





Operations Review

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Overview

DVN is a leading provider of comprehensive digital transmission platforms that deliver content, services and applications to end-users, in particular cable TV subscribers. CATV operators use DVN's platforms to improve the transmission efficiency, quality and types of content and services broadcast over their networks. As a result of improved content quality and breadth of services, the CATV operator is able to better utilize its cable bandwidth and increase its revenue sources. Subscribers in return for paying higher subscription fees enjoy premium content and new services, which include real time news, weather and financial information as well as personalized broadcasts. Eventually the subscriber will be able to use the television set as a point of sales device trading stocks and buying items over the TV.

Total Solution Provider at Affordable Prices

DVN's platform is inclusive of the hardware, software and applications needed by the CATV operator to run a digital broadcasting business; the digital STB required by the subscriber to receive the digital broadcasts; and content and services to be broadcast over the platform. CATV operators, instead of using multiple vendors to piece together a digital broadcasting system, benefit significantly from using DVN's end-to-end turnkey solution. CATV operators save significant costs, such as in manpower, time, software royalties and logistics, from using a totally integrated, turnkey solution, designed and owned by DVN. These significant savings and a short construction period allow the CATV operators to offer interactive TV services quickly and at prices affordable to the Chinese today. Additionally DVN provides its CATV operators with continuous software and system upgrades, freeing up CATV operators resources to focus on their core business competencies and ensuring that the platforms technology remains on the cutting edge.



概覽

天地數碼在市場內具有領導地位。除提供全面的數碼傳輸平台外，更為終端用戶，特別是有線電視訂戶，傳送內容、服務及提供應用服務。有線電視經營商利用天地數碼之平台，得以改善傳送效果、質素、以及網絡廣播之內容種類和服務。由於內容質素和服務範圍得以改善，有線電視經營商便可更好地利用其有線頻寬，增加收入來源。訂戶雖付出較高的費用，但可享用包括即時新聞、天氣、財經資訊及個人化廣播等增值內容的新服務。訂戶更可利用電視機進行線上股票交易及購物。

以相宜價錢提供全面解決方案

天地數碼之平台，可為有線電視經營商提供經營數碼廣播業務所需的硬件、軟件和應用系統；並為訂戶供應接收數碼廣播內容和服務所需的數碼機頂盒。有線電視經營商毋須從不同的途徑購置設備組合數碼廣播系統，只要使用天地數碼的端對端全承包解決方案，便可得到極大的方便。利用天地數碼擁有及設計的整合解決方案，有線電視經營商可大大節省成本，包括人力、時間、軟件版權費和後勤開支。由於成本得以降低，建立網絡之時間得以縮短，有線經營商可以迅速提供互動電視服務，而價錢是中國今時今日可以負擔得起的。再者，天地數碼亦為有線電視經營商提供持續的軟件及系統升級服務，把有線電視經營商從繁重的日常業務解放出來，全力投入核心業務發展，且能保持平台技術的領先優勢。

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Year at a Glance 大事年表

7.2000

Change in name from DVB to DVN.

Management re-organization, Terry Lui became the CEO of the Company.

Began platform installation at Foshan City, Guangdong Province CATV

公司名稱由 DVB 更改為 DVN。

重組管理層，呂品先生出任行政總裁。

開始在廣東省佛山市安裝有線電視網絡平台。

Flexible System that Allows for Change and Growth

DVN's platform, which runs on both existing analog networks and new generation broadband networks, precludes the necessity for CATV operators to upgrade its network further for digital broadcasts. The DVN platform is a scalable, open system that not only accommodates numerous income-generating services but also supports multiple hardware devices, such as personal computers and telephones. Income-generating T-commerce services expected to be offered over the platform include on-line trading, banking and shopping.

Tailored for China's Needs

DVN's system also provides CATV operators with an automatic fee collection system that not only improves the cash flow of the CATV operators but also provides a viable payment method for T-commerce transacted over the system. Combined with DVN's highly complex encryption system, the CATV operator is able to offer its end-user a secure environment in which to do on-line transactions. The encryption system is also used to prohibit non-paying end-users from receiving content and promotes consumers to sign up for the digital service.

