

NO.167 A TRANSFORMER-USER IDENTIFICATION METHOD BASED ON CHANNEL IDENTIFICATION

Pinlei LI

Guangzhou Power Supply Co.,Ltd – China

Bowen XU

Guangzhou Power Supply Co.,Ltd – China

Miao MO

Guangzhou Power Supply Co.,Ltd – China

Xinyuan GE

Guangzhou Power Supply Co.,Ltd – China

Jian CHEN

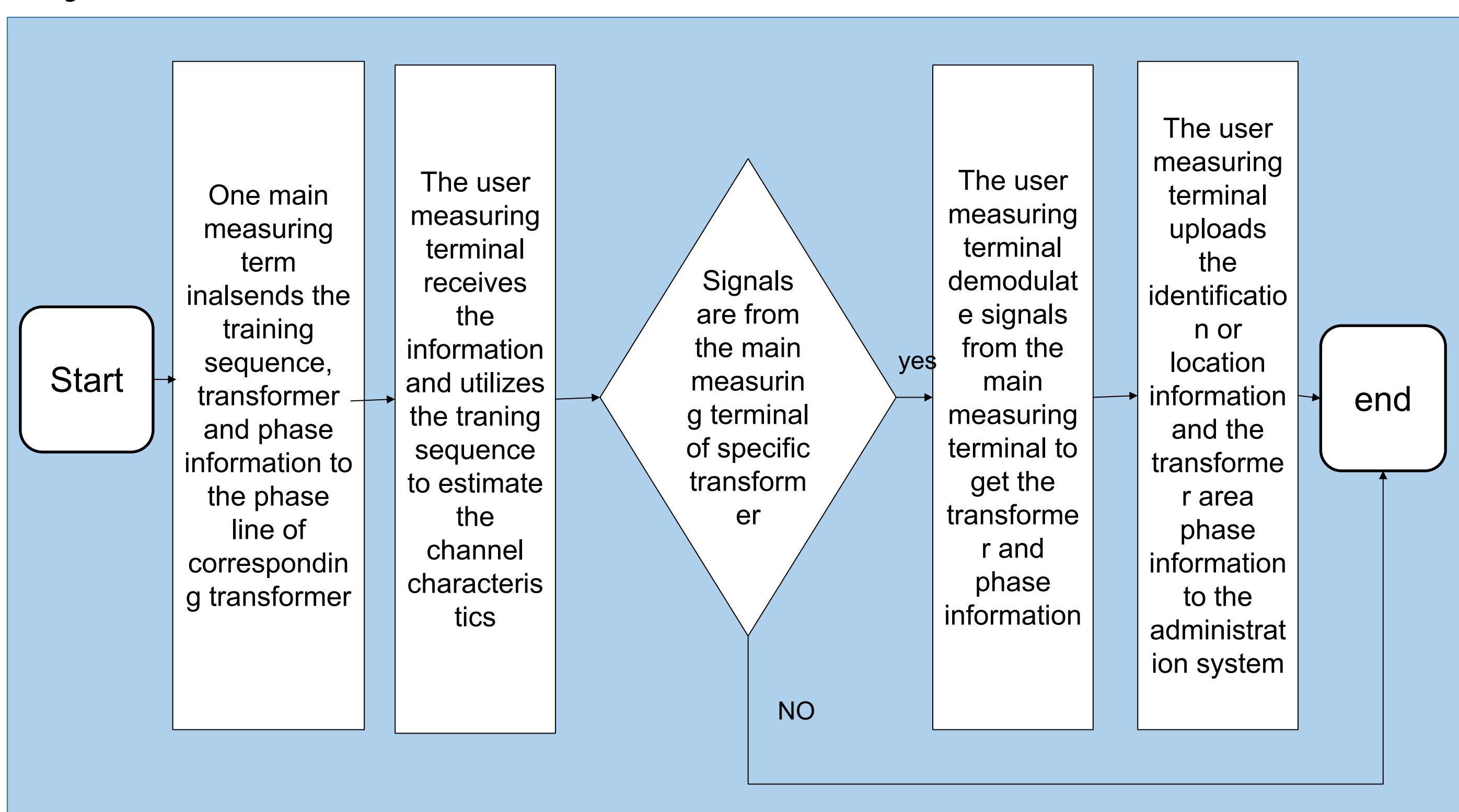
Guangzhou Power Supply Co.,Ltd – China

Introduction

With the development of power grid construction, the effective identification of transformer-user relationship can finely manage transformers and reduce losses. However, due to the complexity of the cables, lost information and incorrect updates, it is difficult to identify the exact user. By training the neural network through principal component analysis (PCA) and BP algorithm, the transformer-user relationship can be identified more effectively and conveniently than the traditional model.

