出席 2002 年國際電信聯合會（ITU）
亞洲電信研討會報告書

出國人員：

服務機關〔構〕	職　稱	姓　名
交通部郵電司	司長	鄧添來
交通部電信總局	局長	簡仁德
交通部電信總局	技正	梁伯州

出國地區：香港
出國期間：九十一年十二月一日至十二月八日
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公 務 出 國 報 告 提 要

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報告名稱:

出席2002年國際電信聯合會(ITU)亞洲電信研討會報告書

主辦機關:

交通部電信總局

聯絡人／電話:

李菲菲／02-23433679

出國人員:

鄧添來　交通部　郵電司　司長
簡仁德　交通部電信總局　　局長
梁伯州　交通部電信總局　綜合規劃處　技正

出國類別: 其他

出國地區: 香港

出國期間: 民國 91 年 12 月 01 日 -民國 91 年 12 月 08 日

報告日期: 民國 92 年 02 月 25 日

分類號/目: H6／電信　H6／電信

關鍵詞: ITU,國際電信聯合會,電信研討會

內容摘要: 2002年ITU亞洲電信研討會於民國91年12月2日至7日在香港舉辦，屬亞太地區第六次舉辦之ITU區域性電信研討會暨展覽活動，計吸引來自全球一百二十七個國家二萬一千多人參加，包括部長級人士三十三人、駐外使節六十多人、局長級人士三十多人、執行總裁一百八十餘人。本次研討會之主題為「從復元邁向繁榮：建基於變革之中」，並分為「全球電訊論壇」及「國際電信展覽會」兩部分。論壇討論之議題主要涵括電信政策及規管、投資及業務、科技及應用等三大專題，每日以全體會議（Plenary）揭開序幕後，繼分三個場地同時對各專題進行討論，計有來自三十八個國家的二百四十名產、官、學人士應邀出席演講。展覽會則有來自世界各地之電信設備商、服務業者及政府部門等三百多個單位，展出及介紹電信業的最新技術、服務與政府產業政策。

本文電子檔已上傳至出國報告資訊網

出席 2002 年國際電信聯合會（ITU）亞洲電信研討會
報告摘要表

1 會議名稱	2002 年 ITU 亞洲電信研討會
2 會議日期	91 年 12 月 2-7 日
3 會議地點	香港會議展覽中心（Hong Kong Convention and Exhibition Center）
4 出席經濟體別及重要出席單位人員	計有全球一百二十七個國家二萬一千多人參加，包括部長級人士三十三人、駐外使節六十多人、局長級人士三十多人、執行總裁一百八十餘人，另有來自三十八個國家的二百四十名產、官、學人士應邀出席演講
5 主辦單位	由 ITU 統籌，中國大陸主辦，並由香港電訊管理局（OFTA）成立中國香港秘書處協辦
6 我國出席人員姓名、職銜	交通部郵電司司長　　　　　　　　鄧添來 交通部電信總局局長　　　　　　　簡仁德 交通部電信總局綜合規劃處技正　　梁伯州
7 會議議程項目內容	分為「全球電訊論壇」及「國際電信展覽會」兩部分

目 錄

出席 2002 年國際電信聯合會（ITU）亞洲電信研討會

壹、概述

  2002 年 ITU 亞洲電信研討會於民國 91 年 12 月 2 日至 7 日在香港舉辦，係繼 2000 年亞洲電信研討會之後，香港再度舉行的 ITU 盛會，屬亞太地區第六次舉辦之 ITU 區域性電信研討會暨展覽活動，計吸引來自全球一百二十七個國家二萬一千多人參加，包括部長級人士三十三人、駐外使節六十多人、局長級人士三十多人、執行總裁一百八十餘人。本會議由 ITU 負責活動之整體統籌規劃事宜，由中國大陸政府負責主辦，香港特別行政區政府則於香港電訊管理局（OFTA）內成立「中國香港秘書處」，協助相關籌辦作業。

  本次研討會之主題為「從復元邁向繁榮：建基於變革之中」，並分為「全球電訊論壇」及「國際電信展覽會」兩部分。論壇討論之議題主要涵括電信政策及規管、投資及業務、科技及應用等三大專題，每日以全體會議（Plenary）揭開序幕後，繼分三個場地同時對各專題進行討論，計有來自三十八個國家的二百四十名產、官、學人士應邀出席演講。展覽會則有來自世界各地之電信設備商、服務業者及政府部門等三百多個單位，展出及介紹電信業的最新技術、服務與政府產業政策。此外，本次亞洲電信研討會亦同期舉行青年論壇，邀集被甄選出的各國優秀大學生，就當前最熱門的電信通訊議題進行研討。

  我會議出席人員交通部郵電司鄧司長及交通部電信總局簡局長等一行三人，除安排出席聯合開幕典禮及「從匯流過程中學習」、「規管及市場動力」、「無所不在的接取」、「縮小數位落差」、「IP-based 網路之重要議題」、「無線及數位契機」等多場論壇並參觀展覽之外，另亦出席摩托羅拉（Motorola）公司所邀集之「亞太電信監理機構餐會」，並安排與瑞銀華寶（UBS Warburg）香港公司代表等四人會談。此外，因考量會議期程過長，鄧司長與

簡局長兩人爰先行於 12 月 5 日返國，由電信總局梁伯州技正全程參與。

貳、會議地點

香港會議展覽中心（Hong Kong Convention and Exhibition Center）

參、會議紀要

一、聯合開幕式

開幕式主席由 2002 年 ITU 亞洲電信研討會之論壇計畫委員會（Forum Programme Committee）會員顧問小組主席 Mr. Jonan van EHMOND 擔任，並邀請香港工商及科技局唐英年局長致歡迎詞，由 ITU 秘書長 Mr. Yoshio UTSUMI 及中國信息產業部吳基傳部長進行專題演講。

唐英年局長首先簡單就香港在促進電信市場競爭、建立公平合理經營環境及落實法規透明化的努力提出說明，並針對香港第三代行動通信（3G）業務四張執照拍賣的結果，以及 11 家行動通信業者的經營概況與無線區域網路（Wireless LAN）的發展作概略的描述。最後，他特別指出，本次會議提供了一個群聚全球電信領域人士來共同探討當前電信通訊業重要議題的絕佳機會，並預祝所有與會人士均度過愉快、豐收的一週。

ITU 秘書長 Mr. UTSUMI 在致詞中指出，十年前亞太地區電信用戶僅佔全球用戶數的五之一，目前則已達三分之一，並且在這十年中持續以每秒鐘增加超過一位新用戶的驚人成長率快速發展，成為全球唯一維持巨幅成長的地區。目前，亞太區域的 ADSL 用戶數已超過全球用戶數的一半，區域內 3G 用戶更佔全球用戶數的百分之九十。依據 Mr. UTSUMI 所引用的各項數據來看，我國在多項電信發展指標上業已取得極為優異的成績，包括行動電話普及率高居全球第一名、寬頻上網普及率全球第四名、行動上網普及率全球第十名、BMI（Bit-Minute Index）指標（評

估對網路電話之需求）居亞太地區第一名、網際網路／國際電話之電路頻寬比居亞太地區第二名、網際網路用戶普及率為亞太地區第五名等。最後，面對持續擴大的數位落差（Digital Divide）挑戰，Mr. UTSUMI 特別呼籲應加強國際合作及相互協調，讓電信服務不僅僅是企業盈利的工具，更是幫忙吾人建立一個共同參與、機會均等的美好世界之利器。

中國信息產業部吳基傳部長則特別就世界電信產業從持續十餘年的成長邁入蕭條的過程中，中國大陸卻仍維持高度的成長作為開場，目前中國大陸固網及行動用戶數合計已超過 4 億戶、網際網路用戶數達 4,587 萬戶，電話普及率為 31.9%，擁有電話之行政村的比例為 85.3%。另外，針對如何在此複雜環境中保持穩健務實的發展，他也提出了幾項看法，包括：需求的過度預期、3G 執照拍賣政策的失誤與電信事業財務管理制度的缺陷等問題的嚴重性，亟需吾人深思，因此有必須進行電信業結構性的調整與制度的改善，在穩健務實的政策下，兼顧電信業網網相連、規模經濟及服務社會等本質屬性，一方面應促進市場的有效與有序競爭，另一方面應加強資訊安全之立法與技術標準之制定。

