is that they want to be realistic about 3G services, as these will take time to penetrate the mass market.

In our view, five market drivers will determine revenue growth for operators going forward in Singapore: personalization through mobile downloads, games, music, video content, and P2P SMS/MMS.

Personalization Through Mobile Downloads

In Singapore, the mobile phone is not only a communication tool, but also a fashion accessory that reflects the owner's personality and status. Consequently, personalized applications like ringtones, logo downloads, wallpapers, and screensavers, have become an important source of mobile content revenues for operators. Ringtones have become the most successful non-messaging mobile application, and will continue to be for some time. SingTel has been successful at bringing mobile downloads to other markets. For

example, SingTel Optus, in Australia, says ringtone and logo downloads already account for half of its premium SMS traffic. Even in content-rich mobile data markets like Japan and Korea, personalized downloads are the dominant form of data content. We think, given the maturity of the Singapore market, that personalized downloads will continue to capture consumer and operator interest.

Mobile Games

Thanks to Java becoming virtually a standard feature in new handsets, mobile games continue to be a fast grower in terms of both revenue and popularity for Singapore operators, driven by the wide range and rich content of games. Although games may not appeal to as many subscribers as mobile downloads, they do deliver higher margins for operators. The growing success of console-based video games, and the aging of the generation that grew up with video games, will ensure the increased success of this revenue stream in Singapore. The ARPU of games users is higher than that of other users, and less driven by price for differentiation, depending more on content.

StarHub claims multi-player games are gaining popularity among its subscribers as such games are more interactive and engaging. Mobile games, together with adult content, are expected to be the major sectors for entertainment based services in the future. Informa Telecoms & Media projects that total global revenues from mobile games will increase from \$2.6 billion this year, to \$11.2 billion by 2010, with 15.2% of people downloading and playing a game on their handset by the end of the decade, up from 6.7% this year. Multi-player games are also expected to continue to increase in popularity and become significant revenue generators in the future, in mature markets like Singapore.

Mobile Music

With Singapore's high rate of broadband Internet usage, mobile music faces a serious challenge from the PC-centered music industry. To be truly successful, downloads will require the speeds that come from 3G connectivity, as 2G and 2.5G technology, such as GPRS, are too slow. Surveys suggest that subscribers in Asia are not going to wait for five minutes to download a single track over a 2G or 2.5G network. We believe that unless the operator has the capability to deliver a music download in a relatively short time, probably under a minute, they cannot realistically compete with PC uploads of tracks through a USB port. Still others in the industry think mobile music is not meant to match the dedicated music player experience. They are hoping consumers will see broadband music downloads as complimentary, rather than competitive, to mobile music downloads.

Many in Singapore are looking at the pioneering success of operators in Japan and South Korea, and hoping they can repeat it here. During their first quarter of offering mobile music services, SK Telecom saw more than half a million mobile music subscriptions, while KDDI's 3G ARPUs increased by nearly 40%. KDDI also recently reported it had more than 20 million over-the-air downloads within 12 months of launching its service.

On the surface, those would appear to be good numbers. The question is whether they can be replicated in markets outside of South Korea and Japan. Users in Japan seem willing to pay up to \$3 per song downloaded, but the handset is very much the center of the computing universe in Japan. In a more PC-centered market like Singapore, access to music files through the internet is easy and price for mobile downloads has already been set at 99 cents or less.

StarHub opened another potential revenue stream in September 2005, when it launched Visual Radio, a Nokia radio service. Visual Radio allows listeners to tune in to local FM radio via their mobile phones, while simultaneously receiving interactive information and graphics that are synchronized with the broadcast. Text and graphics are delivered via the cellular network onto the screen of the mobile handset.

Mobile Video

In Singapore, video telephony is expected to be the key differentiator for 3G cellular, as opposed to 2.5G. Consequently, there is a lot of pressure on Singapore operators to ensure mobile video calls deliver a reasonable quality. Unfortunately, this tends not to be the case in many 3G networks when they launch. There's more to delivering high-quality video than just increasing the bandwidth. Video telephony is highly sensitive to delay. Even the slightest delay means a significant drop in quality. Part of the problem is that increasing the transmission speed reduces the number of active calls that can be supported within a single cell.

Even before the launch of the 3G networks in 2005, Singapore's three mobile operators - SingTel, MobileOne and StarHub - had interconnected to allow video calls across their networks. This created a level of coordination not found in other markets, which will surely help foster the success of 3G in Singapore.

SingTel has launched a new 3G initiative in a bid to shore up already slowing demand for 3G services. Called 3G TV, this service allows users to access video on their handsets with just a click of a button. SingTel offered free trials on all 3G TV content until the end of 2005. In 2006, charges will range from 50 cents to less than S\$3 per unlimited channel. SingTel feels the main obstacle to 3G adoption is that people still perceive this service as expensive; however, it argues that its charges for video calls are the same as those for voice calls, and that data usage is 30% cheaper on 3G. To encourage higher 3G take-up, SingTel is lowering its margins for the initial period, in the hope that the increase in usage and revenue will more than compensate for the margin sacrifice in the long run. The operator plans to launch two more 3G initiatives by year-end 2006: Video Call on Broadband and 3G Live Cam.

With mobile music becoming widespread, mobile video content cannot be far away, as more video-enabled handsets hit the streets and 3G networks continue to launch across the region. While 3G pioneers like "3" and DoCoMo have geared their video marketing rather heavily to consumer application like video calls and videoconferencing, the big video applications tend to be entertainment. SingTel is working to build buzz by offering its customers music videos that debut on their 3G network before they are released through traditional channels, such as TV and music stores. They also launched a Singapore's Best Videos competition, in which subscribers were paid S\$ 50 if their video clips were published.

