The Computer Museum

300 Congress Street Boston, MA 02210

(617) 426-2800

December 10, 1991

For your files

Mr. David Abramson Corporate Relations manager 3COM Corp. 5400 Bay Front Plaza Santa Clara, CA 95052

Dear David,

We are delighted to be making this proposal to 3COM for sponsorship of an exciting new exhibit on networking as part of our newest exhibition, *Tools and Toys: The Amazing Personal Computer*.

The Museum's staff has struggled with how to illustrate the utility and attributes of computer networks in an engaging, intuitive, and appealing activity that gives Museum visitors first-hand experience with the technology. In quest of this goal they have collaborated with a team from the Chedd-Angier Production Company, a widely respected producer of educational television (the NOVA series) and computer-based interactive exhibits for museums (The Motorola Museum). Together this group has conceived of a game which would convey the power networks put in the hands of people seeking to collaborate in the achievement of a common goal. The interactive exhibit based on this game is described in the enclosed proposal.

The Network Interactive will become the cornerstone of the "Sharing Ideas" section of *Tools and Toys* and undoubtedly one of the most popular features of the whole exhibition. This section of the exhibition will seek to give the general public an enhanced understanding of computers and networks as powerful tools for communication of data, information, knowledge, and ideas. Supporting presentations and additional, tangential interactives will interpret and build upon the Network Interactive, giving visitors a more comprehensive understanding of networks and their real world applications.

Tools and Toys will have national impact. As the world's only museum dedicated exclusively to computer technology, the Museum draws a national audience. Furthermore, as the leader in the development of interactive museum exhibits about computers, the Museum guides other museums and science centers in their treatment of the topic. *Tools and Toys* will serve as a test-bed for interactive exhibits that will be disseminated to museums nationwide in the form of software kits. The Network Interactive might hold great appeal for the many science museums with exhibitions on communications.

Sponsors of this important project already include: Apple Computer, Digital Equipment, Bill Gates, Raytheon, and Steve Wozniak. Proposals are currently under consideration by IBM, HP, Silicon Graphics, and the National Science Foundation, to name just a few. As befits its position in the industry, we invite 3COM to join this prestigious list as a Sponsor at the \$50,000 and to provide the networking equipment required to implement the Network Interactive. These funds will help cover the cost of developing the Network Interactive software, configuring and installing the hardware system, and designing, building and installing the physical structure of the exhibit.

The enclosed materials describe the Network Interactive in greater detail. I have also enclosed an abstract describing the promotional campaign we will be launching to bring attention to *Tools and Toys* and recognition to its sponsors. If there is any other information you require, please let me know.

Warm regards,

Dr. Oliver Strimpel Executive Director

Enclosures

cc: Dr. Eric Benhamou

Network Interactive for

Tools & Toys: The Amazing Personal Computer

A Landmark Exhibit opening June 1992 at The Computer Museum

Prepared for: 3COM Corp.

By: The Computer Museum, in conjunction with The CHEDD-ANGIER Production Company

Multimedia Design: Ben Dubrovsky, Chedd-Angier David Greschler, Computer Museum

Project Management: Richard Lewis, Chedd-Angier Greg Welch, Computer Museum

Abstract:

This exhibit will provide a networked, shared interactive experience to teach visitors about computer networks, and their use. The overall guise of the experience will be that of a game. Visitors will need to work together against time to accomplish to reach their goal.

Goals:

As in any interactive experience, learning goals should be concise and achievable in a short period of time. In this piece, we will convey the following basic ideas about computer networks:

- Communication
- Data Sharing

We will convey these points in a meaningful, interactive, and engaging experience for viewers. If the visitors leave with the knowledge that computer networks provide communication and data sharing among users, we will consider it successful. A third, more subtle goal of the experience will be to convey the idea of

• Shared Processing

This idea will be inferred from the very nature of the exhibit—people working together over a computer network to solve a problem.

Physical Layout:

The physical layout of the exhibit will be four personal computers at the four corners of the exhibit space. These personal computers will be connected via visibly obvious Ethernet wires to a central server computer. This layout will form an "X" - a topography that will be reinforced in the software design.



In addition, there will be a tote board where game results will be posted along with pictures of the participating team members. By depicting the progress of the game, the tote board will also serve to attract spectators, instruct people about the game, and educate them about the function of the network.

Each personal computer will contain a full color monitor, touch screen, video camera, video digitizing hardware, digital video playback hardware, microphone, sound reproduction hardware, and computer and network support.

Interactivity:

Visitors will be introduced to the game via a short video (stored as digital video on the network server) which will explain the rules and how the network works. Players need to travel from their spot on a map to the center. They will be faced with several barriers along the way. Each barrier can be

unlocked by a specific key. Players will be given several keys at the outset of the game. However, the keys they are given will not be able to unlock the barriers they will face. Rather, other players will have their keys. Therefore, to succeed in the goal of the interactive, visitors will have to share information.





During the play of the game, visitors will be able to speak with other players. Pressing on an icon for a particular player will activate a communication link with that player. The 2 players will be able to communicate via full motion video and sound - similar to a video conference. The players will be able to ask each other which keys they have. Players will be able to give keys to each other over the network. They will accomplish this by dragging a key to a data "funnel" for a particular person. The key will travel over the network, and out of the corresponding funnel on the recipient's end. The key will then be available for the recipient to use.

