antiope

Antiope : Information service by simple request

A new system for new services

Displaying printed texts on home TV screens, researched and developed primarily in Europe and Japan, consists of using the broadcast and transmission capabilities of existing networks — particularly those of the telephone and television — as rationally and economically as possible. Instead of taking a picture of a page of text, the broadcast facility transmits the characters on a given page sequentially and in digital form through teleprocessing.

Upon reception the pages are displayed on a colour television equipped with a « black box » capable of decoding the broadcast signals.

The user selects the services or pages of interest to him either by telephone (the interactive version of teletext over the telephone network) or by using a special keyboard (broadcast or teletext version over the television network). By so doing, the user can obtain information corresponding to a multitude of centres of interest.

The French teletext system, named Antiope offers many advantages. Its unified base adapts to all networks — telephone, television, etc. — It displays up to 16 différent alphabets on a single page. It generates the special characters in all European languages, including roman, greek, cyrillic and arabic. In addition Antiope offers quasi-instantaneous adaptability to all television standards. Its broadcast functions operate independently of its display functions. Its broadcast version can use the entire television channel. Such components and advantages make Antiope international in scope and vocation.

Developed by TéléDiffusion de France, Antiope offers two major types of services which command attention. The first, by the very nature of its content, addresses itself to specialized audiences such as institutions, organizations and professional groups. The second is designed for the public at large and includes general information services, video games, etc.

The 1979 Montreux Symposium provided the first showcase for a new generation of equipment including editing consoles and decoders. By taking advantage of the advances in microprocessors, that equipment highlights such Antiope advantages and capabilities as precise selection of character colour and dimension, automatic retrieval system for the main pages of a given magazine, increased resistance to transmission error, extremely high numerical output capacity, etc.

Abroad, several organizations have actively promoted Antiope-Services. Most notably this has led American authorities to undertake experimentation of the system.

Furthermore, an internationally recognized standard for the teletext is now being elaborated.

