TITLE: Error correction for the H261 codec.

SOURCE: UK, NETHERLANDS, FRANCE

1. Introduction

This document, which is for **information only** , describes work which has been undertaken in the UK, Netherlands and France concerning a possible error correction scheme for the H261 codec.

2. Error Correction Meeting

A telephone conference meeting was held on 30th June 1988. This meeting was organised to allow interested NA3.1 participants to discuss the issue of error correction with a view to preparing some contributions on the subject ready for the CCITT SGXV/1 meeting in September.

Four people joined the meeting:-

> J P Blin (CNET)
> R Plompen (DNL)
> B Schuurink (DNL)
> M Carr (BTRL)

We discussed the activities on error correction undertaken at each of the laboratories. This work can be summarised as follows:-

DNL

DNL have considered the problem of error correction specifically for the H261 codec. They do not have strong opinions about which error correction code should be used an could except the BCH proposals from Japan or the Reed-Solomon proposal from Picturetel. DNL are aware of some work by C J Chargaca at the University of Victoria, Canada, concerning implementation of Reed-Solomon in hardware and are following this up to find out more details. Ronald has received a set of BCH chips from Mitsubishi and intends getting a student to build hardware to test the chips starting Monday 4th July.

CNET

CNET have talked to their error correction experts, but do not have any specific proposals to make. Their main requirement is to ensure that the proposed scheme is not over sophisticated and is simple/cheap to implement. CNET hope to start some experiments to assess the sensitivity of the H261 codec to transmission errors.

BTRL

Have investigated the problem via a student project at University College London. The investigation led to a suggested solution identical to that from Picturetel (an RS

255,239 code). BT does not have a strong opinion and could except the BCH code from Japan or the Picturetel solution provided they can be shown to be practical to implement at 2Mbit/s. BT have also receive BCH chips from Mitsubishi and will be using a student (starting 4th July) to build hardware to test the chips.

We discussed the details of how we should proceed towards generating a contribution for the next SGXV/1 meeting. The following actions were agreed:-

    i. BTRL will distribute their University report to CNET and to DNL.

    ii. CNET will take the proposals from Japan and Picturetel along with CCITT recommendation G821 as a basis for further discussion with CNET error correction experts. J P Blin will inform DNL and CNET of the outcome of this discussion.

    iii. DNL will distribute information from the University of Victoria concerning the implementation of Reed Solomon codes.

    iv. DNL and BTRL will get their respective students to collaborate on building common implementations of the Mitsubishi BCH error correction chips. The intention is to build a general purpose 2Mbit/s error corrector which could be used in field trials of both the H120 and H261 codecs. Results should be ready for the September meeting. We fixed a date of 20 July at 14:30 (13:30 in the UK) for a telephone meeting to discuss this in detail.

    v. DNL, BTRL and CNET will prepare a joint contribution ready for the next CCITT SGXV/1 meeting in September.

3. Progress

BTRL and DNL have both successfully built error correction equipment based on the Mitsubishi chip set. The hardware can operate using the 255,239 BCH code as well as the 511,493 BCH code. We have prepared a video tape showing the perfomance of this hardware when used with the H261 codec operated at 384kbit/s in a random error environment.

France have produced a video tape which demonstrates the performance of the H261 codec without error correction. The effect of different error burst lengths are shown.

4. Future Plan

DNL and BTRL intend to use their error correction harware in a satellite field trial connection proposed for week commencing the 25th September 1988. Futher work will then be undertaken by CEPT NA3.1 with a view to preparing some firm proposals for including an error correction scheme in the H261 codec.