

Behavioural Team

21 VAUGHAN ROAD, SUITE 202, TORONTO, ONTARIO M6G 2N2 (416) 656-6676

TELIDON FIELD TRIAL EVALUATION

—
1983 MARCH 31

Prepared for:
DEPARTMENT OF COMMUNICATIONS

DSS Reference:
12ST.36100-1-0361/A

By:
Ben Barkow, Ph.D.
Veikko Piipponen
Darian Wallis, M.Phil.
Tom Hay, Ph.D.
Betty Scalzitti
Larry Hershfield, M.A.

Public release:
1994 August 5

Executive Summary

This report summarizes all that Behavioural Team could learn about user happiness and industry effectiveness during the Telidon field trials. Our purpose was to support the development of this technology and thus the report is configured as a positive contribution to the success of Telidon. The resulting 380 page document was based on data from:

- ** a review of data collected by the field trial operators,
- ** interviews with members of the Telidon industry and information providers,
- ** a review of past lab and human-factors information.
- ** a telephone survey of 96 users in Canada and the U.S.,
- ** and behavioural observations conducted at public terminals.

Documentation for the generalizations below may be found in the body of the report. In any instance where there is no specific reference either the privacy of our respondents would be compromised or it is the opinion of the authors.

General Reactions

General reaction of field trial users was neither strongly negative nor strongly positive. Telidon, as represented in the field trials, should not compete head-to-head with existing alternate media (i.e. newspapers). 61% of telephone respondents said using Telidon to access information is less worthwhile than using the newspaper; 12% said it was more worthwhile. Other reports offer similar findings.

Some Positive Points

According to users, some favourable aspects of Telidon are:

1. the novelty of the technology,
2. the initial entertainment value of the graphics displays,
3. the games, and
4. the fact that use was interactive.

Main Dissatisfactions

65% (62) of telephone respondents said "yes" when asked if they had experienced frustration or aggravation using Telidon.

The main dissatisfactions are with database information. These are:

1. there is no range of information,
2. there is no depth of information,
3. information is not timely, and
4. information is neither complete nor detailed.

Many of these issues are merely by-products of the newness of Telidon and of the critical-mass paradox. Because the field trials were an experiment, IP's did not develop many pages and many potential IP's did not even participate. Our best information indicates that potential IP's\still\are reserved about committing resources to existing Telidon services.

Another dissatisfaction for users was speed of the system, specifically log-on delays. A somewhat lesser annoyance is the time required for repetitive and/or detailed graphics displays. These problems are more acute when the user's application brackets the amount of time available for use as in a classroom.

The problems reported for database organization were that it is hard to retrace steps or get to other information branches. Users also found it tedious to go through so many levels for such (often) limited information. Again, this is not a technical problem but one of start-up pains. As the number of terminals proliferates, IP's will increase as well.

Technical Reliability

Technical difficulties were not a major problem in users' minds although 54% of those in our telephone survey said "yes" when asked if their [Telidon] equipment had ever broken down. There was some variation among the trials: the range was from 20% to 65% with equipment problems.

Generally peak residential use occurs during late afternoon and early evening. Some 60% of telephone survey respondents' reported using Telidon in the afternoon or evening, while 5% reported morning use. This is very similar to results reported by other studies. Late afternoon use tends to be by children; early evening use is by adults. Some trials reported peaks during the morning hours, although these were smaller than the evening peaks.

Session length varies substantially, depending on terminal location, setting, and information available. Our behavioural observations revealed an average session

length of 4 minutes and 21 seconds for public teletext. According to our telephone survey, 63% typically viewed Telidon for 20 or more minutes while only 8% used it for fewer than ten minutes per session, on average. Viewing time seems to be a function of user intent, as well as timely, comprehensive information.

Residential Telidon use is often a social situation. But the equipment must be designed to support group settings.

Women and older people are much less likely to use public Telidon (based on our first-hand observations of public terminals); prime users in public locations tend to be younger teenage boys.

The highest rate of approach in public situations occurred when the previous user had left an index page on the screen.

Page Display

The time required to transmit the page seems to be too long for many users. (42% in the telephone survey said "often", 35% "sometimes" when asked how often they felt page display takes too long to begin being drawn on the screen.)

Display time also tends to be perceived as too long. (79% (76) of telephone respondents said "yes" when asked if they ever thought that pages take too long to finish being drawn.) Graphics page display tends to be the culprit. (86% of telephone respondents mentioned "graphics" as type of page they recalled to be slow.)

Other findings are: that the use of paragraphs can lead to 15% increase in reading speed; and optimum spacing affects reading speed, but not accuracy. Also, smaller type size increases reading speed and larger type size reduces search time. Finally, headlines, colours, and "bullets" help skimming, but not exhaustive reading.

Page display time is a major consideration, and establishing the best role for graphics requires urgent attention.

IP's are asking for help in page design. Successful pages are critical to their continued support of this medium.

