Please release immediately

Contact Persons：Director Shu-Keng Hsu、Director Wei-Shen Lai

Telephone：02-23496820、02-23496817、02-23496827

Tax：02-25450427

E-mail：keng@iot.gov.tw、lewis@iot.gov.tw

Website：www.iot.gov.tw

Constructing Railway Supply and Demand Diagnosis Model Software through the Use of Big Data Analysis Technology

The Institute of Transportation, MOTC (IoT) has integrated and developed the mathematical models and core technologies of Taiwan Railways system-wide supply and demand through big data analysis technology, leading to the successful development of railway supply and demand diagnosis model software. This software diagnoses the current situation of Taiwan Railways system-wide supply and demand, optimizing transportation capacity, and evaluating the effectiveness of construction plan transportation capacity improvement, etc. These situational analyses aid in the advancement of railway constructions and operations.

Taiwan Railways is the largest railway system with the greatest variety of train types and the longest history in Taiwan. In order to assist Taiwan Railways in enhancing operational efficiency, keeping abreast of the benefits of construction plans, the IoT has cooperated with the NCKU Railway Technology Research Lab, with the aspects of "railway transportation system supply", "passenger transportation demand", and "consumers" as the starting points. Six mathematical models have been established to describe the formation of transportation demand, the choices of behaviors, the formulation of railway service plans, ruling out schedule conflicts, schedule assessment and analysis,

and other important factors. The Railway Supply and Demand Diagnostic Model Software has been subsequently integrated and completed to serve as a powerful tool for diagnosing the current situation of the railway system supply and demand, the review of railway construction plan funds, and the comparison of various railway operation related policy plans.

The high technical threshold of railway system supply and demand diagnosis has drawn international academia and industries to engage in the research and development of related core technologies. However, with the large size and operational complexity of the Taiwan Railways, there have been no successful cases of supply and demand diagnoses through computers and automatic trading scheduling that meets passengers' needs. The IoT, along with academia, have overcome the technical threshold and have successfully developed the supply and demand diagnostic model software compatible with the Taiwan Railways system, which will give rise to opportunities for Taiwan Railways operational intelligentization. Related R&D results will be subsequently transformed and promoted for application by Taiwan Railways Administration, MOTC and Railways Bureau, MOTC.
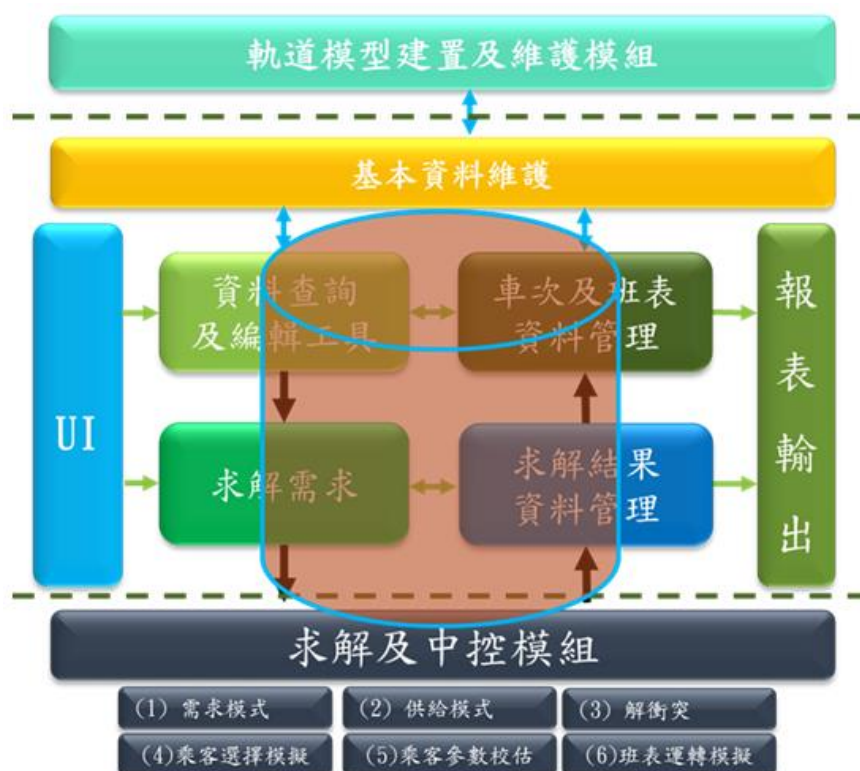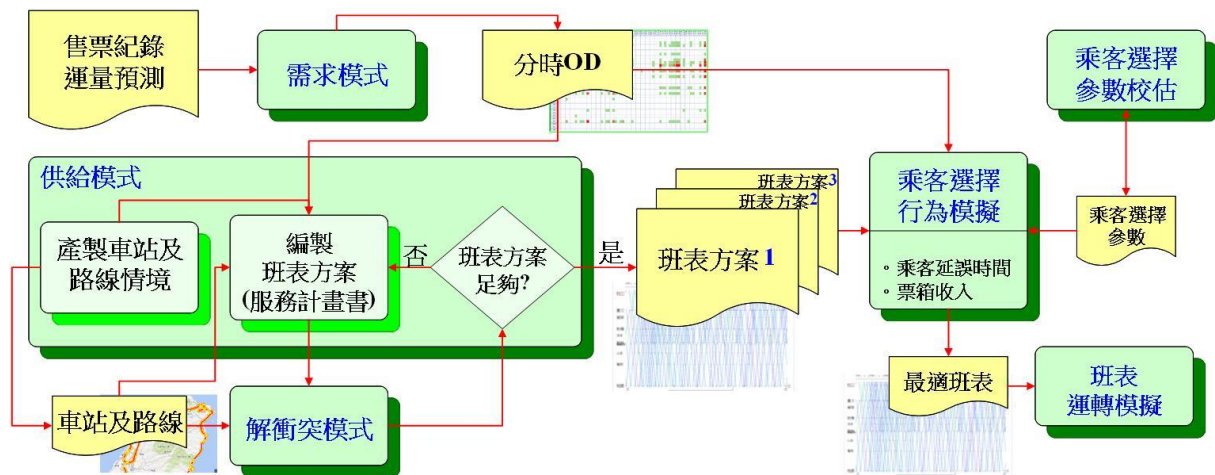

