

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 fully leverage its monitoring role, 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 (Macau 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), TDM Entertainment, CCTV-13, CCTV-1, CGTN, CGTN Documentary, 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. The Radio Macau features two channels: one in Chinese, the other in Portuguese.

Macau Cable TV has been broadcasting since July 2000, and offers 97 channels (72 basic channels, 16 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 – has offered the MSTV News Channel since January 2019, 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.

Currently, Macao has 14 Chinese-language daily newspapers, which currently print a total of over 100,000 copies each day. Macao also has several Chinese-language weeklies.

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* (Macau Gazette), *Imparcial* (The Impartial), and *Correio de Macau* (Macau Post). Macao currently has three Portuguese dailies. There are two Portuguese-language and two English-language weeklies, and two English-language daily newspapers in Macao.

Newspapers and magazines published in Hong Kong, mainland China and overseas are also available in Macao. In addition, Macao residents also 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 resident correspondents in Macao include China Central Television (CCTV); China Media Group (CNR); Wen Hui Bao (Shanghai); Hong Kong Economic Journal (HKEJ); EyePress News Agency; Radio Television Hong Kong (RTHK); Television Broadcasts Limited, Hong Kong (TVB), Phoenix TV and Hong Kong Ta Kung Wen Wei Media Group Limited.

Journalists' Associations

The journalists' associations in Macao include the Macao Media Workers Association, the Macao Journalists Club, the Macao Journalists Association, the Macao Media Club, the Macau Sports Press Association, the Macau Portuguese and English Press Association and the Macau Youth Media Association.

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.

The GCS is committed to expanding its services in social media and new media, offering a variety of information to the media and the general public, including the Macao Gov News mobile app, an official Macao Gov Info WeChat account, a YouTube channel, a Facebook page, a Telegram channel, an Instagram account, Weibo and WeChat accounts, and a Toutiao account Macaugcscn, which is published in Macao and the Greater Bay Area. On this basis, the GCS set up an audio-visual account in early 2021, achieving a positive result with total traffic exceeding 2.4 million. The GCS publishes the *Macao Yearbook* and *Macao Magazine* in Chinese, English and Portuguese, and launches websites and mobile applications, allowing readers to conveniently browse related information.

As at 31 December 2021, the GCS Facebook Page had 46,271 likes and 56,520 followers. A total of 7,684 posts was published in 2021, including 6,948 graphic messages and 736 videos (live streamed 136 times).

The GCS re-registered its official WeChat account Macao Gov Info and obtained the official account certification in April 2019. The number of followers increased from 30,108 in 2020 to 50,681 at the end of 2021. Macao Gov Info published a total of 1,427 posts in 2021, and received a total of 1,996,041 views.

In 2021, the GCS increased its rate of publication on the official WeChat account *Macao Gov Release* in mainland China, the official Weibo account *Macao Gov Release*, and Toutiao account *Step Closer to Macao*. There was notable growth in the numbers of subscriptions and views.

Among the aforementioned accounts, *Macao Gov Release* published a total of 1,380 posts in 2021. The number of subscriptions increased from around 59,000 to 108,000, with a growth rate at nearly over 80 percent. By the end of 2021, the official Weibo account *Macao Gov Release* published a total of 1,763 posts; and the number of subscriptions increased from 79,036 to 127,000. The official Toutiao account *Step Closer to Macao* published a total of 1,183 posts in 2021; and the number of subscriptions increased from 6,544 to around 30,000.

Regarding promotions in mainland China: the GCS continuously seeks cooperation with influential integrated media organisations in mainland China, with a view to strengthening the promotion of news and information in the Greater Bay Area, and to better tell of Macao's role in developing the Greater Bay Area. The GCS also cooperates with Radio the Greater Bay from the Hong Kong-Macao-Taiwan Programme Centre of the China Media Group on a long-term basis, including through providing assistance with organising editorial reports involving the broadcast team and the new media team, as well as the collective production of a new media series, *Visit Macao*, which introduces cultural tourism in MSAR and its latest updates. This series has included episodes titled "Macao is My Home", "Macao in 360°" and "Intangible Cultural Heritage in Macao", to celebrate the 22nd Anniversary of the Reunification of Macao with the Motherland.

Furthermore, the GCS continue cooperating with the People's Daily Online Hong Kong in the production of *Micro Macao* video series. A total of over 100 million hits were recorded for the four-episode series.