Received All Required Government Approvals

DVN's STB receives, deciphers and de-scrambles the broadcasts signals sent through the cable network. Each STB is equipped with a Smart Card, which is one of the key components of the platform's conditional access system. The Smart Card controls the STB's output as well as turns the TV into a point of sales device. DVN's STB is one of three that have received government approval for distribution and use by CATV operators in China.

International Financial Data Provider

DVN through its group company, Dynamic, also disseminates real time international financial market information and selective real time consumer data to end users in the PRC, Malaysia, Singapore, Taiwan and Hong Kong. The type of content provided includes equity, commodities and foreign exchange real time data.



容許變化和擴張的靈活系統

天地數碼之平台可在現存的模擬網絡和新一代的寬頻網絡上運行，容許有線電視經營商提升其網絡作數碼廣播。天地數碼平台提供一套具擴張性的系統，既可容納多種功能開拓收入的服務，也可支援不少硬件設備，例如個人電腦及電話；其透過平台提供的收費服務，將包括線上交易、線上銀行服務和線上購物服務等。

配合中國之需要

天地數碼之系統也為有線電視經營商提供自動收費系統，不單能改善有線電視經營商之現金周轉，也能提供利用系統進行電視交易的可行付款方法。配合天地數碼高度精細的加密編碼系統，有線經營商可確保終端用戶在安全的環境下，進行線上交易。這套加密系統也可禁止沒付款的用戶接收內容，及鼓勵消費者登記享用數碼服務。

機頂盒已獲政府批核銷售

天地數碼之機頂盒能夠接收、破譯及分解有線網絡所傳送之廣播訊號。每一個機頂盒均配備智慧卡，而智慧卡是天地數碼平台登入系統的重要軟件，能控制機頂盒的訊號輸出，還可令電視機變作銷售點設備。目前國內有三個機頂盒牌照獲政府批核，天地數碼機頂盒是其中之一，可供應給有線電視經營商使用。

國際金融數據供應商

天地數碼透過集團旗下公司Dynamic，為中國、馬來西亞、新加坡、台灣及香港的終端用戶發放實時國際金融市場資訊及精選消費者數據，所提供的內容種類包括證券、期貨及外匯實時數據。



Interactive Pay TV

Premium Services for which Subscribers Ready and Willing to Pay

Broadcasts over DVN's platform offers subscribers, at an acceptable price, an interactive TV experience with premium content, near video on demand service and real time and personalized news and financial information services. T-commerce opportunities, such as on-line trading, banking and shopping, are expected to be offered in the near future.

Access to Premium Content

Many content providers have been hesitant to license their content in China due to piracy concerns and the difficulty to verify and collect licensing royalties. DVN's digital broadcasting system provides not only a secure and encrypted transmission platform but also clear records of content viewership allaying content providers concerns over piracy and providing proper assessment of licensing royalties owed. As a result, content providers are willing to license premium content to CATV operators improving the quality of content broadcast over the platform.

On-line Commerce

Currently in China, most consumers do not have a credit card. Debit cards are offered only regionally and only in the major cities. Additionally, only 0.5% of the population has access to the Internet at home, with a majority of users accessing the Internet at workplaces. Internet security among e-commerce operators is limited and a well-developed nationwide transportation system does not exist.

DVN's platform offers subscribers and vendors a secure payment system with the use of the Smart Card. The DVN platform is connected to the subscriber's bank and each subscriber's transactions are verified and deducted from available funds in the subscriber's bank account before the transaction is settled, thereby securing payment for the vendor. The subscriber does not need to provide any confidential information since the Smart Card, which is pre-registered by the subscriber, will provide such identification to the network. The system is convenient to the subscriber and secure as all information is encrypted on the return path to the head end. DVN believes that on-line stock transactions over its platform will be the first significant on-line commercial activity to be offered. It is envisaged that fees from on-line trading, and in the future, on-line shopping, will be a significant contributor to its revenues.

Other interactive services such as pay-per-view, video leasing and pay-per-game services will be offered in the near future over DVN's platform as the subscriber base grows.

