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**MEDIA, COMMUNICATIONS
AND INFORMATION
TECHNOLOGY**



Macao enjoys freedom of the press, freedom of speech and freedom of publishing. Despite being relatively small, it has a sophisticated and well-developed media industry.

The Government strives to enhance the transparency of its administration and facilitate communication and dialogue with the media. This enables government messages to be delivered to the public promptly and accurately, and provides a wide range of information via the media. Furthermore, the Government expects the media to act as a watchdog, continually prompting every government department to improve its work and provide better-quality services to the community.

Macao's laws protect the rights of journalists to gather and receive news and information, and to report it, ensuring their journalistic independence.

Mass Media

Electronic Media

Macao has one free-to-air TV station, two radio stations and one cable TV station, as well as three locally based satellite TV stations.

Teledifusao de Macau (Macao Broadcasting Company, TDM) began providing a public broadcasting service in February 1988. Digital broadcasting commenced in 2008. Currently, both analogue broadcasting and digital broadcasting are available. The 12 digital channels include the two round-the-clock channels (Chinese and Portuguese), sports, information, high definition (HD), CCTV-13, CCTV-1, CCTV documentaries, Fujian TV Station Haixia Satellite Channel and Hunan TV World.

Radio Macau, a subsidiary of TDM, and the privately owned Radio Vila-Verde (Green Village) are Macao's two radio stations. Both broadcast 24 hours a day.

Macao Cable TV has been broadcasting since July 2000, and offers 98 channels (71 basic channels, 15 premium channels, five test channels, and two dedicated hotel channels); each is aired 24 hours per day.

MSTV Satellite TV Company Limited – originally known as the Cosmos Satellite Television Company, which was the first operator to be granted a licence to provide satellite television services in Macao – now offers the MSTV's News Channel, broadcasting 24 hours a day.

The Chinese channel of the MASTV Company began operations in June 2001. It broadcasts 24 hours a day.

On 2 December 2008, Macau Lotus Satellite TV Media Limited was granted a 15-

year licence to provide satellite television services in Macao. It started its broadcasting service on 1 January 2009, on its Macao Lotus TV 24-hour channel.

Print Media

The history of Macao's newspaper industry can be traced back over 100 years. From 1839 to 1840, while enforcing the opium ban in Guangdong, Lin Zexu commissioned a selective translation of the English *Macao Monthly* and, for administrative purposes, published *Journal News of Macao* in Guangzhou. On 18 July 1893, Dr Sun Yat Sen and a Macanese named Francisco H. Fernandes worked together and founded *Echo Macanese*, which was published in Chinese and Portuguese. On 22 February 1897, Kang Youwei and Liang Qichao founded *The Reformer China*. After the 1911 Revolution in China, Macao's Chinese newspapers began to flourish. Several newspapers, such as *Ao Men Shi Bao* (Macao Times), *Hao Jing Wan Bao* (Oyster Mirror Evening Post), *Ao Men Tong Bao* (Macao Bulletin), and *Hao Jing Ri Bao* (Oyster Mirror Daily), were founded at this time.

Macao has 13 Chinese daily newspapers, which currently print a total of 100,000 copies each day. They are *Ou Mun Iat Pou* (Macao Daily News), *Jornal Va Kio* (Overseas Chinese Journal), *Tai Chung Pou* (The Public), *Si Man Pou* (The Citizen), *Jornal Seng Pou* (Star Journal), *Cheng Pou* (Righteousness), *Today Macau Journal*, *Jornal San Wa Ou* (New Chinese Macau Journal), *Hou Kong Daily*, *Macao Evening*, *Macao Times*, *Exmoo News* and *Macao Today*.

The Chinese weeklies published in Macao are: *Jornal Informacao* (Information Journal), *Pulso de Macau* (Macao Pulse), *Semanario Recreativo de Macau* (Macao Entertainment Weekly), *Semanario Desportivo de Macau* (Macao Sports Weekly), *Observatorio de Macau* (Macao Observer), *Macao Chinese Journal*, *Macao Commercial Post* and the *Macao Convention and Exhibition Economy Journal*, and *Click2Macao*.

Portuguese daily newspapers have an even longer history than the Chinese dailies. In 1822, *Abelha da China*, the first-ever daily in China, was founded and published in Portuguese. Other early-founded Portuguese papers founded in Macao include *Gazeta de Macau* (Macao Gazette), *Imparcial* (The Impartial), and *Correio de Macau* (Macao Post). Macao currently has three Portuguese dailies primarily intended for a local Portuguese readership. These are *Ponto Final* (Full Stop), *Jornal Tribuna de Macau* (Macao Tribune Journal) and *Hoje Macau* (Today Macau). Weeklies include *O Clarim* (*The Bugle*) in Chinese, English and Portuguese versions, and *Plataforma Macau* (*Macao Platform*) which is published bilingually in Chinese and Portuguese.