Disseminating Government Information

The GCS launched self-developed systems, such as the news information submission system (E-info Submit), news information management system (E-info Management) and news information dissemination system (GovInfo Hub), thus building a reliable, safe way for the receiving and release of official MSAR Government news. This also accelerates the news release process, and strengthens the mechanism for exchanging information.

Also, the GCS introduced a mechanism for the receiving and release of civil defence and automatic informational. Meanwhile, the weather alert notification service from the Meteorological and Geophysical Bureau commenced, to send messages to news reporters through instant messaging applications, and publish the messages on public websites, to help with enhancing the timeliness and effectiveness of the release of important news from the government.

In 2021, the GCS drafted, released and assisted various departments in publishing a total of 17,823 news items (press releases, press invitations, important notices, and speeches) in Chinese, Portuguese and English, as well as 305 video clips and 472 sets of photographs.

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.

In 2021, 12 publications were newly registered with the GCS, including weekly, fortnightly, quarterly and yearly publications. Meanwhile, 10 publications cancelled their registration during the year.

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.

As at December 2021, the Government Printing Bureau had established an online database comprising full texts of over 29,570 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 2021, the bureau's official website recorded an average of more than 418,000 hits per month.

Laws of the Macao Special Administrative Region

Prior to the establishment of the MSAR, the Government Printing Bureau published *Macau 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 electronically certified *Macao SAR Gazette* was first published in January 2016, offering free subscriptions to various public service department entities and citizen.

In accordance with the regulation stipulated in Law No. 20/2021 Amendment to Law No. 3/1999 – “Publication and Form of Regulations”, the *Macao SAR Gazette* would be published by electronic means instead of hard copy from 1 January 2022, while the e-version of the gazette is legally binding.

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, and with the Secretary for Transport and Public Works as the vice-president, the Science and Technology Committee, has other members including the Secretary for Economy and Finance and the Secretary for Social Affairs and Culture (or their representatives), the Chairman of the Executive Committee of Macao Foundation (or a designated full-time committee member as representative), the Chairman of the Executive Committee of the Science and Technology Development Fund (or a designated full-time committee member as representative), the Rector of the University of Macau, the Rector of the Macao Polytechnic University, the Rector of the Macau University of Science and Technology, the President of the Board of Directors of the Macau Productivity and Technology Transfer Center (CPTTM), and the Director of the United Nations University International Institute for Software Technology.

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

The Science and Technology Development Fund

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

The Science and Technology Development Fund (FDCT) aims at aligning its efforts with the MSAR’s technological development policies, and providing funds to various projects that promote Macao’s capacities and competitiveness in scientific research and innovation. In alignment with the FDCT’s objectives, the following projects are sponsored:

1. Projects which help deepen and intensify technical knowledge;
2. Projects which help improve productivity of corporations and strengthen their competitiveness;
3. Projects which are beneficial to developing the research, promotion and innovation of Macao industries;
4. Projects which help motivate transformation of research outcomes;

5. Projects which help motivate external technological cooperation;
6. Technological transformation projects that prioritise socio-economic development; and
7. Patent applications.

FDCT is responsible for the related work on science and technological rewards in Macao SAR, and can recommend that research institutes and staff in the MSAR apply for relevant rewards in response to invitations issued by mainland China or renowned science and technological reward-awarding institutions in other countries or regions. Besides, FDCT also provides funding to scientific research platforms based in Macao SAR.

In accordance with the amendments to Law No. 16/2021 concerning the regulations on forming a Science and Technology Committee, with reference to Law No. 17/2005, Law No. 10/2009, Law No. 11/2015 and Law No. 15/2015, the Science and Technology Development Fund is also responsible for providing technical and administrative assistance to the Science and Technology Committee.

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 officially began.

Many new services have been introduced since the establishment of Macao Post and Telecommunications Bureau. Alongside traditional postal services and Macao Postal Savings, established in 1917, the Macao Post took over the operation of telephone and wireless telegraph services in 1927. In response to social development, some of these services were transferred to other entities or public departments. In 1981, the Companhia de Telecomunicacões 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

As a result of the COVID-19 pandemic in 2021, local mail traffic was 13 percent lower than in 2020.

Regarding international mail, several operating airline carriers suspended their flights due to the epidemic, impacting postal transportation for outbound mail. Compared to 2020, the outbound

international surface mail and international airmail in 2021 recorded a 24 percent drop and a 51 percent drop respectively. Inbound international surface mail decreased by 13 percent, while outbound international surface mail increased by 16 percent.