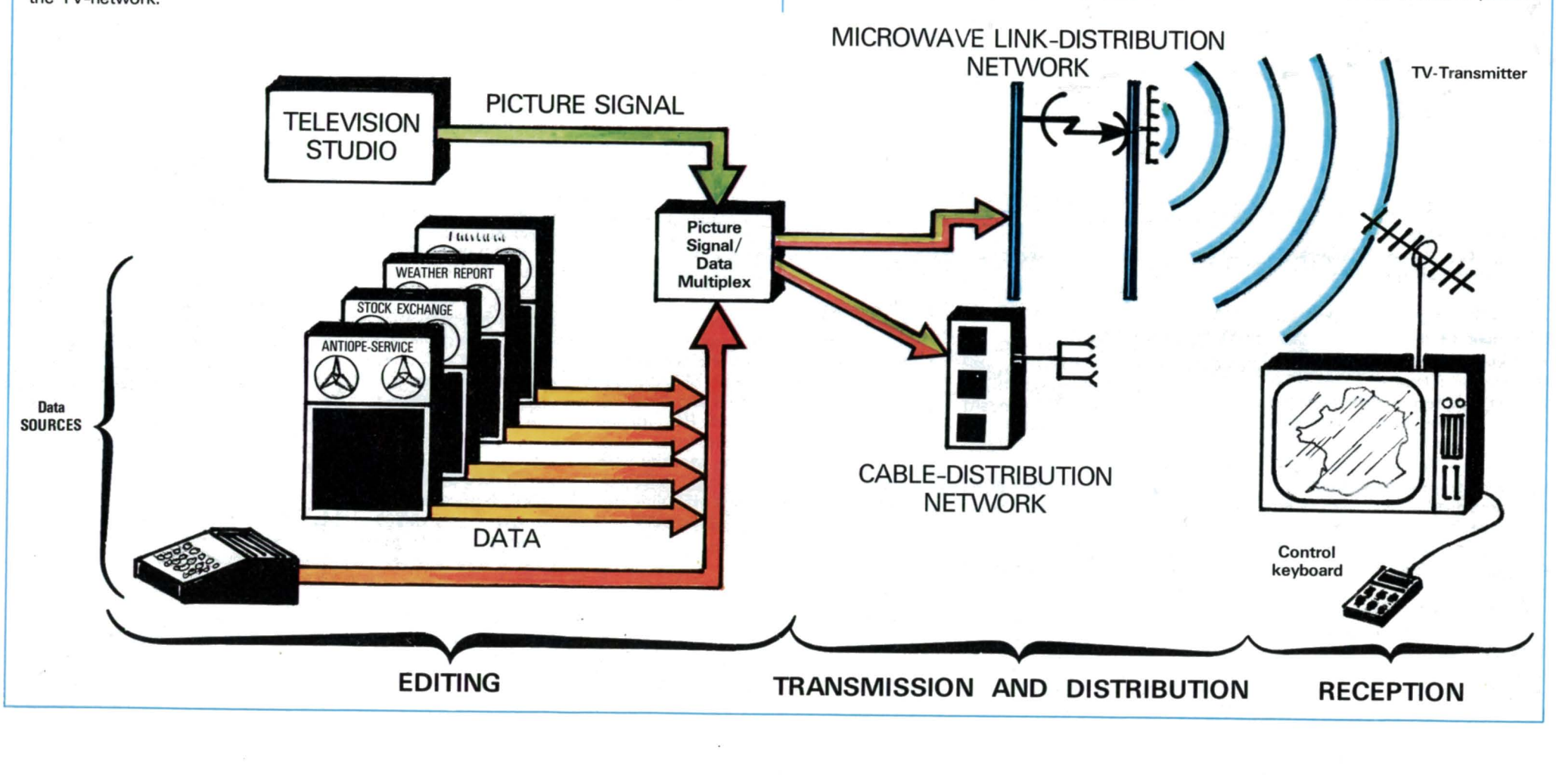
* A.N.T.I.O.P.E. : Acquisition Numérique et Télévisualisation d'Images Organisées en Pages d'Ecriture (Digital acquisition and teledisplay of pictures arranged in the form of written pages).

A range of information and news at your finger tips. Photo Michel Kimmel.

Source-to-user data routing

Instead of taking a picture of a page of text, the teletext performs a sequentiel digital processing of the characters contained on the page and transmits the related information over the TV-network.

The user then receives it through his antenna (or through a cable distribution network) and requests the desired pages by composing an identification number on his control keyboard.



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General layout of the system

Magazine editing

Prior to being introduced into the TV-network, the data constituting the magazines must be suitably formatted. Accordingly a comprehensive editing work has to be done to generate the pages. There are two possibilities available, corresponding to two types of data sources, i.e. :

Manual editing

Manual editing consoles feature a conventional typewriter keyboard to which has been added function keys, a monitor and a storage unit. They allow the typesetting of the teletext pages : selection of characters, colours, sizes, make-up, etc. The magazines thus generated are stored on a disket ready for broadcast.

Automatic editing

This second type of editing is used in the event that the data to be broadcast already exist in a computer system (data base, real time access files, etc.). The latter is then programmed to edit the data in the format of Antiope pages through text editor and translation routines of fairly conventional type.

The edited pages are then transmitted to the centre on charge of distribution over any wire-type channel (private line, switched line, etc) and using conventional teleprocessing methods.

