

Post-pandemic Travel with a Blockchain Immunity Passport

Background: Health codes to re-open business during Post-Pandemic Era

The COVID-19 pandemic has been upending our daily life as authorities are forced to take measures to control the outbreak by limiting ordinary activities, including banning reunions and parties, shutting down schools and restricting restaurant operations etc. The International Monetary Fund has predicted gloomy forecasts for the global economy and adjusted the world economic outlook with a warning of a deeper recession in 2020 and a slower recovery in 2021. Different policies are implemented by governments to encourage the resumption and recover the stalled economy.

The free movement of both people and goods is central to the economy recovery, but governments have found out that keeping track of people is far more difficult than tracking cargoes. Public health agencies end up using antiquated methods at train stations, airports, and shopping centers to check people's temperatures and maintain entry logs. The lack of digital contact tracing systems creates redundant registration work for public health agencies and individuals, while raising the cross-infection risk through shared stationery and equipment.

In China, a highly effective and efficient tool – the digital health code approach – has replaced the old-school manual work. The health code is a digital pass with QR codes that are generated from multiple data sources provided by users, authorities, and institutions. After user scans the QR code and gives electronic permission to the public health authorities, authorities can then analyze the submitted information such as personal identity, health condition, travel itinerary, COVID-19 test result, etc. for disease control. The health code incorporated in popular apps of Alipay and WeChat is highly user friendly, and hence widely adopted in many Chinese cities.

Other regions in Asia followed suit and launched similar health code applications to manage the relaxation of social distancing and travel bans. SafeEntry launched by Singapore in May allows people to log the places they visit using QR codes. The software shortens the waiting time for people to enter public space and improves the efficiency of tracking potential COVID-19 carriers. South Korea implemented a QR code solution in June to check on customers visiting packed bars and nightclubs after new rounds of contagion cases emerged. Undoubtedly, health codes are gaining increasing attention, and it is becoming the new norm of daily life.

Technology Empowerment: Blockchain-Based Immunity Passport Protects Travelers' Privacy

Currently, the health code usage is mostly confined to one single jurisdiction, while most countries rely on centralized quarantine to fan out inbound COVID-19 cases. The compulsory 14-day quarantine, for example, is a widely adopted method for border control. But loosening the flow of people across different regions is a prerequisite for reviving economic vitality. A method to ensure traveler information through proper monitoring and management while gradually relaxing the borders is essential. Under the existing technology regime, the blockchain-based mutual recognition of cross-regional health codes is an effective practice. Different countries and regions have various regulatory rules of data security and privacy protection. Blockchain features being tamper-proof, decentralized systems, enhanced data encryption, share ledgers, and consensus mechanisms make it a natural fit for the solution.

WeBank's Weldentity Solution: Mutual Recognition of Health Codes Using Decentralized Identity

Weldentity is a blockchain solution for decentralized identity management and standardized data exchange designed and developed based on FISCO BCOS¹, which allows digital identity registration, authentication and management, as well as cross-institutional data sharing in a trusted and compliant manner. The process is triggered when user submits several requested credentials which prove he or she is healthy, then the user can apply for an "immunity passport"² to travel through an established Green Travel Fast Lane between two regions.