Perceptions of Physical Telidon

The major user perceptions of physical Telidon are:

1. Telidon is not portable. This reduces its usefulness, both perceived and actual.
2. Screen sizes used in field trials are about right (any change should increase the sizes).
3. Labels on keypads/boards are confusing when they appear between the rows of

keys

4. Cords and cables are thought to be unattractive and inconvenient.
5. Ease of equipment use is related to previous experience with other similar devices. (This can hinder\or\enhance learning, depending on the similarity of the equipment.)
6. User complaints about equipment design relate to size of units and/or number of pieces.
7. Aesthetics were not important to most users.

The Telidon Industry

Overall, the Telidon industry developed hardware, created pages, and operated field trials with not unreasonable competence. The relations among the Network Providers, Database Operators, Page Creators and their clients, the Information Providers are examined in some depth in the report. There was a general deficiency in quality of management and in the collection of management information. Many of the study recommendations relate to organizational issues within the industry.

Major Conclusions / Recommendations

1. It is not clear who is "in charge" of Telidon. That is, who is the Publisher?
2. For a mass retail-like activity, great naïveté is shown in human-factors, cognitive psychology, and market research. Numerous examples of improvements are given in the text.
3. Due to the range of skills of users and due to the number of new users (everybody!) greater intelligence is needed in the terminals. This is also important because of the "serial character" of Telidon.
4. Present user interaction protocols and most existing hardware are not recommended for continued use in\public\terminals without substantial and immediate improvement. It is counter-productive to offer to the unselected public services which insufficient numbers of them can successfully access or use agreeably. Home users\can\tolerate existing hardware on an experimental basis.
5. Of all the barriers to the effective proliferation of Telidon, none is so oppressive as the page creation bottleneck. The broadly held antipathy to text and to paper-borne information has hindered the industry. The emphasis on graphic prettiness and the weakness in text-handling software have led to several dire consequences. The problems of page creation are considered in a long chapter in the report. This chapter includes a task-analysis of the technician's job. Behavioural Team condemn one of the page creation terminals.

Some further observations...

Telidon industry personnel should take advantage of the potential for timely information, and emphasize information which is complementary to that in more traditional media (at least initially, until Telidon use becomes more "entrenched" in the public).

Designers should pay close attention to the portability aspects of equipment. (These will likely increase the usefulness of residential, and perhaps business Telidon.)

Designers should also build upon user liking of Telidon's interactive aspects.

A pay-for-service situation will increase the numbers of situations where time is money. Therefore, any factors (technical reliability, search strategy possibilities, etc.) which increase delays will be of greater importance than is evident from this study. \Also greater\ will be the range and degree of\dissatisfaction\voiced by paying users generally.

Industry efforts are needed to stress standardization in a broad context, including:

1. compatibility of equipment designed and built by various manufacturers; and
2. consistent use of labels and symbols on equipment, in operating instructions, and on screen displays.

There is a need for coordination of efforts among all the industry participants. (Often there are conflicting goals such as the "universal database" of database operators, and the need for more local database information to encourage community use.)

Industry roles need to be defined. Much of the "fuzziness" in which Telidon currently lives needs to be sharpened for effective growth.

The labels on keypads/boards should be directly on the keys they refer to.

Public locations should have terminals at approximately eye level, to encourage passers-by to use them.

Screen instructions should be stressed (especially in public settings, few users would read through hard-copy material before starting to use the system), using full-length prompts wherever possible.

We hope you will want to read - or at least, to examine - the whole report. It is filled with hundreds of specific observations and innumerable suggestions for improving videotex services.

CONTENTS (page numbers refer to the original print of this report)

Executive Summary.....	1
1. Introduction.....	10
1. Abstract.....	10
2. Terms of Reference.....	10
3. Methods of Study.....	11
1. Field Trial Self-Studies	
2. Review of Lab Studies	
3. A National Telephone Survey	
4. Behavioural Observations at Public Terminals	
5. Interviews with Industry Participants	
4. How are we using the word "Telidon?".....	16
5. The Difference between Videotex and Teletext.....	17
2. User Satisfaction.....	19
1. Abstract.....	19
2. General Satisfaction.....	19
3. Satisfaction and Use.....	22
4. Telidon Compared to Alternatives.....	23
5. Sources of Satisfaction.....	24
1. Roots of Dissatisfaction	
2. Roots of Satisfaction	
3. Can a free trial be properly evaluated?	
6. Summary.....	30
3. Technical Reliability and Technical Problems.....	31
1. Abstract.....	31
2. Specific Technical Problems.....	32
1. To what extent have users experienced technical problems?	
2. Which components are involved in problems?	
3. Which sets are most problematic?	
4. Does Telidon pose technical problems for other comm. systems?	
5. How are the users' technical problems solved?	
6. What is the relation between technical problems/solutions and users' perception of system reliability?	
3. Summary.....	42
4. Learning/Understanding.....	44
1. Abstract.....	44
2. Do users find Telidon easier to use with practice?.....	44
1. What areas do users need instructions for?	
2. Relative to equipment functions, how hard is it to learn to use the database?	
3. User Variables.....	46
1. How do user variables affect learning/understanding?	
2. What do users' understanding and learning characteristics imply for system design, hardware and software?	
3. How successful have help-lines or help features been in	