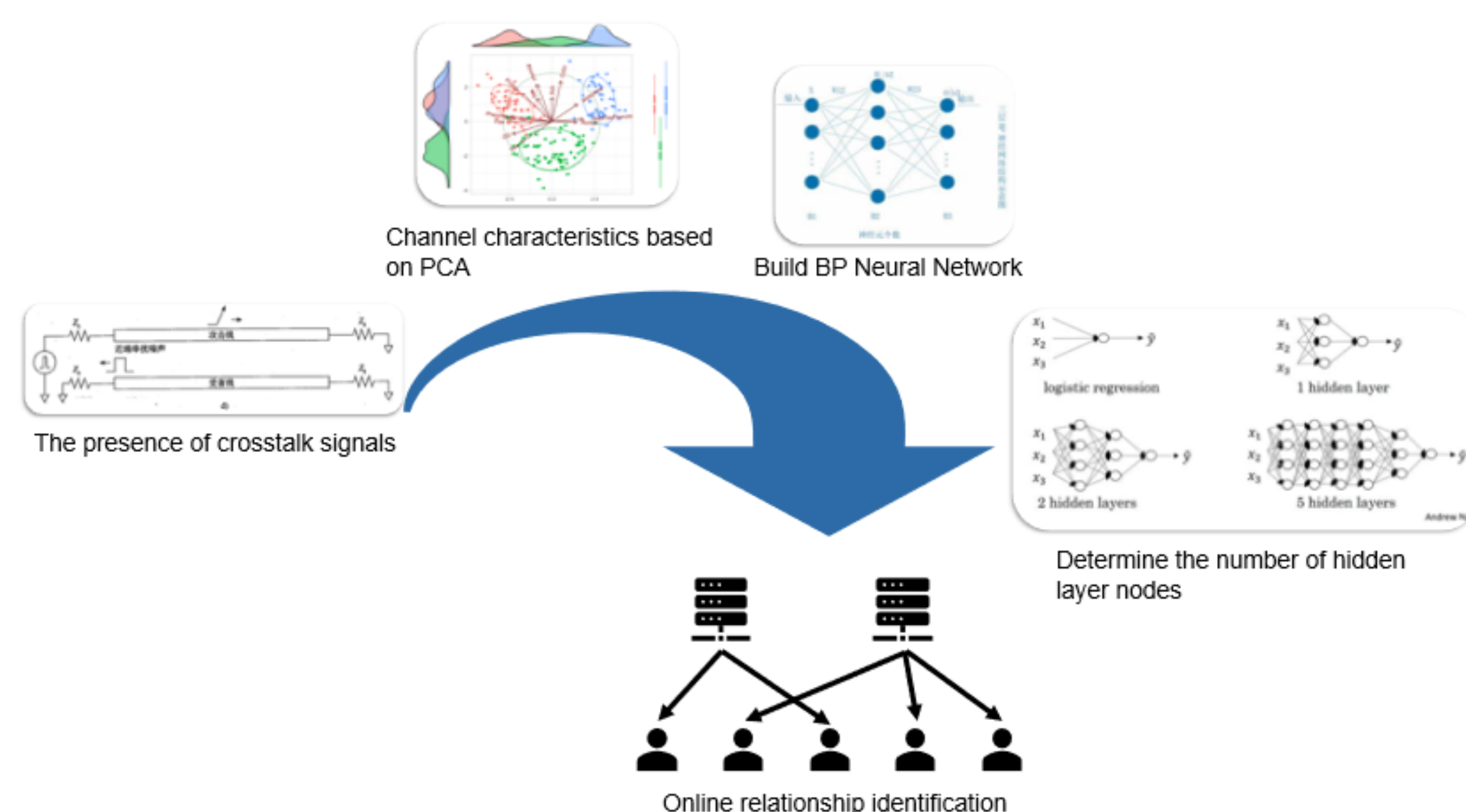
SYSTEM STRUCTURE AND OPERATING PRINCIPAL

One main measuring terminal sends the training sequence, transformer and phase information to the phase line of corresponding transformer. The user measuring terminal receives the information and utilizes the training sequence to estimate the channel characteristics. Signals are from the main measuring terminal of specific transformer. The user measuring terminal demodulate signals from the main measuring terminal to get the transformer and phase information. The user measuring terminal uploads the identification or location information and the transformer area phase information to the administration system.



How to achieve

1. Get channel characteristics
 - 1.1 The presence of crosstalk signals
 - 1.2 Channel characteristics based on PCA
2. BP neural network model analysis.
 - 2.1 Build BP Neural Network
 - 2.2 Determine the number of hidden layer nodes
3. Online relationship identification



In conclusion

A transformer-user relationship identification method based on channel characteristics uses power line carrier communication technology, PCA dimensionality reduction, BP neural network technology, etc., to improve the efficiency and accuracy of transformer user relationship identification, and solve the problem of determining the transformer to which the user belongs. To guide low-voltage distribution network operation, maintenance, emergency repair, technical transformation, planning and other fields to lay the foundation.