

## 下载官方 APP 乘坐全国地铁的技术路径

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曾几何时,乘坐高铁时可以互联网购票并在车站自助取票轰动一时,人们相告感受其便捷。而如今,二维码过闸已成为手机标配,互联网取票机又将成为昨日黄花。互联网应用、电子支付以及智能终端的普及,改变了社会生态,也给城市轨道交通(以下简为“城轨”)票务系统带来了翻天覆地的变化。当5G的应用呼之欲出,物联网的应用逐渐普及、智慧地铁的追求成为行业共识的今天,城轨票务系统又该何去何从?

要谈趋势,首先要谈实质。乘坐地铁,什么信息是不可或缺的呢?“乘坐人及其进出站的时间、地点”,是构成一次乘车的必要信息。其他信息都可以通过这些信息关联而获得。另外,信用消费更是今后的发展方向,因此实名制及信用消费应是城轨票务系统的必然发展趋势。

采取实名制,“票”就有了新的定义,就可以更确切地将其定义为“凭证”。闸机的作用只是对实名旅客的识别,所有的消费信息可以通过实名旅客的行动轨迹加以关联。实名旅客可以有20多个维度,由此可以生成很多种“凭证”,比如老年、通勤,以及特定的优惠等。闸机也会进一步智能化,比如生物识别、万物互联等。票务系统的后端也会向大数据应用及更加智慧化的方向发展。但不管信息化技术怎么发展,城轨票务系统毕竟是为乘车而生,万变不离其宗,其基本功能是不会改变的。二维码仅是其中一种识别模式,而识别形式是会有变化的。

票务系统是城轨企业为乘客提供乘坐地铁列车服务的一种延伸,AFC(自动售检票)系统的数据库是城轨企业大数据应用中的重要组成部分。城轨系统的大数据包括车辆、通信、信号、供电、电气、综合监控等系统的装备数据,以及运输管理、运行调度等的行车数据;还应包括BIM(建筑信息模型)、办公、资源管理、人力资源、财务等系统的企业资源数据;当然还包括旅客信息系统、AFC系统的旅客服务数据。通过这些大数据的分析及应用,可以改善城轨的运营组织,提升应急响应能力,降低运营成本。城轨的快捷性、安全性、经济性,是判别各种技术发展的试金石。城轨企业的官方APP是企业的门户,是为乘客服务的重要手段。实名旅客的OD信息是智慧地铁的重要数据来源,是城轨企业的重要财富。因此,城轨企业要坚持自己发码,掌握数据实时性、准确性的主动权。

既然城轨企业官方APP的存在是必要的,那么城市间通过官方APP互联,让乘客下载任何一个城市的城轨官方APP就能乘坐全国地铁,就成为人们的期望。中国城市轨道交通协会顺应广大业主的需求,搭建了城轨易行数据交换平台,已于3月15日在无锡正式启动。可以期待,下载任何一个城市的城轨官方APP就能乘坐全国地铁的梦想不久也可以实现。跨区域乘坐公共交通的形式有很多种,比如交通部的一卡通、第三方支付的乘车码等。各种互联方式应相互包容、开放,真正方便广大乘客。而城轨易行平台只进行城轨官方APP的互联,并不妨碍其他形式的互联。

中国铁路总公司已经宣布,今后铁路的乘车凭证为身份证和二维码。这为城轨票务与国家铁路公交票制车次的票务互联提供了可能。可以想象,下载“铁路12306”就能坐全国地铁的日子也不会太远。同样,任何一个城市的城轨官方APP也能乘坐所有铁总的公交票制列车。

随着新的IT技术的出现,实名识别的方式会有层出不穷的变化,但是城轨票务系统有车站及路网中心的两层架构及基本功能不会变。今后的城轨AFC系统前端会更加简单,后端会更加智能,依赖大数据及网络为乘客的服务会更加个性化,旅客乘车会更加便捷。这是城轨票务系统发展的必然趋势。

(Continued from Commentary)



## The Technical Path of Riding the National Metro-APP

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In China, people could buy tickets on the Internet and collect tickets by themselves at station when they take the high-speed rail, which made a great sensation of the convenience. Nowadays, the QR code gate has become the standard of mobile phone, which is replacing the Internet ticket machine. The popularity of Internet applications, electronic payment and intelligent terminals has changed the social ecology, and the ticketing system of urban rail transit greatly. When the application of 5G is coming out, the application of Internet of Things is becoming gradually universal, and the pursuit of intelligent Metro becomes the consensus of the industry today, how the urban rail ticketing system will develop in the future?

Indispensable information for taking the metro include passengers, the time and place of entering and leaving stations, credit consumption is the direction of development in the future, real-name system and credit consumption will be the inevitable development trend of urban rail ticketing system.

Because of the implementation of real-name system, ticket can be more precisely defined as "voucher". The function of the gate is only to identify the real-name passengers, and all consumption information can be related through the trajectory of the real-name passengers action, can have more than 20 dimensions, and generate many kinds of "vouchers", such as elders, commuters, and specific preferences, so the gates will also be further intelligent. The back-end of ticketing system will also develop towards the application of big data and more intelligent direction. After all, urban rail ticketing system is for passenger transport, and its basic functions will not change. QR code is only one of the recognition modes, and the recognition form will be changed.

Ticketing system is an extension of metro train service provided by urban rail transit enterprises for passengers. The data of AFC system is an important part of big data application in urban rail transit enterprises, which also includes equipment data of vehicle, communication, signal, power supply, electric, integrated monitoring system, traffic data of transportation management and operation dispatch, the enterprise resource data of BIM (Building Information Management), office, resource management, human resources, finance and other systems. Through the analysis and application of these big data, the operation organization of urban rail transit can be improved, the emergency response ability can be enhanced, and the operation cost can be reduced. The rapidity, safety and economy of urban rail transit are the acid test for judging the development of various technologies. The official APP of urban rail enterprises is the portal of enterprises and a major means of serving passengers. OD information of real-name passengers is an important data source of intelligent Metro and an important wealth of urban rail enterprises.

The official APP in urban rail enterprises has become the expectation of people to connect cities. Through official APP, passengers can download the official APP in any city and take the subway in the whole country. China Urban Rail Transit Association has built an easy-to-use data exchange platform for the needs of the owners, which was officially launched in Wuxi on March 15. There are many forms of cross-regional public transport, such as the one-card-pass system, passenger code paid by the third party, and so on. While the urban rail ease platform only connects with the official APP, which does not hinder other forms of interconnection.

Railway Corporation of China has announced that in the future, railway will use ID card and QR code as passenger certificates. This provides a possibility for the interconnection of urban rail ticketing and the ticketing of the national railway bus ticket system. It can be imagined that the days when the "Railway 12306" can be downloaded to take the national subway will be coming soon. Similarly, the official APP of any city's urban rail transit can take all the general bus ticket trains.

Along with the emergence of new IT technology, the way of real-name recognition will change greatly, but the two-tier structure of station and network center, the basic functions of urban rail ticketing system will not change. In the future, the front-end of AFC system will be simpler, the back-end will be more intelligent, the service for passengers relying on big data and network will be more personalized, and passengers will ride more convenient. This is the inevitable trend of the development of urban rail ticketing system.

(Translated by JIANG Jiacen)