The English daily newspapers in Macao are the *Macao Post Daily* and the *Macao Daily Times*. The *Macao Business Daily*, founded in 2012, ceased publication in 2017, while the magazine and website bearing the same name continue to operate.

Every day, dozens of Hong Kong newspaper and magazine titles are transported to Macao. Some daily newspapers and magazines published in mainland China are

also available on local newsstands. In addition, Macao residents enjoy access to radio and TV programmes made in Hong Kong and mainland China.

Media Stationed in Macao

Xinhua News Agency and Lusa-Portuguese News Agency have branches or representative offices in Macao. People's Daily and China News Service (CNS) have branches in Macao. Other media organisations with accredited correspondents in the territory include China National Radio (CNR); China Radio International (CRI); the State Administration of Radio, Film and Television; Wen Hui Bao (Shanghai); Hong Kong Economic Journal (HKEJ); EyePress News; Radio Television Hong Kong (RTHK); Wen Wei Po; and Television Broadcasts Limited, Hong Kong (TVB), Hong Kong Cable Television and Phoenix Television.

Press Associations

The press associations in Macao include the Macao Chinese Media Workers Association, the Macao Journalists Club, the Macao Journalists Association, the Macao Media Club, the Macau Sports Press Association, and the Portuguese and English Speaking Media Association.

The Press Law

The Press Law (Law No. 7/90/M), promulgated in August 1990, guarantees the freedom of the press and its right of access to information; and governs activities regarding newspapers and magazines, publishers and news agencies.

Macao's Press Law consists of seven chapters and 61 articles. This law protects the rights of journalists, including those to gather, receive and report information. By law, journalists have the right to access information from government authorities, public administrations, public corporations and joint ventures formed by the Government; private organisations of which the Government or its subsidiaries are major shareholders; corporations that operate public assets; and contractors that provide public works or services. This freedom of access is not applicable to information regarding judicial confidentiality and state secrets, or facts and documentation protected by law as private and confidential information.

Journalists have the right to protect their sources of information and they will not be penalised directly or indirectly while exercising that right. Likewise, there is no obligation for media owners and publishers, individual publications or news agencies to reveal their sources of information. In this way, the law protects journalistic independence. However, in the event of sufficient evidence of criminal involvement, the media's right

to protect its sources of information can be terminated by a court order.

The Press Law allows freedom of discussion and criticism of politics, society, religious views and laws, as well as the acts of the Government itself and its departments and personnel.

Publishers or other entities publishing periodicals, and correspondents of non-local media organisations based in Macao, are legally required to register with the Government Information Bureau (GCS).

In 2010, the Government proposed to review and revise the Press Law and the Audio-Visual Broadcasting Law. The Government Information Bureau (GCS) began to prepare for the revision. Academic institutions were appointed to conduct a study on the direction for amendments to the two laws and an opinion poll at the end of 2010 and in 2011, to realise the objectivity and neutrality of the revision process. The GCS also gave the media regular reports on progress with the work, to inform the public; and communicated with the industry through various channels to collect opinions and suggestions about the revision.

Since the Broadcasting Law encompasses many regulations on technical aspects of broadcasting, and there is a need to align with the telecommunications legislation, the Government deferred any amendment to the Broadcasting Law while proceeding to amend the Press Law under the principle of any clause being “limited to deletion only”, after gathering and analysing the views of the media industry and the results of the opinion gathering. The controversial provisions to be deleted included one concerning the Press Council, and another on the Code of Practice for Journalists. Some wording would also be amended, to align with relevant laws.

The Government Information Bureau drafted consultation documents in alignment with the above-mentioned direction for amendment, and conducted a public consultation on the revised draft of the amendment to the Press Law in 2013. The final report on the public consultation on the amendment was announced on 17 April 2014, after consolidating views gathered in six industry and public consultation sessions, as well as written opinions collected via various channels, such as online sources, fax, email and post. In June 2014, after the revised draft of the Press Law and the relevant administrative documents were completed, and submitted to the Chief Executive, they were referred to the administration and justice system for follow-up, and technically analysed and verified by the relevant authorities. The GCS will follow establish procedures in continuing to communicate with the legal departments and follow up the relevant work.

Government Information Bureau

The Government Information Bureau (GCS) is a bureau-level administrative entity under the supervision of the Chief Executive. It assists government departments and the media by coordinating and conducting research regarding public communication,

disseminating government information and arranging media interviews.

