Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

PRE-IMPLEMENTATION EVALUATION IOS FIELD TRIAL

ANATOMY OF TELEPHONE CALLS

IN THE GOVERNMENT

GOVERNMENT TELECOMMUNICATIONS AGENCY

GTA
ATG

CANADA

Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

PRE-IMPLEMENTATION EVALUATION IOS FIELD TRIAL

ANATOMY OF TELEPHONE CALLS

IN THE GOVERNMENT

GOVERNMENT TELECOMMUNICATIONS AGENCY

GTA
ATG

CANADA

2

PRE-IMPLEMENTATION EVALUATION IOS FIELD TRIAL

ANATOMY OF TELEPHONE CALLS

IN THE GOVERNMENT

REPORT PREPARED BY Denyse Boulet

DENYSE BOULET
COSEP STUDENT
DEPARTMENT OF PSYCHOLOGY
UNIVERSITÉ DE MONCTON

REPORT REQUESTED
AND APPROVED BY

MARIA M. MORIN, Ph.D.
PROJECT MANAGER, EVALUATION
DIVISION OF DEVELOPMENT AND ENGINEERING
GOVERNMENT TELECOMMUNICATIONS AGENCY

AUGUST 1987

TABLE OF CONTENTS

I INTRODUCTION

The telephone seems to be one of the most productive tools available to business but it can also be a major source of time wasted and frustration. Incoming calls can interrupt work and outgoing calls often fail to reach the intended party resulting in a match of telephone tag. Each party is then faced with a number of message slips which often contain little information.

The everyday telephone call is made up of many parts which form its "anatomy". The call can be incoming or outgoing; after the first try, a call can be completed or if the party was unavailable, it can require a follow-up; if a message is left, it can have a content or simply a name and number in the "call back" style. The telephone call can require a two way conversation in order to be productive while for other calls, a one-way transmission of information may be sufficient.

It is important to determine how efficient telephone calls are in a given organization in order to justify whether an alternative to telephone communication is a necessity. For example, if a large percentage of the calls are not completed after the first try and, if most of these calls only required a one-way dialogue, then there is definitely a need for transmitting messages in order to reduce the amount of time wasted on returning these calls when the information could have been transmitted through a voice messaging system (VMS).

In this case, we could educate the callers to leave messages with content to the secretary but people's attitude towards leaving a detailed message to a third party is often negative believing that their message is too long and too complex and that it won't be transmitted correctly to the concerned party. Also, confidentiality often inhibits the caller to leave a more detailed message.

Therefore, we will try to answer the following questions concerning telephone calls in the government.

What is the success rate of our telephone calls? That is, what percentage of our calls are actually completed after the first try. How much time do we spend each day trying to reach an unavailable party? Are the figures important enough to conclude that an alternative is necessary?

II METHODOLOGY

2.1 Respondents

The population in the study was composed of a total of 90 members of two government departments. There were 42 participants from the Department of Communications (DOC) and 48 participants from Treasury Board (TB). The data were collected for the Telephone Messaging Survey and the Telephone Logs in mid-December for DOC and in mid-January for TB.

2.2 Procedures

2.2.1 Telephone Messaging Survey

A Telephone Messaging Survey was distributed to all the participants in order to determine, by way of estimation, telephone and messaging habits (see Appendix A for a copy of the survey).

2.2.2 Telephone Log

A log, Telephone/Message Log, was filled by all the same participants. For every incoming and outgoing call for a period of five days, the source of the call and other attributes were indicated on the log (see Appendix B for a copy of this log).

2.2.3 Telephone Interruption Log

Another log, Telephone Interruption Log, was distributed to a small sample of 10 people. The participants in this sample indicated what s/he was doing when s/he received a call and if that call was either more or less important than the work it interrupted (see Appendix C for a copy of this log).

2.2.4 Time involved in placing a call

In order to determine the amount of time required to make/answer a call, 30 numbers were looked up and dialed; the time taken for each was recorded. The numbers were found in a telephone directory, in a staff card directory and in the Government directory. The results were averaged to give the approximate time required to look up and dial a number.

All the data were averaged and reduced to percentages, making it easier to visualize the results of the study in every day communication habits.

III DATA ANALYSIS

The calls recorded on the Telephone Log were classified as either completed or not completed. Wrong numbers were taken out of the total number of calls, being neither completed nor incompleted but simply an error.

We calculated the percentages for the following:

1) message with content versus only name and telephone number,
2) one-way sufficient versus dialogue required, and
3) time the call was placed/received.

Out of the total population of 90 who filled in the Telephone Logs we eliminated the data of 9 secretaries/receptionists. This way we avoided double counting phone calls, since both the secretaries and the participants would enter the messages received for the same call.

IV RESULTS

4.1 Number of calls per day

With 81 telephone logs compiled, there is a total of 4259 calls, of which 1355 calls were not completed. Therefore, 32% of the total calls did not reach the intended party after the first try.