Antiope in France

— Vidcom : Cannes (September 1976)
— Audiovisual and Communication Show : Paris (January 1977)
— Opening of the Pompidou Centre : Paris (January 1977)
— Initiation of Antiope-Stock Exchange services : Paris (June 1977) And extension to Lyons (January 1978). First Antiope service distributed by specialized transmitters
— SEE Congress : Grenoble (September 1977)
— Bordeaux Fair (October 1977)
— Lyons Fair (March 1978)
— Operation « Parliamentary elections » (March 1978)
— The Electronic Components Industry Fair : Paris (April 1978)
— MIP - TV : Cannes (April-May 1978)
— Tours Fair (May 1978)
— 180th Anniversary of the Chappe telephone link : Strasbourg (June 1978)
— First demonstration of Antiope-weather report service throughout french metropolitan territory (June 1978)
— PROCOM : Paris (December 1978)
— Audiovisual and Communication Show : Paris (January 1979)
— Initiation of Antiope-weather report service throughout metropolitan France (January 1979)
— International Agricultural Show Paris (March 1979)
— Lyons Fair (March-April 1979)
— The Electronic Components Industry Fair : Paris (April 1979)
— Initiation of Antiope-OREP service concerning regional economic life in the south west of France (May 1979)
— Initiation of Antiope-Post Office service throughout Paris (May 1979)
— Initiation of Antiope-Antenne 2 magazine throughout metropolitan France (May 1979)
— Audiovisual Show : Royan (June 1979)

In North America

— NCTA Exhibition : New-Orleans (April 1978. First demonstration in the United States
— ICC 79 : Toronto (May-June 1978). First demonstration in Canada
— SMPTE : New-York (October-November 1978)
— National Academy of Sciences : Washington (October 1978). First teletext link by satellite between France and the United States, in NTSC Standard
— Intelcom 79 : Dallas, Texas (February 1979). First demonstation of the interactive version over direct telephone link with France
— NAB 79 : Dallas (March 1979). First demonstration with local editing
— N.I.C.E. III : Wahington (April 1979). First demonstration of the interactive version over a local network
— CBS, the major american TV-network experiments with and tests the Antiope system broadcast through its KMOX-TV Station in St Louis, Missouri (USA)

In the world

— Moscow - USSR (1976, 1977, 1978). First presentation to SVIAZ and various experimentations on the soviet TV-network
— Berlin IFA (1977) : in PAL + SECAM on special transmitter
— Montreux - Switzerland (1977). First presentation in NTSC standard in Europe + PAL + SECAM
— Bogota - Colombia (1978) - International Fair
— Buenos-Aires, Argentina (1978). First demonstration in South America
— Abidjan - Ivory Coast (December 1978). First demonstration of Antiope in Africa by direct satellite link
— Lisbon, Portugal (March 1979). Demonstration at the occasion of an UER meeting
— Montreux Symposium (May 1979).

Data transmission and reception

Information broadcast carrier = TV-signal

Television broadcasting of digital data making up Antiope pages is based on the DIDON system (Data broadcasting).
This system performs two symmetrical functions :

— **On transmission** (DIDON Multiplexer)

It divides the continuous flow of coded data into 32-octet packets (in accordance with L TV-standard).

Each packet is alloted a prefix representing a true recognition label. The prefix includes 8 bytes, three of which are used for identifying the digital channel to which the packet belongs, i.e. to identify the magazine. The packets thus built up are multiplexed with the video signal after NRZ modulation. Owing to the design of the various digital channels, the lines allocated to the video signal can be shared among several data sources.

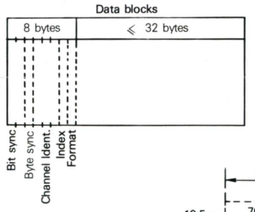
The system grants each channel a maximum average rate and enables the information broadcast to be adjusted according to its instantaneous rate.

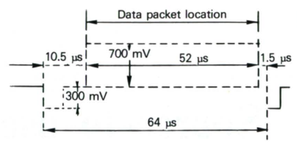
The data sampling frequency can be matched to any television standard, the only requirement being a modification of the network useful rate.

Thus, the teletext broadcast resource consists of :

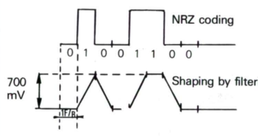
— either the few lines normally used (field blanking interval) : the teletext information is then simultaneously transmitted with a normal video signal,

— or all the lines of the TV-channel. In the case of a TV-network exclusively used for teletext broadcasting, the transmission capacity is very high (nearly 4 M bits/second).





