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**Culturecom Hong Kong:  
Building an alternative to Wintel IT systems in  
Greater China**



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**MGSM Case 2003-3**

*Culturecom Hong Kong:*

*Building an alternative to Wintel IT systems in Greater China*

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## ***Introduction***

While the strategy of platform leadership is usually taken to describe advanced firms in advanced economies bidding for supremacy in their respective industries – such as Cisco in routers, or Intel in microprocessors, or Palm in handheld devices – the case of Culturecom in Hong Kong presents unusual features. Here is a company that is barely past startup phase of a new career in IT and Chinese computing (after transforming itself from a previously well known Hong Kong publisher of Chinese newspapers and comic books) and it is already bidding to be the creator and leader of a new platform for computing in greater China based on efficient creation, processing and storing of Chinese characters and the use of open-source software such as Linux. Culturecom represents an unusual entrepreneurial combination between a smart company promoter, Mr Cheung Wai-Tung, and a visionary technologist, Mr. Chu Bong Foo, both of whom are contributing essential skills to the emergence of a new IT powerhouse in greater China.

Culturecom has developed a new series of chips that embody an advanced algorithm to intelligently create and manipulate Chinese characters, storing at least 32,000 of them in highly efficient manner within the chip itself, making for ultra-fast processing. This is the world's first chip that actually uses – builds, processes and stores – Chinese characters themselves, in its core operating system, rather than using a translation system into and from a western operating system like Windows. This series of chips – dubbed the Via Dragon chipset series -- is at the heart of a slew of new products, including low-cost PCs, e-Book readers, and mobile devices, being rolled out in Chinese markets with strategic partnerships. For example the e-Book reader is being taken up in Chinese schools in partnership with a Chinese publishing house linked to the Ministry of Education.

In parallel with these developments, Culturecom is partnering with other firms in greater China and the West to build a standard for operating systems, dubbed the Chinese 2000 operating system, based on the Midori Linux system developed as an open-source system by the leading U.S. microprocessor firm, Transmeta. Culturecom is partnering with another Hong Kong-based firm, eForce Holdings, and with Transmeta, to make the Midori Linux system the heart of a series of products based on Chinese 2000 as an effective computing alternative to Microsoft Windows and Intel (the so-called “Wintel standard”) – long an objective of Japan and non-English speaking countries, but never successfully achieved before.<sup>1</sup>

The strategy pursued by Mr Cheung and Mr Chu is breathtaking in its technical and marketing audacity. It is a classic strategy of stretch and leverage, drawing in resources from external partners to leverage the most from their own innovation, in the form of the central chip series and the Midori Linux system. The partnerships involve some of the most sophisticated firms in the developed world, including IBM and Transmeta. The only difficulty is that the duo might run out of capital before their dreams are fulfilled.

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<sup>1</sup> See the article by Takahashi and Namiki, forthcoming in *Research Policy*, for a discussion of previous efforts to break the Wintel monopoly in IT.

## ***The entrepreneur: Cheung Wai-Tung***



Cheung Wai-Tung is an unassuming man in his mid-40s, who is living his dream of harnessing technology to the development of China. Currently based in Hong Kong, as chairman of Culturecom Holdings, he is a native of Guangdong province and received his education in Shanghai in PRC. He now does extensive business with Taiwan, the PRC and greater China. He was able to seize control of the listed HK firm, Culturecom, famous for its comics, newspapers and media titles, in 1998, through his investment vehicle, Via Gold Capital, which is listed on the Sydney Stock Exchange. In the nearly five years since then, he has systematically shed the traditional publishing activities of Culturecom, and brought on new businesses in IT and Chinese computing systems and electronic books, all targeted at the greater China population. Mr Cheung was born in Shanghai, and graduated with a BA in Accounting and Finance from the Shanghai Maritime College. As befitting this qualification, he then pursued a career in shipping with the Chinese Ocean Shipping Company (COSCO), which is China's major shipping line. In 1993 he was sent by COSCO to Singapore, with the task of creating an alternative base for COSCO (in view of uncertainties surrounding the anticipated handover of HK to China in 1997). This mission was successfully accomplished, and the next year he was promoted to Vice President and sent to Hong Kong, with the goal of forming a container leasing company. This mission too was accomplished, with the listing of the company, COSCO-Pacific, on the HK Stock Exchange, and its inclusion in the Hang Seng Index. By this time, Mr Cheung was ready to go it alone, and he quit COSCO at the end of 1995.