收費 互動電視

提供訂戶願意支付的優質服務

透過天地數碼平台進行廣播，可為訂戶以一個合理的價格，體驗互動電視的樂趣，獲取優質內容、隨意選取視訊服務、即時及個人化新聞及財經資訊，以及在短期內提供電視商務機會，包括在電視機上進行線上交易、銀行及購物等。

獲取優質內容

基於盜版問題以及核實和收取版權費用存在著困難，很多內容供應商不太願意在國內供應內容。天地數碼的數碼廣播系統不單能提供安全的加密編碼傳送平台，也可提供清晰的內容接收紀錄，減低或消除內容供應商對盜版侵權問題的憂慮，並協助其適當地評估版權費用收取情況。因此，內容供應商均樂意為有線電視經營商供應優質內容，改善其廣播之內容質素。

線上商貿

目前，國內大部分消費者都沒有信用卡，或者信用卡只限在某些地區或大城市通行。此外，只有0.5%市民為在家中使用互聯網，大部分人士只在工作場所內上網。電子商貿經營商提供的網上保安不足，也欠缺完善的全國性物流管理。

天地數碼的平台，配合智慧卡的使用，為訂戶及零售商提供安全可靠的付款系統。這個平台與訂戶的銀行連結，核實每個訂戶的交易，並在交易結算前從訂戶的銀行戶口內扣除款項，因此確保服務商取得費用。由於智慧卡在訂戶預先登記下為網絡提供辨證功能，因此訂戶在使用線上服務時毋須提供任何機密資料。這套系統為訂戶帶來方便，並確保所有資料在返回網絡連接時都經過加密編碼程式。天地數碼相信，透過平台在電視機上提供股票交易服務，是在國內提供的首項重要線上商業活動。線上交易可帶來豐富收入，而日後的線上購物活動也將成為重要的收入來源。

其他互動服務，例如按次收費觀看節目、影片租賃，按次收費遊戲服務等，將於短期內待客戶基礎增長時，透過天地數碼平台提供。



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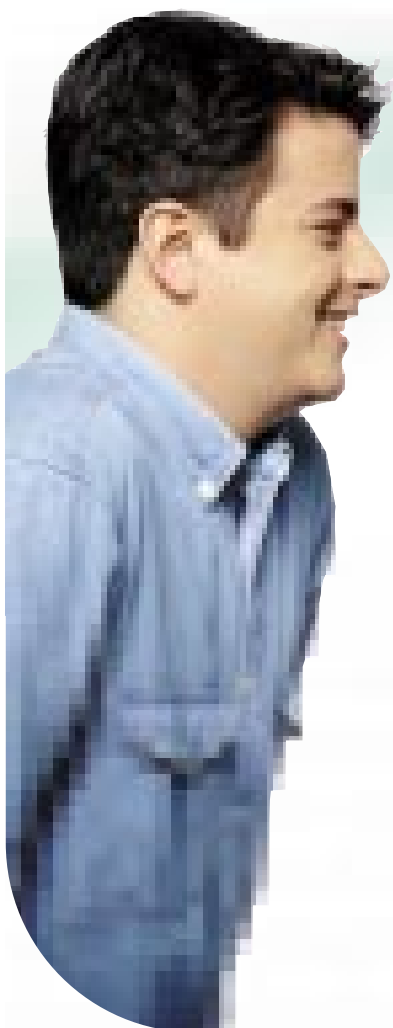
DVN's Business Model

DVN, in offering CATVs a total solution, derives revenue from three main lines of business: integrated platform provider; content aggregator; and provider of value added services.

Platform Provider

DVN designs, integrates and installs platforms for CATV operators that will allow it to deliver interactive pay TV services to its subscribers. DVN provides all the system components at the operator level, which include the broadcast control system, conditional access system, subscriber management system and the hardware as well as the digital STBs at the subscriber level. DVN either sells the system outright or enters into leasing contracts with the CATV operator. If DVN sells the system outright, it receives an annual maintenance fee over the contractual period on top of the sales price of the platform. Under the leasing option, in consideration for the lease of its platform, continual platform maintenance and application software upgrades, DVN receives a percentage of all subscription fees collected for digital broadcasts over the contractual period.

Under either option, the CATV operator will sell DVN's STB to subscribers who wish to receive digital broadcasts. DVN usually receives sales revenue from the resale of the STB.



