CCITT SG XV **Doc AVC-14**
Working party XV/1 **November 13, 1990**
Expert group for ATM video coding

Source : The Royal PTT Netherlands, PTT CONTEST
Purpose: Discussion.
Title : Interconnectibility of future AV-systems.

Abstract

This document tries to stress the difficult point of interconnection or interworking of various existing and future audio visual system and services.

The necessity of interworking will be discussed from different point of views; technical achievement, applications, standardization and the implication of marketing.

One thing we should bear in mind is the users request.
The objective of standardization should be to achieve the highest level of compatibility.

Due to the various research in the field of image coding harmonization for all types of coding is advisable and communications to other established groups is necessary. Due to the construction of open networks like (ISDN), network operators do not have the monopoly any more. They should consider a cooperate with industry.

The industry has other than technical objectives.

Do we need a coding hierarchy? Is it necessary to have compatibility between QCIF, CIF, CCIR 601, EDTV, HDTV formats or could we define classes related to application areas.

For the sake of service development we should try to achieve the highest level of intercommunication.

Introduction

Given a rapid growing market for digital audio visual (AV) services and products a demand for interconnection between various audio visual terminal equipment is of interest.

To start new services the so called chicken and egg problem must be encountered;

There is no service without equipment and
no equipment at reasonable pricing if the service is not defined properly. I.e. service interworking and compatibility are key words in this.

Considerations

For the definition of the new workplan we should not tackle the technical aspects only, we have to consider also :

* Types of applicatiions
* what standardization is needed
* Manufacturers objectives
* Marketing

The task of the specialists group is not to tackle them but liasions should be made to the appropriate bodies which should tackle them. The specialist group could function also as a consultancy group.
The tasks would be to see that problems of interworking are tackled and that the work is done. Possible not by the Specialists group but possible by other SG's or standardization bodies.

New applications are likely to emerge between now and the end of this decade. The drive for these new applications will come from the business sector, application providers, terminal manufactorers and operators.

Important for the users are:

* cost reduction
* business advantage
* Quality/performance improvement
* solution to specific related problems
* availability.

Also for the users point of view the migration path to new applications is of importance
The market would therefore be looking for terminal equipment manufactorers to design their terminals in such way that they would be capable of supporting new applications which users may migrate to in future.

Considerations from a technical point

This area is of first priority for the specialists group;
what is technical feasible bearing in mind the need for standardization. Is an universal interface wanted? What type of level is standardization of this interface possible.

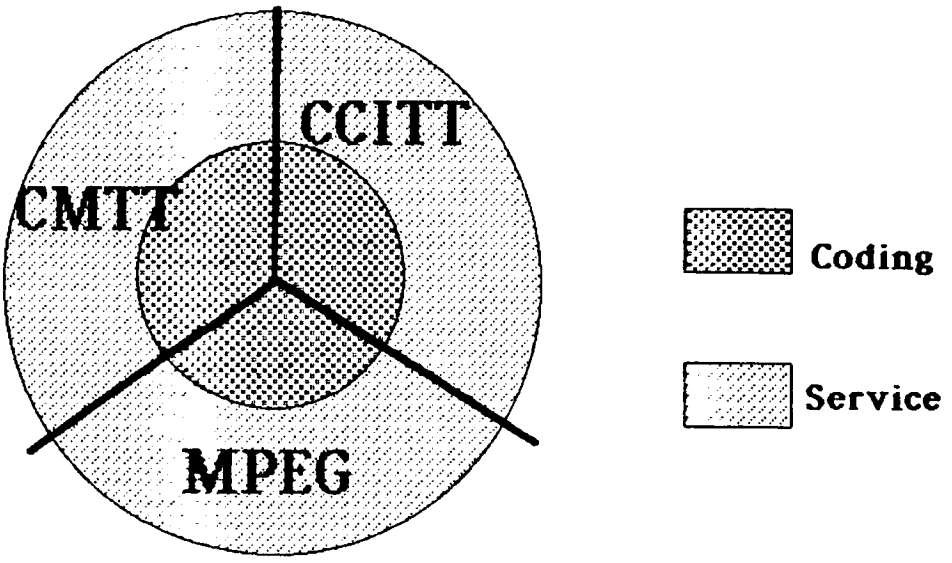
Interconnection could be approached from several angles:

- Analog connection
  Drawback is a loss in quality, due to the conversion to and from the analog signal and transcoding. A complete encoder and decoder is needed to transcode one bitstream into the other one.

