

ANNEX C

FACTSHEET: Infocomm Milestones

Date	Description
1981	<ul style="list-style-type: none"> • National Computer Board Act is passed by parliament and NCB was formed under the Ministry of Finance with its first chairman Mr Philip Yeo. • Civil Service Computerisation Programme (CSCP) was implemented to computerise civil service ministries and departments; to train enough computer software professionals to meet Singapore's needs, and to develop the computer software and services industry. Ministry of Finance was the first government agency to use PCs.
1982	<ul style="list-style-type: none"> • TAS Act 1982 - Merger of TAS and Postal Services department in Oct 1982. • 14,804 public telephones were installed island wide.
1983	<ul style="list-style-type: none"> • Automatic Paging system introduced on 20 Feb 1983.
1984	<ul style="list-style-type: none"> • 27 systems implemented at CSCP sites.
1985	<ul style="list-style-type: none"> • Old telephone booths were replaced by new generation cardphone booths. • Network for Electronic Transfers Singapore Pte Ltd (NETS) was founded in 1985 by five major banks namely, DBS Bank, OCBC Bank Group, Overseas Union Bank, POSBank and United Overseas Bank to operate and manage an on-line debit payment service. TatLee Bank(since merged with Keppel Bank to form Keppel TatLee Bank) and Keppel Bank joined as NETS shareholder banks in 1990 and 1992 respectively. Through the years, NETS has developed a comprehensive range of electronic payment services such as EFTPOS, Shared ATM service, FEDI (Financial Electronic Data Interchange), Nets Kiosk, CashCard, Set Payment Gateway, CashCard for Open Network E-commerce (C-ONE), Business-to-Business Internet Payment service, HomeNets, e-bill service and Trade Finance service.
1986	<ul style="list-style-type: none"> • National IT Plan (NITP) was launched to promote widespread IT application in Singapore by Committee for National Computerisation (CNC) chairman, Lee Hsien Loong. The NITP further established a number of nationwide electronic services that facilitated cross agency collaboration and provided significant

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	<p>value-add to the stakeholders. Examples included “TradeNet” which enabled the electronic exchange of structured documents between the trading, shipping, and freight forwarding community and various government agencies, and the “One Stop Change of Address Reporting Service” (OSCARS) provided citizens with a single point reporting for change of residential address. The NITP also addressed the softer complementary aspects of developing a sufficient IT manpower base, establishing a culture that was receptive to ICT, and encouraging creativity and entrepreneurship.</p>
1987	<ul style="list-style-type: none"> • Radio Memo Paging Service launched (Pager can store and display up to 1,200 letters of the alphabets and numbers). • Coin-operate IDD telephones made available to the public.
1988	<ul style="list-style-type: none"> • Handphones introduced in Singapore (First in the world to be used underground in MRT). • Singapore Network Services (SNS) set up to operate TradeNet.
1989	<ul style="list-style-type: none"> • TradeNet, the first nation-wide electronic data exchange system for international trade document processing was launched in Jan 1989. It became the first non-US recipient of the 1989 Partners in Leadership Award from the US Society for Information Management. Only months after it began operations, TradeNet was already handling 20% of the international trade documents in Singapore. On a national basis, it was estimated to be saving Singaporean traders about one billion USD per year. • First National IT awards was launched. Aimed to recognise organisations that have excelled in exploiting IT and to highlight the strategic importance of IT applications in creating superior business performance. • Computer network linking 23 major government computer centres marked first major step towards one-stop, non-stop services.
1990	<ul style="list-style-type: none"> • World’s first caller number display service for handphone launched. • Integrated Land Use System (ILUS) which provides comprehensive, up to date information on land use, building and planning related data launched. iLUS supports the planning and operational needs of the URA and the Public Works Department, as well as public agencies through the Land Data Hub.