在開幕式的第二階段中，會議係以「寬頻網路之快速佈建」為主題，採「Q&A」方式進行，受邀的來賓包括東加王國首相 Mr. Lavaka Ata ULUKALALA、越南郵電部長 Dr. Mai Liem TRUC 及土耳其交通部長 Mr. Binali YILDIRIM、俄羅斯通信資訊部第一副部長 Mr. Boris D. ANTONYUK、加拿大工業部頻譜資訊技術及電信部門助理副部長 Mr. Michael BINDER 等人。三位來賓首先簡介其國內電信之相關發展；隨後在討論中，對於電信是兼具有促進經濟成長及社會發展雙重功能的重要推動力，引進競爭與外資、實施普及服務來改善數位落差問題，以及推動用戶迴路細分化來促進競爭等看法，均被熱烈討論。

二、「從匯流中學習」論壇

本論壇以「經驗分享」及「如何取捨他人經驗」兩項議題

為主軸先後進行兩場討論，由 GetIT 公司執行長 Mrs. Laina R. GREENE 擔任主席。

（一）經驗分享

在「經驗分享」議程中，邀請來賓包括新加坡資訊通信發展局（IDA）局長 Mr. Keng Tai LEONG、馬來西亞通信暨多媒體委員會（MCCC）產業研究分析處處長 Mr. Yow Lock SEN、瑞士聯邦通信局國際事務處處長 Mr. Marc FURRER 等人。

為因應產業匯流趨勢，亞太區域內已有部分國家整合原分立之數個監理機關為單一監管機構，本議程即是透過討論，分享各國的經驗。其中，主席 Mrs. GREENE 認為，產業匯流下應考量的三大課題包括(1)自由化：業者家數、市場競爭、特定監理機關的成立與功能；(2)技術發展：數位化、無線化、寬頻化及 IP 化等趨勢；(3)監理現況：法案、監理機關的分立與整合問題。

此外，Mr. LEONG 談及新加坡繼 2000 年 4 月整合電信管理局（TAS）及電腦委員會（Computer Board）為 IDA 之後，規劃在近期內再進一步整併傳播監理單位之功能。而面對各類服務的整合監理議題，馬來西亞擬於 2005 年之前，進一步取消各類業務執照之條件，以解決整合型服務難以歸類之監理窘境。另針對如何評量監理的成功與否問題，多位來賓認為應以結果來論定，例如市場的競爭、服務的多樣化、效率與價格是否獲得改善等。

（二）如何取捨他人經驗

在本議程中，邀請來賓包括有 ITU 亞太區域辦公室資深顧問 Dr. Eun-Ju KIM、中國信息產業部監理政策局局長 Mr. Yaoping JIANG、不丹通信部副部長 Mr. Dasho L. DORJI、阿富汗 Mr. M.M. STANEKZAI 部長等人。

經過前一議程分享部分國家在整合監理機關功能的經驗後，本議程係以如何從最佳實務（best practices）中學習、如何從眾多的經驗中尋求較合適之學習標的等議題作為討論重點。基本上，來賓們建議，在學習及改革的過程中，各國應加強各方面之交流，除在共通點上尋求可複製的經驗外，亦應注意本身國情、文化、階段性發展上的差異，以推動相關改革，達成促進有效競爭、提供消費者更多元選擇之目標。其中不丹 Mr. DORJI 及阿富汗 Mr. STANEKZAI 提到，他們將分別以馬來西亞及巴基斯坦作為學習的對象。

三、「規管及市場動力」論壇

　　本議程由香港電訊管理局（OFTA）總監王錫基先生擔任主席，主要是探討在市場及技術的快速演變下，以及多數監理單位及政策制定者逐漸採行市場機制與技術中立原則時，該如何從單純的市場監管者轉變成為產業發展的有效推手，並且更深入瞭解各類爭議解決機制與競爭法規。邀請的來賓有美國聯邦通信委員會（FCC）委員 Mrs. Kathleen Q. ABERNATHY、日本總務省電信局國際事務處處長 Mr. Kiyoshi MORI、德國郵電管理局主席 Mr. Matthias KURTH、紐西蘭經濟發展部資源暨網路分部副部長 Mr. M. LEAR 及挪威郵電管理局局長 Mr. W. JENSEN 等人。

　　主席王錫基先生一開始即提出數個問題來引導後續的討論，包括：

- 政府監理單位是否應拯救陷於困境的經營業者（如歐洲的 3G 業者）？
- 如何在 facilities-based 及 services-based 競爭中取得平衡？
- 用戶迴路細分化的推動問題？促進競爭，但無法鼓勵投資？
- 開發中國家是否應專注於市場開放上，亦或是基礎建設的佈建上？
- 那些人應支付普及服務之成本？辦理方式如何？寬頻服務是否應被列入普及服務之中？

FCC 的 Mrs. ABERNATHY 首先提到，國際海纜的高供給量、電信業者過度的投資／網路佈建與對投資回收能力的忽視等市場因素，是當前需要面對的重要課題，然監理單位的要務是努力確保政策的確定性與一致性、監理的獨立性與公正性及 facilities-based 競爭的多元化（包括衛星、固網、有線電視網路、無線網路等），使市場得以健全發展，讓消費者獲得最大的利益。

Mr. LEAR 則提到，過去紐西蘭並未設立電信監理單位，完全無市場進入障礙及任何執照條件，但似乎仍舊缺乏 facilities-based 競爭，2002 年起該國已成立一監理單位。有關用戶迴路細分化，目前多數 OECD 會員國均已開始實施。至於推動 services-based 競爭，首先須面對的困難是既有業者不願開放其網路供服務業者接取。

針對用戶迴路細分化之實施，Mr. KURTH 提到德國有相當成功的經驗，目前係採行全元件長期增支成本法（TELRIC）來計算費用。至於日本，2001 年即已實施光纜（dark fiber）之細分化作業，並以成本（cost-based charge）為計價之基礎。而挪威 Mr. JENSEN 則認為，競爭並非市場監理之最終目的，增進消費者福祉才是目的，因此監理單位應多關注各項電信服務的應用面問題。

有關業者破產的問題，挪威 Mr. JENSEN 不認為是監理單位應負責的問題，但挪威曾放寬兩家有財務困難的得照業者之執照條件。美國 Mrs. ABERNATHY 認為，處理此問題時，最重要的是如何保護消費者，因此需要建立一套機制，並且對破產法庭有相當程度的瞭解。紐西蘭 Mr. LEAR 則提到，監理者應注意的是如何確保合理的市場競爭，而非去關注某一特定的競爭業者。

四、「無所不在的接取─重新釐定普及服務」論壇

本議程由馬來西亞 Ms. R. Abdul RAHIM 擔任主席，主要探討區域內業者提供普及服務的方法與技術，期藉由範例之檢視，重新定義普及服務之接取議題，以進一步縮小數位落差。邀請的

來賓有泰國國家電子電腦技術中心國家資訊技術委員會主任 Dr. C. THUVASETHAKUL、斯里蘭卡電信監理委員會經濟處副處長 Mrs. C.J. WARAGODA，以及來自香港、德國、芬蘭等國企業之專家多人。

泰國 Dr. THUVASETHAKUL 首先進行專題演講，並針對泰國推動普及服務與普及接取的經驗，提出幾項心得：(1)教育與宣導是成功的關鍵；(2)需要有專責推動單位；(3)推動類似以圖書館作為全球資訊接取中心（Centers for global information access）的概念；(4)高度建議應設立普及服務基金；(5)以無線技術來提供偏遠地區之電話服務是可行的。

其中，針對普及服務應由那些業者提供之問題，部分來賓認為不應單由某特定業者提供是項服務，而應透過競爭的機制來決定普及服務提供者，如此方可提高服務之效率與品質，並降低成本。但亦有來賓以英國為例，認為指定市場既有業者無償提供普及服務也是可行的方式，因為研究指出既有業者提供普及服務可獲得許多潛在的利益，故毋需再補償其提供普及服務之成本。