SingTel has also joined with Microsoft to offer subscribers access to mobile content and entertainment, including music videos. The service is designed to give SingTel subscribers with Windows Mobile-based devices better access to content downloads. Based on GPRS and SMS, the service will allow Windows Mobile users in Singapore to tap into content from SingTel's own Ideas content-download service, television channel AXN, Microsoft,

and numerous others. The content includes music videos, movie trailers, ringtones, and news about Xbox games and events.

One concern for 3G video is the success of the new iPod video player, which offers a 2.5" screen and a set price for videos, rather than the variable price of a download over a 3G network. Consumers may well continue to prefer the ease-of-use, quality of picture and affordability of a dedicated player. The new Sony PSP and Nintendo DS portable game players may well dominate, when serious game players compare them to the smaller screens and keypads of a mobile phone.

Another possibility for mobile video is being led by MediaCorp, a major Singaporean media organization (and a shareholder in MobileOne). MediaCorp has partnered with Nokia and MobileOne to test Nokia's Digital Video Broadcasting-Handheld (DVB-H) standard. The standard combines traditional television broadcast technology with elements such as mobility, smaller screens, indoor coverage, and optimized batteries. To receive the live television broadcast, the Nokia 7710 is paired with a Nokia streamer. MediaCorp hopes to develop a business model around the technology, which will enable new generation mobile phone users to access TV programs. DVB-H was showcased at Nokia's annual Nokia Connection and the Broadcast Asia events, both held in Singapore in June 2005. DVB-H appears to be gaining traction among vendors. Intel, Motorola, Nokia, Texas Instruments, and Crown Castle (the US cell tower operator that is building a DVB-H network in the US) have formed an alliance to promote the DVB-H standard. If there is traction for this type of offering, operators are not likely to be behind.

We think demand for Mobile TV certainly exists in Singapore, although kinks such as suitable content and network performance will need to be removed from the system. In other markets, the reviews are mixed. In the UK, for example, O2 and broadcasting company Arqiva said their mobile TV trials showed consumers were willing to pay between £8 (\$14) to £10 (\$18) for the service. The trial of 375 O2 users offered a choice of 16 channels. O2 says 83% of users were satisfied with the service and 76% indicated they would take it up within 12 months. It is to be seen what the actual take-up is in 12 months. On the other hand, Mobile TV services in Germany may not be impressing consumers due to poor network performance, lack of compelling content, or inadequate devices. A report by Strategy Analytics shows T-Mobile's Handy TV out-scored Vodafone Live! Mobile TV, but users were not impressed by the experience delivered by either services.

Mobile Messaging

For all the talk about mobile multimedia, text messaging is still the key data application. SMS accounts for the bulk of data traffic in Asia, not to mention revenues. For most operators in the region, excluding Japan and South Korea, text messaging accounts for between 85% and 95% of data revenue.

In the Philippines, the world's texting capital, the phenomenal growth of SMS, with the average Filipino sending around 240 text messages per month, has helped boost data's contribution to revenues to 45% of the total, the highest in the region. The same scenario is also starting to take shape in Indonesia and Vietnam, where text messaging provides a cheaper alternative to voice calls.

In developed markets like Singapore, operators also report significant growth in SMS

usage. StarHub claims the average originating customer typically sends more than 100 SMS messages per month. While text messaging will continue to dominate Singapore operators' data landscape during the next few years, we are seeing signs SMS revenue growth is starting to slow. Price discounts and the bundling of free SMS have stimulated an increase of SMS traffic, but have not increased revenue. New customer additions also have driven volume.

Over the long term, Singapore operators realize they must continue to develop and market a broad range of applications and content services, to stem ARPU decline and maintain growth. While SMS ARPU will decline, ARPU of P2P MMS will increase substantially over the forecast period. As packet data tariffs fall and a large number of handsets are equipped with native email and IM clients, the use of other messaging applications will grow in the mature Singapore market.

5. Singapore Mobile Operator Outlook

5.1. Industry Strategic Scenario

Singapore has one of the most advanced telecom infrastructures in the world. The country's small size, high national income, and government commitment to developing it into a premier telecom and broadcasting hub within the region, have contributed to making Singapore a leader among Southeast Asian countries. Accelerated liberalization of the telecom industry has led to competition in almost every segment of the industry. Singapore has attained the status of a market leader in the telecommunications industry through development of a high-quality, progressive regulatory telecom environment, generating a highly competitive market. Although the incumbent company, SingTel, continues to play a major role in the sector, liberalization has led to the entry of a host of new operators into the market.

The government's vision to transform the country into a global information and communications technology (ICT) capital by the year 2010 is further stimulating demand for information technology (IT) products and services. Singapore has benefited from being a major producer of electronics goods, a high population density and a 100% urbanization rate, all of which has made the provision of the infrastructure required to wire the nation relatively easy.

Our outlook for overall investment in telecom is modest, partly because much of the infrastructure is already in place. Nevertheless, an ongoing upturn in the local economy has helped telecom investments since early 2004, although it will remain well below the levels experienced in the mid- to late 1990's. Furthermore, despite saturation of the mobile phone market, there are signs the adoption of 3G mobile phone services has started to drive demand for phones and equipment, a trend that will accelerate in 2006. Thus, demand for a new generation of phones is expected to be supported by new applications.

5.1.1. Regulatory Developments

SingTel, MobileOne and StarHub were required to have fully functioning WCDMA networks launched by the end of 2004, a deadline imposed by the regulator, Infocomm Development Authority (IDA). This was not a deadline for the commercial launch of 3G services; however, IDA made it clear to operators that if, during testing in January 2005, any were found to have a weaker network signal than was mandated, the operator would be subject to a \$1 million fine or even have its licence suspended. The three conducted network trials, and ensured their signal strength met requirements set by IDA. Authority engineers have been cruising down the main roads and most remote corners of Singapore, using software programs to monitor 3G signal strengths.

