

## 1. TELETEXT

### 1.1 INFORMATION ABOUT THE SYSTEM

#### 1. What is Teletext?

Teletext is a type of information service which is transmitted alongside television signals and is receivable on adapted television sets. The information is organised in 'pages' using alphanumeric characters and block graphics. Pages are transmitted in a continuous cycle. Pages are accessed by keying a three-digit number on a remote-control keypad and waiting for the selected page to arrive.

#### 2, Who provides Teletext?

Teletext in Britain is transmitted by the BBC as CEEFAX on BBC 1 and BBC 2 and also by Independent Television on Channel 3 and 4 as ORACLE. The name 'CEEFAX' is obviously a play on the words 'SEE' and 'FACTS'. The word 'ORACLE' means one who speaks knowledge or wisdom and also stands for 'Optional Reception of Announcements by Coded Line Electronics'.

#### 3. What types of information and services do CEEFAX/ORACLE provide?

The main categories of service and information are:

- News and current affairs;
- Travel information, road, rail, sea and air;
- Weather forecasts;
- Sports fixtures and results;
- TV Programme information (listings and background);
- Subtitles for programme being shown;
- Financial information, personal and business; Market prices;
- Amusement, puzzles, quizzes and competitions;
- Holidays;
- Shopping;
- Advertisement (on ITV/C4 ORACLE).

#### **4. Who uses teletext and what are the benefits?**

Teletext is aimed mainly at the domestic user, though some of the information has commercial importance. People are able to obtain information at any time the TV station is transmitting. People can see the news, for example, without waiting for certain times of day and they can choose for themselves how long to spend on any particular item.

Teletext information is frequently updated and urgent newflashes can be made to appear on the screen as scan as the information is available.

People whose hearing is not very good can use teletext subtitles to follow the main TV programme. Not all programmes are subtitled but the service covers news reviews, documentaries, films and other entertainments.

#### **5. What equipment is needed to receive teletext in the home?**

Most users of teletext use a TV set with an adaptor that was built-in when the TV set was made in the factory. It is also possible to buy separate adaptors to convert a non-teletext TV to receive teletext. Teletext pages are selected by using a remote- control handset to key in the required page number. It is technically possible to download computer programs by teletext using a special adaptor. Some TV sets have a feature known as FASTTEXT; this is really a more advanced teletext adaptor that can store several of the most often used pages at the same time. This can give the user a faster service because one of the locally-stored pages can be selected without waiting for it to be sent again by the TV station.

#### **6. How often are teletext pages updated?**

Some types of information change minute by minute, some day by day and some change very infrequently.

When there is a major disaster, such as an airplane crash, the first reports will be incomplete with the barest details such as the place, the airline, and the route the plane was flying. Later, information about the number of casualties, weather conditions, possible causes, and what police, fire, ambulance, airline and government officials have said will be reported. Often information given earlier has to be corrected as the story unfolds.

City financial information changes repeatedly during the day as prices of stocks and shares and of commodities go up and down.

Information on what is showing on the TV obviously changes daily but even this can be changed suddenly for various reasons.

Building society and bank interest rates change from time to time and it is possible for teletext to supply the names and addresses of the more competitive ones thus saving the viewer who wants to invest or borrow some money a lot of time and postage/telephone expense enquiring of each institution separately.

#### **7. How is the information for teletext collected?**

The BBC and ITN provide news services for broadcasting on television and radio.

Some of these items are adapted by CEEFAX and by ORACLE for use on teletext. Teams of teletext editors, journalists and reporters write up various stories and collect information from many outside sources for use on teletext. Some people produce information solely for use on teletext but most information is used by several media but in different forms.

The British Airways flight Information computer has an on-line link to the ORACLE computer so that pages of information on the expected and actual arrival times of BA flights into London and other British airports are updated continuously without the involvement of ORACLE staff.

Advertisers on ORACLE can design their own pages or get ORACLE staff to do it for them. Although users cannot respond to the advertisements through the teletext system, the page can give a telephone number, often a free number, that the viewer can call to place an order or request further information.

#### **8. What are the costs of using teletext?**

The Teletext adaptor facility adds about £50 to the price of buying a television set.

From then on, the service is free. There are no subscription charges, time charges or page charges. The normal television licence fee covers television reception with or without teletext

#### **9. Is teletext the same as viewdata?**

PRESTEL is the British Telecom viewdata system which consists of a huge database of information transmitted through a telephone line and displayed on a monitor or television set. PRESTEL pages look similar to teletext pages but the database is much larger than CEEFAX or ORACLE. Users have to subscribe to PRESTEL and pay charges.