Data packet location in TV line



Specifications of Antiope teletext in TV-standards SECAM/PAL

Useful bytes per TV-line	32	
Capacity for 1 TV-line (bits/sec) per field	12 800	
Number of characters per row	40	
Number of rows per page	25	
Pages/sec. for 1 data line per field*	2	
Maximum capacity with SECAM routine (7 usable lines if no test-lines)	14 p/sec	
Maximum capacity with PAL routine (16 usable lines if no test-lines)	32 p/sec	
Full channel maximum capacity (295 lines)	590 p/sec	
Capacity for an average wait time of :	1 line/field	Full channel
5 sec.	20 p	5 900 p
10 sec.	40 p	11 800 p

* 1 page contains an average of 800 bytes.

— **On reception** (DIDON demodulator)

It performs the symmetrical functions, i.e. packet demodulation, sorting on channel identifier and integral reconstruction of the transmitted information after prefix suppression. The system is fully transparent.

The Antiope terminal

The only item needed for receiving the teletext magazines is a conventional TV-set equipped with a decoder. The latter extracts the data from the video signal and displays them on the TV screen. A control keyboard allows one to select a magazine and consult the corresponding pages. The whole of this equipment comprises the Antiope terminal.

The TV receiver HF stage supplies the DIDON demodulator with a video signal carrying the data coded according to the procedure of the broadcasting system.

Furthermore, the information generated by the management unit and notably the magazine number composed by the user on his control keyboard are compared with the coded data extracted from the video signal on order to select a digital channel.

As a result, two possibilities are available :

— either the data are processed by the second section of the demodulator (page memory, display) to be displayed on the TV screen,

— or the data are transmitted, via an interface, to any other system desired for such operations as printing or input into a microcomputer. This interface also allows the reception of data from another network (e.g. a telephone channel associated with modem).

Formatting in magazine pages

Whether they originate from the DIDON demodulator or from any other source, the data corresponding to a magazine which consists of a given number of pages must now be displayed on the screen.

The term page applies to a set of information to be displayed simultaneously on the screen. Each page contains a maximum of 24 rows (plus a heading row) of 40 characters. The pages bear a number enabling the user to skim his magazine and request the pages to be displayed, using his control keyboard. When the desired page is broadcast and received on the TV-set, it is capted by the decoder and displayed on the screen. In fact, each magazine is fully broadcast cyclically in its entirety.

The average access time to a page is thus directly linked to the broadcast-cycle time of the complete magazine which, in turn, depends both on the number of pages and on the allocated line-ressources. In the case of moderately filled pages, the projected broadcast volume is one page per second for each field line used.

The Antiope language

In addition to the broadcasting specifications, the Antiope language offers extensive data display capabilities.

Each page, together with each row of a page (e.g. a line of text displayed on the screen), is identified by a specific character called a « flag » followed by its number.

Display of texts

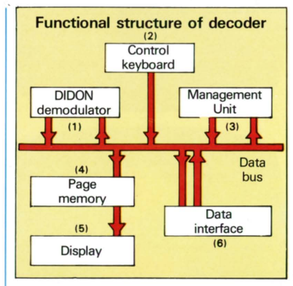


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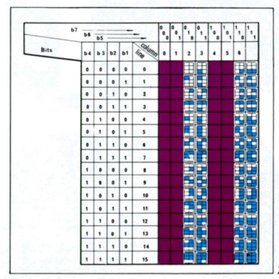
Table of graphic characters