IDA also announced that mobile operators are now free to charge different rates for calls originating from 2G and 3G handsets. In the past, IDA did not allow differentiated pricing except when it was offered on a short-term, promotional basis or limited to specific users. According to IDA, at the time differentiated pricing favoured those operators with significantly larger subscriber bases, because it could potentially discourage consumers from switching operators, and hinder the development of effective competition in the mobile market. Now, all three incumbent operators can each charge different prices for calls made between

their own subscribers, as well as for calls made between their subscribers and those of other networks. Therefore, Singapore operators have more flexibility in pricing their service packages and promotions.

This latest development reflects the regulator's recognition that the mobile market in Singapore is now more mature and competitive. IDA has also noted that all three mobile operators, have successfully met their contractual obligations to complete nationwide roll-outs of 3G systems and services by the end of 2004.

IDA is leaving operators to define their own business strategies for 3G, and determine how they present the 3G experience to customers. Operators are welcoming this decision, as it will allow more creativity in pricing and packaging. Some operators are already practising differentiated pricing to a limited extent.

In the government's latest anti-terror measure, Mobile phone subscribers with prepaid SIM cards are now required to register with service providers. The government ruled that existing prepaid SIM cards not registered by May 2006 will be deactivated. This ruling will affect more than 1.4 million prepaid SIM subscribers, who make up about 35% of the mobile market. Singapore's step follows similar measures taken by countries such as Malaysia, Thailand, and the Philippines.

5.1.2. Competitive Developments

In our view, there may be consolidation in the sector sometime in 2006 or 2007, as the Singapore market approaches saturation and pressure on margins increases. With limited prospects for growth, there has been speculation that MobileOne could become a takeover target, a possibility its CEO, Mr. Neil Montefiore, has not ruled out. Such talk of an impending MobileOne take-out has been around since at least 2003. At that time, StarHub's major shareholder, government-linked Singapore Technologies Telemedia (STT), said it was keen on MobileOne. At that point, STT CEO, Mr. Lee Theng Kiat, said in an interview with Reuters: "The Singapore market cannot support too many players, and more than two is too many. Personally, I believe M1 and StarHub share a lot of common areas. If there is a time and place for the two companies to come together, it is definitely an eventuality that we will explore."

More recently, however, there has been a major change in MobileOne's shareholdings. In August 2005, Telekom Malaysia and investment firm, Khazanah, bought a major stake in MobileOne, previously held by Cable & Wireless and PCCW. Since then, they have been buying up MobileOne shares on the stock market, and apparently hold at least 25% of MobileOne's common shares. This acquisition by a Malaysian operator and investment house has led to speculation that StarHub itself may be an acquisition target. StarHub's other key shareholders, including NTT Investment Singapore Pte. Ltd. (10.3%), MediaCorp Pte. Ltd. (13.7%), are also known to be willing sellers at the right price.

We think a StarHub takeover of MobileOne makes better sense. While StarHub is now free cash-flow positive, cable TV remains its Achilles' heel. MobileOne would give StarHub access to its free cash flow, which was S\$163 million in 2005. For vendors, there are two implications:

- While 3G network roll-outs have already occurred separately for the two entities, we think that the merged entity could enjoy significant savings of S\$300 – S\$450 million over the next 10 years on network CAPEX, and annual savings of S\$45 million on operating expenditures. This is a hit for Nokia, since both StarHub and MobileOne selected Nokia as the vendor for their 3G network roll-outs.
- For content providers, a StarHub takeover of MobileOne would mean a shot in the arm for content development. StarHub is very much a regional media “convergence” play, and the merged entity will provide a unique media offering to consumers throughout the region.

Two other competitive developments are worth mentioning, although impacts are unclear at this point:

- First, the introduction of wireless broadband or WiMAX in Singapore could complicate the competitive landscape. In May 2005, six firms, including four existing operators, paid S\$8.8 million (\$5.24 million) for spectrum and licenses. The four incumbents, SingTel, StarHub, MobileOne and Pacific Internet, were required to deploy within 18 months of the issue of 2.5-GHz band spectrum, for which equipment is already available. Corporate data services provider, Qala and Inter-Touch, which manages internet services for hotels, have 36 months to deploy. It is not yet clear to us how much WiMAX and 3G platforms will affect each other, or which may have more competitive advantage over the other and in which services. Some observers have even gone as far to speculate WiMAX will replace 3G. In our view, it is equally possible that 3G technology evolution could impact on prospects for WiMAX.
- Second, the decision by IDA to order operators to share their infrastructure for broadcasting services will likely have a positive impact on MobileOne and a negative impact on StarHub. StarHub is Singapore’s second fixed-line operator, after SingTel, and the country’s only cable TV provider. IDA’s decision would allow MobileOne to offer cable TV services to customers, which has been the unique value proposition of StarHub. Currently, MobileOne has a contract with SingTel to provide local lease-circuits. We do not think MobileOne will move into the cable TV broadcasting space in a big way, partly because of the limited size of the domestic Singapore market. Nonetheless, IDA’s decision does remove an important hurdle for MobileOne to diversify away from its pure-play wireless operations. MobileOne’s demonstration of Nokia’s DVB-H standard may signal a move by the operator to move into broadcasting.

5.2. Mobile Operator Competition Analysis

5.2.1. Singapore Telecommunications Ltd.

Financial Metrics (SingTel and SingTel Group as Indicated)

Liquidity Ratios

Current Ratio (Group): 0.95
Quick Ratio (Group): 0.92
Inventory Turnover (days): n/a

Debt Ratios

Asset Coverage (Group): \$1,219
Cash Flow/Total Debt Outstanding (SingTel): 24.9%

Profitability Ratios

Operating Profit Margin (SingTel) : 41.5%
Net Profit Margin (SingTel): 35.0%
Pre-Tax Return on Assets (SingTel): 7.1%
Pre-Tax Return on Equity (SingTel): 10.5%
Debt- Adjusted Dupont ROE: 3.7%

Total Subscribers Base: 1,620,000*
Net Subscriber Growth, 2005: +5.3%

ARPU per month (Pre-Paid): \$7.22
ARPU per month (Post-Paid): \$42.69
Data Services as a % of ARPU: 23.0%
Post-Paid Churn per Month: 0.9%

Management Background:

SingTel is Singapore's incumbent monopoly telecom operator. Although only around 7% of the company's share capital was sold in the privatization of SingTel in 1993, the government's share has been further watered down since then. SingTel enjoyed a monopoly until the liberalization of the Singapore telecom industry in April 2000. The company is a major international investor in its own right, with over \$3 billion invested in close to 20 markets.