此外，部分來賓以低度開發國家的經驗為例，說明透過公共電話站（Telecenter）的設立及教育機構（如學校）設施的改善，可以改善偏遠與低度開發地區民眾、學生及殘障人士不易接取電信網路的問題，以縮小數位落差。

五、「縮小數位落差：朝向 IP 發展」論壇

本議程由美國 July Systems 公司執行長 Mr. Ashok NARASIMHAN 擔任主席，主要探討與 IP 相關之技術、政策及服務等議題，在 IP 技術漸趨成熟且 IP-based 網路已可提供高效率通信服務的情況下，IP 業成為區域內最熱門的技術議題之一，本論壇目的在集思廣異，聽取各界對 IP 發展的看法。邀請來賓有印度通信資訊部電信委員會主席 Mr. Vinod VDISH、新加坡 Starhub 公司行動事業部門副總經理 Mr. Kin Chan、香港 Juniper Networks 公司工程部副總經理 Mr. Andrew Coward 等人。

印度 Mr. VDISH 在專題演講中首先簡介印度電信市場概況，特別是鄉村無法接取電信網路的問題相當嚴重，因此需要在政策上提出相關的對策；針對 IP 議題，他也提出了許多政策制定者所面臨的共同問題：(1)政府與監理單位是否應該介入 IP 之發展？(2)是否應該讓市場力量決定一切？他個人則認為，就如同其他許多技術一樣，IP 僅是達成電信發展目標的一項工具。而針對該二項問題，與會的來賓基本上認為市場力量應扮演主要角色，惟有建立合適的商業模式，IP 的發展才能成功，包括未來 3G 服務的成功關鍵，均將視第三者（third party）能否開發出適合的 IP 應用及內容服務，但目前似乎仍未看到這樣的成功案例。

雖然就技術而言，IP 已能作為提供多樣化服務之共通平台，但如何建構全方位的 IP-based 網路，與會來賓卻有兩種截然不同的看法，一種看法是認為業者應建立一套全新的 IP 網路，來取代現有的電信網路，另一種看法是業者應儘可能由現有的電信網路逐步升級為 IP 網路。對此，主席強調這是一個需視個案情況作選擇的問題，沒有絕對的單一答案。

此外，一位來自印尼的台下來賓則認為，在許多開發中國家仍無法提供普及之電信實體接取網路的情況下，暢談 IP 的發展仍祇能是空談，畢竟連最根本的實體網路均付之闕如時，則實際上 IP 技術是毫無發揮的空間。對此看法，台上來賓認為除可透過普及服務政策來改善接取問題外，倘能找到合適的商業經營模式，亦可提供解決之道。

六、「IP-based 網路之重要議題」論壇

本議程由美國 Equinix 公司共同創辦人 Mr. William B. Norton 擔任主席，主要係從技術、監理及企業經營的角度，探討與 IP 網路相關之議題，例如服務品質、技術標準、ENUM、安全、IPv6 轉換等，預期這些議題在 IP 網路成為基本的通信基礎建設時，將成為主流議題並產生重大的影響力。邀請來賓有日本

NTT 公司總經理暨執行長 Mr. Masanobu SUZUKI、美國思科（Cisco Systems）公司業務經理 Mr. Garry TURNER、香港 West Bridge Communications 公司常務董事 Mr. Pindar WONG 及香港 Ericsson AB 公司資深產品經理 Mr. Ivan CHAN 等人。

Mr. SUZUKI 首先以"The IT Market and the Role of Telecom Carriers"為題發表專題演講，認為在 IT 技術及寬頻服務的發展帶動下，雖然市場的需求依然強勁，然網際網路等服務的潛能卻尚未被有效開發。此外，他將市場中的業者分為「網路業者(Layer Players)」及「解決方案業者（Solution Players）」兩類，針對「網路業者」，他認為當前最重要的議題是應切合寬頻、普及服務及網路安全之發展需要，而對「解決方案業者」而言，他則認為應針對個人及企業用戶之不同需求，提供單一窗口、訂製型的服務。

針對許多國家均已開放市場且技術發展相當快速的情況下，電信監理者究應扮演何種角色的問題，來賓們大致提出確保公平競爭避免市場主導者濫用市場力量、保障消費者權益及妥善解決技術標準（如 ENUM）制定之問題等事項。此外，針對目前 IP 應用之快速發展，包括網際網路發展均需 IP 位址之支援，因此多位來賓認為傳統電信監理單位應與業界緊密合作，以掌握技術之發展趨勢，並著手瞭解 IP 位址之相關議題，包括位址的核發、ENUM 的發展等問題，才能順應未來發展之需要。Mr. WONG 在說明 IP 相關發展時，特別提醒與會人士「2003 年亞太網路科技高峰會（APRICOT 2003）」將在台北舉辦，該會議對於 IP 相關議題將會有更深入的探討。

七、「無線及數位契機」論壇

本議程由美國 Globalstar 公司董事長暨執行長 Mr. Olof LUNDBERG 擔任主席，主要係針對目前無線通信及網際網路相關服務（如電子商務、多媒體娛樂、訊息傳送）之快速發展，探討如何將網際網路相關的利益擴大至無線通信的應用環境中，使

消費者獲取最大的福祉。邀請來賓有日本 KDDI 公司總經理 Mr. Tadashi ONODERA、UMTS Forum 主席 Dr. Bernd EYLERT 及 QUALCOMM 日本公司總經理 Mr. Ted MATSUMOTO。

在專題演講中，Mr. ONODERA 說明 KDDI 公司正持續採用 3G 無線通信技術 cdma 20001x（EVDO）來提供偏遠地區寬頻通信服務，其原因是網路佈建速度快、成本低，且語音通信容量較 2G 系統增加 1.5 倍，數據通信速率則可達 144kbps。此外，他認為該系統之用戶可同時使用 2G 及 3G 服務，正是該系統能夠在日本成功的關鍵。

針對部分台下來賓詢問 3G 技術的多種標準是否將影響未來 3G 服務的全球漫遊功能及消費者接受度，Dr. EYLERT 及 Mr. MATSUMOTO 在答覆時均認為，在技術的進步下，單一手機整合多種標準及提供多模通信功能並無任何困難，而就未來 3G 的發展前景，則抱持樂觀的看法。Dr. EYLERT 並提出 3G 應用的六大服務類型：(1)語音通信，包括影像電話服務；(2)MMS 多媒體簡訊服務；(3)企業用途；(4)資訊及娛樂；(5)Internet-Type 應用；及(6)Location-based 服務。主席最後補充時，認為真正要提供全球無空隙的行動通信服務，仍需依賴衛星通信技術。

八、「跨越數位落差：新接取方法之影響」論壇

本議程由斯洛維尼亞（Slovenia）共合國國家電信協會主席 Dr. Marko JAGODIC 擔任主席，主要探討新接取技術如 Wi-Fi 無線傳輸（IEEE 802.11b，屬 WLAN 技術）、Ethernet to the Home、SDR（Software Defined Radio）等，以及新的接取設備如 WebTV 及 Simputer 等，對電信政策及縮小數位落差的可能影響。邀請來賓有新加坡思科（Cisco Systems）公司亞太區主任 Mr. Kumaran SINGARAM、法國電信（France Telecom）公司國際公共關係部資深副總 Mr. Michel HUET 及前 ITU 秘書長 Mr. E. BUTLER 等人。

新加坡思科公司 Mr. SINGARAM 首先就數項新的接取技術

（如 Wi-Fi、Metro Ethernet 等）進行簡介，並提到佈建用戶迴路的成本約界於 US$800 至 US$400 之間，而業者提供每一用戶 DSL 服務之建置成本約為 US$100 至 US$200 之間，亞洲區域內之 DSL 用戶則平均需每月支付 US$25。Mr. BUTLER 則簡介歐洲接取網路的概況，包括在歐洲區域內傳統雙絞線的涵蓋率約為 70%～80%，而法國實施細分化之用戶迴路（Full Unbundling）出租費用約在 10.5 歐元，頻寬分享（Shared Access）費用約 0.5 歐元。