A Sample of Green Travel Fast Lane between Two Regions

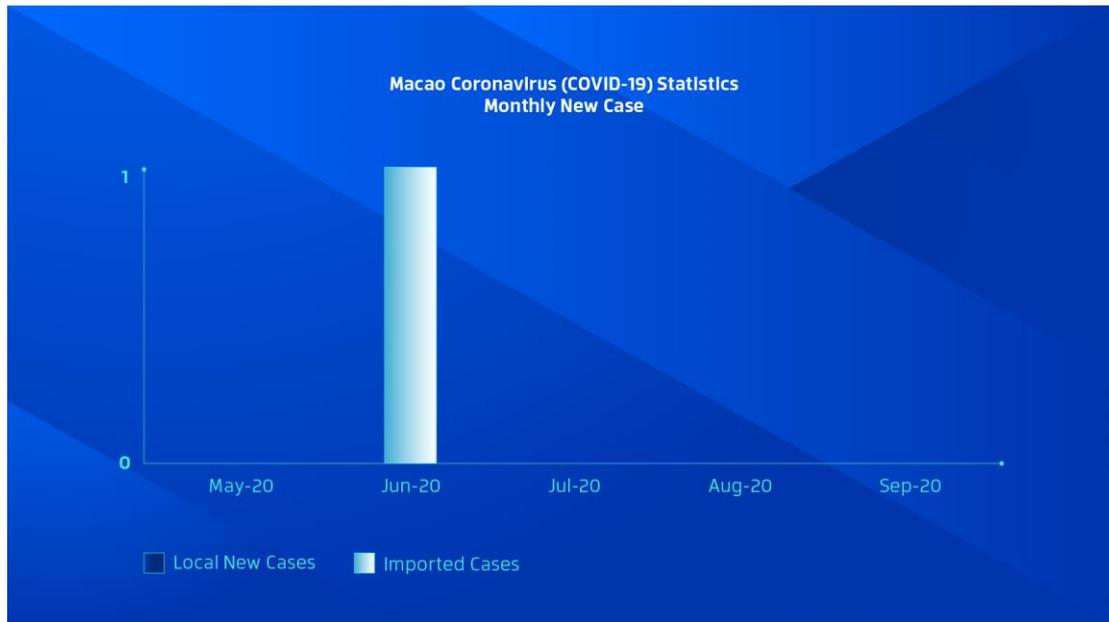
A Recent Use Case: Weldentity Fosters Transferable Health Codes in-between Guangdong and Macao

Let's look at how Weldentity can foster safe cross-border travel. In May 2020, a solution based on Weldentity was designed to unblock the cross-regional travel between Guangdong and Macao. By October 2020, more than 17 million border crossings have been through customs between Chinese mainland and Macao with ZERO local new cases generated.

¹ FISCO BCOS: an open source, free domestic blockchain-based platform.

² To read more about "immunity passports" in the context of COVID-19 by WHO:

<https://www.who.int/news-room/commentaries/detail/immunity-passports-in-the-context-of-covid-19>



Macao COVID-19 Monthly New Case
 Source: Microsoft Bing Coronavirus Statistics

Originated from the idea of “travel bubble” and “immunity passport”, more regions are considering establishing such travel connection by opening up borders without on-arrival quarantine. Backed up by WeIdentity blockchain technology, no data but only credentials are transferred in-between Yue Kang Code (Guangdong Health Code) and Macao Health Code in this case, which protects data privacy and ensures authenticity.

What information do we need to prepare for cross-border travelling and how does this “data-journey” go? Take Macao-Guangdong as an example, travelers can simply authorize the system through mobile phones to redirect to the health code page of the destined region, and only their credentials will be brought forward by the server automatically to generate the new health code of the destined city without any data exchange. More specifically, travelers enter the local health code page through mobile phones and fill in the credentials, which include: KYC Credentials (name, ID number, home address, phone number etc.), Health Credential (COVID-19 test result, COVID-19 exposure etc.), and Travel Credentials (travelled cities in the past 14 days, and whether have been abroad in the past 14 days). By confirming the data authenticity, they then authorize to transmit it to generate the destined health code, armed with blockchain technology. At the same time, the issuer (server) starts to encrypt the credentials and issue them to blockchain, ensuring data confidentiality and indicating that no one can spy on it nor change the data anymore. These credentials are further transmitted to the destined location health code page as URL parameters, and being verified under local blockchain technology. After going through this cross-border “data-journey”, satisfied credentials are finally utilized to generate the destined health code ready for scanning. With an average of 1 minute and 40 seconds, the new health code of destined region is created. Surprisingly, it only takes a maximum of 3 seconds of “page-jumping” to return from their journey.



Transferable Health Codes in-between Guangdong and Macao

With the success of Weldentity application in Guangdong and Macao, people can finally travel in such safe “bubble areas”, which not only revives tourism, but also trade and business, rekindling regions with a protective shield. Backed up by blockchain, this solution satisfies data compliance regulations while emphasizing data authenticity. Government agencies from different jurisdictions can also use Weldentity to issue credentials on a consortium blockchain, where verifiers, the public health authorities and customs controls, can make validations without privacy breaches. Currently, Weldentity is pathing the way to the cross-border economy recovery and is believed to be widely applied during the post-pandemic era.

Terminology:

KYC Credential – Issued by Government Authorities

Health Credential – Lab or Health Departments

Travel Credential – Issued by Government Authorities in Different Regions

Contact us for more information if you are interested in Weldentity solution: fintech@webank.com