The Singtel Group CEO is Mr. Lee Hsien Yang, the younger brother of the current Prime Minister, Mr. Lee Hsien Loong, and son of the former Prime Minister, Mr. Lee Kuan Yew. Mr Lee is a graduate in engineering from the University of Cambridge, and obviously carries significant political clout.

SingTel announced a new organisational structure in February 2006, saying this would help to strengthen its operations. Two new CEO positions were created, one each to oversee the domestic and foreign markets. The new CEO of SingTel International is Ms. Chua Sock Koong who is also group CFO. We see these changes in organizational structure as largely a formality, since Ms. Chua has long been the driving force in SingTel's overseas markets. She is also supported by others with strong international credentials including Mr. Paul O'Sullivan (CEO, SingTel Optus) and Mr. Lim Chuan Poh (Executive Vice President, Strategic Investments).

Strategic Analysis:

SingTel is Southeast Asia's largest telecommunications operator, with stakes in associated companies and a combined cellular subscriber base of more than 78 million, as of end December 2005. This number falls to about 30 million when adjusted for the percentage of equity ownership that SingTel holds in each of its associate operators. Within Asia-Pacific, only DoCoMo, China Mobile, and China Unicom have a larger customer base, although SingTel has the distinction of being the largest multi-market mobile operator.

In Singapore, SingTel Mobile serves only 1.6 million customers, with 40% of customers

provided with a dual-band GSM900 and GSM1800 service and coverage, supported by over 1,900 base stations. Faced with limited growth prospects in its home market, SingTel started expanding overseas early, and is now active in five markets in South and Southeast Asia, as well as the more mature markets of Singapore and Australia. Unlike DoCoMo, SingTel has recently had a coherent regional strategy, divesting its European investment and is now focused on primarily Asian markets. SingTel has stakes in: Bharti (investment to date of \$930 million and a 30.6% stake), Pacific Bangladesh Telecom (\$123 million, 45%), Advanced Info Services (\$523 million, 21.5%) in Thailand, Telkomsel (\$1.16 billion, 35%) in Indonesia, and Globe Telecom (\$530 million, 44.6%) in the Philippines.

SingTel's overseas investments will allow it to create a mobile "life-cycle", where the experiences and new service launches in developed markets can be re-used to assist network and service roll-outs in less mature markets. This will mean that as telecom markets continue to be liberalized, SingTel can offer both operators, in which it wants to acquire stakes, and the nation's government a clear-cut value proposition. It also means revenue growth for SingTel in the medium- to long- term. Operators, such as Globe in the Philippines and Advanced Info Services in Thailand, will give SingTel revenue growth in the medium-term. Others, such as Bharti in India, Telekomsel in Indonesia, and Pacific Bangladesh Telecom, will provide SingTel with growth opportunities in the medium- to long-term. Therefore, we think these investments make SingTel an important regional play, with excellent growth prospects going forward.

One key market missing from the list is Malaysia, which refused SingTel's attempts to take over TIME Telekom in 2000, due to political pressure driven by the two countries' long-standing rivalry and the heavy government stake in SingTel. Recent events seem to suggest there may yet be hope for a Malaysian deal. In August 2005, Telekom Malaysia was allowed to take a 30% stake in MobileOne, following an earlier deal by Temasek, the Singapore government's investment vehicle, in which it took a 5% stake in Telekom Malaysia.

Almost all of SingTel's regional business is in the wireless space. As the incumbent telecom operator in the Singapore market, SingTel provides a broad range of telecom services. The group has been working on trimming this range of services, to focus more on business lines with a strong and profitable future. SingTel has continued to reduce its interests in non-core businesses, such as Singapore Post. In December 2005, the company further reduced its stake in Singapore Post, from 30.85% to 25.87%, and intends to liquidate the remainder through a strategic sale, likely in 2006 - 07.

SingTel is also leading an initiative with eight other operators in a regional GSM alliance, called the Bridge Mobile Alliance (BMA), which launched in Singapore in June 2005. Six of the eight members are SingTel subsidiaries or associates. BMA is a separate company, funded by operators to provide seamless regional service, including roaming, pre-paid subscriptions, enterprise and concierge services. The company aims to deliver a "seamless roaming experience" for customers at home and when traveling in member networks, and to develop innovative services beyond the reach of individual operators, targeted at Asian customers. Bridge says operator collaboration will lead to more development of Asian-focused mobile technologies, and is working with technology partners to develop new location information and regional content services, as well as 3G value-added offerings.

Financial Analysis:

Of the three operators in the Singapore market, SingTel Group has, by far, the largest asset base (26x larger than MobileOne). Given that SingTel's business strategy has long been to expand into overseas markets, we think the closest comparable players are DoCoMo and South Korean telecom operators. Both SingTel and DoCoMo have staked their future on international expansion, given the mature nature of their domestic markets. This is even more important for SingTel, since its domestic market really does not provide it with the type of economies of scale enjoyed by either DoCoMo in Japan or SK Telecom in South Korea. Another comparable player is Japan's KDDI, which also reports its numbers on a consolidated basis, and has fixed-line operations like SingTel. Therefore, in what is to follow, we compare SingTel not to its peers in Singapore, but to some of the larger wireless telecom players in Asia.