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	<ul style="list-style-type: none"> • MediNet, Singapore's nationwide computer network for the medical and health care community launched. 5 pilot applications focus on the processing of claims in hospital bills, electronic procurement of medical and surgical supplies, the transmission of notifications to government agencies, a national patient master index and access to local and foreign databases. MediNet links the computer systems of all participants in the healthcare delivery system. These include the Ministry of Health, Central Provident Fund (CPF) Board, government, restructured and private hospitals and general practice clinics. By connecting their computers (personal computers, minicomputers and mainframes) to MediNet, these organisations are able to communicate, exchange data and access common applications on the network. • LawNet was launched. LawNet is a strategic legal information network that aims to provide users with an instantaneous and convenient way to retrieve legal information services electronically. A wide variety of services are currently available relating to Legal Research, Litigation, Conveyancing, and Corporate Law.
1991	<ul style="list-style-type: none"> • Time-based charging for local calls introduced. • Singapore Telecom launched Skypager service (First international paging service in region). SkyPager delivers numeric messages to end user's pager instantly. SkyPager service utilizes a compact messaging unit that features a digital display and a user-selectable choice of discreet tone or silent vibration alerting the user the moment an incoming message arrives.
1992	<ul style="list-style-type: none"> • IT2000 report launched outlining the vision of the intelligent island that will be one of the first countries in the world with an advanced nationwide information infrastructure interconnecting computers in nearly every home, school and workplace (NCB 1992a). The computer will become a multi-purpose information appliance that integrates the functions of the telephone, television, and computer to deliver sound, images, text and data. Through these information appliances, Singaporeans will draw upon a wide array of electronic information and services to improve their businesses, make their working lives easier, and enrich their personal, social and recreational activities. Singapore is to evolve into a developed nation by exploiting IT extensively to enhance its economic competitiveness and quality of life. • Reconstitution –TAS Act 1992:

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	<p>TAS: 2 Principal functions</p> <ol style="list-style-type: none"> 1. Regulator 2. Promoter of Telecomm and postal services
1993	<ul style="list-style-type: none"> • Information Technology Institute Holdings (ITI) established to commercialise products and applications developed by ITI. • Land Data Hub was launched and has since become a critical centre of information. It coordinates land resources by standardising data, setting data policies and making information with maps and text of the whole island, using Geographic Information System technology to manage the data.
1994	<ul style="list-style-type: none"> • Singatouch kiosks launched at National Library. • All approved Telecommunication equipment to have TAS-approval label. • Introduction of Singapore's first digital cellular system, Global System for Mobile Communications (GSM). • Extra "9" digit prefix added to the existing 7-digit numbers mobile phones and pagers. • 6 Digit postal code introduced to improve efficiency and to further automate Sing Post's mailing sorting system. • OSCARS, or the 'One-Stop Change of Addresses Reporting Service' was implemented in Singapore. With OSCARS, Singaporeans no longer need to report separately to various government agencies on their change of address. They can update their residential addresses at any neighbourhood police posts and police stations, which will then transmit the updated data to all subscribing agencies by the next working day.
1995	<ul style="list-style-type: none"> • Licensing of one more public cellular mobile telephone operator and three more public mobile radio paging operators to commerce service in April 1997 in competition with Singapore Telecom when its exclusive license for these services expire (May 95). • Liberalisation of IDD/STD payphones (Sep 95). • Licensing of 2 Internet public access providers, in competition with

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	<p>SingNet.</p> <ul style="list-style-type: none"> • Transfer of LIVEwire technology to SNS (LIVEwire is part of Singapore's IT2000 masterplan to deploy nation wide information infrastructure which will support various online, interactive, communication and transaction services). • Launch of CORENET (Construction and Real Estate Network) on 27 Sept 1995, a major IT initiative led by the Ministry of National Development and driven by the Building and Construction Authority in collaboration with other public and private organisations. CORENET provides an integrated environment for members of the construction and real estate sectors to communicate and exchange information. The CORENET web site was also launched to provide the public with access to selected information on properties and real estate. • Singapore Government website (www.gov.sg) first came online. SINGOV is the "Government" component of the Singapore Government Online. It serves as a convenient launch pad for users to locate information on the Singapore Government - such as government news and policies, leadership and bureaucracy, official statistics put out by the government, as well as details and contact information of public service agencies. SINGOV not only acts as a gateway, it also highlights important information. • 2 new initiatives - CITREP and a Co-investment scheme riding on the cluster development fund launched to boost skills of IT professionals. • Primary One pupil registration exercise was launched in July 1995. This was a Ministry of Education and NCB project to streamline and computerise Primary One pupil registration. The system allowed registration to be done online at schools, with updates on vacancies after each phase of the registration made easily available. The system also helps the school authorities to detect parents who reserve places for their children in several schools.
1996	<ul style="list-style-type: none"> • The Multimedia Broadband Network project, initiated by NCB, TAS and Singapore National Science and Technology Board (NSTB) was officially launched by the Minister for Communications in June 1996. Singapore ONE, which allows access to fast Internet, digital library, Student's and Teacher's Workbench, electronic government services and video-on demand was the

