TELETRAFFIC AND INTERNATIONAL STANDARDIZATION - THE CASE FOR DOING LESS

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This paper reviews some key characteristics of the Comité Consultatif International Télégraphique et Téléphonique (CCITT) and some important attributes of the Teletraffic field of study. The less than perfect relation of the two is illustrated with examples. Suggestions for future improvements are offered.

1. INTRODUCTION

CCITT has been producing international standards on teletraffic topics from its inception. ITC and CCITT have maintained close liaison and there has been an implicit assumption in both bodies that the production of more and more CCITT Recommendations on teletraffic is desirable for the dissemination and promotion of teletraffic knowledge. This paper challenges that assumptions.

2. CCITT

CCITT is the most important body involved in international standardization for communications. The main function of CCITT is the production of Recommendations. These Recommendations are voluntary but widely observed standards for international telecommunications services. Many Administrations also use CCITT Recommendations as national standards as well. Some Administrations use CCITT Recommendations in specialized fields such as teletraffic as their primary source of knowledge in such fields and apply the Recommendations literally word by word.

CCITT Recommendations cover an enormous range of activities; human factors, outside plant practices, accounting, maintenance, technical characteristics, numbering and routing and, of course, teletraffic. Some Recommendations are absolutely essential for international telecommunications to function at all. Others are of a more advisory nature, aimed at improving the quality of service or the economy of telecommunication networks. The wide range of topics to consider and the multiple purposes to be achieved has led the CCITT to develop a broad structure of fifteen Study Groups each independently working on separate Recommendations. Most Study Groups are further divided into Working Parties to cover individual topics. The result of such an organization is that the participants in each group are encouraged to think of themselves as specialists and to structure their studies as independently as possible from other groups in CCITT.
CCITT Recommendations are taken very seriously and the member
Administrations of the International Telecommunications Union tend to view
Recommendations as international commitments. Thus their formulation is
very deliberate and is carefully reviewed from many points of view. This
situation gives rise to several criteria for Recommendations:

- they should be simple;
- they should be impossible to misinterpret;
- they should be applicable to broadest possible range of situations;
- they should allow only a minimum number of options.

3. TELETRAFFIC

This section will not describe the Teletraffic field in a comprehensive
way. Rather, it will highlight some key characteristics that are important
in relation to CCITT.

Teletraffic models are not an explanation of telecommunications traffic
flows. They are approximation borrowed from applied mathematics to
simplify the representation of the actual flows. Teletraffic engineering
procedures use scientific methods but are not a science. There are no
teletraffic laws, only teletraffic hypotheses. A teletraffic model can
never be correct; the best it can be is appropriate for use in certain
situations.

People who work in teletraffic require highly specialized knowledge and are
often employed as specialist resources. However, the product of their
endeavors is rarely an end in itself. Often teletraffic experts work as
part of a team solving a large problem with many different aspects to be
considered. The overall solution may very well be less than optimum from a
pure teletraffic viewpoint when all the other considerations are taken into
account.

Teletraffic has been a very dynamic field and will be even more so in the
immediate future. Even in periods of relatively stable telecommunications
techniques, teletraffic developments have progressed rapidly. Today with
both the technical equipment and customer service needs evolving quickly,
teletraffic problems are multiplying and the need for solutions is
pressing. Thus we have a need for rapid and broad dissemination of new
ideas and techniques.

4. CCITT – TELETRAFFIC SYNTHESIS

The problems of marrying the CCITT with teletraffic can be illustrated by
reviewing some of the current areas of activity in CCITT Working Party II/4
(traffic engineering, forecasting, network planning).

CCITT has had for many years a Recommendation on traffic measurements [1].
This Recommendation calls for measurements on international circuit groups
24 hours a day for every day of the year. The 30 busiest working days
would then be chosen and averaged to produce a Time Consistent Busy Hour
value to use in network planning. From a pure teletraffic point of view,
such a procedure produces an accurate and representative value for use in
long term planning. However, the procedure is also costly, impractical
administratively and useless in serving the other purposes of traffic
measurements. The reason such a situation arose is most likely
attributable to the pressures within CCITT for specialists to stick to
their specialities and not bring into consideration other factors as they
would normally do in teletraffic work outside CCITT.

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Working Party II/4 has been aware of this problem and has now produced a thorough revision of this Recommendation. This revision incorporates more practical and less expensive measurement procedures and provides information on relating these to the "ideal" procedure.

Working Party II/4 has recently developed a new Recommendation on the calculation of blocking for individual traffic streams sharing the same overflow group. Such calculations are necessary to apply important concepts such as end to end GOS or cluster engineering in network planning. This Recommendation includes detailed comparisons of several methods which have been previously presented at ITC [2], [3], [4]. The wide application of CCITT Recommendations and their formal importance as standards require that these comparisons be exact and take into account a large range of situations and considerations. The result, to an outside reader, overemphasizes the choice of the best calculation method at the expense of the more basic point that end to end GOS and cluster engineering are a major improvement over the traditional GOS on final approach.

ISDN presents many new and challenging problems in teletraffic. In CCITT work has started on a whole new series of Recommendations. This work is progressing well and has produced seven good quality Recommendations. However, the content of these Recommendations is considerably less than the knowledge on the subject of the people who produced them. For example, many of those working on CCITT ISDN traffic studies have also participated in the ITC seminars on ISDN in Brussels and Como. All gained considerable insights at these seminars, but very little of that knowledge can be included in the CCITT Recommendations. One of the main reasons for this is that CCITT is attempting to define a single comprehensive ISDN structure and to relate teletraffic studies to only this standard structure. This approach is highly desirable in working towards the criteria for Recommendations listed in Section 2 of this paper. But in adopting this approach for a diverse, fast evolving field like ISDN much valuable knowledge is excluded from the CCITT Recommendations.

5. A BETTER WAY

Perhaps it would be more productive if, in future, CCITT teletraffic work concentrated more on handbooks and less on Recommendations. CCITT handbooks are already being produced including some in the teletraffic area. The recently published handbook "Planning Data and Forecasting Methods" [5] is a good example of the expanded possibilities of the handbook format. This handbook contains both a deeper review of the theoretical basis for forecasting models and several pragmatic shortcuts in applying the models. Neither of these aspects can be readily incorporated in a formal standard such as a CCITT Recommendation. The case studies included with the handbook give examples of how to adjust ideal methods to real life conditions.

At present, CCITT handbooks are created at the request and for the benefit of developing countries. This tends to limit the range of topics and also to exclude some of the most interesting and newest developments. However, with imagination, a mechanism can probably be found to overcome this limitation and embark on handbook topics identified by teletraffic experts.

If a handbook approach is adopted, an interesting possibility presents itself. Perhaps extracts from some ITC seminars could be included in CCITT handbooks giving wider dissemination to the valuable but little known achievements of these seminars.
ACKNOWLEDGEMENTS

All of the author's knowledge of CCITT and a major portion of his teletraffic knowledge has been gained at CCITT meetings. This paper has stressed differences between CCITT and ITC, but there is also an important similarity. In both bodies there is a very free and open exchange of ideas.

The review of CCITT in this paper is not intended as a criticism of any of the participants in Working Party II/4. Any shortcomings in the teletraffic Recommendations should be interpreted as the inevitable result of international standardization limitations.

REFERENCES