Liquidity:

With a Current and Quick ratio of less than 0.95 and 0.91 respectively, SingTel's liquidity position is not as strong as it could be (DoCoMo's current ratio was 1.95). We do not think this is a major constraint for SingTel, since most of its current assets are in the form of cash, cash equivalents, and accounts receivables, rather than inventory. SingTel also has reserves of \$14.95 billion, about 2.8x its current liabilities.

SingTel Group's debt ratios are not comparable with its peers, reflecting the firm's aggressive push overseas. Its asset coverage ratio was S\$1,219 is among the lowest in the region. Again, we do not think that the low asset coverage ratio is an issue, primarily because SingTel has significant cash reserves and something that other operators do not enjoy – the explicit support of the Singapore government.

Profitability:

Compared to DoCoMo and KDDI, SingTel has strong profitability metrics, reflecting its investments in high-growth wireless companies in Asia. Its operating profit margin stood at 45.1% (compared to 33% for DoCoMo and KDDI), and its net profit margin was 35% (compared to 26% for DoCoMo and 7% for KDDI). These operating margins are even above its closest competitor in Singapore, the pure-play MobileOne, again reflecting SingTel's profitable investments overseas.

Risks:

Unlike DoCoMo, SingTel's international investments have paid handsome dividends to the firm. There is a risk, however, that SingTel's overseas investments could take some time to mature. Certainly, markets like India and Bangladesh will experience low levels of ARPU for a long time, and, in that sense, may be tying up SingTel's capital in high-volume activities. The low spending power of the mass market in these economies also presents a challenge, as new technologies such as 3G are costly and provide questionable benefits for the underemployed youth that make up the bulk of customers in these markets.

Another challenge for SingTel's international operations is brand recognition and brand equity of its associated companies. IEMR's 2005/06 Brand Image Survey of mobile operators in India and Indonesia provides insights into the types of challenges SingTel faces in those markets. In India, for example, our Brand Image Survey found that AirTel (Bharti's brand in India) had a share of mind of only 30.8% compared to Reliance (51.2% share of mind) or BSNL (37%). Both Reliance and BSNL had a lower market share than AirTel, indicating

that these firms are able to leverage their brand recognition in other sectors (Reliance is a diversified conglomerate and BSNL is the incumbent fixed line operator).

Most of the firms acquired by SingTel are not part of diversified brands and therefore do not have the same level of recognition as their competitors in domestic markets. We see this as a challenge for SingTel in its effort to generate economies of scale from minority stakes across the region. While there are a total of 78 million subscribers in the SingTel Group, SingTel only directly controls 7 million subscribers through its Singapore and Australian operations. SingTel hasn't achieved consistency of brand, services, platforms, language input, or functionality across the group. As well, SingTel has been unable to customize handsets or truly differentiate services across the region - benefits that global operators such as Vodafone and Hutchison have been able to capitalize on.

Having said that, SingTel's regional expansion strategy seems to be working, with about 75% of SingTel Group's total revenue in FY 04/05 coming from its overseas associates. However, building further on this strategy may prove difficult. There is increased competition from a growing list of international operators seeking to escape slowing demand in their home markets. An obvious market for SingTel to add would be China, but the experience of other operators there is not encouraging, and there are a number of suitors for a few qualified local operators.

To some extent, the Bridge Mobile Alliance is an effort to address this challenge of attracting more operators; however, the success of such alliances in the past has not been great, and the realized benefits sometimes elusive, as the DoCoMo experience shows. Certainly, the benefits for regional-roaming customers are considerable, allowing them to experience many home-market services while abroad. While these are valuable customers, their numbers are limited, especially when compared to the masses of new customers in markets like India and Indonesia. There is a risk that this alliance could fall apart, as the members find it difficult to reconcile the needs across a very diverse range of markets.

As experience in Malaysia has shown, it can also be politically difficult for a largely government-owned entity like SingTel to take a stake in certain local operators. These sensitivities may also make it difficult for SingTel to increase its stake to a majority interest. Again, without a controlling interest in many of its associate operators, the company may find its efforts to reap greater synergies stymied.

Financial Metrics**Liquidity Ratios**

Current Ratio: 1.98
 Quick Ratio: 1.94
 Inventory Turnover (days): 6

Debt Ratios

Asset Coverage : 1,192
 Cash Flow/Total Debt Outstanding: 77.38%

Profitability Ratios

Operating Profit Margin: 42%
 Net Profit Margin: 26.1%
 Pre-Tax Return on Assets: 21.0%
 Pre-Tax Return on Equity: 43.3%
 Debt- Adjusted Dupont ROE: 17.6%

Total Subscribers Base: 1,246,000*
 Net Subscriber Growth, 2005: +7.2%

ARPU per month (PrePaid): \$12.63
 ARPU per month (PostPaid): \$36.14
 Data Services as a % of ARPU: 19.6%
 PostPaid Churn per Month: 1.5%

Management Background:

MobileOne was formed in August 1994, to bid for Singapore's second mobile phone license. It was awarded mobile phone and radio-paging licenses in May 1995, and launched its services in April 1997. Keppel Group, Singapore's largest industrial conglomerate, owns 42% of the company. A local publishing and printing group, Singapore Press Holdings, Malaysia Telekom, and a Malaysian government-linked investment firm, Khazanah, are also major shareholders. MobileOne became a public company in 2002.

MobileOne has been led by CEO Neil Montefiore for most of its existence. Prior to his appointment in 1996, Mr. Montefiore was the Director of Mobile Services at Hong Kong Telecom CSL Limited. An engineer by training, Mr. Montefiore joined The Cable and Wireless group in 1976, and held various marketing and engineering management positions in Hong Kong, Bahrain, Saudi Arabia, and the United Kingdom. In 1983, he joined Cable and Wireless Systems Ltd, and was appointed as its CEO. In 1989, he moved to the UK as Managing Director of Paknet Ltd., a joint venture owned by Cable and Wireless PLC and Vodafone PLC, which developed and launched the world's first public packet radio data network. In 1991, Mr. Montefiore returned to Hong Kong as Managing Director of Chevalier (Telepoint) Ltd until 1995.