learning different functions of the systems?	
4. Learning Issues.....	50
1. Are the written instructions adequate?	
2. Are the written instructions clear to various users?	
3. Are the written instructions adequate for specific tasks?	
4. Do users understand the written instructions?	
5. Access Ease.....	54
1. Is signing on to the system easy and reliable?	
2. What factors are associated with database menu type and selection by user?	
3. What are the effects of an expanding database and directory updates?	
4. Are some access methods preferred by certain types of users?	
6. Database Searches.....	64
1. How successful are users' searches?	
2. How easy is it to find information you're looking for?	
3. How easy is browsing with no particular item of information being sought?	
7. What do the data on search times and paths tell us about users' response to Telidon?.....	73
1. Components of Search Time	
2. What is the average (and range) of search times?	
3. What are common search errors?	
8. What affects search paths and times?.....	79
1. Printed or On-Line Directories	
2. Keyword Search	
3. Number of Choices per Page	
4. User Characteristics	
9. What results are there about unsuccessful searches?.....	84
10. Do users remember search paths, problems, and/or the information they look for?.....	85
11. Would users like hard-copy materials?.....	85
12. When are there most or least users on the system?.....	87
13. What is the relationship between number of users and system response time?.....	88
14. How long do users generally stay on the system?.....	88
15. What is involved in users' terminating a session?.....	89
1. Ease of Logging On	
2. Does the system give any on-line message requesting log-off to inactive terminals?	
3. Can one log off from any point in database?	
16. Summary.....	92
5. Page Display and User Reactions.....	95
1. Abstract.....	95
2. Page Display.....	96
1. Typeface?	
2. Type Size?	
3. Number of Colours?	
4. Sequence of Graphics and Text?	
5. Proportion of Graphics and Text?	

6.	Spacing and Layout?	
7.	Number of Choices per Index Page?	
8.	Amount of Information per Information Page?	
9.	Characters per Line, Lines per Page?	
3.	Display Parameters and User Perceptions.....	110
1.	Legibility and Perceptual Quality	
2.	Aesthetic Questionability	
3.	Efficiency of Information Retrieval	
4.	Understandability	
5.	User Response and Search Times	
6.	Feeling of Information Overload	
7.	Level of Visual Comfort	
8.	What are the advantages of animation, of zoom?	
4.	Is page display a problem for users?.....	122
1.	What is the relation of lags in page display to irritation, distraction, or loss of patience?	
2.	How can the problems be lessened?	
5.	Summary.....	129
6.	Ergonomics and Aesthetics of Hardware.....	133
1.	Abstract.....	159
2.	Ergonomics of Equipment.....	160
1.	Video Display and Decoder	
2.	Keyboard or Keypad?	
3.	Touchscreens	
4.	Keyboard Layout	
5.	Cables and Connectors	
3.	Typical Viewing Conditions and Space Constraints.....	147
4.	Potential Health and Safety Hazards.....	151
5.	Users' Aesthetic Preferences.....	156
6.	Summary.....	158
7.	Telidon in Public.....	159
1.	Abstract.....	159
2.	Observational Methods.....	160
3.	The Setting.....	162
4.	User Characteristics.....	164
1.	Age of the Individual	
2.	Sex of the Individual	
3.	Age by Sex by Situation	
4.	Other Age Effects	
5.	Length of Viewing Sessions.....	174
6.	Length of Display Time.....	178
7.	Selection of Topic Groups.....	179
8.	User Difficulties.....	180
1.	The Machine	
2.	The Instructions	
3.	No Attendant Present	
9.	Equipment Design and Function.....	185

1.	The Keypad	
2.	The Screen	
10.	Elements Affecting System Usage.....	189
1.	In what building is it located?	
2.	How difficult to find is the terminal?	
3.	Is it free?	
4.	What's on the screen?	
5.	Is the system being used?	
6.	Will I be able to cope?	
11.	Summary.....	196
8.	Studies of the Telidon Industry.....	201
1.	Introduction.....	201
2.	Network Providers.....	203
3.	Database Operators.....	214
4.	Page Creators.....	230
5.	Information Providers.....	258
9.	Recommendations.....	266
1.	Abstract.....	266
2.	Who is in charge?.....	266
3.	User Centredness.....	272
4.	Naive and Experienced Users.....	278
5.	Intelligence in Users and in Terminals.....	281
6.	Page Creation as a Bottleneck.....	285
7.	Telidon as a micro-computer.....	289
8.	Making Telidon more competitive.....	291
Appendices		
Appendix A	- Field Trial Vignettes.....	295
New Brunswick.....		296
Cabot.....		299
Vista.....		301
OECA.....		304
Cantel.....		307
IDA.....		309
Elie.....		311
AGT.....		313
BC Tel.....		315
WETA.....		317
Appendix B	- Telephone Survey.....	320
- Methodology		
- Questionnaire		
- Detailed Survey Results		
Appendix C	- Behavioural Observations.....	355
- Sample by Field Trial		
- Level of Interest by Age by Sex by Field Trial		
- Summary of Interest by Age by Sex		
Appendix D	- Industry Interviews.....	371
- Distribution of Interviews		
References.....		375