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	<p>world's first nation wide broad band network</p> <ul style="list-style-type: none"> • Corporatisation of CSCP (Civil Service Computerisation Programme) and transferred these activities into National Computer System (NCS) • Launch of Government EPS (Electronic Procurement System) which automates the complete procurement workflow and establish electronic links with government suppliers via fax and electronic data exchange (EDI). EPS was implemented at MOF's Budget Division and Ministry of Health's pharmaceutical Department by end 1996 before subsequent deployment to other government departments and statutory boards. • Launch of Government Intranet in June 1996. The Government Intranet links some 16,000 computers in a secure network that allows multimedia information to be shared across government departments and statutory boards. Civil servants have online access to government directories, instruction manuals, details of Civil Service Sports Council facilities, and PS21 information services such as newsletters and updates on WITS projects. The Government Intranet also provides an intelligent news alert service where a user can specify selected topics of interest from major information sources, such as AsiaOne, to be sent automatically to them. • Public Sector Smart Card (PS card) was approved in March 1996. The card which serves as a common identification document for civil servants, allows the holder to enter into selected government buildings and access to computer systems. The card is compatible with the NETS Cashcard system which can be used as an electronic purse to pay for goods at canteens or retail outlets, for public telephone calls, and for purchases at vending machines. • Electronic Filing System (EFS) was implemented. The Electronic Filing System paved the way for the World's first nation-wide paperless court system. With EFS, law firms no longer need to make physical trips to the Courts for filing or extraction of documents. The filing service can be made available 24 hours a day so that documents can be submitted to the law firms' convenience. • Information kiosks were installed at the Subordinate Courts, the Traffic Police and the Land Transport Authority for the Automated

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	<p>Traffic Offence Management System (ATOMS) for traffic offenders to pay traffic fines at the kiosks without having to attend court. Three other kiosks available, one at Supreme Court and two at City Hall Building, made it possible for public and lawyers to obtain information pertaining to court schedules, processes and procedures of the law.</p> <ul style="list-style-type: none"> • The Digital Library created a network of borderless libraries and electronic databases, with information readily accessible from the desktop. Linking 20 libraries and 200 information databases, the digital library allowed all segments of the population to enjoy more convenient and cost-effective access to information. • The Student's and Teacher's Workbench (STW) was piloted in January 1996 in six secondary schools to deliver Science lessons to Secondary One students. The STW provides a multimedia software environment for secondary schools where teachers can make use of STW to prepare lesson packages and deliver lessons in class with participation from students. Students can access the lesson packages later for review or if they have missed the lessons in class. • The Electronic Medical Record (EMR) System was implemented to allow patients' medical data to be easily retrieved and shared among healthcare providers. • Internet was introduced in MOE HQ, 14 junior colleges, 24 schools and 4 centralised institutes.
1997	<ul style="list-style-type: none"> • Singapore ONE was formally announced by Minister for Communications, Mr Mah Bow Tan, at CommunicAsia 96 and Network Asia 96, Singapore. • The <u>first Masterplan for IT in Education</u> (1997 - 2002), a blueprint for the use of IT in schools and access to an IT-enriched school environment for every child was revealed. The goal was to shift the learning process to nurture thinking skills. The rich, interactive capability of IT-based learning resources would be harnessed to motivate and engage students and allow them to learn at a comfortable pace and help prepare them for the workplace of the future. • The Singapore Network Information Centre (SGNIC), a wholly-owned subsidiary of IDA which was established in October 1995 to administer the Internet domain name space in Singapore.

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	<ul style="list-style-type: none"> • NCB comes under the Ministry of Trade and Industry. • Intelligent Trademark search system launched. • SGNet implemented - interconnects all government ministries and stat boards as well as their external business partners. Structure hub connections enable the haring of government-wide applications. • Netrust was established (NCB and NETs) in May 1997. Netrust adopts the Public Key Infrastructure (PKI) technology in the issuance of digital certificates that can positively identify an individual or a server in the faceless Internet. PKI is generally acknowledged as the best solution available today because it addresses the key issues of authentication, confidentiality, integrity and non-repudiation required for secure e-commerce transactions. In addition to its proprietary platform, Netrust also issues open standard certificate types for Microsoft and Netscape Web browsers and servers, and for VPN devices and applications. • Institute of Systems Science (ISS) and Infocomm Technology Institute (ITI) merge to form Kent Ridge Digital Labs. • Spore Computer Emergency Response Team set up to coordinate emergency response to security incidents. The Singapore Computer Emergency Response Team (SingCERT) is a one-stop centre for security incident response in Singapore. It was set up to facilitate the detection, resolution and prevention of security related incidents on the Internet. SingCert was initially established in October 1997 as a programme of the Infocomm Development Authority of Singapore (IDA), in collaboeration with the Centre for Internet Research, National University of Singapore (NUS). • Singapore was the first country in the world to deploy ADSL commercially when SingTel launched its Magix service in November 1997.
1998	<ul style="list-style-type: none"> • Singapore ONE launched and goes commercial (nation wide network). Singapore ONE is a collaborative effort between the government and the industry to implement a nationwide broadband network and deliver interactive multimedia on-line applications and services to all Singaporeans.