For an average of 5 days each, every person received and/or placed an average of 48.9 calls or about ten incoming and/or outgoing calls a day. (An average of 5.43 calls a day were received by each person according to logs). According to the Telephone Messaging Survey, the subjects estimated an average of 12.38 the number of calls they received each day. Based on the Telephone Interruptions Log, 53% of the calls received were less important than the work they interrupted. People are not disturbed as often as they think by the telephone but their work is often disrupted by less important phone calls. This may explain why people tend to overestimate the number of calls they receive.

4.2 Dialogue versus one-way

The data in the telephone log indicates that 75% of all calls require a form of conversation in order to relay a message. 25% of the calls required a one way transmission or reception of information.

From the Telephone Messaging Survey, an estimated 63.7% of all calls come from or are placed within their organization.

4.3 Time call placed/received

With the data from the telephone log, we can observe that telephone calls are placed/received in an evenly distributed way throughout a working day. 47.9% of all calls were either placed or received between 9:00 a.m. and 12 a.m. Another 31.5% of the calls were placed or received between 1:00 p.m. and 4:00 p.m. The most activity for telephone calls were between 9 and 11 a.m. where 33% of the calls were placed.

4.4 Messages

According to the Telephone Messaging Survey, it is estimated that 89% of all message slips contain a name and number only. The remaining had a content beyond the "call back" information. In the telephone logs, 83% of the messages left were "name and number - call back" while 17% had a content. We can observe that the participants' estimate was relatively accurate.

The subjects rated the efficiency of telephone messages on a seven-point scale - 1 being that they thought the messages were not often misplaced, illegible and/or incomplete and 7 being that the messages were very often misplaced, illegible and/or incomplete. The average score was 2.7 out of 7 meaning that those surveyed seemed to find message slips an adequate method to relay telephone messages (which most of them contain only the name and the telephone number of the caller).

4.5 Telephone tag

We calculated an average of 6.4 minutes wasted every day by each person on calls which are not completed. This calculation is based on 3.2 incompleted calls received/placed by each person every day and 120 seconds on the average to make these calls. The last figure of two minutes includes both the time of the caller to look up a number, dial and leave a message and the time of the secretary to answer the phone and take the message. These figures are based on observations.

V DISCUSSION

By looking in the literature we discovered similar studies as this one which were conducted in the private sector in the U.S.A. In Table 5.1, we summarize the data found in our study and data found from these other studies.

In our study, 32% of the telephone calls were not completed on the first try. According to studies performed by AT&T in the late 1970's a professional or a manager was away from his office or otherwise occupied 82% of the time. They concluded by this that over 80% of all calls are not completed after the first try implying by this that telephone calls are evenly distributed during the working day. In our study, we have found that the telephone calls placed/received were in fact, somewhat evenly distributed throughout the day.

Table 5.1 Summary of attributes of telephone calls from the present study and similar studies conducted in the private sector.

	Government (present study)	AT&T	Diebold	Crownlife	Westinghouse
Incomplete calls	32%	80%	42%	40%	
Dialogue required	75%	45%	---	---	
One way sufficient	25%	55%	---	---	
Messages:					
Content	17%	9%	---	---	
Name and number	83%	---	---	---	
Call to/from inside organization	63%*	68%	---	---	
Call less important than work interrupted	53%	60%	---	---	
Telephone tag	6 min/day	---	---	---	8 min/day

*(the same department)

But if the only time spent at one's desk is from 9:00 a.m. to 11:00 a.m., 33% of the telephone calls of the day will be completed, exceeding the 20% estimated by AT&T.

Another study, conducted at Crown Life, reported that 40% of all telephone calls missed the intended party on the first try. In yet another case study conducted by the Diebold Group, 42% of all the calls received or placed by managers or professionals were not completed. The incomplete telephone calls are less in our study than what has been reported in all the other studies. While our figure of 32% incomplete calls is closer to Crown Life's and Diebold's, there is still a difference of between 8-10%.

Maybe office workers in the Government of Canada leave their desk less often than office workers in the private sector.

We have found that for 25% of all calls a one-way dialogue is sufficient. In the AT&T study, it was found that 55% of all telephone calls required a one-way dialogue. Exchanging information seems to be of greater importance for the population in our study than at AT&T. Less calls can be completed (in the two government departments) even with a voice messaging system than at AT&T. It seems that 75% of the calls require an exchange flow of information which cannot be achieved with the use of VMS.

We conclude that Government employees conduct more important business by phone, so this is the reason why only 25% of the calls can be satisfied by a one-way conversation only. The implication is that if more important business is conducted by phone, the employees tend to be more often at their desk. This might be the reason why we record less incomplete calls in the government than what is reported in other studies.