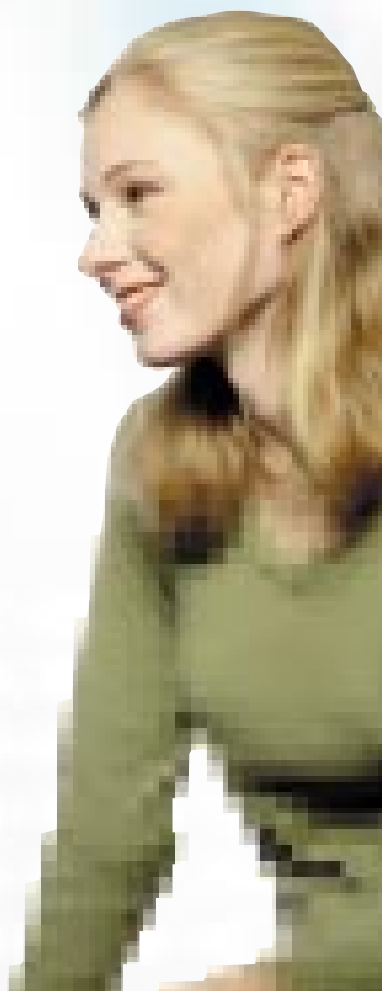
天地數碼之商業模式

天地數碼為有台商提供全面的解決方案，並有三個主要收入來源：提供整合平台、內容彙集及增值服務。

平台供應商

天地數碼為有線電視經營商設計、整合及安裝平台，讓經營商為訂戶提供互動收費電視服務。天地數碼供應所有在運作層面的系統軟件，包括廣播監控系統，有條件登入系統、訂戶管理系統及硬件，以及在訂戶層面上，供應數碼機頂盒。天地數碼除直接出售這些系統外，也與一些有線電視經營商訂立租賃合約。若天地數碼出售系統，可在合約期內，在平台銷售價之外，再收取維修年費。若採用租賃形式，天地數碼將提供持續的平台維修及應用軟件升級服務，並在合約期內，收取數碼廣播訂戶費用的某個百分比。

不論是銷售還是租賃，有線經營商都會出售天地數碼機頂盒予希望接收數碼廣播之訂戶。天地數碼還可藉著機頂盒銷售取得收益。



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Content Aggregator

DVN receives royalties or fee from the CATV operators for providing them with content, which includes video, data and text. DVN has a 30 year exclusive licensing contract with China Star Entertainment Limited, a leading Chinese film production house in Hong Kong, to broadcast in China their titles over DVN's platform. DVN also has license to a library of over 1,000 movie and educational titles, plus over 1,000 hours of documentaries, from content providers. DVN also receives fee income for the on-line news and financial information it provides to the CATV operators. Through its strategic partner, DVN is able to introduce content from Discovery, Disney, Shanghai Film Production Works, the Fashion Channel and MTV.

Year at a Glance 大事年表

8,2000

DVN's STB, received all necessary approvals from SARFT in China, one of only three.

Began platform installations at Shandong Provincial and Suzhou City, Jiangsu Province CATVs.

Signed Deed altering conditions of HiTV Agreements

天地數碼機頂盒已獲中國廣播電影電視總局批核，是國內已獲當局批核之三個機頂盒牌照之一。

開始在山東省及江蘇省蘇州市安裝有線電視網絡平台。

HiTV修改條款契約。

Value Added Service Provider

The number and type of applications that DVN's platform is able to support is limitless. This is due to the open architecture of the system as well as the installation of the Smart Card in each subscriber's STB. Interactive services currently envisaged include on-line trading, on-line shopping and home banking to name a few. The Smart Card provides not only a secure transaction environment but also a payment method. DVN has already developed the application for a major PRC brokerage firm that will enable stock trading over the platform. DVN will in turn receive a fee for each transaction conducted over the platform. DVN envisages that this will be a major contributor to its revenues in the future. Negotiations are also underway to provide interactive TV subscribers with a home shopping service. All the above services will provide a more diversified revenue base to both DVN and its CATV partners.



內容彙集

天地數碼為有線電視經營商提供內容，包括視像、資料及文字，從中收取版權費。天地數碼與本港具有領導地位之製片公司中國星集團簽署了為期30年的獨家合約，利用天地數碼平台在國內播放由中國星製作的電影。天地數碼也擁有一個豐富的影片庫，內容包括逾一千套電影和教育節目、以及逾1000小時的紀錄片。為有線電視經營商供應線上新聞及金融資訊，天地數碼可從中收取費用。此外，天地數碼也和策略性夥伴合作，獲取了Discovery、迪士尼、Shanghai Film Production Works、The Fashion Channel及MTV之節目。