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The range of possibilities

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Cyrillic text

Table of characters

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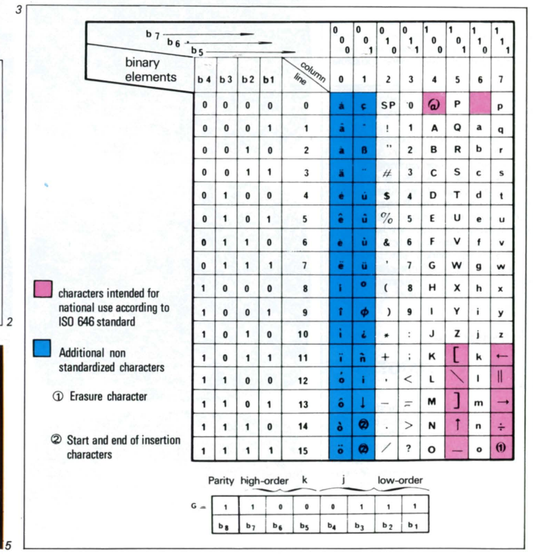


Row 00, which is compulsory, is a page header row normally not displayed which includes service instructions (date, time, magazine, title, etc) ; the next rows are all optional. The row ends and unused rows are not transmitted because of the use of function codes. Accordingly, the Antiope language is compressed which leads to a transmission gain.

The display function of the Antiope language is based on the two following major specifications :

— the adoption, for the essential part, of the ASCII 7-level code providing : the 26 upper case and lower case letters, the digits, a number of arithmetic operation signs, etc and formatting codes.

Framed insertion of news in the TV programme (here: « tanker explodes »).

This set excluding the formatting codes — makes up the main alphabet. In addition there is a complementary, secondary set of « semi-graphic » characters. These are obtained by dividing the display rectangle into 6 elementary rectangles which can be « lit » or « extinguished » : the screen is thus partitioned into 40 × 2 times 24 × 3, i.e. 5 760 elementary rectangles offering a squaring suitable for introducing relatively small graphs and diagrams.

A set of non-standardized accented characters, used in various european countries, is also available.

— the use of a set of control characters recognizable as such by the special « escape » character which precedes them. They allow for the following effects : indication of background colour, character to-background colour reversal, character flashing, single or double height or width, choice between alphanumerical and semi-graphic sets.

The presence of a third set of characters, called « soft », enables the typesetting of texts in non-Roman alphabets (Cyrillic, Arabic, etc) of which the Antiope system offers 16 different possibilities.

The range of available alphabets together with the possibility of inserting a text strip in the normal video picture affords numerous subtitling applications.

The appearance of Antiope video inserts during a TV programm also allows for the permanent reception of news flashes from the Antiope news magazine.

Interactive compatibility

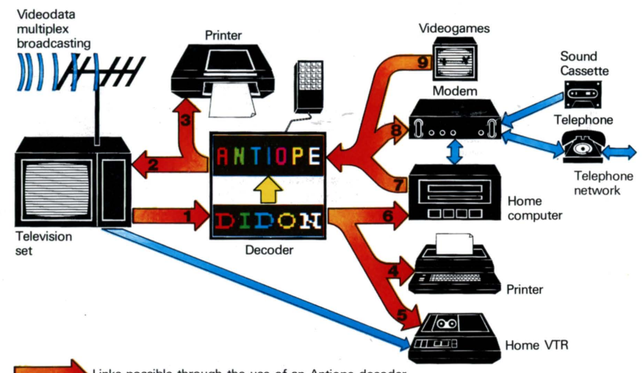
The unidirectional teletext system has been designed to be compatible with the interactive videotex system. In such a case, the text pages, which also conform to Antiope language specifications, are transmitted on request over the telephone network.

In the near future...

Every home now equipped with a TV set and a telephone may currently use :

— a VTR
— a home computer
— a printer.

The Didon-Antiope terminal will allow this equipment to be interconnected.



1. Reception of multiplex videodata transmitted over the TV network
2. Display of pages of text on the TV set 1 + 2 : Antiope teletext
3. Hard copy printing of teletext pages
4. Print-out of videotex in data form
5. Reception of command signals intended for a home VTR
6. Reception of data intended for a home computer
7. Display of pages generated by the home computer
8. Display of remote-generated pages.
9. Display of videogame pages.

Antiope Services

Antiope-Stock exchange

(Photos 1, 2, 3)

The French Stock Exchange Committee has chosen Antiope to provide traders with the information they need rapidly and at the lowest possible cost.