The main countries and regions for outbound mail include mainland China, Hong Kong, the United States, Taiwan, Portugal, Singapore, the United Kingdom, Australia, the Philippines, Germany, France, Canada, the Netherlands, Malaysia, Thailand, Japan and South Korea. The inbound mails were mainly from countries and regions including Hong Kong, Mainland China, the United Kingdom, Taiwan, Portugal, Japan, Jersey Island, the United States, Singapore, the Netherlands, Switzerland, Canada, France, Belgium, Sweden and New Zealand.

Regarding registered mail, in 2021, the volume of local mail was six percent higher than in 2020. The volumes of outbound and inbound international airmail decreased by 23 percent and 19 percent, respectively. The volumes of outbound and inbound international surface mail also decreased, by approximately 10 percent and two percent, respectively.

In order to satisfy the demand of corporations, institutions and government department for promotional products and services, CTT launched the Direct Mail service. Clients are only required to provide the geographical locations of their target consumer groups, then the professional CTT team can provide delivery services with a high price-performance ratio. In 2021, the volume of local mail delivered through Direct Mail recorded a slight increase of three percent, compared to 2020.

In 2021, the volume of outbound and inbound mail through the Express Mail Service (EMS) was similar to the volume before the pandemic. In February and March 2020, as the pandemic had become more severe, there was a marked surge in the volume of face masks carried by outbound and inbound mail. Thus, in 2021, the overall volume of outbound and inbound mail was lower, by approximately 27.13 percent and 9.85 percent, respectively.

The main destinations of EMS items were the United States, Taiwan, Portugal, Hong Kong and mainland China. The main sources of EMS items were mainland China, Taiwan, Japan, Hong Kong and the Netherlands. Currently, the EMS covers about 200 countries and regions.

In 2021, the volume of outbound and inbound parcels recorded growth of approximately 25.71 percent (surface mail: 26.62 percent; airmail: 21.87 percent) and 3.95 percent (surface mail: 10.79 percent; airmail: 0.85 percent), mainly due to some countries and destinations suspending airmail parcel services in 2020, due to the impact of the COVID-19 pandemic. Various destinations gradually resumed airmail services in 2021. The main destinations of outbound parcels were Canada, Germany, Nepal, mainland China and the United States. The main sources of inbound parcels were Australia, Germany, the United States, Taiwan and Japan.

Comprehensive Use of the Electronic Declaration System

In accordance with a regulation under the Universal Postal Union Convention, all senders of locally posted mails using Express Mail Service, parcels, registered items, and non-registered packets (non-mail category) are required to submit electronic declaration information before dispatching them to countries or regions outside Macao.

Assisting with the “e-Consumption Benefit Plan”

In accordance with the “e-Consumption Benefit Plan” launched by the MSAR Government, the general post office under CTT together with 11 post office branches set up service spots from 24 May to 13 December 2021, to assist residents who had chosen “Consumption Cards” with collecting e-consumption benefits by tapping their cards.

Secure Electronic Postal Services

The 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 delivery services, such as promoting the acceptance of e-bills via the Safe Electronic Post Box (SEPBox) with the Macao Water Supply Company Limited and the Companhia de Electricidade de Macau (CEM), as well as launching magazine advertisements to enhance public understanding of the Secure Electronic Postal Services.

In addition, the CTT launched the “e-Advice” service, through which the electronic version of the Delivery Notice for EMS mail or parcels can be received, which helps with quickly and accurately acquiring information on mail. Currently, the Safe Electronic Post Box (SEPBox) service registration points covers organisations including the Directorate for Identification Services, the Science and Technology Development Fund (FDCT), the Public Administration, the Financial Services Bureau, the Macao Water Supply Company Limited, the Cultural Industries Fund, the Companhia de Electricidade de Macau (CEM) and the Social Security Fund, the Macao Post and Telecommunications Bureau (General Post Office), the Macao Postal Savings, Fai Chi Kei Post Office, Red Market Post Office, Mong Ha Post Office, Rua do Campo Post Office, Nova Taipa Post Office, Ocean Gardens Post Office, Coloane Post Office, Seac Pai Van Post Office, Carmo Post Office, Hac Sa Wan Post Office, University of Macau Post Office and eSignTrust Registration Authority.