針對政府如何推動偏遠地區之寬頻服務及如何監管新興服務等問題，Mr. SINGARAM 認為在偏遠地區提供電信服務之重點在於業者如何回收其成本，只要是有合理的商業利潤，業者即有意願提供服務，Mr. HUET 也認同此看法，但認為普及接取仍應以語音通信為主（如此用戶即能以撥接方式上網），另外亦補充說明歐洲設立偏遠地區發展基金的經驗供各界參考，至於新興服務之監管則建議以競爭法規為主要之規範。

九、「寬頻/多媒體在亞洲：孰虛孰實？是奢侈還是必需？」論壇

本議程由新加坡電信（SingTel）公司營運長 Mr. Toon LIM 擔任主席，主要探討亞洲國家寬頻服務（例如 2.5G 與 3G 服務、DSL 服務及 Streaming Media 服務等）之發展概況，並檢視寬頻／多媒體服務在亞洲之前景。邀請來賓有美國 Lucent 公司行銷部門資深副總 Mr. Scott K. ERICKSON、美國 Intel 公司無線通信及計算機事業群首席軟體設計師 Dr. Patrick REILLY、美國 Streaming21 公司執行長 Dr. Joe LIN、美國 Reback Networks 公司行銷副總 Mr. Shailesh SHUKLA 及香港 SpeedCast 公司執行長 Mr. Tom CHOI 等人。

Mr. ERICKSON 在專題演講中指出，亞洲在寬頻服務的推動上已居全球領導地位，包括 SK Telecom、LG Telecom、NTT DoCoMo 等公司均已開辦其 3G 商用服務。Dr. LIN 則提出一份數據，顯示亞太區域中家庭寬頻上網服務（透過固網）之領先國家包括：韓國（25%）、台灣（10.9%）、日本（4.3%）、美國（2.4%）

及香港、新加坡；至於促使寬頻服務發展的主要因素可歸納為：(1)多元應用與內容服務的提供，如 MOD、遊戲等；(2)基礎建設的普遍化，在面臨競爭下業者急於吸引更多用戶；(3)政府的參與，包括電子商務、電子化政府等多項倡議的帶動；及(4)固網業務的開放。

Mr. SHUKLA 則認為，韓國政府強力的支持是促使寬頻服務成功的主因，例如要求學生均需透過網路提交家庭作業，使得每一戶家庭均需學習如何上網並購置相關設備，其他也包括文化及教育等因素。至於寬頻／多媒體服務是否僅是虛構的神話？Dr. REILLY 提出三點來反駁：(1)通信服務的質量正逐步獲得改善，上網頻寬已從過去 9.6kbps 提升為目前的寬頻上網；(2)技術正不斷演進，GPRS、UMTS、ADSL 等寬頻服務正推陳出新；及(3)多媒體服務已進入吾人生活，並非遙不可及；因此，他認為寬頻／多媒體服務已是實際存在的事物。

十、聯合閉幕式

本議程由 ITU 副秘書長 Mr. Roberto BLOIS 擔任主席，會議首先邀請由 2002 年 ITU 亞洲電信研討會青年論壇（Youth Forum）選出的兩位青年代表（香港的 Ms. S. L. YUEN 及印尼的 Mr. A. PRASETYO）提出青年論壇的建言，內容大致包括：

- 鼓勵青年們動員起來，建立跨國及超越文化的連繫網絡，以促進有效的對話與合作，使青年們針對塑造未來 ICT 產業及整體社會發展的政策之看法得以受到重視；

- 主張青年們應將他們的才華、活力及創新的觀念帶進 ICT 產業，鼓勵年輕專家們擁抱全球人力網絡，在兼顧各區域文化特質的前提下，發展出以社群為出發點的具體內涵，以提升整個社群之利益；

- 鼓勵青年們在與 ICT 政策制定相關之資源分配、基礎建設之發展事項上，提出相關倡議，以加強社會各界之認知，並在企業精神、縮小落差及全人類平等運用 ICT 之基礎上，扮演

更積極的領導角色；

■ 力促 ITU 持續促進 ICT 產業之競爭，以確保全球消費者均可普遍獲得科技進步及價格下降的利益，並藉由競爭促進產品與服務之創新，以滿足消費者多元需求、提供更佳的通信服務，進而縮小數位落差；以及

■ 強烈建議 ITU-D 透過對青年論壇及其他青年們參與的 ICT 相關活動之賡續支持，擴大投資在青年身上，以創造出足以達成吾人目標的青年領袖。

隨後，ITU-D 電信發展局局長 Mr. Hamadoun I. TOURE 在致詞中特別對本次會議的成果表示肯定，並感謝所有協助本次 ITU 研討會之舉辦的團體與個人，強調 ITU 將持續其促進區域內合作及交流的努力，並對需要幫助的國家提供協助，以期縮小各國國內及國際間之數位落差問題。香港電訊管理局總監王錫基先生則感謝 ITU 的支持及所有的與會人士的參與。主席 Mr. BLOIS 則感謝中國及香港對本次會議的辛勞付出，並呼應 ITU 秘書長 Mr. UTSUMI 在開幕式中所指出之亞太地區電信發展的成果與挑戰，同時強調 ITU 將賡續舉辦電信研討會活動之努力，最後在提醒未來兩屆資訊化社會世界高峰會（World Summit on the Information Society）將分別於 2003 年及 2005 年召開後，宣布本次會議圓滿結束。

肆、展覽活動

本次展覽會計有來自全球 24 個國家共 319 個單位參與展出，包括思科、北方電訊網絡、Lucent、易利信、Samsung、LG、NEC 等國際電信設備大廠，NTT DoCoMo、Sprint、SingTel、Korea Telecom、China Telecom 等電信服務業者，以及美國、加拿大、英國、法國、新加坡、香港、以色列等國家與地區之政府部門，分別展出及介紹電信業的最新技術、服務與政府產業政策。

就展出規模而言，除中國與香港以地主國身份設置有大規模之展示區外，當以日本及韓國之參展業者數量及展覽規模最為

龐大，表現十分積極。相關展示內容則以行動通信（包括 3G、
GPRS、衛星通信）相關之系統設備、手機及加值服務等為主，
充分顯示行動通信的重要性，以及業者對其未來成長性的高度期
待。

　　在政府部門展示方面，各國係以簡介其國內之通信資訊相
關科技發展與設備廠商為主，其中展場最大的香港政府則主要介
紹其 1998 年發表的「數碼 21 新紀元（Digital 21）」資訊科技策
略之各項推動工作，該策略之重點是建立香港的資訊基礎設施及
創造理想的環境，使電子商務得以蓬勃發展。在推動一系列開放
電信與廣播市場、強化競爭及提升服務品質的措施後，香港於
2001 年將「數碼 21」之資訊科技策略修訂為：「數碼香港，連結
全球」，並致力於推展以下五個策略範疇：(1)增強發展優良的電
子商務環境；(2)建立電子政府；(3)培育資訊科技人才；(4)加強
市民掌握數碼世界機遇的能力；及(5)充分應用促進資訊科技發
展的技術。此外，香港亦正積極推動「數碼港（CYBERPORT）」
旗艦計畫，希望透過數碼港所提供的一流工作和居住環境，吸引
海外公司至港設立區域總部，並帶動電子商務應用及其他資訊科
技相關活動，使香港成為一個國際多媒體及資訊服務中心，俾鞏
固香港作為資訊科技樞紐的地位。

伍、其他活動

　　為善用本次會議期間加強與各界交流，在參與論壇及參觀
展覽之外，我代表另亦出席摩托羅拉（Motorola）公司所邀集之
「亞太電信監理機構餐會」，並安排與瑞銀華寶（UBS Warburg）
香港公司代表會談。

一、亞太電信監理機構餐會

　　本活動係由摩托羅拉公司全球政府關係部（Global
Government Relations Organization）亞太總裁 Mr. Jim Gradoville
所邀集，除有該公司台灣、澳大利亞、韓國、新加坡、香港、中
國大陸、印度、印尼等代表出席外，另亦邀請我國、新加坡、香