增值服務供應商

天地數碼可支援之應用軟件數目是無窮無盡的。目前設想中的應用軟件，包括線上交易、線上購物及家居銀行等，不能盡錄。這是因為系統的開放式功能，以及在每名訂戶的機頂盒內裝設智慧卡，便可達到上述目標。智慧卡不單能提供安全可靠的交易環境，也能提供可靠的付款方法。天地數碼已為國內某大證券商發展應用軟件，日後可利用互動電視平台進行股票交易。每宗在平台上進行的交易，天地數碼都可收取費用，相信這將成為集團未來的一項主要收入來源。天地數碼亦正洽談為互動電視用戶提供家居購物服務。以上各項服務能為天地數碼及其有線電視夥伴提供更多元化之收入基礎。

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Largest Cable Television Market in the World

TV penetration in Chinese households is nearly 100% as compared to 0.5% for personal computers. Additionally China currently has over 80 million cable TV subscriber households, increasing at 10 million a year. This is greater than the 60 million subscribers in the United States and the 50 million subscribers in Europe. In addition China's cable network is comprised of over 300,000 kilometers of laid cable.

Modern Cable Network with Excess Bandwidth

As China's cable networks were recently installed and are relatively modern, most of the laid cable network is fiber optic and hybrid fiber coaxial ("HFC"), providing broadband transmission speeds of over 2 megabytes per second ("mbps"). This is compared to that of personal computer modems of 56 kilobytes per second, Integrated Service Digital Networks ("ISDN") of 128 kilobytes per second and Asymmetric Digital Subscriber Lines ("ADSL") of between 1.5 mbps and 8 mbps only if within 5 kilometers of the telephone company's local exchange. Only ADSL networks come close to achieving similar transmission speeds to those of cable TV HFC but such ADSL network services are currently only on offer in Shenzhen, Beijing and Shanghai and charges over these networks are very expensive. The size of these networks is also restricted due to the necessity for users to be within a 5 kilometer proximity of the telephone company. However, despite the modernity of China's cable network, most of the cable network only provides for one-way transmission.

全球最大有線電視市場

現時，電視在中國國內的家庭滲透率接近 100%，而個人電腦的滲透率却只得 0.5%。目前，全中國共有超過 8000 萬有線電視家庭訂戶，每年增長 1000 萬。這個數目已分別超越了美國的 6000 萬及歐洲的 5000 萬有線電視家庭訂戶數目。此外，有線網絡已鋪設的電纜已逾 30 萬公里。

具備充足頻寬之現代有線網絡

由於有線網絡都是近期裝設，相對而言較為先進，大部分已鋪設的有線網絡都是光纖及混合纖維同軸電纜(HFC)，提供每秒超過 2 百萬位元組(2 mbps) 的寬頻傳送速度。相比之下，個人電腦數據機的傳輸速度為每秒 56 千位元組，整合數碼網絡服務(ISDN)的速度為每秒 128 千位元組，而非對稱數位用戶回路(ADSL)在電話公司交換站五公里範圍內的輸送速度為每秒 1.5 至 8 百萬位元組。只有非對稱數位用戶回路(ADSL)網絡的傳送速度，可追近利用混合纖維同軸電纜(HFC)的有線電視傳送速度。但 ADSL 網絡目前只在深圳、北京和上海等地提供，費用昂貴。這些網絡的規模，也只局限于電話機樓方圓五公里範圍內的用戶。儘管中國有線網絡日益先進，大部分有線網絡只提供單向傳輸功能。



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Analog Vs Digital

CATVs in China currently utilize analog broadcasting technology. Analog technology, as compared to digital broadcasting technology, does not fully utilize the bandwidth and revenue generating capacity of the cable network and does not provide any encryption. Additionally, transmission is very susceptible to interference. Digital broadcasting, on the other hand, by using compression technology increases broadcasting transmissions by at least 6 times and allows the CATV operator to diversify and increase revenues by offering premium content and new services. Furthermore, digital signals may be encrypted under complicated methods making it very difficult and uneconomic to decode.