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	<ul style="list-style-type: none"> • Kent Ridge labs launched by DPM Lee Hsien Loong. • National Chinese Internet Programme launched; providing web content to the Chinese community. • Electronic Transaction Act (ETA) passed by parliament. In July 1998, the ETA was enacted to provide a legal foundation for electronic signatures, and gives predictability and certainty to contracts formed electronically. Singapore is one of the first countries in the world to enforce a law that addresses the issues that arise in the context of electronic contracts and digital signatures. The Electronic Transactions Bill was introduced in Parliament on 1 June 1998, and passed on 29 June 1998. The Act came into force on 10 July 1998. The Singapore ETA follows closely the UNCITRAL Model Law on Electronic Commerce, which is setting the framework for electronic laws in many countries. • S\$9 million e-commerce programme launched to help small businesses get into e-commerce. • Telecomm (Amendment) Act was passed to enable TAS to fulfill its function to liberalise multi-operator environment. • Public Internet Access market liberalised.
1999	<ul style="list-style-type: none"> • NCB and TAS merge to form the Infocommunications Development Authority of Singapore (IDA). • TAS liberalises internet exchange provision in Singapore. • TAS liberalise transmission of Value-Added Network traffic over the internet. • Singapore 1st Permanent Singapore One Training centre opens "One Learning Place" opens at Toa Payoh library. • Launch of eCitizen portal. The eCitizen portal is an initiative owned by the Ministry of Finance and managed by the Infocomm Development Authority of Singapore (IDA). The portal is positioned as the first-stop for government services on the web and organised with the needs of the citizens and customers in mind. The end goal is to build a leading e-Government, which delivers more convenience and benefits to all individuals who live, work and play in Singapore. The eCitizen portal enables users:

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	<ul style="list-style-type: none"> • To search for and access a diversity of information from government agencies • To conduct a wide range of transactions online with government agencies
2000	<ul style="list-style-type: none"> • IDA formulated the Infocomm 21 report. Infocomm 21 is a five-year strategic plan launched in the year 2000. The plan aims to harness infocomm technologies to boost national competitiveness and improve Singaporeans' quality of life. At its heart is the vision to develop Singapore into a vibrant and dynamic global Infocomm capital with a thriving and prosperous e-economy and a pervasive and infocomm-savvy e-society. Infocomm 21 is the result of the collective effort of government agencies, the infocomm industry, academia, research institutes, community groups, industry associations and professional societies. • Full liberalisation of the Telecommunication market. On 21 Jan 2000, the Government brought forward the introduction of full market competition in the telecommunications sector by 2 years, from 1 Apr 2002 to 1 Apr 2000. It also lifted direct and indirect foreign equity limits for all public telecommunications services licences. • IDA issued the Code of Practice for Competition in the Provision of Telecommunication Services ("Telecom Competition Code") in 29 Sep 2000. • First S\$1.5 billion e-Government Action Plan (eGAP) launched to be a leading e-Government to better serve Singapore and Singaporeans in the new knowledge-based economy. A total amount of S\$1.5 billion was committed to this plan.
2001	<ul style="list-style-type: none"> • The Masterplan II for IT in Education (mp2) was unveiled in July 2002. It consolidates and builds on the achievements of the first Masterplan, and continues to provide the overall direction on how schools can harness the possibilities offered by IT for learning. The vision of mp2 is that IT will be pervasively and effectively used to enhance educational processes and structures. By leveraging on IT as a tool to customise education to meet the needs and abilities of our pupils, we will be able to support and develop lifelong learners as we work towards the overall vision of Thinking Schools, Learning Nation. • National Infocomm Literacy Programme (NITLP) launched by PM Goh Chok Tong. The National IT Literacy Programme (NITLP)