港、澳大利亞等區域內電信監理機構代表出席。其中，澳洲通信管理局（Australian Communications Authority, ACA）副主席 Dr. Bob HORTON 並受邀進行專題演講，向與會人士介紹澳洲電信監理政策之發展概況。我出席代表則於席間與各界廣泛進行意見交流，例如 Dr. HORTON 曾論及他個人認為「透明化」、「健全的法規」、「依法行政」、「公正與獨立超然」等基本原則，是電信監理單位最重要的施政方針。

此外，我代表亦再安排與摩托羅拉公司台灣區總裁孫大明先生及總監林坤進先生會面，就國內電信事業之發展及頻譜配置問題廣泛交換意見。

二、與瑞銀華寶香港公司會談

瑞銀華寶香港公司為進一步瞭解我國電信監理政策及市場發展，特別邀請我出席本次 ITU 亞洲電信研討會代表進行本次會談，該公司計有執行董事孔祥達先生、副董事黃紹基先生及市場分析師 Mr. Frank BOLAND 等四人參加。

瑞銀華寶公司在輔導公司上市及股票承銷作業上一向有豐富經驗，並屬於負責承銷中華電信公司 ADR 的團隊成員之一，2002 年曾成功承銷新加坡 MobileOne 公司 4.5 億美元股票的初次公開發行（IPO），為該年全球第三大金額的電信公司 IPO 作業。針對台灣的投資環境，瑞銀華寶認為資金的流通仍受到許多限制，將不利於國際資金進入台灣；且國內電信業者的數量似已偏多，長期而言恐影響其獲利能力及國際投資者的投資意願。

此外，該公司認為除了電信公司的預期獲利能力是吸引投資人的主要因素外，市場監理架構是否健全亦是國際投資人的重要考量之一，例如大陸信息產業部最近片面提高國際電話攤分費率（accounting rate），原係希望提升中國電信（China Telecom）的營收與釋股吸引力，卻反而提高國際投資人對其監理政策高度不確定性的疑慮，對中國電信首度國際釋股之時程及最後成交價均造成負面影響。針對我國電信市場監理環境，該公司建議應儘

速實施行動電話號碼可攜服務（MNP）、固網用戶迴路細分化及虛擬行動通信業務（MVNO）；針對我國 3G 服務的發展，其認為手機推出時程與價格、漫遊安排、服務價格等均將是重要的影響因素。

陸、感想與建議

一、亞太地區已成世界電信的領導者，我國相關發展成就更是有目共睹

　　近年來，隨著亞太地區在網際網路、行動通信、無線上網、寬頻通信等領域的長足進步，亞太區域內國家已在用戶數、普及率及成長率等重要發展指標上逐漸取得領導地位，而我國與南韓在多項電信服務的優異成長表現亦在研討會中一再為各方所提及與讚許，ITU 秘書長 Mr. Utsumi 在聯合開幕典禮中致詞所引用的各項數據即是最佳的明證。

二、市場公平競爭及健全監理措施仍被認為是促進電信業邁向繁榮的最主要因素

　　在科技進步的帶動下，各類創新服務正不斷因應而生，加上匯流產生的跨產業監理議題，為促進競爭所採行的市場不對稱管制、網路互連、平等接取、號碼可攜等措施，以及為保障民眾通信福祉、縮小數位落差所推動的普及服務、公共資訊服務站等，均彰顯正確的電信政策、健全的市場監理機制及公平合理的競爭環境，對於電信服務之長遠發展與提升消費者權益的重要性。在摩托羅拉公司邀集的「亞太電信監理機構餐會」及與瑞銀華寶公司的會談交流中，相關的訊息也一再為各界所提及。

三、寬頻、無線、IP-based 與行動化是未來電信服務的重要發展主流

　　為了滿足消費者即時、多樣、隨時隨地的個人化服務需求，促進知識經濟與知識社會（Knowledge-based Economy/Society）的發展，寬頻多媒體服務、寬頻無線通信（如３Ｇ）服務不僅儼

然成為電信服務業者、設備業者爭相投入的新興領域，更是各國電信政策的重點推動項目；而無線及 IP-based 接取技術，不僅具備其便利性與全球網際網路廣大平台的優勢，也是許多專家、學者認為是縮小數位落差、提高普及接取的重要工具；從本次展場中的展示及研討會中的討論，均可驗證全球電信界對此一發展趨勢的重視。雖然與會人士普遍對歐美短期內的電信發展持保留態度，但對亞洲區域在相關指標中展現領先地位的國家（包括我國），卻有相當高程度的期許，而我國成功的３Ｇ執照拍賣，以及文化上對新興服務的高接受度，或許正是我國在相關領域再度引領群雄的一大契機。
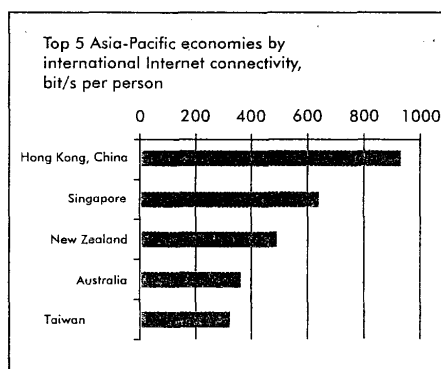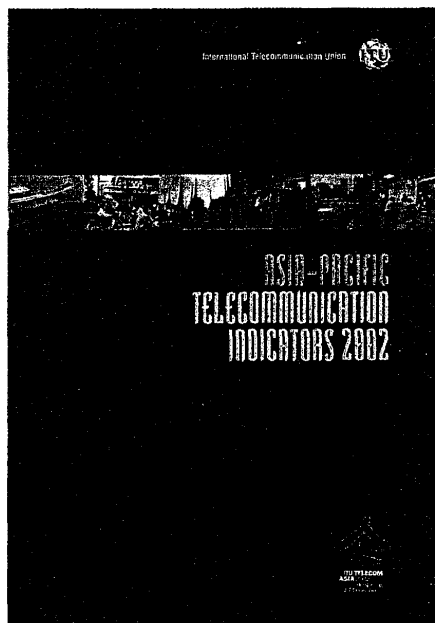
附件一

ITU Telecommunications Indicators Update:

International Internet Bandwidth in Asia-Pacific

Measuring international Internet bandwidth

How can the sufficiency of a nation's international Internet capacity be measured? This article highlights four ways.

■ **Raw quantity or the amount of international Internet bandwidth adjusted by population.** Hong Kong, China ranks top in this indicator with almost 1000 bit/s of bandwidth per inhabitant (see figure below). However, per capita bandwidth may not be meaningful because countries have different levels of Internet penetration. Therefore even if a nation's per capita bandwidth is low, it may have enough given the number of Internet users in the country. Since Internet use tends to be related to income, this indicator might be adjusted by per capita income to indicate if a nation is doing well relative to its per capita income.

■ **Quality related to bandwidth per subscriber.** It is computed by dividing the international Internet capacity by the number

Top 5 Asia-Pacific economies by
international Internet connectivity,
bit/s per person

	0	200	400	600	800	1000
Hong Kong, China						
Singapore						
New Zealand						
Australia						
Taiwan						

of Internet subscribers. Available evidence suggests that some 256 kbit/s per subscriber is a yardstick for the amount of international bandwidth per subscriber.[1] Interestingly, the Maldives, a least developed country, ranks first in this indicator with some 409 kbit/s of international Internet bandwidth per subscriber. However, this indicator can be misleading for a number of reasons. ISPs might tailor international bandwidth just to the existing number of subscribers, constraining addition of new ones. In some countries, the number of users may be significantly higher than subscribers because of public Internet

[1] See ISP Planet "Pricing your services"

INTERNATIONAL INTERNET BANDWIDTH IN ASIA-PACIFIC

The Asia-Pacific region is witnessing an explosion of international Internet bandwidth. Capacity on Internet links connecting Asia-Pacific to the world have skyrocketed more than eightfold over the last two years from 8 to 65 gigabits (Gbit/s) by the end of 2001.[1] International Internet capacity in the region now far exceeds conventional telephone capacity (see Figure 1).