Philately

In 2021, CTT launch a total of 15 stamps with diverse and memorable themes, including stamp products such as the Chinese zodiac series – “Year of the Ox”, “Scenery in Mainland China - Eight”, “Procession of Our Lady of Fátima” and “The 100th Anniversary of the Founding of the Communist Party of China”.

Apart from issuing regular stamp products, CTT also issued stamp gift sets featuring “Year of the Ox” and “Festival - the Buddha’s Birthday”.

In 2021, a total of 13 commemorative postmark services were offered. Also, an online order service for personalised stamps was launched.

Internationally, the “Chapas Sínicas” stamp issued by CTT in 2018 was selected as the 2021 German Design Award - Excellent Communications Design, Official Documents Category Special Award, with honour, by the German Design Council.

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 2021, CEP approved loans with a total of nearly 200 million patacas.

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 2021, approximately 490,000 payment transactions were settled.

In 2018, the CEP obtained prior approval from the Chief Executive to build and operate the Credit Reference Platform. After system design and development, and a joint test with participation by various banks, the platform entered the trial operation stage. It was anticipated that the platform would be put into operation in the second quarter of 2022 at the earliest, providing services to various banks in Macao, achieving the objective of sharing and use of consumer credit data and lower credit risks.

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

In terms of remittance services, the remittance agency service operated by Western Union in Macao for 18 years was terminated on 31 March 2021, in view of the overall business development of the CEP.

eSignTrust

As the only authentication entity approved by the Government, eSignTrust has been issuing electronic signature certificates to citizens, corporations and government departments, providing them with online identity authentication services and 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.

Given the implementation of intensifying e-governance, the scope of e-governance application of the eSignCloud service provided by CTT was further expanded in 2021, offering a project integration service to many government departments so they can submit bulletin drafts online, and provide electronic quotations and approvals for flight applications through eSignCloud. Starting from June, electronic signature certificates issued by eSignTrust fully support the EDI electronic declaration service platform. Electronic signature is applicable to various import/export declaration forms.

In 2021, eSignTrust completed the deployment of electronic signature authentication server systems for the Financial Services Bureau and the Customs; the qualified electronic signatures functionality was activated, for signing electronic certificates.

As at the end of December, the total number of valid electronic signatures in various categories during the year was similar to the figure of the previous year. There was marked growth in

standardised certificates, recording a 362 percent increase in comparison with the same category during the previous year, while the total number of qualified certificates dropped slightly, by nine percent. The growth in the corporations and organisations user category was significant, with numbers of standardised certificates and “eSignCloud” electronic certificates growing by 606 percent and 25 percent, respectively – mainly as a result of applications from external traders through electronic declarations.

In March 2021, eSignTrust added an online video conference function for electronic certificates and eSignCloud service applicants to verify their identities, thereby making it more convenient to apply for the eSignTrust service.

In 2021, CTT continued approving internationally recognised WebTrust for Certification Authorities and acquiring WebTrust Seal.

To align with the Government’s effort to ensure that Mutual Recognition of Electronic Signature Certificates can be utilised in administration arrangements related to optimising the Guangdong-Hong Kong-Macau Greater Bay Area information technology infrastructure, eSignTrust participated in drafting the “Hong Kong–Macao Suggestions on the Framework for the Mutual Recognition of Electronic Signature Certificates”, making progress with the work on mutual recognition.

Telecommunications Services

Fixed-network and External Telecommunications Services

The Companhia de Telecomunicações de Macau (CTM) and MTel Telecommunication Company Limited (MTel) have been granted fixed telecommunications network and services licences, while CTM also held the “Interim Review of the Public Telecommunications Service Concession Contract” (Concession Contract). These licences and the contract expired on 31 December 2021.

In view of the MSAR Government’s efforts in discussing future telecommunications policy and monitoring system, to align with related work and ensure the provision of public telecommunications services, after comprehensive consideration the MSAR decided to renew the fixed telecommunications network and services licences granted to CTM and MTel for two years, until 31 December 2023. Meanwhile, the concession contract signed with CTM was also renewed for two years, until 31 December 2023. The new concession contract also provides the MSAR Government the right to terminate this extension on 31 December 2022, providing it gives at least 60 days’ advance notice.

At the end of 2021, there were 99,474 fixed-network lines in Macao, along with 515 public pay phones installed in the Macao peninsula and streets in the two islands. These public phones can also be used to make international direct calls (IDD). Currently, callers in Macao can make IDD calls to 246 countries and regions.