The GCS regularly publishes *Macao Magazine*, the *Macao Information* booklet and the *Macao Yearbook* in Chinese, Portuguese and English; and is gradually increasing the release of new information through new media and mobile networks.

In recent years, the GCS utilises the mobile network to offer different kinds of information to the media and the general public. In addition to Macao news applications that distribute the latest government news, the GCS has launched an official WeChat account, a YouTube channel, a Facebook page, a Sina Weibo account and a Toutiao account. *Macao Yearbook* and *Macao Magazine* are published in Chinese, English and Portuguese, and are available through websites and mobile applications allowing readers to browse information.

Disseminating Government Information

In 2018, the GCS established a new information dissemination system (GovInfo Hub), to replace the Information Broadcast System (IBS) for local media and accredited correspondents which had operated for over 10 years. The GovInfo Hub facilitates media access to official information and photographs by distributing them via the Internet. This enables the media to remotely access official information at any time.

During 2018, the Information Department of GCS wrote and distributed 13,032 press releases in Chinese, Portuguese and English, and distributed 2,104 interview notices, 89 important notices and 1,268 photographs on behalf of the Government and its departments. The bureau also produced 235 video clips, and distributed a total of 330 video clips on behalf of other government departments via the Internet and social media channels.

Registration of Periodicals

The Information Department of the GCS is responsible for registering newspapers, publishers and periodicals. Under the Media Registration Regulations, if a daily publication is registered but has not been published for 180 days, or if other registered periodicals have not been published for a period of one year or have been suspended for a period of one year, their registration will be cancelled. Registration of publications is free of charge.

Twelve new publications were registered with the GCS in 2018, including publications appearing weekly, fortnightly, monthly, once every two months, and quarterly. Also, 12 publications cancelled registration.

The Government Portal

The Government portal (www.gov.mo) was officially launched in December 2004. It offers a comprehensive platform for information and e-services provided by all Government departments. The portal gives the public access to information from various public administrative departments, the Legislative Assembly, courts, the Public Prosecutions Office and tertiary education institutions.

Available in both traditional and simplified Chinese, Portuguese and English versions, the Government portal provides general information and updates about Macao to local residents, tourists and the business community, and introduces various public services and their contact details.

The portal's objectives are to announce government policies in a timely manner, enhance communication between the Government and the public, maintain administrative transparency, and collect public opinion.

Government Printing Bureau

The Government Printing Bureau implements the Government's publishing policy. It is responsible for the publication of the *Macao Special Administrative Region Gazette* (the *Macao SAR Gazette*) and its supplements; the laws and regulations of Macao (in both separate and omnibus formats); the general budget of Macao and related budgets of government departments and public bodies; Macao's accounting records; government policy addresses; legally defined official forms; and any official printed matter that uses the emblem of Macao. It also undertakes the layout, proofreading and printing of printed matter that requires special security measures or close supervision.

The Macao SAR Gazette

Sections One and Two of the *Macao SAR Gazette* are published at 9:00 am every Monday and Wednesday, respectively; unless either of these days is a public holiday, in which case the pertinent section is published on the next working day. Announcements of urgent or ad-hoc matters that occur outside this schedule may be issued in a supplement or special section.

Publication of all the following items in Section One of the *Macao SAR Gazette* is mandated by law, and they only come into legal effect thereby: laws, by-laws, Legislative Assembly resolutions, administrative orders and orders approved by the Chief Executive, orders approved by principal government officials, international treaties signed in the name of "Macao, China", Legislative Assembly election results, the appointment of members of the Legislative Assembly, the appointment and termination of appointment of Executive Council members, the appointment and termination of appointment of

presidents and judges at all levels of the courts and of public prosecutors, as well as other announcements of appointments and terminations of appointments under the law and documents whose announcement is required by law.

The following announcements must also be made in Section One of the Macao SAR Gazette:

1. Amendments to the Basic Law of the MSAR, proposals to amend the Basic Law, and interpretations of the Basic Law by the authorised entity;
2. National laws that apply to the MSAR, and interpretations of those laws by the Standing Committee of the National People's Congress (NPC);
3. Documents adopted by the NPC and its Standing Committee regarding the MSAR;
4. Regulatory documents adopted by the NPC's Preparatory Committee for the Macao Special Administrative Region, regarding the establishment and operation of the MSAR;
5. Documents authorised by the NPC and its Standing Committee and the central government; and orders, instructions and documents issued by the central government in accordance with the Basic Law of the MSAR;
6. Documents regarding the appointment and termination of the Chief Executive, principal government officials and the Public Prosecutor-General by the central government; and
7. The Chief Executive's annual policy address.