In our survey, 63.7% of the calls are from within the department. Again in the study, conducted at AT&T, 68% of the calls are from within the organization. This is useful information in order to determine whether intra company calls can benefit from the use of a VMS. These-figures are averaged and vary according to the nature of one's job. We cannot conclude that this percentage is evenly distributed throughout the personnel.

Incomplete calls might not involve, at first glance, a lot of time wasted (6 min. per person/day). But, telephone tag often causes a great deal of non-quantifiable frustration. Combined with other factors such as telephone interruptions, countless confusing message slips and wrong numbers, telephone tag can be a stress factor in one's every day life.

In calculating the cost of implementing a voice messaging system in the Government, we should take into consideration the cost involved in reducing telephone tag and the increased productivity due to elimination of the frustation and anxiety caused by inadequate communication.

If one out of every three letters you send or receive arrives with an envelope but without content, wouldn't you try to find a more efficient way of communicating?

VI REFERENCES

Lee L., Purdy, J. and Williamson, H.; (1985); Meridian SL Information Services; Telesis; Bell Northern Research Ltd. 12 (2), 13-19.

Neale, Andy; (1986); Some Generic Arguments for Voice Messaging. Voice-Data Report, Vol.3 ; Number 1 (14), 7-9.

Newton, Steve; (1985); Voice Messaging Systems, Computer Communications; 8 (3), 115-120.

Hi-Tech Approach Cuts Westinghouse Costs; Business Equipment; 23 (5), (1983), p.47.

The Diebold Group, Inc. (1984); Voice Mail: Voice Store-and-Forward. Applications Casebook: From Pilots to Operational Systems.

APPENDIX A

A copy of the Telephone Messaging Survey

INTEGRATED OFFICE SYSTEM TRIAL:

Telephone Messaging Survey

This questionnaire has been developed by:

Maria M. Morin, Ph.D.
Lucie Côté, M.Ps.
Division of Development & Engineering
Government Telecommunications Agency
Department of Communications
Ottawa, Ontario
October 10, 1986

7715-06/LCX61001

INTEGRATED OFFICE SYSTEM TRIAL:
Telephone Messaging Survey

This survey is part of the evaluation process of the integrated office system that you will be receiving shortly.

We would like to compare each individual's attitudes and expectancies before and after the implementation of the system. You will therefore receive a similar survey after the implementation period.

We would ask you to write your name on this sheet, to detach it and return it separately from the survey. Your confidentiality will therefore be ensured, while allowing us to compare answers on an individual basis.

Your responses will be used by the Division of Development and Engineering in the Government Telecommunications Agency to evaluate the results of the integrated office system trial service in your department. All data made public will be averaged across many individuals in order to guarantee the anonymity of the participants.

Thank you for your co-operation.

NAME:

DEPARTMENT:

TELEPHONE MESSAGING SURVEY

Instructions:

Read the question carefully. To rate a given question please circle the number that best describes it. For example:

Do you often use a hand calculator?

	1	2	3	4	5	6	7	
Not at all								Very often

A response of 4 on the frequency scale indicates that you have an average use for a hand calculator. Please use the extremes of the scales (i.e. 1 and 7) only if you think that it truly reflects your evaluation of this aspect.

Work rapidly through the questionnaire, without pausing more than a few seconds on each question and without returning to ones you have already completed.

1. On average, how many telephone calls do you receive each day?

_____

2. How frequently are written telephone messages misplaced, illegible, and/or incomplete?

1 2 3 4 5 6 7

Not often — Very often

3. Do you feel that you waste time returning telephone calls and leaving messages (telephone tag) because people you are trying to reach are unavailable?

1 2 3 4 5 6 7

No time wasted — A lot of time wasted

4. How much use would you make of a feature which would enable you to leave a voice message with the person you are calling, when s/he is away from his/her desk?

1 2 3 4 5 6 7

Very little — Very much

5. How much would you use a feature allowing you to retrieve voice messages any time, day or night?

1 2 3 4 5 6 7

Very little — Very much

6. During an average day, what proportion of your incoming calls are from:

Within your department: _____ %
From outside your department, but within the government: _____ %
From outside the government: _____ %

7. When people are unable to reach you, do they leave a message to call back or leave a message with a content? State approximate percentage in each case.

_____ % message to call back
_____ % message with a content

8. Do you feel that people trying to reach you by phone would make use of the voice messaging capability?

1 2 3 4 5 6 7

Very little Very much

9. What percentage of people trying to reach you do you feel would leave a message to call back or a message with a content using the voice messaging facility?

_____ % message to call back
_____ % message with a content

10. Do you receive complaints from people who find it difficult to reach you by phone?

1 2 3 4 5 6 7

Never Very often

11. List 3 persons in your department with whom you exchange many telephone calls each week and with whom you would like to leave voice messages.