This is an astonishing achievement considering that just a few years ago, Asia-Pacific still had the bandwidth blues. The price of Internet bandwidth was dear and countries had to pay for the cost of the full link to the United States, the number one destination of choice for Internet connections. Not only did the United States host the sites users wanted to surf to, it was also the most popular transit point for Internet traffic. Australia complained that it was subsidizing United States' Internet service providers (ISP). New Zealand was losing e-commerce business to companies who would prefer to host their websites in the United States, where they would get more bandwidth for less money.[2] Some countries in the region turned to methods like caching (storing popularly accessed Web pages lo-

cally) to reduce the need for users to surf abroad.

Asia-Pacific was the most vocal region about what it calls "International Charging Arrangements for Internet Services." The region passed a number of resolutions calling for a more equitable distribution of international Internet connectivity costs. But lately, this issue has not been as publicized and Asia-Pacific Internet connectivity has grown rapidly. What has changed and driven this massive boost in capacity?

One is a bandwidth glut. Some half-dozen fibre-optic submarine cables have been completed in the region over the last few years. One example, the Australia-Japan fibre cable, which connects the two countries and is interconnected to submarine cables heading to Europe, other Asia-Pacific points and the United States, has a design capacity of 640 Gbit/s, "*more than 500 times the capacity currently available from or to the East coast of Australia.*"[3]

A second trend is liberalization. Most of the region's advanced economies allow competition in the international Internet bandwidth market, which has driven down the costs of connectivity. For example,

the Internet Initiative of Japan is paying one tenth of what it used to pay five years ago for Internet connectivity (see Figure 2).

A third trend is that telecommunication operators got more comfortable with the Internet. Many had inherited academic networks and were new to the world of the Internet. Over time, they have begun to realize that their own traditional circuit-switched networks would evolve to Internet networks. These traditional telecommunication operators are now investing heavily in Internet infrastructure. One focus has been on end-to-end connectivity. If you have to pay for the full cost of a circuit, you might as well own the whole link. The most dramatic example is Japan's NTT purchase of Verio in August 2000 for USD 5.5 billion. Verio is one of the world's largest Web hosting companies with an extensive Internet backbone. The purchase provided NTT with an instant international Internet network, including direct access points in the United States. Related to this are regional alliances and cross-holdings allowing companies to leverage partner links in order to reduce cost and duplication. For example, Hong Kong, China's Pacific Century CyberWorks

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Figure 1 – Asia-Pacific international communications capacity (Gbit/s)
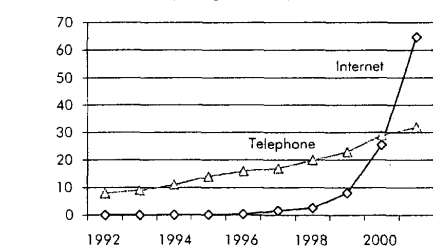
Note: Giga stands for 1000 million bits per second (Gbit/s).
Telephone circuits have been converted assuming 64 kbit/s per circuit.
Source: ITU.

Figure 2 — Price of international bandwidth from Japan to the United States per 1 Mbit/s (USD), per year
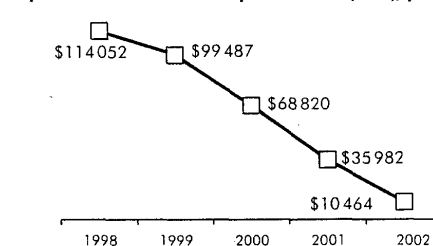
Source: Internet Initiative Japan.

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[1] Internet bandwidth refers to the capacity of the connection. It is measured in bits per second (bit/s).
[2] "Why 7am News Moved Offshore in 1997." www.circle4.com/allblack/7am.html
[3] http://www.telstra.com.au/newsroom/printver.cfm?ReleaseID=4521

ASIA-PACIFIC INTERNET ECONOMY (2001)

		Number of users		Number of subscribers (000s)		
	Number of ISPs	Total (000s)	Per 100 inhabitants	Total	Broadband	International Internet bandwidth (Mbit/s)
Australia	603	7200	37.1	4181	123	7000
Bangladesh	60	250	0.2	100	–	40
Bhutan	1	3	0.4	2	–	2
Brunei Darussalam	2	35	10.4	23	–	60
Cambodia	2	10	0.1	5	–	6
China	936	33 700	2.6	17 364	203	7598
Fiji	2	15	1.8	6	–	4
French Polynesia	1	16	6.8	9	–	8
Guam	5	48	30.5			
Hong Kong, China	258	2601	38.5	2631	623	6308
India	90	7000	0.7	3200	50	1475
Indonesia	60	4000	1.9	600	15	343
Iran (Islamic Republic of)	2	1005	1.6	402	1	160
Japan	4000	55 930	43.9	24 062	3835	22 705
Kiribati	1	2	2.3	1	–	0.13
Korea (Republic of)	99	24 380	52.1	8956	7806	5432
Lao P.D.R.	2	10	0.2	2	–	2
Macao, China	6	101	22.5	35	10	120
Malaysia	6	6500	27.3	2115	4	733
Maldives	1	10	3.6	1	–	5
Micronesia	1	5	4.2	2	–	1
Mongolia	7	40	1.7	10	–	10
Myanmar	1	10	0.0	4	–	2
Nepal	15	60	0.3	15	–	10
New Caledonia	4	25	11.4	15	–	8
New Zealand	80	1092	28.6	660	17	1900
Pakistan	70	500	0.3	200	–	225
Papua New Guinea	6	50	0.9	27	–	6
Philippines	51	2000	2.6	600	10	237
Samoa	3	3	1.7	...	–	2
Singapore	42	1500	36.3	927	151	2639
Solomon Islands	1	2	0.5	1	–	0.26
Sri Lanka	29	150	0.8	62	–	18
Taiwan	185	7820	34.9	6316	1130	7228
Thailand	18	3536	5.8	1500	2	642
Tonga	1	3	2.8	1	–	1
Vanuatu	1	6	2.7	2	–	1
Viet Nam	4	1010	1.2	252	–	34
Asia-Pacific	6654	160 217	4.6	74 290	13 979	64 955

Note: Local Internet access in Afghanistan and the Democratic People's Republic of Korea is not available.
Source: ITU.

(PCCW) and Australia's Telstra combined their Internet backbones to form Reach. Another example is ISPs using the Internet backbones of their parent companies. Sri Lanka Telecom, for example, has Internet connectivity to Japan via its part owner NTT while LankaCom, another ISP, has a four Mbit/s connection to Singapore via its owner SingTel.

A big boost in Internet connectivity is increasingly celebrated as a significant event in most countries throughout the region. Take India's incumbent international operator VSNL, which proudly announced in April 2001 that it had reached 1000 Mbit/s of international Internet capacity, a major milestone: *"The achievement of 1000 Mbit/s of leased connectivity is a landmark for India..."*[4] The increase in bandwidth was also significant since India now has more Internet than voice telephone capacity. Or take Fiji, which has the good fortune of being a landing point on the new 30 500 km-long Southern Cross Cable, which also links Australia and New Zealand to Hawaii and the United States West Coast. Fiji spent USD 22 million to connect to Southern Cross, one of the biggest investments the island nation has ever made. The Chairman of Fiji's international telecommunication operator FINTEL, noted: *"The significance of the investment should not be under emphasized...the impact of the project will be far reaching...it will influence investors' decisions to invest in Fiji."*[5]

But not all countries in the region have participated in the bandwidth boom. While some nations have gigabits of connectivity others get by on less bandwidth than an average Asymmetric Digital Subscriber Line (ADSL) connection. Two

groups of countries are particularly suffering, cursed by unfavourable geographic locations. One group includes land-locked Asian nations such as Laos P.D.R or Nepal that cannot benefit from undersea cables. The other group, Pacific island nations, lies too far away from main submarine cable routes. These nations find thermselves in a situation where they rely on lower quality and high-cost satellite connections. Another factor affecting these countries is economies of scale. While the cost of bandwidth is coming down, the savings are particularly significant when you buy megabits of it. Smaller nations do not have the resources to buy large amounts and thus pay higher prices. For example, ITU research suggests that countries in South East Asia are paying between six and seven times more than what Japan pays for international Internet bandwidth. There is also a lack of transparency in bandwidth pricing and vendors tend to not publish their prices.