- Digital CCIR 601 connection
  A complete encoder and decoder is needed for transcoding resulting in the corresponding loss in quality and delay.

- Digital connection with simple transcoding
  Simple transcoding. Algorithms should be highly similar. This option seems virtualy impossible, e.g. the H.261 and MPEG algorithms are highly similar but a H.261 bitstream cannot directly be converted into a MPEG bitstream because of the missing loopfilter.
  Therefore transcoding will be complex and will still result in a significant transcoding delay.

- Direct digital connection
  Compatible algorithms for different products are used. A new coming standard which can be used for videophone applications, dataretrieval services, TV broadcast and storage will make it possible to use a single terminal for all applications.



Considerations from applications point of view.

We can define the following categories for the discussion:

1 Conversational
2 Distributive
3 Data storage and retrieval
4 messaging and surveillance

The following picture formats could be considered:

- i QCIF
- ii CIF
- iii CCIR 601
- iv EDTV
- v HDTV

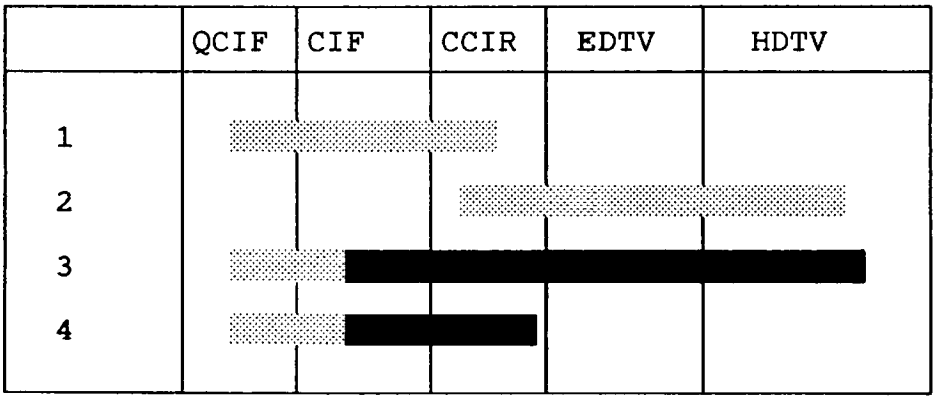


Figure 1 Possible classes for hierarchies

For application area 3 databases the hierarchie QCIF and CIF could be of interest for forinstance electronic news gathering.

	QCIF	CIF	CCIR	EDTV	HDTV
QCIF	VT		Surv.		
CIF		VT	MCU		
CCIR				enter.	
EDTV					enter.
HDTV					

- enter:= entertainment
- VT := VideoTelephone
- MCU := Multipoint Conference Unit
- Surv.:= Surveillance

Figure 2 Relation between picture format and compatibility.

Figure 2 is not complete, this figure is ment as a possible accelerator for the discussion for which class of applications do we want to preserve the hierarchie.

Considerations from the marketing point of view.

The market for audio visual telecomunication is just beginning to develop and there is very little available public domain information on the prospects.

The influence of the tariffs and the way the charges are calculated highly influence the acceptability of future audio visual telecommunication services.

	QCIF	CIF	CCIR/ EDTV	HDTV
Audio Visual services	CCITT SG XV CCITT SG I			
Prof. studio		MPEG	CMTT/ WP 2 EBU	CMTT EBU ETSI/ JTC
Consumer products	CCITT MPEG	Industry MPEG	FCC CCIR	FCC CMTT
Cable distri-bution			CMTT	CMTT

FCC = federation communications commitee

Figure 3: Relation between picture format and involved organizations