IPs (Information providers) may be paid every time one of their pages is accessed

#### **10. Advantages of teletext and viewdata over traditional sources of information.**

1. Up to the minute Information can be provided.
2. Information can be changed as new situations develop.
3. Teletext provides subtitles for hearing-impaired viewers.
4. Viewdata user can communicate in the system to order goods
5. Data can be stored from Viewdata or teletext on personal computers.
6. Teletext is free whereas newspaper and magazines have to be paid for.

#### **11. Advantages of teletext over viewdata**

1. The use of teletext is free: there are no subscription charges, call charges or page charges.
2. Teletext is integrated with TV broadcasts and the viewer can 'flip' rapidly from TV picture to teletext and back, or even mix them on the same screen.
3. Teletext provides programme subtitles for hearing-impaired viewers but viewdata does not
4. Up-to-the-minute TV programme information is available on Teletext but not on viewdata.
5. Teletext uses shorter page numbers than viewdata which are easier to key-in especially for people with some types of disability.
6. It is safe to leave children using teletext because they cannot incur charges whereas using PRESTEL can be very expensive if used unwisely.

## 12. Advantages of viewdata over teletext

1. Viewdata is a two-way system which enables users to make reservations and to order goods by credit card.
2. Viewdata has many thousands of pages which are transmitted to the user when requested.
3. Some viewdata yes contain information which is expensive do collect and could not be given out without charge.
4. Viewdata can run on a personal computer with a modem and does not interfere with the use of the TV. (Teletext needs an adaptor to do the same thing.)
5. Viewdata running on a personal computer Invariably has the facility to download files and to obtain hard copy printouts. These facilities are not available with standard teletext equipment but are available with a teletext adaptor.
6. Viewdata equipment provide access to electronic mail and services such as CAMPUS 2000.
7. Viewdata and electronic mail can be used for 'conferencing' nationally or Internationally.

## 13. Limitations of teletext

The main limitations of CEEFAX and ORACLE are:

1. The types, range and depth of information available; some other countries make much more extensive use of teletext.
2. The display method used in teketext and viewdata; 24 rows of 40 columns, limited character set with very low resolution (block) graphics and very limited animation.
3. The number of pages available; a few hundred pages on each channel.
4. The access time or delay waiting for a page to 'arrive'.

The number of pages available is limited by the rate of data transmission and the average length of time users are willing to wait for the page to 'arrive'.

Increasing the number of pages would mean that the cycle-time would be increased unless the capacity of the transmission system was also increased or examply by using more lines of the transmuted TV signal for teletext.

## 14. The structure of a TELETEXT page

A teletext page consists of 24 rows of characters. The first row contains identifying information and looks something like this:

P123	CEEFAX	100	Sun 11 Mar	20:23/12
	Name of		Day & date	
	Service			
Page No.		Page No.		24-hour clock
selected		being		(Hours: Mins/Secs)
		displayed		

## 15. The teletext character set

The main difference between the teletext character set and standard 7-bit ASCII (128 characters) is that the eighth bit is used to provide a further 128 characters including eight colours, flashing characters and block graphics.

## 16. The organisation of teletext databases

When the television is first switched on and teletext is selected, there is a default page which is displayed until changed. This is page 100 on BBC and ITV and page 400 on C4. This page displays the name of the service being used (CEEFAX or ORACLE) and gives some of the important page numbers such as the news headline page. The news headline page will in turn point to each of the pages that contain fuller reports on the news items. This sort of structure is known as a 'TREE' because it splits up like the branches of a tree upside-down.

100 Title Page

118 News headlines

210 TV Programmes

103 Thatcher

211 BBC1 today

104 Germany wins world cup

212 BBC 2 today

105 EC butter mountain melts

213 ITV today

106 Police hunt mad dog

214 C4 today

Pages may also be cross-referenced to other related pages. For example, page 214 above might include a feature film in the programme and refer the viewer to another page where a short description of the film is given and another page where a review consisting of several frames or sub-pages can be found. CEEFAX and ORACLE each provide a full index to all their respective pages.

If the teletext database was just a disorganised collection of pages without any structure and pointers from one page to another, it would be very hard for viewers to use effectively. It would be hard to find the information needed. Designing and maintaining the structure makes a lot of work for ORACLE and CEEFAX staff because when one page is changed several others may have to change to follow suit. For example, when an older news story is replaced by a newer item, the page itself must be replaced and the headlines pages must be updated to match. Sometimes mistakes are made with hilarious or infuriating results, depending on your point of view.

Because viewdata has many more pages than ORACLE or CEEFAX, problems of database organisation become much greater.

## 17. Organisation of ORACLE teletext

Editorially, ORACLE TELETEXT is produced from two main sources. The ORACLE news suite at ITN provides news, sports, weather and financial information. All other general and features editorial control is provided from a different centre in London.

Subtitling of TV programmes is handled by a separate department.

Regional information is input centrally in London and sent by landline to the mini-computer at the appropriate regional ITV company (eg CENTRAL or TVS) to be combined with the nationally networked ORACLE signals for transmission.

