Progress in Forecasting and Traffic Measurement Techniques as seen at recent Teletraffic Congresses.

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By studying the papers presented at International Teletraffic Congresses starting with the 8th held in Melbourne, Australia, the author has attempted to identify and comment upon some of the more important developments which have taken place in the field of telecommunications forecasting and traffic measurement.

One feature of forecasting in this field which distinguishes it from many other applications is the need for a very large number of forecasts of a similar nature at any one time. The widespread availability of the digital computer has had a significant impact on the character of the forecasting algorithms used, so that whereas at one time much forecasting was done using simple "fitting by eye", nowadays the tendency is to turn to relatively complicated forecasting systems. This increasing complexity can only be justified by considerations of improved accuracy and the more cost-effective use of the forecasting resources.Consequently the subject of forecasting accuracy and the impact of inaccurate forecasts on network performance and cost is of great interest.

In extrapolative forecasting procedures prediction of future values of the quantity of interest are based only on the current and past values, and many techniques are available for tackling this problem. Comparing these techniques is a difficult task, and many will be familiar with the work of Makridakis *et al* and of the controversy which their conclusions excited.

It is in the search for a unified framework of methodology that the Kalman filter plays a central part, and it is in the period under review that this was introduced into the field of telecommunications forecasting by David and Pack. It has been shown by Harvey that many forecasting methods currently in use are special cases of Kalman filters.

The papers dealing with traffic measurements over the same period are more difficult to classify and group. One continuing theme is the interest shown in the identification of the quantity often referred to as the base load, which is used as a dimensioning parameter and as a current load in a traffic forecasting system. The concept of busy hour too, and the many possible interpretations of it, also attracts attention.

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