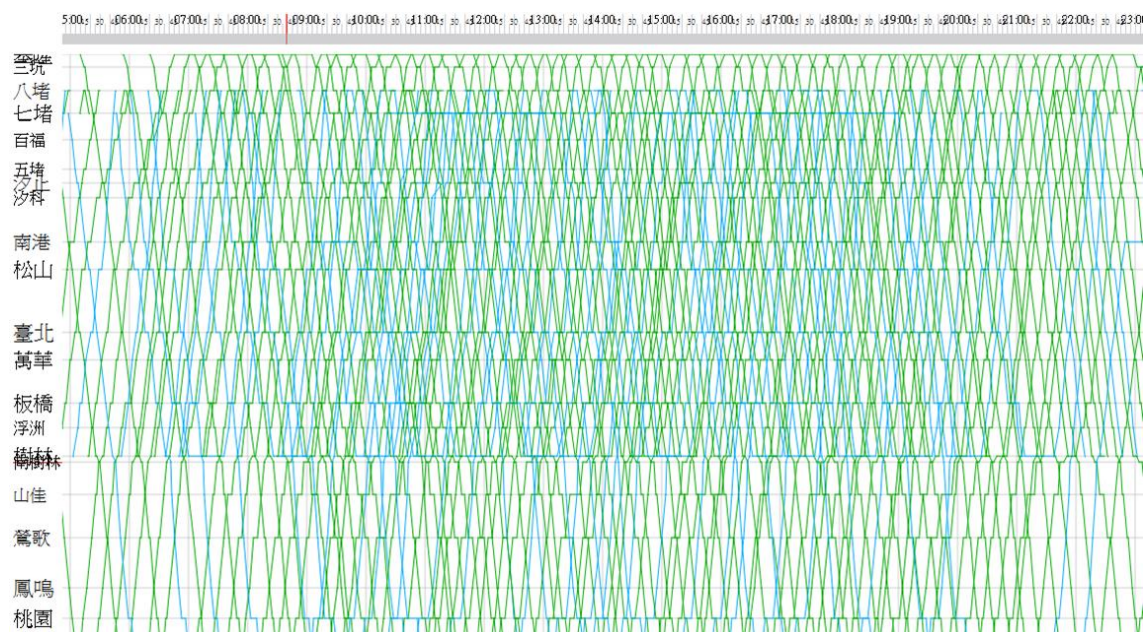圖 1 鐵路供需診斷模式軟體系統架構圖

圖 2 鐵路供需診斷六大模式關聯圖

圖 3 臺鐵實際班表範例