Mr. Montefiore is very well regarded within the industry in the region, and has generally done a good job in building MobileOne into Singapore's second largest operator from the ground up, since he joined the company in 1996. MobileOne has become a dividend play for the wireless telecom sector in Singapore, however, and Mr. Montefiore must be thinking about the next steps for MobileOne and himself.

Strategic Analysis:

MobileOne's strategy in the past has been clear - compete on price and service offerings with the market leader, SingTel. While StarHub has caught up to MobileOne's #2 slot in the Singapore market, we think MobileOne has done a better job of maintaining a larger share of the more lucrative post-paid subscribers than StarHub (but still not up to the level of incumbent SingTel). In our view, the end of the government's mobile phone registration period for pre-paid subscribers will lead to the termination of a number of unregistered

pre-paid subscribers. The picture of true subscriber numbers should then become clear when this occurs in a few months' time.

There is speculation that MobileOne will be taken over eventually by StarHub. Mr. Montefiore is on record as not dismissing the possibility of a takeover. As mentioned above, we think such a takeover would deliver significant value to MobileOne's shareholders in the long-term. Thus, management may be in a "pretty up the asset" mode, in the hope that shareholders receive good value for their investments.

There are a number of other options available to MobileOne, should a merger not happen. MobileOne may decide to enter the MVNO market. By opening up its network, MobileOne will gain a steady income stream and higher profit margins, leaving others to tackle bundling of products across voice, data, access, and fixed-line services.

Financial Analysis:

Our financial analysis suggests that MobileOne is in a strong position, with most financial indicators showing the firm is able to maintain margins in a saturated market and push inventory through to the end-user. Most indicators are at par with leading wireless operators, such as DoCoMo or SingTel.

Liquidity:

With a working capital ratio of 1.98, and quick ratio of 1.94, MobileOne has one of the strongest balance sheets and cash positions among Asia-Pacific operators. The company's inventory turnover of just six days is comparable to many in emerging markets, probably reflecting the large role third-party retailers play in supplying handsets to the Singapore market. The cash position of the company increased by 56% over the previous year, due largely to the reduced capital expenditure in the current year, now that 3G infrastructure is mostly in place.

Debt:

This year, MobileOne has made significant strides in reducing its overall debt, which dropped by 46%, compared to the previous year. This is reflected by asset coverage of 1,192 and a 77% cash flow/debt outstanding ratio. The company also drastically altered its gearing this year, dropping its debt-to-equity ratio from 34% last year to 16% this year. This reduced debt load should benefit the company going forward, as it looks to slower growth in the years ahead.

Profitability:

IEMR's standardized profitability calculations show that operating profit margins at MobileOne are comparable to the market leader, SingTel. While our measure of operating profit margin of 42% is particularly strong, we question the company's ability to maintain this level of profitability as the Singapore market continues to mature. A pre-tax return on assets of 21%, and pre-tax return on equity of 43%, indicate the company is free cash-flow positive, and is a good dividend play in the short- to medium- term.

Risks:

MobileOne should be busy in 2006, as it continues to drive the uptake of its 3G services in an unconvinced market. We think the company will need to pay particular attention to maintaining pressure on its monthly churn rates, as competition in subscriber services heats up in Singapore.

In our view, the single most important challenge facing MobileOne, as an independent

entity, is its ability to differentiate its offering in a highly competitive market. In December 2005, MobileOne announced an alliance with Vodafone, through which its subscribers received discounts of up to 60% on data charges for customers roaming on Vodafone networks overseas. The company will need more initiatives such as the upcoming roll-out of new services designed to target the Filipino community in Singapore (there are approximately 130,000 Filipinos working in Singapore).

In the long-term, however, it is clear that a pure-play mobile player in a relatively small, mature market, such as Singapore's, will have limited growth prospects and therefore, will always be an acquisition target.

5.2.3 StarHub

Financial Metrics (Group)

Liquidity Ratios

Current Ratio: 0.68
Quick Ratio: 0.66
Inventory Turnover (days): 11

Debt Ratios

Asset Coverage: 1,982
Cash Flow/Total Debt Outstanding: 63.5%

Profitability Ratios

Operating Profit Margin : 16.3%
Net Profit Margin: 16.3%
Pre-Tax Return on Assets: 12.7%
Pre-Tax Return on Equity: 23.8%
Debt- Adjusted Dupont ROE: 10.5%

Total Subscribers Base: 1,328,000*
Net Subscriber Growth, 2005: +22.5%

ARPU per month (Pre-Paid): \$14.2
ARPU per month (Post-Paid): \$42.02
Data Services as a % of ARPU: 16.0%
Post-Paid Churn per Month: 0.9%

Management Background:

StarHub won fixed and mobile-phone licenses in April 1998, and launched its cellular services in April 2000. Fixed-line services were launched in December 2002. In May 2002, StarHub and Singapore Cable Vision (SCV) merged, with the newly formed cable company, a subsidiary of StarHub, called StarHub Cable Vision. Post-merger, major shareholders include: Singapore Technologies Telemedia (STT) Communications Ltd., a Singaporean government-backed investor in high-tech firms; the investment arm of NTT DoCoMo, NTT Investments Singapore Pte Ltd.; and local broadcaster, MediaCorp Pte Ltd.

Mr. Steven Clontz has been StarHub's President and CEO since January 1999. He is a 33-year veteran of the telecom industry, and began his career as an engineer with Southern Bell in 1973. In 1987, he joined BellSouth International, and during his stint there, held several senior executive positions, including as three years as President of BellSouth Asia Pacific. Following this, he was President and CEO of IPC Information Systems Inc., based in New York.

We think that, over the years, Mr. Clontz has put together a strong second-tier management team, with a broad range of experiences needed to implement StarHub's diversified telecommunications portfolio. These include: Mr. Mike Reynolds, former President of BellSouth's China operations; Mr. Alex Siow, a well-known industry leader in Singapore; and Mr. Chan Kin Hung, former head of MCI WorldCom's Singapore operations.