## 18. Some Technical Details About TELETEXT

Teletext is transmitted along with ordinary television programme signals and thus does not require separate transmitters or additional radio frequencies. A TV picture is made up of 625 horizontal lines but only about 600 actually carry picture information. For technical reasons, the TV requires a 'frame blanking period' between pictures and the time needed is equivalent to about 20 lines. The 'spare' 20 or so lines can thus be used for other purposes and about 8 are used to carry teletext data. The BBC uses some spare lines for internal communications between various parts of the TV network and these signals are not accessible by domestic users.

Non-teletext TVs simply ignore the teletext data whereas the circuitry in teletext TVs decodes the signal into usable form. Teletext transmission data is very compact compared with TV picture signals. Normal colour TV picture signals have to give the colour and position of every tiny dot on the screen. On the other hand, teletext characters are all stored in the teletext adaptor in the TV and a whole character (eg the letter 'A') is transmitted as a digital code consisting of a few bits rather like the representation of computer data.

At the appropriate ORACLE teletext centre information is edited into a format suitable for the TV screen and is keyed in using a VDU (visual display unit). After proof-reading, it is fed into the ORACLE central computer for immediate transmission. However, special equipment is used at various stages. As well as units specially suitable for creating and editing teletext text and graphics using a keyboard, photographs and drawings can be converted to teletext pages using a camera and a form of digitiser. The sub-titling departments also use special equipment to enable them to superimpose the captions in different colours for different speakers easily and economically.

Users access teletext using a remote-control unit which also controls other facilities on the TV, such as changing channel. To change from TV to teletext mode, the user presses a button often marked 'TEXT' and a 3-digit page number is keyed in. (If no number is specifically entered, a default page will appear) Each function on the remote control has a different internal code number which the user does not need to know. The handheld controller unit sends data for the selected page number to the teletext unit within the TV, usually by digital infra-red beam.

The teletext adaptor then monitors the incoming TV broadcast signal and waits for the selected page to arrive as part of the continuous cycle of pages being transmitted. It should be emphasised that teletext is a one-way system. The signal from the remote control is used by the teletext adaptor in the TV and is NOT transmitted back to the studio. This contrasts with VIEWDATA in which a user's request for a page is sent along the phone line to the central computer where the requested page is retrieved from storage and transmitted by phone line individually to the user who made the request.

Some teletext pages may appear to arrive more quickly than others. This is because the most often used pages are refreshed more frequently than others by being repeated within the main cycle. However, the frames of some multipages are changed several times during a single main cycle. For example, some of the holiday advertisement pages on ORACLE change every few seconds. The user presses the 'HOLD' button to 'freeze' the page for reading or to give time to write down the telephone number provided for further information or to make a booking.

### Acknowledgement

The author wishes to acknowledge the assistance of ORACLE Teletext Limited who kindly provided much useful information.

## SECTION B

### 1.2 EXERCISES AND ACTIVITIES

#### 1. Answer the following briefly.

- (a) You have been asked by your headteacher to act as a consultant and advise the school on the costs of using teletext and viewdata assuming that the school already has the appropriate equipment. What are your main findings?
- (b) Design a questionnaire to collect data on which pages of teletext your friends find most useful or interesting.
- (c) Select a particular type of user (eg young children, the hard-of-hearing, long-distance travellers, or gardeners) and find out what information is currently available for them on teletext. List the sorts of information that you think ought to be added, say from where the information could be obtained and explain with reasons how often it would need to be updated.
- (d) Word process a letter to CEEFAX or ORACLE suggesting improvements that they might make to the way they organise the teletext pages they offer.
- (e) Sometimes space is a big problem when designing a teletext page and abbreviations are used. List some of the abbreviations you have seen used on teletext and explain their meanings.
- (f) Some types of information are best displayed in tables. Write a paragraph in ordinary English giving the order number, size, price and description of five types of jeans available from a mail order catalogue company. Then put the same information into tabular form (in a table of rows and columns) and give each column a suitable heading.