The following announcements must be made in Section Two of the Macao SAR Gazette:

1. International treaties applicable to the MSAR;
2. Agreements on judicial mutual assistance, and mutual exemption of visa requirements by the MSAR and other countries or regions with the assistance and authorisation of the central government;
3. Judicial mutual assistance agreements signed with judicial authorities in other areas or regions in mainland China;
4. Statements and announcements made by the Legislative Assembly;
5. Statements and announcements made by the Government; and
6. Other documents that are to be announced in this section by law.

Since 2000, the Government Printing Bureau has posted the complete contents of Sections One and Two of the *Macao SAR Gazette* on its website (www.io.gov.mo) for public access and information. To strengthen the accuracy and integrity of the electronic version of the *Macao SAR Gazette*, the Government Printing Bureau launched an electronic authentication version of the *Macao SAR Gazette* in November 2015.

By 31 December 2018, the Government Printing Bureau had established an online database containing the full text of 27,000 laws and regulations. This includes all the laws and regulations published since the establishment of the MSAR, as well as laws, decree-laws and other regulations gazetted between 1976 and 19 December 1999.

In 2018, the bureau's official website recorded an average of more than 350,000 hits per month.

Laws of the Macao Special Administrative Region

Prior to the establishment of the MSAR, the Government Printing Bureau published *Macao Laws*. Since the establishment of the MSAR, it has published *The Macao Special Administrative Region Laws*, a semi-annual reference document that provides easy access to major laws, by-laws, resolutions of the Legislative Assembly and administrative orders published in the *Macao SAR Gazette*.

External Services

The Government Printing Bureau offers external services including subscription of the *Macao SAR Gazette*; sales of government publications and other printed matter. In addition to the *Macao SAR Gazette*, the Government Printing Bureau sells printed books published by the bureau, books published by other governmental departments, government printed materials and CD-ROM of laws. The bureau also publishes announcements and notices of private institutions in the *Macao SAR Gazette*, and provides printing services to private organisations and individuals.

The Government Printing Bureau launched the Macao SAR Electronic Book Store mobile application in November 2013, offering electronic publications published by the Macao SAR, governmental departments and other institutions, and the *Macao SAR Gazette*. It also distributes promotional materials, and sells miscellaneous printed materials. The electronic authentication version of the *Macao SAR Gazette* was launched in January 2016, for free subscription by government departments and the public.

Information Technology

Science and Technology Committee

The Science and Technology Committee is a consultative body that advises the Government on the formulation of policies to promote technological development and modernisation.

Chaired by the Chief Executive, the Science and Technology Committee was formed with committee members including the Secretary for Transport and Public Works, the Secretary for Economy and Finance, the Secretary for Social Affairs and Culture, the Chairman of the Executive Committee of Macao Foundation, the Chairman of the Executive Committee of the Science and Technology Development Fund, the Rector of the University of Macau, the Rector of the Macao Polytechnic Institute, the Rector of the Macao University of Science and Technology, the President of the Board of Directors of the Macao Productivity and Technology Transfer Center (CPTTM), and the Director of the United Nations University International Institute for Software Technology, plus 18 other members who have excelled in the fields of science, technology and innovation, and who are appointed by the Chief Executive.

The Chief Executive has also appointed 10 internationally renowned experts and scholars as advisors to the council. They are Tsung Dao Lee, Lu Yongxiang, Zhu Lilan, Lu Zhonghe, Hui Yongzheng, Zhu Gaofeng, Li Lianhe, Song Yonghua, Jack Ma and Chan Ching Chuen.

Science and Technology Development Fund

The Science and Technology Development Fund was established under By-law No. 14/2004 of the Macao SAR and is supervised by the Chief Executive.

In line with Macao's policies on science and technology, the fund subsidises the development of educational programmes, research and other related projects.

Eligible categories for subsidies include science research, popular science, patents, joint projects and special subsidies for purchasing science equipment.

Macau New Technologies Incubator Centre

Co-founded by the Government and the private sector, the Macau New Technologies Incubator Centre (Manetic) was established in 2001, marking Macao's first step towards the development of innovative hi-tech industries.

Manetic is an incubator centre for new technology. Its major objective is to help turn business or product ideas into commercial ventures as quickly as possible. Manetic's targets include: to strengthen technological development in Macao and improve career opportunities for the next generation; to effectively utilise Macao's professional resources through cooperation with multinational companies; and to tap international resources through developing Macao as the technological development centre in the Greater China region.