Strategic Analysis:

With its latest offerings StarHub is aiming to differentiate itself from its competitors, focusing on a strategy it calls "hubbing". Customers are offered a package of mobile, cable, and broadband internet services in an attractive bundle, while the company makes an effort to offer focused content across the three platforms. For example, scores and highlights of World Cup soccer are available on cable, through the internet, or via mobile phone. StarHub has created content teams responsible for delivering this type of infotainment to select customers across their multiple platforms.

We think hubbing provides StarHub with enough of a differentiator to create a captive market and remain the #2 player in Singapore. On a gross subscriber basis, StarHub is already the #2 player in Singapore. While StarHub has seen significant gains in market share over the past year, most of these have been in the pre-paid segment of the market. Pre-paid subscribers jumped 43% (y-o-y ended September 2005). On a post-paid subscriber basis, StarHub continues to lag behind MobileOne; however, StarHub's post-paid ARPU is 18.3% higher than MobileOne's ARPU. In our view, this is a clear indication of the type of premium StarHub's customers are willing to pay, and StarHub is able to capture, for its bundled services.

We think, however, that maintaining the momentum going forward in a saturated market will prove challenging for StarHub. Data may provide StarHub with some slack. StarHub's GPRS and MMS traffic grew by 74.3% and 61.8%, respectively (y-o-y ended September 2005). StarHub currently had about 25,000 3G subscribers by year end 2005 - compared to SingTel's almost 50,000. Take-up of StarHub's 3G services has so far been in line with its expectations, although not spectacular by any means. StarHub aims to attract 50,000 subscribers to i-mode service by year end 2006.

The most important strategic issue facing StarHub in the 2006-07 period will be the likely merger with MobileOne. A merged entity would be better placed to compete with SingTel in the domestic market, and may even provide the merged entity with enough scale to make limited forays regionally, using its hubbing strategy.

Financial Analysis:

Of the three operators in Singapore, StarHub is by far the least profitable. While it has become free cash-flow positive in the last three years, this has not always been the case, primarily because StarHub's cable division.

Liquidity:

With a working capital ratio of 0.68, and quick ratio of 0.66, one can see why it would be important for StarHub to create some room for itself through a merger with MobileOne, which had liquidity ratios that were 3x higher. StarHub's inventory turnover of 11 days reflects its broader base of operations, compared to MobileOne.

Debt:

We are comfortable with StarHub's Debt metrics. Asset coverage was S\$ 1,982 and its Cash Flow – Total Debt Outstanding ratio was 63.5%. These numbers are broadly in line with other similar operators.

Profitability:

IEMR's standardized profitability calculations show operating profit margins at StarHub are below the industry average for the region. StarHub's operating profit margins were more than 2x lower than SingTel's and MobileOne's margins, again reflecting the drag of its cable TV operations.

Risks:

In end February, StarHub announced operating profits of S\$ 256.30 versus an operating loss of S\$16.70 in 2004. These profitability numbers have been driven by mobile revenue growth, which we expect to taper off in the medium term in the absence of a strategic move by StarHub.

Unlike SingTel and MobileOne, StarHub's 3G content is available to subscribers using both GSM/GPRS and WCDMA handsets. This is likely to be attractive for subscribers who are keen to try out the 3G content, but are not yet willing to upgrade to a WCDMA handset. This strategy may increase interest in revenue in the short term, but also risks delaying the uptake for 3G and the increased revenues that should bring.

In November, StarHub launched i-mode internet service on both its 2.5G and 3G Networks. In many ways, i-mode is tried and tested, so all of the bugs have been worked out, and it is a proven success in other markets, especially Japan. This makes i-mode easy to use, and ensures there is sufficient content that customers are willing to pay for. In that sense, it is a much less risky platform; however, StarHub is handing over a considerable portion of the pie, by sharing up to 85% of revenue generated by i-mode to content providers, which may hamper its efforts to increase profitability over the longer term.

The greatest risk for StarHub (and MobileOne) in the medium-term is what happens if the Singapore government does not approve any potential merger on competition grounds. As rejected mergers in other sectors have shown, once mergers are rejected by the regulator, it becomes hard for the merging entities to come together again at some later date. Therefore, StarHub will have to play its cards very well indeed, to ensure that a merger does occur successfully, and this involves very close consultations with Singapore regulators.

Annex A: Financial Metrics Methodology

We use nine standardized indicators to analyze the financial status of handset manufacturers and operators in the wireless space. These span three areas: liquidity, debt, and profitability. The indicators we use are calculated as follows:

Liquidity

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$$

$$\text{Inventory Turnover} = \frac{365}{(\text{Cost of Goods Sold}/\text{Inventory})}$$

Debt

$$\text{Asset Coverage} = \frac{\text{Total Assets} - \text{Deferred Charges} - \text{Intangible Assets} - [\text{Current Liabilities} - (\text{short-term debt} + \text{Current Portion of long-term Debt})]}{\text{Total Debt Outstanding}/\text{Currency Unit 1,000}}$$

$$\text{Cash Flow : Debt Outstanding} = \frac{\text{Net earnings (before extraordinary items)} - \text{equity income} + \text{minority interest in earnings of subsidiaries} + \text{deferred income taxes} + \text{depreciation} + \text{Deductions not Paid in Cash}}{\text{Total Debt Outstanding}} \%$$