With the backing of a group of investors, Mr Cheung went looking for an investment vehicle, in order to bring technology to the Chinese masses. He ran into a friend who had such a vehicle, Via Gold Capital, listed in Australia. This company's chief asset was a chemical plant in Guangdong, but because of permit difficulties with the China Stock Exchange, he was able to purchase the company cheaply, and sold off the chemical business. This put some capital into the company. His main chance came when he learnt that the well-known HK-based comics publishing firm, Culturecom, found itself in difficulties, with poor management and a string of losses. He was able

to make an offer, and at the end of 1998 achieved control of the company through his investment vehicle, Via Gold Capital. He is reported to have acquired a 34% holding of the company for HK\$21 million – putting a valuation of only HK\$60 million on a once proud publishing giant, and bringing it within reach of a canny entrepreneur like Mr Cheung. He at once restructured the Board, and made himself Chairman.

By the beginning of 1999 Mr Cheung was thus in possession of a substantial company -- but carrying large overheads (such as a printing press, and a newspaper) and debts, as well as mastheads and titles of comics and strips that were very popular in HK and abroad. His first acts were to slim the company down, selling off surplus assets like the printing plant, selling off a Chinese newspaper, and selling licenses to the titles so that they would generate cashflow (in the form of royalties) without carrying production overheads. In this way Mr Cheung readied the company for his goals of turning it into an IT and technology vehicle. But he still had no clear idea of how to do this. An early investment was a pointer to things to come: Culturecom was able to secure a 51% stake in the firm Q-Code Information Technology, holder and developer of the popular Q9 system for Chinese character data entry, using a keypad of 9 keys (and thus suitable for mobile devices). This is expected to bring substantial payoff as the Q9 system is installed in mobile devices, combined with Culturecom's own chipsets. Another early investment was in the wireless communications firm, Gold Mind Telecom (GMT) which secured a FWL operating licence from the Chinese government. This is now serving as the platform for an emerging broadband communications strategy for China.

The key development came in late 2000, when Mr Cheung met the visionary IT pioneer, Chu Bong Foo, through the intercession of a mutual acquaintance. The two men hit it off at once, and cemented a partnership that has been enormously fruitful. Mr Chu (known universally as “Professor Chu”) is extremely well known in Chinese IT circles as the inventor of the Chang-Jie system of character entry (building the character up through successive keystrokes adapted to the western QWERTY keyboard), which has dominated Chinese character processing since the late 1970s. Mr Chu gave away his rights to this system, and has been a legend and prolific inventor ever since. (His story is recounted below.) Mr Cheung and Mr Chu held a two-day meeting in Macao, where they went over every aspect of their future strategy, and the details of their agreement. Mr Cheung bought out Mr Chu's small company (Fighting Spirit Technology) and offered him the position of Deputy Chair of Culturecom Holdings Ltd, and 10% of the company – a generous offer. Mr Chu came on board, as chief technology officer, with a remit to develop Chinese IT as he saw fit. And this is exactly what he has done.