Exclusively produced by computer based systems, the Antiope-Stock Exchange magazine delivers daily and at every instant :

— a complete view of settlement and spot-market operations at the Paris and provincial stock Exchanges (quotations, analyses, indicators, etc),

— the evolution of securities, advice and decisions of the Brokers' Company quotation of major stocks and shares on foreign stock exchanges,

— gold and currency rates,

— the money market, etc.

As a result, 4 000 prices are or will shortly be available throughout increasing portion of the French metropolitan territory.

Antiope-weather reporting

(Photos 4, 5, 6, 7, 8, 9)

The Antiope experimental weather-report system has been operational on a national TV-network since January 8, 1979. The meteorological magazine is automatically typeset by the computers of the National Meteorological Office. It consists of two basis sections :

— information intended for the general public : weather observed throughout the world and national and regional forecasts in the form of tables and maps,

— more specialized information (strong gales, hydrology, mountain weather reports, etc) of interest to specific audiences such as building and transport trades, farmers, safety and tourist services, etc.

The first Antiope weather-report broadcasts were made for a sample of users who were asked to give their advice as to the specifications necessary for a permanent diversified and regionalized service.

Experiments and projects

(Photos 10 to 18)

In co-operation with many organizations, T.D.F. is studying feasible Antiope uses and operations in the following fields :

— regional economic life : a regional office for continuing vocational training transmits messages to interested parties employment, training and commercial and industrial activities ;

— public services : several projects are being developped in public administrations with a view to providing their agents and users with permanently updated information and notices in a practical attractive and modern form ;

— current events ;

— detailed sports results ;

— advertisements : employment, real estate, vehicules, etc ;

— home life : practical information, useful addresses, food prices, consumer information ;

— tourism : lodging and travel possibilities, weather reports, tourist events and information ;

— entertainment ; theatres, films, radio and television programmes, concerts, festivals, cultural events, etc ;

— a constantly renewed variety of video games.

For more information about « Antiope Services », please contact TéléDiffusion de France, Département des Affaires Commerciales or the Délégation à l'Information 21-27, rue Barbès 92120 Montrouge (France), Tél. 657.11.15.

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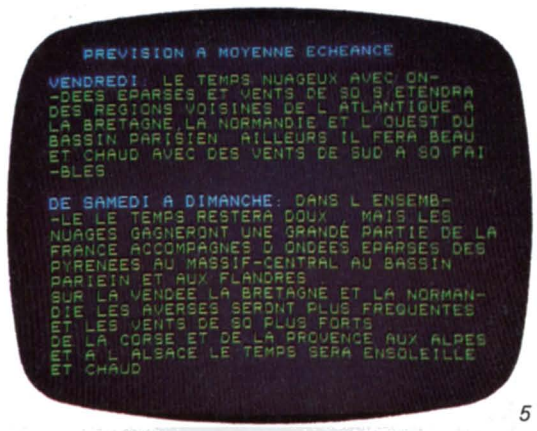

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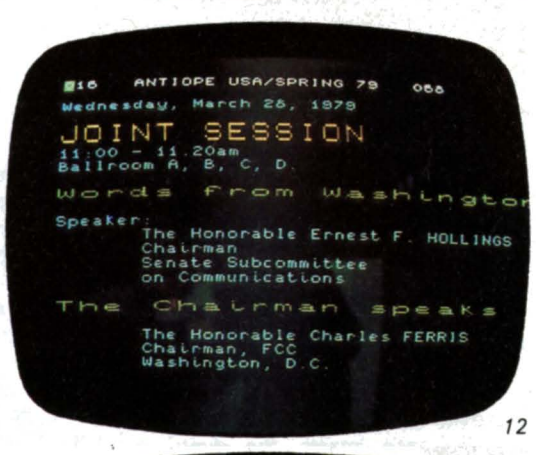

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(Photos Doina Roizen - Michel Kimmel)

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