Macao Post and Telecommunications Bureau

Since its foundation on 1 March 1884, the Macao Post Office has operated as a provider of postal services, complying with international conventions. On the same day, the first Macao stamp, titled "Crown", entered into circulation. In fact, Macao Post's history dates back a century earlier, to 1798, when sea mail services began.

Many new services have been introduced since the establishment of Macao Post. Alongside traditional postal services and Macao Postal Savings, established in 1917, Macao Post took over the operation of telephone and wireless telegraph services in 1927. Then, as society developed, these services were conceded to other entities or public departments. In 1981, the Companhia de Telecomunicacoes de Macau (CTM) took over the operation of telecommunications. In 2000, the Post Office's role as the supervisory body for telecommunications services was transferred to the DSRT.

On 19 December 2016, the MSAR Government issued By-law No. 29/2016 Amendment to Regulation of Organisation of Postal Services, to rename Macao Post as the Macao Post and Telecommunications Bureau (CTT) and merge it with DSRT, with effect from 1 January 2017.

As a bureau-level administrative entity with legal personality, the CTT enjoys autonomy over administration, finances and property, and performs the function of a credit institution. It aims to provide postal public services, and regulate, monitor, promote and coordinate any activity related to the telecommunications industry in Macao. It is under the supervision of the Secretary for Transport and Public Works.

Postal Services

In 2018, the local economy remained steady, and the volume of local mail was nearly the same as in 2017. The clients were mainly from the hotel and resort industry, the food and beverage industry and government departments.

Regarding international mail, in 2018 the volume of outbound international surface mail and airmail decreased by four percent and 17 percent, respectively, compared to 2017, while the volume of inbound international surface mail slightly decreased by one percent, with a six percent increase in international airmail. The main destinations of outbound mail were Hong Kong, mainland China, Portugal, the United States, Taiwan,

the United Kingdom, Singapore, Australia, Malaysia, Canada and Germany. The main sources of inbound mail were Hong Kong, mainland China, the United Kingdom, the United States, Taiwan, Portugal, Singapore, Switzerland, Japan, Sweden and Belgium.

Regarding registered mail, in 2018 the volume of local mail was one percent higher than in 2017. The clients were mainly from various government departments and associations. Meanwhile, the volume of outbound international surface mail increased by four percent, while that of international airmail decreased by 10 percent. The volume of inbound international surface mail decreased by 33 percent, while that of international airmail dropped by seven percent.

In 2018, Macao Post recorded 5.01 percent and 2.36 percent decreases in the numbers of outbound Express Mail Service (EMS) items and inbound EMS items, respectively, due to keen market competition. The main destinations of EMS items were the United States, Portugal, the United Kingdom, Hong Kong and mainland China. The main sources of EMS items were Japan, Hong Kong, Germany, the United States and Taiwan. At present, the EMS covers about 200 countries and regions.

The “e-Advice” Service launched by the CTT allows recipients who have registered for the SEPBox Service to choose whether receiving the electronic version of the Delivery Advice of EMS mail or parcels and related information. Users may collect the parcels from designated “elockers” at EMS Mails Collection Centre, Fai Chi Kei Post Office, Nova Taipa Post Office, University of Macau Post Office and Ocean Garden Post Office.

Secure Electronic Postal Services

To promote the development of e-services, Secure Electronic Postal Services has developed a solid platform for electronic deliveries. Services launched include provision of Postal Registered Electronic Mail, Postal Electronic Mail, eDirect Mail, e-bill services and electronic version of Delivery Advice of EMS mail or parcels via SEPBox. It also cooperated with various organisations in promoting electronic deliveries, such as promoting the use of SEPBox to receive e-bills with the Macao Water Supply Company and Companhia de Electricidade de Macau, and putting advertisements in magazines to enable the public to gain a better understanding of Secure Electronic Postal Services

In addition, to enhance the use of SEPBox, the CTT launched the “e-Advice” Service, through which the electronic version of the Delivery Advice for EMS mail or parcels can be received via SEPBox, so that customers can promptly receive accurate mailing information. Moreover, to facilitate registration for SEPBox, this is now possible in various organisations – the Identification Services Bureau, Science and Technology Development Fund, Public Administration and Civil Service Bureau, Financial Services Bureau, the Macao Water Supply Company Limited, Cultural Industries Fund, Companhia de Electricidade de Macau and Social Security Fund; the CTT (Central Post Office); Caixa Economica Postal and various CTT service counters and information kiosks (Fai Chi Kei, Red Market, Mong Ha, Rua do Campo, Nova Taipa, Ocean Garden, Coloane, Seac Pai Van, Carmo, Hac Sa Wan, University of Macau and eSignTrust Registration Authority).