Public Mobile Telecommunications Services

At the end of 2021, there were four mobile telecommunications network operators in Macao, namely the Companhia de Telecomunicações de Macau (CTM), China Telecom (Macau) Company Limited,

Hutchison Telephone (Macau) Company Limited and SmarTone Mobile Communications (Macau) Limited, offering 3G and 4G telecommunications services. And with the continuous developments in information and communications technology and users' increasing demand for mobile data, 4G services have become mainstream.

At the end of 2021, there were 1,274,747 mobile telecommunication users, with the per capita mobile penetration rate at 187 percent. ^(Note 1)

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
2019	58	802,220	1,991,254
2020	0	832,949	788,268
2021	0	880,785	393,962

Internet and Broadband Services

At the end of 2021, there were 205,524 registered broadband subscribers, two percent more than in 2020. Among these subscribers, 183,029 were residential broadband services subscribers, representing approximately 90 percent of all households.^(Note 2)

Moreover, the urban wireless broadband network project commenced in 2009, and began providing services to residents and tourists in September 2010. As at the end of 2021, there were 182 WiFi Go service spots, and over 118 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. To further expand the coverage of free Wi-Fi in Macao, the “FreeWiFi.MO” plan was launched in December that year, aiming to encourage institutions in Macao to provide free Wi-Fi services to residents and tourists. The plan gained support and participation from organisations, which include Internet service providers, government departments, hotels, hospitals, shopping malls, banks, on-call taxis, public utilities and the beverage industry. At the end of 2021, there were 591 locations providing the service.

Since the Cybersecurity Law was promulgated, the CTT, as a designated cybersecurity monitoring entity, has the responsibility of monitoring the private operators of critical infrastructure in four categories: regulating audio-visual broadcasting, operating fixed or mobile telecommunication networks, and providing Internet connection services, wholly owned public corporations, and non-profit public legal bodies for managing activities limited to scientific and technological areas, and continues to supervise effective implementation of the real name registration and preservation of records of changes of network addresses.

Television Services

Since April 2014, Macau Basic Television Channels Limited has been assisting Macao residents with receiving basic television channels. Meanwhile, the company carried out cable enhancement work across various districts in Macao, while dismantling aerial cables along public roads. The company’s support service was renewed for two years, starting from 1 April 2020. As at June 2021, the work to replace aerial cables along public roads with underground cables was largely completed. Currently, underground cable networks cover over 90 percent of residential buildings, enabling residents to receive basic television channel signals.

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 Macau Cable TV for five years, 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 for receiving television channels for private viewing. This enables the public to conveniently access television programmes via satellite signals.

Registration and Management of Internet Domain Names

In March 2011, the Government launched the new Macao Network Information Centre.

In 2014, the Macao Network Information Centre introduced services for Chinese and Portuguese domain names for the Internet country code “.mo” and supported 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 (Macau Broadcasting Company, TDM) increased to 13.

Wireless Communication Operations and Frequency Plan in 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 been maintaining 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. Despite the influence of the COVID-19 pandemic in 2021, the CTT organised Macao-operated independent surveys, to oversee and continue improving the problem of cross-boundary signal overspill, in accordance with the agreement.

In November 2021, CTT and coordination representatives from wireless communication operators in mainland China organised a coordination meeting regarding frequencies of wireless communications between mainland China and Macao.

Note 1: The calculation was based on figures from the 2021 population census in the fourth quarter of 2021 – 683,200, as announced by the Statistics and Census Service.

Note 2: According to the results of the 2021 population census announced by the Statistics and Census Service, there were 202,700 households at the end of 2021.



Macao Health Code

To effectively prevent and control the spread of COVID-19, and strengthen the protection of health and safety of residents and tourists, the Government has developed the Macao Health Code System, for users to confirm their health status and applicable pandemic prevention measures when entering border-crossing checkpoints and public places. The mutual recognition of the Macao Health Code and the Guangdong Health Code, which was developed by Guangdong province in accordance with the national requirements, not only improves the efficiency of pandemic prevention at border-crossing checkpoints, but also provides protection for efficient and convenient travel between Guangdong and Macao.

At present, the Macao Health Code System, including its mobile app, can access users' vaccination records and travel records, which can be used in conjunction with the venue codes in public places, for more quickly tracing the transmission routes of confirmed cases, to reduce community risks and achieve targeted prevention and control.