Name	Division

APPENDIX B

A copy of the Daily, Telephone/Message Log

Government of Canada
Department of Communications

Gouvernement du Canada
Ministère des Communications

DAILY TELEPHONE MESSAGE LOG

RELEVÉ DES APPELS OU MESSAGES TÉLÉPHONIQUES

IDENTIFIER
CODE D'IDENTIFICATION ▶

DATE ▶

	DESCRIPTION		CALL NUMBER / NUMÉRO DE L'APPEL																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PARTY INVOLVED / CORRESPONDANT	1. WITHIN DEPARTMENT À L'INTÉRIEUR DU MINISTÈRE																					
	2. OUTSIDE DEPARTMENT À L'EXTÉRIEUR DU MINISTÈRE																					
	3. OUTSIDE GOVERNMENT À L'EXTÉRIEUR DU RÉSEAU DE L'ÉTAT																					
	4. LONG DISTANCE APPEL INTERURBAIN																					
	5. CONFERENCE CALL TÉLÉCONFÉRENCE																					
	6. IN REPLY TO MESSAGE EN RÉPONSE À UN MESSAGE																					
	7. RETURN CALL REQUIRED RAPPEL NÉCESSAIRE																					
	8. NO FURTHER ACTION REQUIRED AUCUN SUIVI NÉCESSAIRE																					
INCOMING CALLS / APPELS REÇUS	9. CALL TAKEN BY YOU PAR VOUS-MÊME																					
	10. TRANSFERRED TO ANOTHER PARTY ACHEMINÉ À UN AUTRE POSTE																					
	11. WRONG NUMBER MAUVAIS NUMÉRO																					
	12. TRANSFERRED FROM ANOTHER PARTY TRANSFÉRÉ D'UN AUTRE POSTE																					
OUTGOING CALLS / APPELS PLACÉS	13. FULL NUMBER DIALED NUMÉRO COMPOSÉ AU COMPLET																					
	14. INTERCOM NUMBER DIALED PAR INTERCOM																					
	15. SPEED CALL NUMBER DIALED NUMÉRO ABRÉGÉ																					
	16. PROGRAM DIALED COMPOSÉ AUTOMATIQUEMENT																					
	SOURCE OF TELEPHONE NUMBER / ORIGINE DU NUMÉRO	17. MEMORY DE MÉMOIRE																				
		18. TELEPHONE DIRECTORY ANNUAIRE TÉLÉPHONIQUE																				
		19. PERSONAL DIRECTORY ANNUAIRE PERSONNEL																				
		20. AUTOMATED DIRECTORY ANNUAIRE ÉLECTRONIQUE																				
		21. MESSAGE SLIP D'UN MESSAGE																				
	22. NO ANSWER PAS DE RÉPONSE																					
	23. LINE BUSY OCCUPÉ																					
	24. WRONG NUMBER MAUVAIS NUMÉRO																					
	25. LEFT MESSAGE MESSAGE LAISSÉ																					
TYPE OF CALL / GENRE D'APPEL	26. ONE WAY SUFFICIENT COMMUNICATION À SENS UNIQUE																					
	27. DIALOGUE REQUIRED COMMUNICATION RÉCIPROQUE																					
CALL DURATION AND TIME / DURÉE ET HEURE DE L'APPEL	28. LESS THAN 2 MINUTES MOINS DE DEUX MINUTES																					
	29. MORE THAN 2 MINUTES PLUS DE DEUX MINUTES																					
	30. TIME OF CALL (HOUR ONLY) HEURE DE L'APPEL (INDIQUER L'HEURE SEULEMENT)																					
MESSAGES	TAKEN BY / TRANSMIS PAR	31. SECRETARY SECRÉTAIRE																				
		32. COLLEAGUE COLLÈGUE																				
		33. VOICE MESSAGING AUDIO-MESSAGERIE																				
	CONTENT / CONTENU	34. NAME AND NUMBER NOM ET NUMÉRO																				
		35. NAME, NO. AND MESSAGE NOM, Nº ET MESSAGE																				
		36. WRONG NAME OR NO. INCOMPLET/INCORRECT																				
	MESSAGE RECEIVED / MESSAGE REÇU	37. WITHIN 30 MINUTES EN MOINS DE 30 MIN.																				
		38. WITHIN 2 HOURS EN MOINS DE 2 HEURES																				
		39. BEYOND 2 HOURS APRÈS 2 HEURES ET PLUS																				

APPENDIX C

A copy of the Telephone Interruption Log

TELEPHONE INTERRUPTIONS

PLEASE TICK THE APPROPRIATE BOXES FOR THE CALLS YOU RECEIVE.

IF YOU NEED MORE FORMS OR HAVE ANY QUESTIONS, PLEASE CONTACT DENYSE BOULET (990-2257)

DATE: _____

ACTIVITY WHEN CALL ANSWERED