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	<p>is a nation-wide government initiative spearheaded by the Ministry of Manpower (MOM) and managed by the Infocomm Development Authority of Singapore (IDA). This programme aims to train 315,000 Singaporeans in three years, to become adept users of infocomm appliances and services. NITLP is one of the key initiatives developed to complement the Infocomm Training Framework which seeks to identify the specific infocomm training needs of different segments of the Singapore population, so that the relevant training opportunities can be made available.</p> <ul style="list-style-type: none"> • Formation of Broadband Media Association, an industry-led effort to promote and grow the broadband industry.
2002	<ul style="list-style-type: none"> • Fixed Lines - 8 digits with number '6' prefix.
2003	<ul style="list-style-type: none"> • Connected Singapore, a blueprint for renewed confidence and new growth opportunities was launched. To maintain relevance in the face of change, IDA initiated a re-visioning exercise of Infocomm 21 to fine-tune the plan and to take cognisance of the need for Singapore to develop new sources of growth, including new areas involving creative inputs, like design and the arts. IDA's vision for infocomm was: Connected Singapore, Unleashing potential, realizing possibilities, through Infocomm. The goal of "Connected Singapore" is to have 50 percent of households in Singapore connected to the Internet through broadband services. • SINGOV (www.gov.sg) was repositioned in October 2004 as part of the Singapore Government Online for better integration with the other major government gateways such as eCitizen and Business Town. • eCitizen Helper programme was launched on 16 March 2003 to provide assistance to Singapore residents with the means to transact online with the government if they do not own a computer at home or do not know how to use the Internet. The programme is owned by the Ministry of Finance (MOF) and managed by the Infocomm Development Authority of Singapore (IDA). • SingPass or Singapore Personal Access, was introduced on 1 March 2003. SingPass, establishes a nation-wide personal authentication framework for e-services. "SingPass" replaced CPF PAL PIN as the common password for government e-services. With just a single identification and password to remember, SingPass makes it more convenient and easier for users to

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	<p>transact online with the Government. All Singapore residents above the age of 15, employment pass holders and their dependents are eligible for SingPass. Some online services that you can access with your SingPass includes encashing your Economic Restructuring Shares (ERS), viewing your CPF Statement of Account, registering your company and filing your income tax.</p>
2004	<ul style="list-style-type: none"> • The second e-Government Action Plan (eGAPII), a S\$1.3 billion initiative to transform the public sector into a networked government., was introduced in 2003 to achieve three desired outcomes: “Delighted Customers”, “Connected Citizens”, and “Networked Government”. Beyond bringing services online, the three year plan (FY2003 to FY2005) has made Government e-services more convenient, user-friendly and accessible to the public and encouraged active participation in online public consultations and virtual communities. The focus of the second Plan is to transform the Public Service into a Networked Government that delivers accessible, integrated and value-adding e-services to our customers; and helps bring citizens closer together. • IDA issued mobile numbers with Prefix “8” (resulting in creating 10 million new numbers).
2005	<ul style="list-style-type: none"> • 3G services rolled out by 3 mobile operators. • IDA amended Telecoms Competition code - unnecessary regulations removed and regulatory provisions strengthen in segments with limited competition. • Minister for Education, Mr Tharman Shanmugaratnam, officially opens Backpack.NET centre – a world-first - at National Institute of Education, specifically designed to showcase and prepare teachers, educators, students and policy makers on how technology will influence pedagogical methods and improve the learning environment for future generations of students in Singapore schools and beyond. • IDA Announces S\$120 million Infocomm Manpower Development Roadmap to develop a globally-competitive and infocomm-savvy workforce. A joint effort between the government and industry, the five-year Roadmap will develop infocomm professionals into globally-competitive players, the general workforce into savvy Infocomm users, and students into the Infocomm talent of the future.

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	<ul style="list-style-type: none"> In May 2005, IDA announced government-industry plan to develop 10-year infocomm masterplan, Intelligent Nation 2015 (iN2015), that will look ten years into the future, and identify new possibilities and opportunities for Singapore's industries, economy and society.
2006	<ul style="list-style-type: none"> Official launch of iN2015 Masterplan, a 10-year masterplan that identifies new possibilities for Singapore's industries, economy and society empowered by next era technologies. It aims to grow the infocomm sector and to use infocomm technology to build a well connected society. The iN2015 master plan is a national co-creation effort by all who have a stake in the future of Singapore. This includes the views of the three Ps - People, Public and Private sectors. Launch of iGov2010 in May 2006. With iGov2010 Plan, the Government aims to achieve a higher level of public service by further simplifying, standardising and synergising government processes. Plans for Singapore's Next Generation National Infocomm Infrastructure (NextGenNII) and Manpower development were announced by Dr Lee Boon Yang, Minister for Communications, Information and the Arts, in Parliament. These developments are part of the iN2015 master plan. The Next Gen NII is Singapore's new digital super-highway for super-connectivity and it comprises WBN and the wired Next Generation National Broadband Network (NBN). The Wireless Broadband Market Development CFC launched today is for WBN. The Next Gen NII will entrench Singapore's Infocomm hub status and open the doors to new business and social growth for the country. Next Gen NII will be capable of ultra-high speeds of 100Mbps to 1Gbps as early as 2008 and pervasive wireless access within key catchment areas as early as August 2006.