## ***The visionary: Chu Bong Foo***



Chu Bong Foo, now in his mid-60s, is known in Chinese IT circles as the “father of the Chinese computer.” He has been at the forefront of developments, ever since his breakthrough in the late 1970s when he devised a new system for data entry of Chinese characters, termed the Chang-Jie system. Chu Bong Fu followed up his development of the Chang-Jie input method, with the world’s first computer operating with Chinese characters, termed the *Tien Lung*. Since then he has developed a far more advanced algorithm, termed the *Chinese Character Generating System (CCGS)*. This is described as a “genetic” approach to character generation, or operating on the theory of “Chinese character DNA” – meaning that the characters are built up in a much more intuitive fashion, based on their core characteristics, such as their code, order, shape, argument, voice and meaning, rather than merely storing them and choosing them from a coded input method.

Chu Bong Foo was an unlikely technologist and revolutionary inventor.<sup>2</sup> A many talented man, he is the author of a 12-volume science fiction epic (framed in the manner of a classical Chinese novel, where each chapter is headed by a seven-character verse that captures the theme to be developed), and the inventor of numerous systems, such as a complete three-dimensional animation system. As a young man he graduated from the Taiwan Provincial College of Agriculture, and then wandered abroad, spending the next ten years in Brazil. He became fascinated by the study of Chinese characters and their roots in the Chinese culture, and in his early 40s started to think about how to capture characters in IT systems. This is when he cracked a code for entry of characters, termed the Chang-Jie system. This made him famous, and enabled him to attract students and collaborators, even though he held no formal position in a university. The next step was the development of an all-Chinese computer, developed with Acer, and launched in 1987 – the *Tien Lung*. This led to a bruising confrontation with Microsoft, which was just beginning to offer a translation of its Windows 2000 system for Chinese users. Chu Bong Foo was at the center of a campaign to market a Chinese alternative, but he was crushed by the marketing might of the Microsoft juggernaut. This was a bitter lesson, and Chu Bong Foo retired for several years to a mountain retreat in Taiwan, where he continued to work on Chinese character generation systems by himself and with students and associates. It was at this time that he developed the fundamental “genetic” basis for constructing and representing characters – along with other distractions like composing his 12-volume

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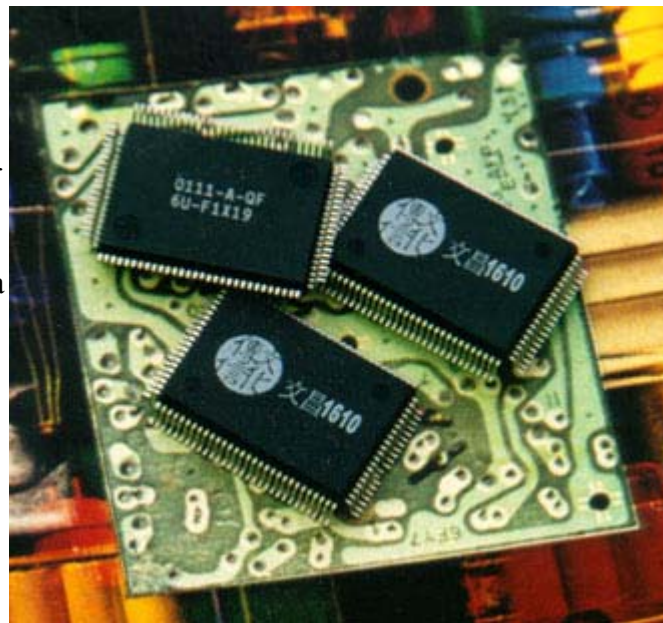
<sup>2</sup> See Teng (2002) for a profile of Chu’s career.

novel, *Cosmic Drifter*, in a burst of sustained creativity over a six month period. Chu sets this novel against a futuristic backdrop, when all humans' basic technical services are provided for, and their major problem is how to fill the hours of their contented days. In the year 2000 he was induced to meet Mr Cheung, as a man who could help him translate his dreams into reality. The two hit it off at their two-day meeting in Macao, and they have formed a powerful partnership ever since.

The first product of this partnership is a chip that embodies the algorithm for Chu's genetic creation of Chinese characters – now called the Via Dragon chip series.