Philately

In 2018, the CTT issued stamps with 12 different themes. As Chinese Zodiac stamps have always been a favourite of stamp collectors and citizens, the CTT issued “Year of the Dog” stamps, thematic pack, teapot gift sets and the “Macao’s Lunar Year of the Dog” Lucky Charm.

In tandem with the first international stamp exhibition in Macao – “Macao 2018 – 35th Asian International Stamp Exhibition”, three sets of stamps and a thematic pack were issued, featuring Macao’s famous gourmet cuisine, local attractions, the CTT Macao Headquarters’ Building and festive celebrations. During the exhibition, a postcard DIY printer was introduced, for customers to design their personalised postcards.

Moreover, China Post, Hong Kong Post and Macao Post jointly issued philatelic products to commemorate the opening to traffic of the Hong Kong-Zhuhai-Macao Bridge. Other items included “65th Macao Grand Prix” thematic pack, “Supplements for Philatelic Album of Macao 2018” and “Joy”, a new edition of personalised stamps.

The CTT has always aimed to improve philatelic products and provide diverse services. Through various sales channels and payment methods, citizens and stamp collectors can easily enjoy philatelic sale services, latest philatelic items ordering and annual subscription service for collectors and dealers. The CTT also cooperated with overseas agents to provide online shopping services for collectors, and promote a culture of philately in Macao.

Caixa Economica Postal

Caixa Economica Postal (Postal Savings Office or CEP) is a credit institution operated by the CTT that serves as the CTT’s cashier. It also provides a wide range of bank related services, such as credit facilities, remittance services, electronic payments and exchange services for the public.

In terms of credit facilities, CEP chiefly provides civil servants and employees of public services and private companies who sign an employee credit service agreement with guaranteed short-term credit. In 2018, CEP approved loans worth nearly 221 million patacas.

CEP and Western Union also jointly provide an express money transfer service. Using its advanced IT, global computerised money transfer system and counter network, customers can transfer money safely to over 200 countries and regions within a few minutes. There are currently 10 outlets for this service, at CEP, Airport Post Office, Ferry Terminal Post Office, Taipa Terminal Post Office, the Communications Museum Shop, Almirante Lacerda Post Office, Ocean Garden Post Office, Coloane Post Office, Seac Pai Van Post Office and UM Post Office.

CEP’s electronic payment platform provides an online payment service for the public. The public can also apply for or settle payments of various government services via this platform in real time. In 2018, nearly 370,000 payment transactions were settled.

Furthermore, CEP provides foreign currency exchange services for 16 currencies, including the Hong Kong Dollar, US Dollar, Renminbi, Euro and Japanese Yen.

eSignTrust

As the only authentication entity approved by the Government, eSignTrust has been issuing electronic signature certificates to citizens, corporations and government departments and providing them with online identity authentication services, strengthening the authentication quality of electronic documents. In accordance with Law No. 5/2005 Electronic Documents and Digital Signatures, an electronic document signed with electronic certification is legally binding.

To comply with the Government's administrative policy on smart city development, Electronic Certification Services (eSignTrust) provided the "eSignCloud" service to several government departments during the year, including the Public Administration and Civil Service Bureau, the former Civic and Municipal Affairs Bureau, the Labour Affairs Bureau and the Public Security Police, for relevant smart governance projects. This e-service was applied to civil servant management, licence applications for food and beverage establishments, and applications for hiring non-local employees. Users may submit digital forms with electronic signatures to the Government's e-services platform.

eSignTrust was first recognised by the WebTrust for Certification Authorities in 2018, and received the WebTrust Seal. At the end of 2018, eSignTrust Online Payment Service was introduced, to process payments of annual fees for personal certificates and individual "eSign Cloud" subscriptions.

The recognition reflects the fact that eSignTrust operates in line with international standards and is committed to providing a good certification infrastructure for smart city development. eSign Trust will continue striving for service improvements, while providing a more convenient electronic certification service to users.

Telecommunications Services

Fixed-network and External Telecommunications Services

At the end of 2018, there were 123,469 fixed-network lines in Macao, along with 632 public pay phones offering local call services and IDD access from public locations throughout the Macao peninsula and the two islands. Callers in Macao can currently make IDD calls to 257 countries and regions.

Public Mobile and Wireless Communications Services

As the Government issued public network licences for terrestrial Long-Term Evolution (also known as 4G) mobile telecommunications and provision of relevant public mobile telecommunication services to Macao Telecommunications Limited, China Telecom (Macao) Limited, SmarTone Mobile Communications (Macao) Limited, and Hutchison Telephone (Macao) Company Limited in June 2015, and has issued licences for provision of 2G/3G public mobile telecommunication services, plus the virtual mobile network operator permit issued to Kong Seng Paging Limited, mobile phone services in Macao are now 2G, 3G and 4G compatible. As information and telecommunication technology become more popular, and user demand for mobile data services rises, 4G services have become dominant in the market.