Profitability

$$\text{Operating Profit Margin} = \frac{\text{Net Sales} - \text{Cost of Goods Sold}}{\text{Net Sales}}$$

$$\text{Net Profit Margin} = \frac{\text{Net Earnings (before extraordinary items)} - \text{equity income} + \text{minority interests}}{\text{Net Sales}} \%$$

$$\text{Pre-Tax ROA} = \frac{\text{Net Earnings (before extraordinary items)} + \text{income taxes} + \text{total interest charges}}{\text{Total Assets}} \%$$

$$\text{Pre-Tax ROE} = \frac{\text{Net Earnings (before extraordinary items)} + \text{income taxes} + \text{total interest charges}}{\text{Value of Common Shares Outstanding} + \text{Contributed Surplus/Paid-In Capital} + \text{Retained Earnings} + \text{Other Adjustments (e.g., Foreign Exchange)}} \%$$

Rather than use “rules of thumb” to judge each of the above measures, we developed normalized indices to rank overall financial strength. For manufacturers, this was the Handset Manufacturer Financial Index (HMFI); for Wireless Operators, we developed the Wireless Operator Financial Index (WOFI). The methodology for calculating HMFI and WOFI was fairly simple:

1. We calculated the average of the liquidity (except inventory turnover), Debt (except Cash Flow: Total Debt Outstanding), and profitability measures separately;
2. We then normalized each of these measures to the minimum in the peer group to get an index number for each of these measures (minimum = 100);
3. The average of the three indices was then used to calculate a “blended index” which was again normalized to the minimum in the peer group.

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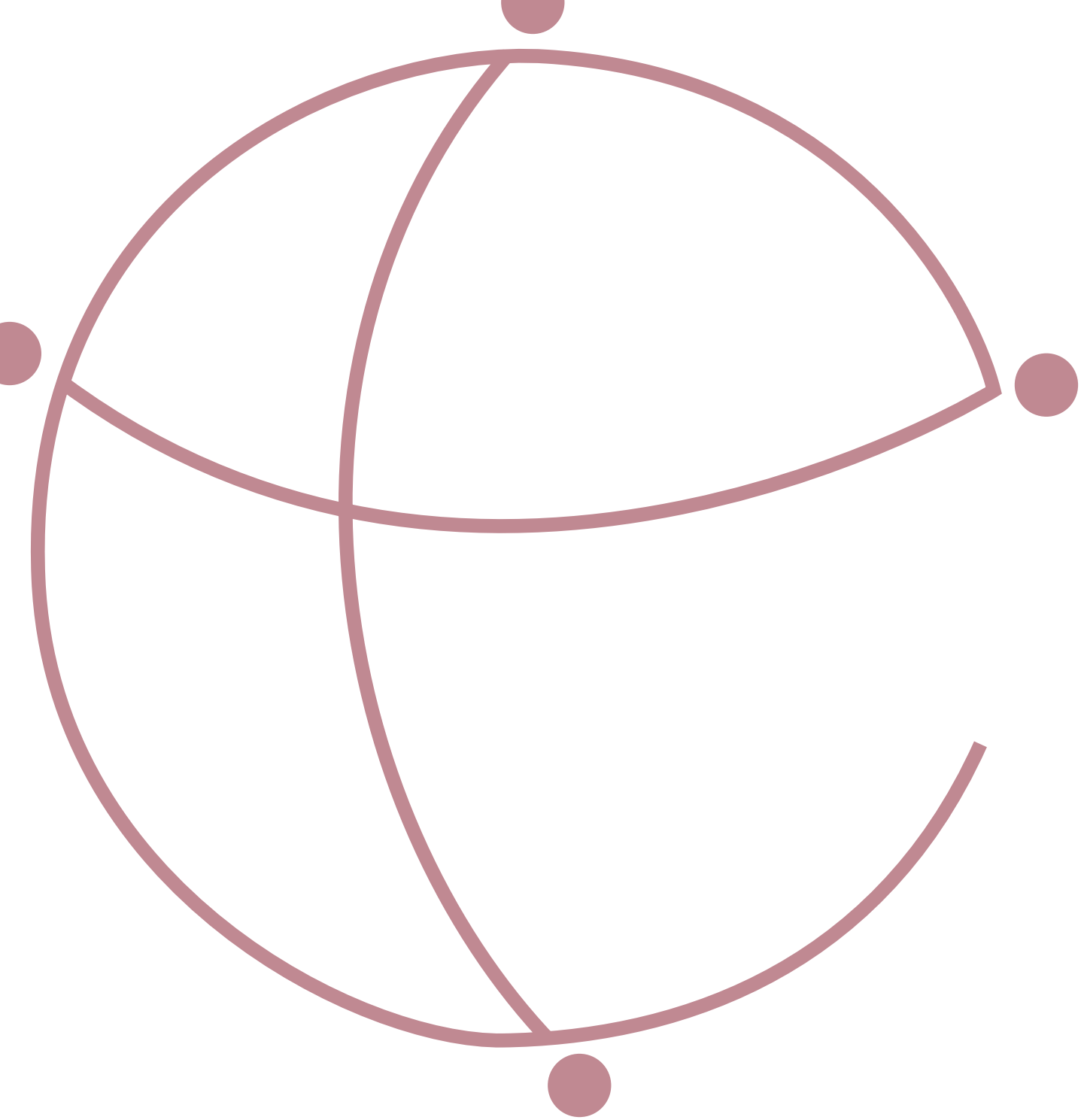
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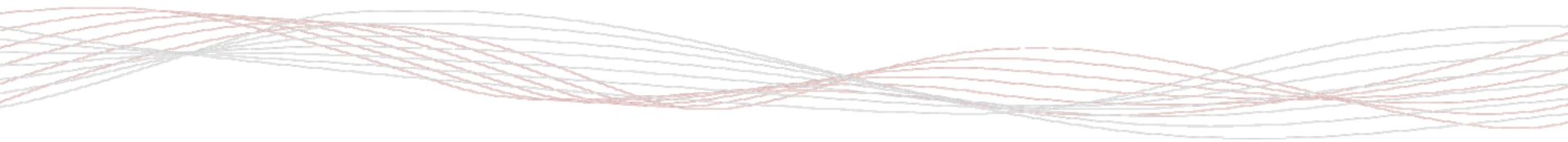
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