### ***The Via Dragon chipset series***

The first chip that embodies the most significant Chinese character processing innovation is a single chip system (SCS) is named the Via Dragon SCS 1610 CPU. It is a 16-bit structure and generates Chinese characters for use in computer systems (as in an Operating System, or an e-book reader) quickly and efficiently, using only a small amount of memory, and with aesthetically pleasing character features. The SCS 1610 CPU is a processor



embodying a novel algorithm (the Chinese Character Generation System) for the construction of Chinese characters, devised by Chu Bong Foo and his collaborators, embodied in an IBM PowerPC processor, and manufactured by IBM.

The company has followed this up with a second chip, based on 32-bit architecture, called the Via Dragon 3210 CPU. This too features the embedded CCGS in a microprocessor – at present in a PowerPC Microprocessor produced by IBM, but able to be embedded in a variety of other processors as well. This second chip is much more powerful, and will drive the development of the Chinese 2000 operating system as well as fast-processing devices.

The Via Dragon chipsets create a new kind of IT standard, in that they embody the Chinese Character Generating System, and thus eliminate the need to hold Chinese fonts and translation systems between Chinese fonts and Western language software. Their design is also uniquely suited to open-source software for their operating system.

Culturecom had the 1610 chip tested by Dr David Smallberg and a team at the Department of Computing at UCLA, Los Angeles, to provide an independent technical assessment.<sup>3</sup> The UCLA report verified that the SCS 1610 CPU processor

<sup>3</sup> The report, dated October 2002, stated “The character generation scheme used in the SCS 1610 processor is of unique intellectual value. The ability to generate tens of thousands of characters in minimal space, efficiently, and with pleasing aesthetics cannot currently be accomplished by any other

achieves its stated capability of generating approximately 32,000 Chinese characters in several fonts and in various sizes, using no more than 256KB of memory (as opposed to 20 to 30GB of memory needed for existing coding systems, not available in a single chip). It is the compact memory requirement, and the compression of all functions into a single chip, priced at no more than US\$25, that creates the possibility for numerous applications at low cost designed for the Chinese market.

Mr Cheung initially approached Intel for the production of the 1610 processor, using Intel Pentium architecture. But Intel were at first very sceptical regarding the claims made for the Culturecom chip design. Eventually, after a visit to Hong Kong and a practical demonstration, Intel proposed a design where the Chinese character algorithm would be embodied in its own chip, attached as an adjunct to the Intel processor, and where Intel would share Intellectual property rights to the combined chip. The Culturecom Board rejected this option, and went to IBM as an alternative. IBM, anxious for what they perceived to be important business, proposed a much more acceptable solution, involving embodying the character generating algorithm within the PowerPC processor, and granting full IP control to Culturecom. This was the option taken up. IBM arranged for the fabrication of the chip using an independent producer.

Mr Cheung and Mr Chu intend to use the chips first in their own products, such as the e-Book Reader and the Chinese 2000 PC. But the goal is much more ambitious than this. Culturecom is pursuing a strategy of “platform leadership” (in the sense given the term by Gawer and Cusumano 2002) by offering the chip, with its Chinese character generation system, to manufacturers of mobile phones, PDAs, two-way pagers, PCs and eventually for set-top boxes for digital interactive television. In this sense, it intends to make the chip and its character generation system the platform for the entire universe of IT products targeted at Chinese users. This is one of the most ambitious IT strategies to be found anywhere in the world today, comparable to the efforts by Palm to establish the Palm OS as an alternative to Windows in PDAs (and involving upwards of 300,000 complementary producers) or the Symbian consortium’s efforts to produce a non-Windows OS for digital mobile phones.