#### 2. Practical Activities with teletext

- (a) Using a watch that displays seconds (or use the time display on the top line of the teletext page) compare the average time it takes ORACLE and CEEFAX to refresh a particular page.
- (b) Choose a topic that interests you and use a teletext TV to find out as much as you can about that topic. You could copy out the information but it might be better to make a list of relevant page numbers and summarise what is on each of the chosen pages.
- (c) Study the ORACLE/CEEFAX indexes and note how some pages are mentioned twice: eg 'Bridge Competition' might be indexed under 'Competition - Bridge' as well as under 'B'.
- (d) Form the class into twos and threes. Each group is given a suitable Imaginary budget between say £200 and £1000 and chooses a different country to plan a holiday visit. Use the advertising pages of ORACLE to find a suitable package holiday or flights-only arrangement. Discuss the alternatives and make a note of where to and out further information.
- (e) Imagine you need to make a last minute car trip to central Europe. Use CEEFAX to check the weather and road conditions for the countries you will visit and check the ferry crossings.
- (f) Your teacher will give you a flight number and date for a British airways flight from a faraway country, perhaps one where you have relatives of friends. Imagine that you are to meet the arrival of their flight. Track the plane's progress over a period of time and try to estimate the actual arrival time. This can be especially interesting on 'long haul' flights and during bad weather.
- (g) Watch a programme that has teletext subtitles. Notice that sometimes the wording on the subtitles is different from what is spoken. Why do you think this is done?
- (h) Choose a suitable topic on which you have collected some information and design a teletext page. Suitable examples include: a list of prices in your tuck shop or canteen; the ten favourite musicians; an advertisement for an environmental or other project that interests you. You could do two versions: the first just with letters and numbers and the second using block graphics characters as well.
- (i) If your school has a local viewdata system you might be able to design pages in colour and get them displayed.

### 1.3 TELEXTEXT COMBINED INDEX - Illustrated - from early 1990. liable to change.

	BBC1/2	C4	ITV
AA road news			164/5
Advertising index		570	280
Air news			176
Air travel	560		
Angling		615	
BBC Jobs	696		
Breakfast news	400		
Bus travel	530		
Car stickers		676	
Cars for sale		496	
C4 progs today		414	214
C4 progs tomorrow		415	218
Chess		617	
Children's guide		550	
City headlines	201		
City News	200		
City latest	250		
Companies	200		
Competitions		691	
- Bridge		616	
- Chess		617	
- Pop		546	
- Prize			125
- Teatime quiz		559	
- Telly quiz			252
Cricket	340		130
Crossword			124
Currency rates	280		
Diversions		610	
Dow Jones Index	263		
Education	614		
Educational courses	671		
Engineering	698	697	297
Eng. test page		694	
Environment		567	
Eurowatch: ferries/roads			166

	BBC1/2	C4	ITV
European weather forecast			163
Events			230
Fare prices	298		
Ferry news	522		166
Films on TV	613		
Films - reviews	622/3		
Films - what's on			230
Finance		500	
Finance (personal)		530	
Football	302		140
Foreign Exchange	280		
For sale		492	
4-Tel index		410	
FT indexes	260		
Games			
- Bridge		616	
- Chess		617	
- Crossword			124
- Puzzles			127
Gardening		612	
Hard of hearing			
- Subtitles	888	888	888
- The week ahead			219
- News : Earshot		695	
- No need to shout	490		
Houses for sale		497	
Holidays abroad		580	
Holidays UK		600	
Holidays flight only		586/9	
Holidays self-catering		585	
Horse racing		470	
Horoscopes			121
Interest rates	270		
ITV today			213
ITV tomorrow			217
Jobfinder			241

	BBC1/2	C4	ITV
Jobs			267
Jokes		552/3	
Kid's index		550	
Knitting		618	
Letters page	122		
Linkup		493	
Live at five			120
Motoring		611	
Motor Sport	380		
Music			
- Pop news & reviews		540	
- Classical what's on			233
- Pop/jazz what's on			234/9
- Pop charts		549	
Newsfile			118
News Headlines	101	401	101
News latest	150	150	150
Newswatch	102		
No Need To Shout!	490		
Park Avenue (soap)			126
Parliament	170		
Personal Ads		494	
Pete Waterman	460		
Politics	160		
Pop charts	649		
Prize competitions		691	
Problem pages		563	128
Property abroad		498	
Racing	360	470	
Radio	630		
Rail travel		530	
Recipe	614		
Regional news		201	
Regional TV	660		
Religion		696	

	BBC1/2	C4	ITV
Road news	510		164/5
Science & nature		567	
Sea travel		520	
Share prices		501/2	
Shipping forecasts			162
Ski forecasts/reports			169
Soaps story so far			255
Sports headlines	301		130
Sports latest	350		
Stock markets	260		
Stock prices	220		
Subtitles	888	888	888
Teleshopping			170
Theatre – listings			231/2
Theatre - reviews		624/5	
Travel summary	501		
Travel abroad	524		
Travel latest	550		
TV guide			210
TV plus			250
TV today	600		
TV now and next	650		
TV regions	660		
TV tomorrow	621		
Video world		626	
Villa holidays		585	
Volunteer	480		
Weather	580		
Weather & travel index			160
Weather map & outlook			161
Weather - your region			209
Weather UK 2-day forecast			209
Welsh news	197		
What's new		698	198
What's on			230
Wildlife		557	

	BBC1/2	C4	ITV
Words of faith	470		
World clock			168
World news	180		
World weather	584		163