WHAT IS THE REMEDY FOR BANDWIDTH CRIPPLED NATIONS?

• One way of reducing costs is to open up markets. While some countries profess to have open Internet markets with no restrictions on the number of ISPs, in reality they are constrained. ISPs are not allowed to directly procure their own international capacity and must instead obtain it from the monopoly gateway provider, typically the incumbent telecommunication operator. In other countries, although ISPs may be free to obtain international connectivity, it is only for a half circuit and they must obtain the other half from the incumbent operator.

• Another way is to reduce the volume of outgoing Internet traffic. It is absurd for e-mails between

two users in the same country to be transited through a third country. This can be avoided by the use of a national Internet exchange. In the case of Indonesia, ISPs estimate that half their operating costs go towards establishing international Internet links. The nation's Internet Service Provider association, in cooperation with Cisco, built a national Internet exchange for ISPs to keep their national traffic from leaving the country. As a result, ISPs estimate they have reduced the costs for international links by some 15 per cent.[6]

• A third method is to develop asymmetric links. This is based on the assumption that incoming traffic (e.g., Web pages from abroad) will be greater than outgoing (e.g., a one line website address). A number of ISPs in the region have thus arranged for Internet connections via satellite where they have more incoming than outgoing bandwidth to reduce their costs. One drawback of this approach is that it is not ideal for electronic commerce. The reason is that overseas users will find it slower to access Web pages in the country that has asymmetric links since they will have less bandwidth available.

• A fourth solution would be for countries with small markets to pool their bandwidth requirements in order to leverage lower connectivity costs.

In conjunction with these steps, other actions could be taken to ensure that geographically disadvantaged nations are not excluded from the global information society. This might include applying the spirit of various resolutions that call for the cost of the Internet link between countries to be shared.

[4] VSNL. "VSNL Internet Operational Bandwidth reaches 1000 bit/s." Press Release. 24 April 2001.
[5] "Fiji Celebrates Launch of Southern Cross Cable." www.southerncrosscable.com/issue8.html
[6] www.nikkeibp.com/nea/jul98/napjuly/indo.html

THE REPUBLIC KOREA: COUNTRY PROFILE

Located in North East Asia, the Republic of Korea is the largest of the so-called "Four Tigers" (i.e., Hong Kong, China, Singapore and Taiwan, China). Its population stood at 46.6 million at mid-2002. The other tigers all have a higher per capita income than the Republic of Korea's USD 9400 in 2001 (as do 50 other nations). Han-gul, the main language, has its own alphabet and uses a pictographic font. Normally these factors — large population, relatively low per capita income, non-usage of a major world language and a non-Roman alphabet — work against elevated Internet adoption. But surprisingly, the Republic of Korea has the highest Internet penetration in Asia and the highest broadband Internet penetration in the world (see Figure 1). What are the reasons for this success?

• **Education.** The country's level of literacy (98 per cent) and school enrolment rate (90 per cent) are high. These are prerequisites for widespread adoption of information and communication technologies (ICT). Some 95 per cent of students in the country use the Internet, as do 97 per cent of those with a college degree.

• **Metropolitan topography.** Some 80 per cent of the country's population lives in urban areas. Apartments provide dwelling for 40 per cent of its population. The average distance of a customer from a telephone exchange is 2.2 km with 95 per cent of customers within four kilometres, the target range of high speed Asymmetric Digital Subscriber Line (ADSL) technology.

• **Competition.** At year-end 2001, there were seven companies providing broadband Internet access service. Competition among broadband technologies has also grown the market through greater choice and lower pricing. ADSL is readily available to the 90 per cent of households with a fixed tele-phone line. Unlimited monthly ADSL access, with download speeds of 8 Mbit/s, is around USD 25 per month. Cable television provides 57 per cent of homes with another broadband option through cable modem. Other broadband options include fixed and wireless local area networks, broadband wireless local loop, satellite-delivered solutions and mobile Internet.
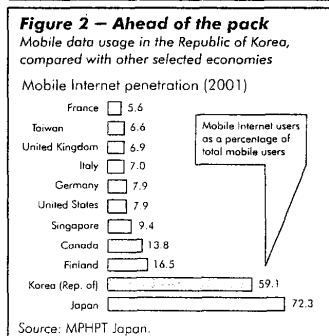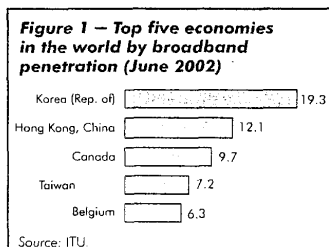
• **Government support.** The government has facilitated broadband development through an early commitment to high-speed infrastructure with specific programmes. This has included low interest loans and a certification programme that grades apartment complexes according to the access speed they provide tenants with.

• **Equipment industry.** The country's large ICT manufacturing sector has been an advantage with local suppliers eager to get into the broadband market. This has minimized shortages and helped keep equipment prices low.

The impact of broadband Internet access and growth of IP-related services is impacting the technical evolution of the country's fixed telephone network. By June 2002, there were some 9.2 million subscribers with a broadband connection. There is now a need to offer subscribers increasingly higher degrees of bandwidth by locating fibre-optic cable closer and closer to the end-user. Korea Telecom plans to offer Very high bit rate Digital Subscriber Line (VDSL) services (at up to 26 Mbit/s) and move aggressively into fibre-to-the-home by 2005 (i.e., replace copper lines with fibre). It forecasts some 5.6 million broadband subscribers of its own by 2003 (out of a nationwide total of 11.9 million).

Mobile communication developments have also proved successful in the country, which today has one of the highest levels of mobile penetration in the world. Its mobile Internet penetration is also impressively high (see Figure 2). The country was slow to introduce digital services, but when it did so, it opted for the CDMA standard. It launched its third generation mobile network in October 2000 with CDMA.1x mobile data services, and IMT-2000 services were licensed in December 2000 for launch in 2003. As of mid-2002, the recorded number of mobile data users was around 10 million.

The Republic of Korea is one of the countries participating in the ITU Internet Case Studies (see www.itu.int/ict/cs/) through its Ministry of Information and Communication. ■

Figure 1 — Top five economies in the world by broadband penetration (June 2002)

Economy	Value
Korea (Rep. of)	19.3
Hong Kong, China	12.1
Canada	9.7
Taiwan	7.2
Belgium	6.3

Source: ITU

Figure 2 — Ahead of the pack
Mobile data usage in the Republic of Korea, compared with other selected economies

Mobile Internet penetration (2001)

Mobile Internet users as a percentage of total mobile users

Economy	Value
France	5.6
Taiwan	6.6
United Kingdom	6.9
Italy	7.0
Germany	7.9
United States	7.9
Singapore	9.4
Canada	13.8
Finland	16.5
Korea (Rep. of)	59.1
Japan	72.3

Source: MPHPT Japan.

access. Thus the overall Internet experience may be a poor one. Furthermore, the growing deployment of broadband Internet access requires that users have greater international bandwidth.

Top 5 Asia-Pacific economies by international Internet bandwidth per subscriber
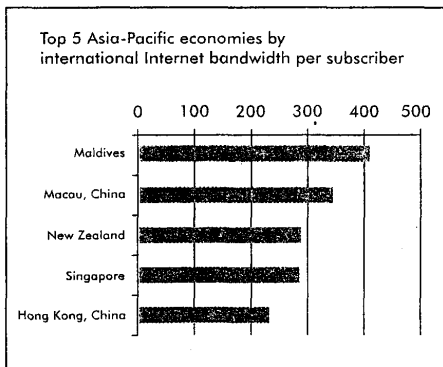
■ **Internet economy transition indicator.** It is calculated by dividing the amount of international Internet capacity by equivalent voice satellite and submarine circuits (circuits multiplied by 64 kbit/s). This measures if the

Top 5 Asia-Pacific economies by international Internet bandwidth/international telephone circuit capacity
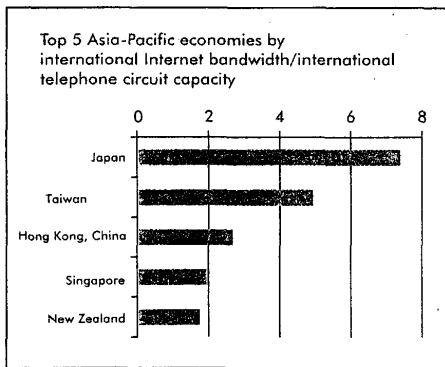

economy has more Internet than voice telephony circuits, suggesting that Internet dominates international communication. Japan leads in this category with roughly seven times more international Internet capacity than voice telephone circuits. Around ten economies in the region have made the transition. A high value for this indicator also suggests that a nation has moved to a sus-

tainable telecommunication sector because it is not so concerned about applications such as Internet telephony cutting into conventional circuit-switched revenues.