By June 2003 Culturecom had invested over US\$38 million in developing the chip, with minimal return so far. This is a big outlay for the fledgling IT company, even given the fact that it is developing the chip, and including it in numerous devices, in partnership with many other firms. The company is reported to be aiming for sales of 200,000 to 300,000 chips and motherboards in 2003, with profit of US\$3 to 4.5 million from sales of devices such as PCs and eBook readers. An IT Trade Fair in Hong Kong in July is likely to be the setting for major demonstrations, and announcements of further alliances with IT firms for the rollout of the chipset.

### ***First application: Chinese e-book reader***

For most applications the chip is mounted on a motherboard, and connected to various kinds of applications and various kinds of input devices (such as a keyboard, or the Q9 keypad system, or even handwriting tablets). The first product embodying the new SCS 1610 PCU chip is an electronic e-book, termed the *Chinese e-Book*. Again the hand of Chu Bong Foo is evident in the innovative design of this product, which can

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technique. The combination of efficient coding, compact internal representation, “smart fill” for strokes, and other techniques, will be difficult to duplicate. Culturecom has a window of opportunity that should provide them significant advantage in the Chinese language computing market” (Smallberg 2002).

hold at any time up to 8MB of text (equivalent to 20 paperback novels), 8 MB of flash memory, an attractive 7-inch LCD display and reading surface that holds the image as the page is turned.

In April 2001, Culturecom announced an agreement with the People's Education Press (PEP), affiliated with the Chinese Education Ministry, to produce and distribute the e-Book Reader in Chinese schools – at a cost of US\$60 each. The People's Education Press was founded in 1950, just after the Communist revolution, and it has been producing materials for use in primary and secondary schools in China ever since. The two companies have formed the Beijing PEP-Culturecom E-Book Co, to promote and advance the use of e-Books in China's classrooms, thus giving Chinese students access to a vast repository of Chinese classical literature that would otherwise be available only in the most prestigious libraries. The joint venture will develop, manufacture and sell e-Books and e-Cards containing libraries. An e-Book pilot was staged in selected secondary schools in China in 2002, and has been followed with the first major rollout in 2003.

In December 2002 Culturecom signed an agreement with Commercial Press (HK) to launch the first version of the Chinese e-Book, dubbed the *Easyread e-reader*, and to jointly develop an e-publishing business based on the Chinese e-Book. It

comes packaged with peripheral cabling and equipment, long-life batteries, and two CD-ROMs, one containing software and the other an initial library of 200 books from a Chinese classical repertoire. The Commercial Press partner brings an existing publishing business to the venture, with retail and distribution networks, and a long publishing history (its HK branch was founded in 1914).

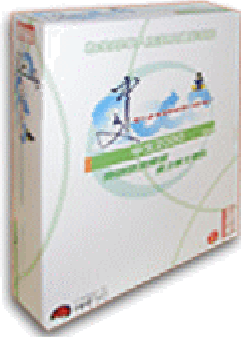
Even before the prototype of the e-Book Reader was produced, Chu Bong Foo worked with other Chinese publishers to secure standards for e-Book representation of Chinese characters. This was the "Han Culture-Info Union" involving over 300 publishers in the greater China region (Taiwan, PRC and Hong Kong). The Easyread e-Reader embodies these standards, and thus forms part of Culturecom's strategy of creating a computing platform in China based on Chu Bong Foo's methods for character generation and display.

**特点**

- 操作便捷——使用方便，易学易用
- 功能广泛——可连接电脑，下载各种信息
- 重量轻——重量仅为300克，减轻学生沉重负担
- 环保节能——大幅节省纸张消耗，真真正正“绿色产品”
- 耗电低——普通两节5号电池便可使用两个月
- 容量大——小小的书卡，就能储存全学期教科书及辅助教材
- 观看舒适——采用双稳态液晶显示，无电子辐射，适合长期观看

PEP-Culturecom E-Book Co., Ltd. 人民教育出版社

## **Chinese 2000 PC motherboard and network PC**



The next version of a character generation chip, the SCS 3210 CPU, has now been produced to form the core of the Chinese 2000 Network PC. The product was launched in late May 2003, with a view to drastically increasing sales of home and desktop PCs in China. The Network PC is priced at just US\$80, making it far more accessible than any other PC system in China. The Network PC is designed for use in a network, so that many of the functions normally supplied as part of a PC can be retrieved from a central access point, the Culturecom-operated Secure Numerical Internetwork Information Center (SNIIC). The initiative is designed to complement the networking strategy of the Chinese government, which revolves around the “Three Nets in One” strategy, involving a combined rollout of PC, television and telephone networks, all on a digital footing.