At the end of 2018, there were 2,181,194 mobile telecommunication service users, with the per capita mobile penetration rate at 328.79 percent.

Mobile Communication Service Information			
Year	No. of radio paging users	No. of mobile phone users	No. of rechargeable mobile phone cards
2003	3,453	198,696	165,335
2004	2,728	228,296	204,154
2005	2,513	259,336	273,422
2006	1,891	301,512	334,835
2007	2,782	356,117	438,206
2008	2,780	395,943	536,653
2009	3,097	420,098	617,282
2010	3,204	459,330	662,931
2011	3,101	525,209	827,985
2012	1,886	564,576	1,048,881
2013	1,278	597,012	1,125,233
2014	865	638,725	1,217,728
2015	722	677,018	1,219,079
2016	701	700,609	1,269,363
2017	546	743,261	1,505,863
2018	334	764,085	1,417,109

Internet and Broadband Services

At the end of 2018, there were 192,939 registered broadband subscribers, 3.39

percent more than a year earlier. Of these subscribers, 171,488 were residential broadband services subscribers, representing approximately 89.55 percent of all households¹.

Moreover, the urban wireless broadband network project financed by the Government, commenced in 2009, and began providing services to residents and tourists in September 2010. As at the end of 2018, there were 194 WiFi Go service spots, and approximately 74 million successful connections had been recorded.

In 2017, the CTT allowed licensed internet service providers (ISPs) to install outdoor Wi-Fi hotspots and provide services to the public upon application and approval. In December 2017, the CTT encouraged Macao organisations and institutions to provide free Wi-Fi services in various locations, all with the network name "FreeWiFi.MO", to expand coverage of free Wi-Fi services, and enable local residents and tourists to more easily identify the free public Wi-Fi service in Macao. At the end of 2018, there were 438 locations providing the "FreeWiFi.MO" service.

Television Services

To ensure citizens' access to basic television channels, the Government categorises television services into free and pay services. In April 2014, the Government, Teledifusao de Macau (Macao Broadcasting Company, TDM) and the Post Office (now the CTT) co-established the Macao Basic Television Channels Limited. In cooperation with the existing terrestrial broadcasting service providers, the company connects the underground transmission network with the networks of these providers, thereby providing support services enabling the public to receive basic television channels, as a supplementary means for people in Macao to receive free television signals. These support services for the public were renewed for two years starting from 1 April 2018.

Regarding terrestrial pay television services, with the policy objective to liberalise the market for television services, on 22 April 2014 the Government endorsed the renewal of the non-franchised contract for Macao Cable TV, thereby creating the conditions for a fully liberalised market for pay television services.

In addition, the Government issued a new executive order in July 2014, exempting satellite television receivers with diameters of less than three meters from approval by the Government, provided that the receivers are used to receive signals of television programmes for private use. This encourages adoption of diversified modes of reception of television services, by allowing the public to have easy access to television programmes via satellite television signals.

Registration and Management of Internet Domain Names

The University of Macau's previous appointment to manage and register the top-

level domain “.mo” for the Macao SAR ended in 2010. Consequently, in March 2011, the Government launched the Macao Network Information Centre and awarded a service contract to HNET Asia Ltd to administer and operate Macao domain names.

In 2014, the former DSRT liaised with the Macao Network Information Centre to introduce services for Chinese and Portuguese domain names for the Internet country code “.mo”, electronic payment, optimisation of the application procedures and amendment of domain names, to provide more diverse, better quality domain name services. The DSRT introduced IPv6 and “.mo” domain name services in 2015 and 2018, respectively, further advancing the development of domain name services in Macao.

IPv6 Network Research Laboratory

To introduce IPv6 and its related setup techniques to the industry and personnel in the relevant fields, and to assure the industry of the application of IPv6, the former DSRT worked with the Macau Polytechnic Institute in setting up the IPv6 Network Research Laboratory. This aimed to demonstrate the application and connection of IPv6, and to conduct related research and development. The laboratory commenced operations on 16 April 2013. The CTT also continued working with Macau Polytechnic Institute in organising IPv6 promotional events.