■ **Estimated demand.** A Bit-Minute Index or BMI (formulated by the research company TeleGeography) can be constructed based on the theory that demand for international telephone conversations is a proxy for Internet communications. For example, the Internet can be used for voice over Internet Protocol and electronic mail to substitute for conventional circuit-switched telephone calls. BMI is constructed by dividing the total of incoming and outgoing international telephone calls (measured in minutes) by the international Internet bandwidth. Taiwan, China ranks first in this indicator. However, BMI is not a perfect substitute for estimating hidden Internet demand. Use of the Internet requires considerably extra skills and is more complicated than making a telephone call so that even if there was substantially extra international Internet bandwidth it is not clear if a nation could use it without the requisite skills.

One measure alone is not adequate to give an overall picture of how a nation is fairing in its international Internet capacity. Using a composite weighting all four indicators
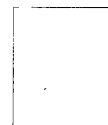
Top 5 Asia-Pacific economies by BMI
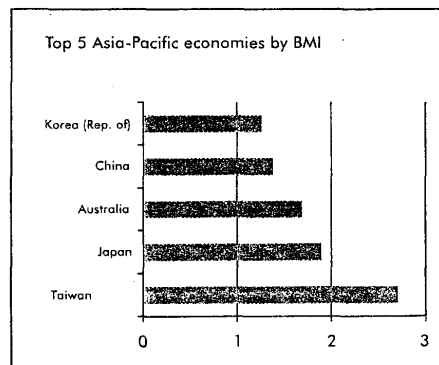
equally would find Hong Kong, China ranked first followed by Taiwan, China, Singapore, Australia and Japan. ▣

附件二

ITU 秘書長 Mr. Yoshio UTSUMI 開幕致詞稿

INTERNATIONAL TELECOMMUNICATION UNION

ITU TELECOM ASIA 2002
OPENING CEREMONY

OPENING ADDRESS

YOSHIO UTSUMI
SECRETARY-GENERAL,
INTERNATIONAL TELECOMMUNICATION UNION

SUNDAY, 1 DECEMBER, 5:00PM
HONG KONG CONVENTION AND EXHIBITION CENTRE

H.E. Mr Tung Chee Hwa, Chief Executive of the Hong Kong Special Administrative region,

Your Royal Highness Prince Lavaka Ata Ulukalala, Prime Minister of Tonga,

H.E. Mr Wu Jichuan, Minister of Information Industry, People?Republic of China,

Excellencies,
Ladies and Gentlemen,

It is my very great honour to welcome you to ITU TELECOM ASIA 2002.

It is often said that the Great Wall of China is the only man-made structure that can be seen from the moon. I asked an astronaut who had been to the moon if he could see the Great Wall. He said o? but he told me he could see buildings in Hong Kong. I am sure, however, he could not see fiber cables inside the buildings. In Hong Kong people speak twice faster than in Geneva. Twice more efficient! They have to use high-speed communications tools. Telecommunications must be more important than tall buildings to support the business activities in Hong Kong.

Hong Kong took many years to build. We too are here with a view to constructing the future. But what we are constructing is made out of information, not out of bricks and mortar. Information that travels over cyberspace is invisible to the human eye.

One decade ago the Asia-Pacific was home to just over 20% of telecommunication users worldwide. It now accounts for over one third of all subscribers. It is unique in being the only region in the world to have significantly grown its market share. It is currently adding new connections at the rate of more than one new user every second of every day. Even more astonishingly, it has sustained this remarkable growth rate for more than ten years.

Rapidly increasing penetration of voice and data services continues to drive buoyant economic growth across the region. Rising per capita income in turn drives even greater demand for telecommunications products and services. For instance, Asia-Pacific has almost half of the world ADSL broadband subscribers, and more than 90 per cent of current 3G mobile subscribers.

With Asia now leading change and defining the shape of tomorrow markets, this year ITU TELECOM ASIA event promises to be the most exciting yet.

In the coming week, you will have the chance to see exhibitors from around the world showcasing the latest technologies in every field.

You l also hear the best of the industry top speakers at this year ITU TELECOM Forum, which will feature more than 200 expert presenters, moderators and panelists.

With depressed economic conditions threatening to impede growth and adoption of next-generation products and services in much of the world, this year Asian Forum will play a critical role in helping

other regions find their way to economic recovery. It will also focus on strategies to stimulate sector-wide growth, and to transform it into renewed prosperity in all world regions.

Telecommunications has become a commodity that is routinely bought and sold, however, it is much more than this. It is an essential public service. Because communication is a basic human right, the telecommunications sector has a special responsibility.

Today   highly sophisticated telecommunications services really do have the power to transform lives. Ironically, it   in the very areas where they are often least available that these services could do the most good.

Access to information and services like telemedicine, distance education, and electronic commerce can help end the cycle of poverty that afflicts many of the world   people.

As many Asian nations are demonstrating, easy and affordable access to communications has become **the** major enabler of economic growth, helping transform yesterday   emerging economies into tomorrow   economic powerhouses.

Access to advanced telecommunications services represents, for the developing world, the chance to finally take their place within the global economy, to break down long-standing barriers to growth, and to tackle local problems through information and education.

After centuries of economic inequality, the human race now has at its fingertips a technology with the power to act as a great global equalizer, breaking through barriers like distance, geography and language.

However, in every region of the world, the gáp between those who enjoy anywhere, anytime access to the vast resources of the World Wide Web and those who cannot log on at all is widening. This is the new face of the development gap.

If we do not act quickly to bridge the widening Digital Divide between *the information empowered* and *the information deprived*, this wonderful technology threatens to have exactly the opposite effect. It could end up polarizing nations, marginalizing communities, and further intensifying existing disparities between rich and poor.

Ladies and Gentlemen,

Almost 20 years ago, ITU published a report called The Missing Link. It highlighted the plight of the many communities lacking even basic access to communications and set an ambitious target: by the early years of this century, most of mankind should be brought within walking distance of a telephone.

When I opened the last ITU TELECOM ASIA here in Hong Kong, I remarked that we are now well on the way to achieving this target. At that time, I set a new goal. By the end of the current decade, virtually the whole of mankind should have easy access to advanced communications, including the Internet.

Meeting this challenge will require a coordinated international approach at all levels. That is why ITU is proud to be serving as lead agency for a new United Nations summit. The first phase of the World Summit on the Information Society will take place one year from now in Geneva.

The Society will bring together heads of state, industry leaders, UN agencies and NGOs to develop an action plan to build the Information Society.

Phase Two of the Summit will take place in Tunis in 2005, where a thorough review of progress will ensure that programmes are on track to deliver rapid, tangible results to those most in need.

Since the early 1990s, ITU has been campaigning to have the Right to Communicate declared a basic human right under the United Nations charter. One decade later humanity has yet to adopt this objective. That   why we, at ITU, have taken on the slogan: Helping the world communicate.

During the week ahead, let us try to focus, therefore, not only on our business goals and sales targets, but on what communications technologies could mean, in the 21st century, for the millions still lacking access to even basic connectivity.

While there will be plenty of deals to be made on the show floor this week, telecommunications is about more than just making money. It is about building a better world, in which today   children, regardless of race, creed, colour or nationality, can participate with equal hope, and with equal opportunity.

Let us all, during this week, help the world communicate.

Thank you.