Culturecom has provided an on-line support system for the Culturecom Chinese 2000 network PC. It consists of multiple layers of integrated online support, from the operating desktop terminal itself; the SNIIC center which includes network application services, digital publishing, translation services, multimedia development services, webbank (a location to store users’ favorite web sites), softbank (a software sharing supermarket), ePlatform (a numeric search engine and e-Commerce platform) and so on, and all augmented by the Wireless Digital Direct Network technology, to provide high-speed communication linking services.

## **Chinese 2000 Midori Linux**

Culturecom, and China, is embarked on a major journey towards the development of alternative, non-Microsoft computing platforms, via widespread adoption of the Linux open source system. Central to this approach is the adoption of Linux as an open-source alternative operating system. Advertisements for the Chinese 2000 operating system appeared in Hong Kong, China and Taiwan in 2002, promoting it as Linux-based, highly stable, and compatible with Microsoft’s Office suite of programs. It can be used with dial-up modems or in broadband connections, and it offers online support as well, where vastly more applications can be downloaded and accessed. All the system commands are in Chinese, although English translations are available. The installation is easy and interactive, and remarkably the whole package sells for US\$50 – a fraction of the hundreds of dollars charged by Microsoft for its Windows and Office suite.

In June 2003, Culturecom announced a major new alliance with the U.S. fast processor company, Transmeta, which has developed inexpensive, fast and low-power microprocessors as alternatives to Intel products, many of which are based on Linux open-source operating systems.<sup>4</sup> Transmeta made this move in 2001, announcing that

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<sup>4</sup> The open-source revolution has taken the computing world by storm, and represents a major threat to the monopoly held by Microsoft over operating systems. The leading players are Linux and other software systems such as Apache and Java. See Raymond (2001) and Moody (2002) for two of

its version of Linux, termed *Midori Linux*, would be available as open-source software, and would be the kernel of many of its fast processors.<sup>5</sup> The deal with Transmeta involves a three way tie-up between Transmeta and Culturecom, and the Hong Kong company eForce Holdings, all of which become partners in Chinese 2000 Holdings, and its operating subsidiary, *Chinese 2 Linux* (C2L). For Transmeta, this represents an ideal way into the vast Chinese market for its processors and Midori Linux operating system; for Culturecom and eForce, it represents a powerful technical alliance to guarantee the technical integrity of their products and their wide acceptability in China and greater China, given their low-cost character, open-sourcing, speed and low power consumption, making the systems ideal for being embedded in a variety of products such as handheld devices and tablet PCs.

The Chinese 2000 Linux system was named as its official system by the municipal government of Beijing in 2000. This was a momentous decision widely reported around the world, since it was understood that it was taking China down a new pathway, one where it would insist on its own standards for its own, potentially vast IT community.

### ***Chinese 2000 Online and Wireless Digital Network***

Around three years ago, Culturecom formed a subsidiary, Gold Mind Telecom (GMT) to begin laying the foundation of a broadband wireless infrastructure that would cover, eventually, the entire greater China area. GMT secured a FWL license from the Chinese government, and is contributing to the development of wireless computing standards in China. (Most current broadband solutions such as DSL and cable modem are unsuitable for China, where the rural telecommunications infrastructure is limited.) Thus China is technologically “leapfrogging” to the next stage, involving wireless broadband communications, and Culturecom has situated itself to help drive this process.