Limited Revenue Base

Through the provision of enhanced services and quality content, the CATV operator is able to charge higher subscription fees and advertising charges as well as receive fee income from future T-commerce services. Currently CATV operators charge subscribers about RMB 8 per month as a maintenance fee. However, the fees are collected manually, which results in high leakage and expensive collection costs. Subscription charges of RMB 8 per month are among the cheapest fees in the world, even lower than in India. As a result, the CATV operators operate on very thin margins and rely heavily on advertising revenues to supplement their incomes. As such, DVN's digital broadcasting platform provides a beneficial solution to CATV operators in the PRC by providing multiple revenue generating sources, an electronic fee collection system and a highly complex encryption system that prohibits non-payers from viewing the contents as well as provides a secure on-line transaction environment.

Year at a Glance 大事年表

11.2000

Completed platform installation at Henan Provincial CATV.

Completed platform installation and commissioning at Foshan City, Guangdong Province CATV

在河南省安裝有線電視網絡平台。

在廣東省佛山市完成安裝平台及投入服務。

Closed Market with High Barriers to Entry

China's broadcasting industry is largely closed to foreign involvement. Foreigners are restricted from operating or owning cable TV networks within China. However, according to the head of China's SARFT, Mr. Xu Guang Chun, foreign firms are able to provide cable TV networks with infrastructure technology and value added services. Under DVN's current business model, DVN provides only the technology and equipment required by the CATVs to run and operate interactive pay TV services.

Cable operators must apply for a license, as promulgated by the SARFT in December 2000, to broadcast pay TV services. To date, only one such license has been issued to Hebei Provincial CATV in March 2001. Hebei Provincial CATV using DVN's platform expects to begin commercial roll out of pay TV services within the second half of 2001. Shandong Provincial CATV, another DVN leasing partner, has also applied for such a license and it is expected to be forthcoming in the near future.

DVN through its leasing contracts receives a percentage of the subscription fees collected for pay TV services broadcast over its platform. DVN also receives sales revenue from the outright sales of its platforms and from the resale of its set top boxes to pay TV subscribers. Under this structure, DVN is legally able to obtain exposure to China's potentially lucrative broadcasting industry without contravening Chinese laws and regulations.

模擬廣播與數碼廣播之爭

中國的有線電視目前採用模擬廣播技術。與數碼廣播技術相比，模擬廣播技術未能完全利用有線網絡的頻寬及賺取額外收入功能，而且傳輸容易受到干擾，也不具備加密編碼功能。相反，由於數碼廣播技術使用了壓縮技術令廣播傳輸增強最少六倍，容許有線電視經營商提供優質內容及創新服務，以擴大及增加收益。此外，加密編碼方式十分複雜，破譯密碼極其困難，且支出也殊不化算。

受局限之收入基礎

透過增強服務及內容質素，有線經營商可徵收較高的訂戶費及廣告費，將來提供電視商貿(T-commerce)服務時也可賺取費用和收入。目前各有線經營商向訂戶徵收每月八元人民幣作維修費。費用是用人手收集，除了有很大漏洞外，成本也十分高昂。每月八元的訂戶費可說是全球收費最低之一，甚至比印度還要便宜。結果，有線經營商邊際利潤微薄，極依賴廣告收益以彌補收入。天地數碼的數碼廣播平台開闢多種收入途徑，提供電子收費系統，配備精密的加密編碼制度，禁止未付費之用戶接收內容，同時提供安全可靠的線上交易環境，為國內有線電視經營商帶來莫大商機。

打入重重障礙之封閉市場

中國的廣播事業大致上禁止外商參與。外商被禁止在國內經營或擁有有線電視網絡。不過，國家廣電總局局長徐光春曾表示，外商可以為有線電視網絡提供基建技術及增值服務。在天地數碼現時的商業模式下，天地數碼正為有線電視經營商提供收費電視服務所需之技術及設備。

根據國家廣電總局於2000年十二月制訂的規例，有線電視若要提供收費電視服務，必須申領牌照。至今為止，只有河北省有線電視於2001年三月獲發一面牌照。河北省有線電視利用天地數碼平台，預期於2001年下半年開始推出收費電視商業性服務。天地數碼的另一個租賃夥伴，山東省有線電視也在申請同類牌照，預料可在短期內獲發牌。

根據租賃合約，透過天地數碼服務平台所收取的訂戶費，天地數碼可從中收取某個百分比的費用。天地數碼也可從直接出售平台及機頂盒予收費電視訂戶，獲得銷售收入。在此架構下，天地數碼可在中國法律和規例容許的情況下，合法地參與中國有巨大盈利能力的廣播事業。