Development of Terrestrial Digital Broadcasting

Following the global trend of terrestrial digital broadcasting, the number of terrestrial digital broadcasting channels provided by Teledifusao de Macau (Macao Broadcasting Company, TDM) increased to 13. To ensure the availability of quality products that meet residents’ needs, and to enable residents to enjoy the programmes aired on Macao’s terrestrial digital broadcasting channels, the former Bureau of Telecommunications Regulation built the Digital Terrestrial Television Research and Testing Centre, which commenced operation on 20 September 2010, in partnership with Macao Polytechnic Institute. Following the centre commencing operations, certain integrated television sets and decoders have been tested, and the reports have been completed.

Radio Frequency Allocation and Coordination with Neighbouring Regions

After signing the Mainland China and Macao Frequency Coordination Agreement for Terrestrial, Mobile/Fixed Broadcasting (Audio and Television) in 2002, mainland China and Macao have maintained strong links in the development of wireless communication services.

In conjunction with mobile network operators in Zhuhai and Macao, the CTT and

the radio authority of Zhuhai regularly tests for cross-boundary overspill of signals, and requests operators to introduce improvement measures according to the test results, to reduce the problem of signal overspill.

- 1: *According to the results of the 2017 population census announced by the Statistics and Census Service, there were 191,500 households at the end of 2017.*



港珠澳大橋

Ponte Hong Kong-Zhuhai-Macau

中國澳門
MACAU, CHINA

12.00
圓 PTCS

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HONG KONG-
ZHUHAI-MACAO
BRIDGE



The Hong Kong-Zhuhai-Macao Bridge (HZMB) is a mega-sized sea crossing project linking the Hong Kong Special Administrative Region to the east and Zhuhai City of Guangdong Province and the Macao Special Administrative Region to the west. It is regarded as an important part of the ever-expanding network of expressways in the Pearl River Delta region. With a total length of 55 kilometres, the HZMB straddles across Lingding Channel of the Pearl River Estuary. The construction works of the Main Bridge started on 15th December 2009 and has passed authorities' evaluation after its completion in February 2018. The Bridge is designed to have a service life of 120 years. With a six-lane long tunnel and the steel bridge structure, it is the longest bridge-cum-tunnel sea-crossing expressway in the world.

The HZMB consists of three main construction projects, including a main construction project of the sea-crossing bridge-cum-tunnel road, cross-border checkpoints of Hong Kong, Zhuhai and Macao, and the cross-boundary land-based connection among Hong Kong, Zhuhai and Macao. The 29.6-kilometer long main body adopts the design of a bridge-island-tunnel combination, which includes a 6-7 kilometer long tunnel running across the Lingding West Channel and the Tonggu Channel; a 22.9-kilometer main bridge connecting an artificial island on both ends of the tunnel, thus providing a seamless connection between the bridge and tunnel. The main part of the sea-crossing bridge-cum-tunnel road was built in accordance with the standard of a dual 3-lane carriageway with a designated speed of 100 km/h. The HZMB is composed of a non-navigable span bridge and a navigable span bridge. The three cable-stayed bridges of the navigable span bridge run east to west across the major navigation channels like the Qingzhou Channel, the Jianghai Channel and the Jiuzhou Channel, which meet the navigation requirement of the passing of 3,000 tons vessels, 5,000 tons vessels and 3,000 tons vessels respectively. It allows 300,000-ton oil tankers to pass above the tunnel.

The Hong Kong-Zhuhai-Macao Bridge Authority, jointly organized by the governments of the People's Government of Guangdong Province, the Hong Kong Special Administrative Region and the Macao Special Administrative Region, is mainly responsible for the construction, operation, maintenance and management of the Bridge. The three regions are responsible for the respective customs inspections, and the construction and administration of the Boundary Crossing Facilities have also been assumed by each of the parties. The Macao and the Zhuhai Boundary Crossing Facilities both locate on the Zhuhai-Macao Boundary Crossing Artificial Island at the Macao New Urban A Zone. The Macao Boundary Crossing Facilities, located on the south of the Zhuhai-Macao Boundary Crossing Artificial Island and covering an area of approximately 71.61 hectares consist of a passenger clearance building, an east parking lot and a west parking lot. The HZMB will drastically slash the travel time among Hong Kong, Zhuhai, and Macao from several hours to 30 minutes that a 'one-hour living circle' will be created.

The Macao Special Administrative Region Government Infrastructure Development Office proactively coordinates the overall infrastructure construction of the Macao's Boundary Crossing Facilities with an aim to ensure that adequate preparations would be made for the opening of the HZMB. The commissioning of the HZMB will promote the growth in economy, trade and tourism of Hong Kong, Zhuhai and Macao. The creation of a 'one-hour living circle' complies with the national policies of building a closer connection among the three places and is thus beneficial to Macao's long-term developments.