At the end of 2002, Culturecom teamed up with eForce Holdings Ltd and Mobile Telecom Network Holdings to launch the Chinese 2000 Linux Mobile operating system, for use in mobile devices. The firm eForce Holdings is a multinational Asian technology corporation; its interest is in bringing the Chinese 2000 Linux system to its enterprise customer base. Mobile Telecom Network offers advanced mobile data services with leading mobile operators across Asia. The new operating system offers Linux-based handsets enabled by the Chinese 2000 Linux Mobile OS to give mobile device holders a low-cost product with full Internet and data access.

### ***The Culturecom resource leverage strategy***

Culturecom is pursuing a clear strategy of being an innovator, based on the leveraging of as much technological and market support as it can muster. This is a classic strategy of “stretch” as described by Hamel and Prahalad (1992) as applied to a

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the best descriptions of the current and likely impact of open-source software, which is ideally adapted to China’s requirements.

<sup>5</sup> Transmeta’s Midori Linux contains a set of enhancements to Linux to make it more suitable for use in embedded applications. The first version was announced by Transmeta in March 2001, and it has since been widely adopted. With the alliance with Culturecom, Midori Linux will now set the standard for open-source software in embedded applications in China; it is perfectly matched to the requirements of the proprietary Chinese Character Generating System developed by Chu Bong Foo.

catchup by a latecomer (Mathews and Cho 2000). The strategic goals of the company “stretch” its present limited resource base, so it devises ways of “leveraging” these resources to greater effect, and to accessing resources held by complementary firms. This is exactly what Culture com is doing. At its core, it possesses unique intellectual capital in the form of the Chinese Character Generating System and its embodiment in the Via Dragon series chips and chipsets. It is leveraging the skills and good reputation of the world’s premier IT companies, such as IBM and Transmeta, in this endeavor. IBM lends technical credibility to Culturecom, as well as providing the quality control and technical support for its Via Dragon chip that could make the difference between a good idea (but a failed technology) and a success. Transmeta lends its Midori Linux operating system that enables the novel Chinese Character Generating System to be implemented as the kernel of a chip, produced by Transmeta itself, bypassing all extant solutions that involve translation from and into western operating systems. This is an ultra-sound platform on which to build, and no doubt Culturecom is already assessing future such partners for further applications in mobile and handheld devices.

Culturecom is then leveraging this core technology into as many products and product applications as possible, harnessing the established reputations and market reach of incumbents. Those that have signed up already include:

- People’s Education Press      Distribution of e-Books in Chinese schools
- Commercial Press (HK)      Chinese e-Book Easyreader
- eForce      Chinese 2000 Linux Mobile; Chinese 2 Linux
- Mobile Telecom Network      Chinese 2000 Linux Mobile.

No doubt Mr Cheung has other partnerships in the making, to take Culturecom and Mr Chu’s technologies into new areas such as PDAs, tablet Chinese handwriting systems, mobile technologies (such as the Q9 input system utilizing just nine keys) and further elaborations of the “Chinese 2000” Linux-based operating system theme. Their vision is to empower Chinese-speaking people with technology that reflects their own language and is adapted to the use of their own characters, and to the products (such as mobile devices) that will enable them to leapfrog previous stages of IT technology. This strategy can be extended to other cultures utilizing non-Western writing systems, such as Japan, Korea and the mid-East countries that use Arabic or Persian.

The most ambitious aspect of this strategy devised by Mr Cheung and Mr Chu is its bid for platform leadership of the greater China IT and computing world. It is an attractive bid from the perspective of China, since it offers a secure, Linux-based alternative to the Wintel system (Microsoft Windows and Intel processors) that still dominates in the West, and in China as well. It would be a truly fascinating development to see the Wintel duopoly stopped, finally, in China, due to the power of the Chinese to enforce their own standards in their own IT, telecommunications and computing community.

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