When players get the key they need, they can drag it to the barrier, open it, and proceed on to the next obstacle. Each player's position is monitored on the game field diagram. Each player can see how many barriers there are, and where everyone stands in relation to the center. If everyone gets to the center within the time limit, the game will progress to a more difficult level. Levels will get more difficult by several means. There will be more barriers; time available may be reduced; several keys will look the same, but not open the same doors; keys will randomly shuffle from player to player during the game; keys will not be available until players get through barriers; etc.

The game ends when all players do not make it to the center in the time allotted. A team's score (all players participating) depends on how many levels they have completed, and how many barriers they have completed on their last level. Winning teams will be asked to enter their initials, and to choose a pose. Their picture and initials will be posted on the game board for all to see.

During the progress of a game, the tote board will display the progress of the team playing. Their positions on the playing field relative to barriers, and time remaining will be prominently displayed. This will give passers by and people waiting in lines something to look at and enjoy during the progress of the game. The tote board will also post information related to the network, such as the rate of information being passed among players.

Metaphors:

There are several layers of meaning put into this design. Primary are the direct answers to the goals. Passing keys from person to person is analogous to sharing data. The same piece of data is passed from person to person—the network facilitates this. Direct visual communication between players represents the communication that a network facilitates among people.

The second set of information that is taught by this design is as follows:

Network Topography: The very design of the game itself mimics the "star" configuration network that we have produced. Additional material may be provided on chair-rails about other network topographies (CSMA/CD, Token Ring, etc).

Visitors are Using Network: The network wire will be visible to players. The wire will travel up to the monitor, and be continued across the monitor bezel to the screen area itself. The screen graphic will continue the line into a funnel. Visitors will drag keys over to the funnel, and watch the key get dragged in. This process should remind visitors of the pneumatic tube metaphor—where pieces of paper were passed from station to station in pneumatic tubes.

Color coded lights will travel along the network wire from where keys were sent to the recipient. When the light arrives, the key will pop out of the recipient's funnel, and appear on his screen. This will reenforce the notion that data can be passed from point to point. **Network Protocol:** All traffic on a computer network must follow a particular protocol - members of a network must share a protocol to communicate. Players will need to develop their own protocol for transferring data - keys. Their protocol will be developed on the fly - but one will be developed never the less. Winning teams will figure out a strategy for conveying the keys in an efficient manner - to beat the clock.

Distributed / Shared Computing: The process of surmounting barriers can be solved in parallel. Visitors will learn that they can communicate with one person, while another is sending them a key, or while another conversation is taking place. Additionally, visitors may utilize their communication link for other purposes, such as to ask other players for rules, or for strategy.

Networks Convey Different Types of Data: The players will see both data (keys) and video travel over the network. Networks support many types of communication simultaneously.

Simulation / Observation: Players will see that simulations - or games can be run over a network, and that network data can be pulled off for other functions such as observation - as they will see on the tote board.

Special Cases:

This exhibit will need to function in an unattended manner, and will need to run both when there are long lines, and when there are fewer than 4 people playing. If there are 2 or 3 players, the game will play normally, just with fewer players. That is, players will still need to communicate, and trade keys with each other, except fewer people will be in the fray. During this period, the unused screen or screens will display a message indicating that a game is in progress, and to please wait until it is finished.

In the case where one person wishes to play, a phantom will be created to allow the single visitor to play. Networks work best with multiple people, so this situation will be less than ideal, but it will be workable. An interface will be created to simulate a person on the other end of the network - perhaps a canned video image of a robot - who will phrase questions to the player asking for different keys. The computer will also ask the player questions like, "Would you like a red square key? Would you like a round blue key?" The player can answer yes or no, and will be given the appropriate key.

People in line will need to be entertained while they are waiting for the current game to be played out. The central tote board will take care of that

problem. The status of each player in the current game will be displayed centrally. The time remaining in the game will also be shown. Visitors in line will be able to see how people are doing, and will be able to cheer them on (or wish them ill if they are in a rush to play.)

Finally, we hope to give the people in line something to shoot for. If they are successful and are the top scorers of the day, then they will get their pictures and names displayed on the tote board.

Outcomes:

There are several things that we hope to have happen from this game. First, we want visitors to have fun. They will get excited - they are playing a timed event, and must get into playing their roles if they expect to win. As they pass through the layers of the game, there will be more and more pressure on them to finish in time.

We also hope to foster a sense of cooperation among players. They all must be successful in order to win. We hope to get the audience involved by bringing them in on the process - by letting them see what is currently happening in the network.

Finally, and most importantly, we expect players to leave this game having experienced first hand the issues involved in computer networking.

Development Schedule:

The Network Interactive will be developed according to the following schedule:

January 1 - 15	Research development of Network Interactive. Consult with technical advisor at 3COM on networking equipment for the interactive.
January 15 - April 1	CHEDD-ANGIERS develops beta-version of Network Interactive.
April 1 - 8	First draft is evaluated at The Computer Museum by Museum staff and visitors.
April 8	The Computer Museum returns the Interactive to CHEDD-ANGIERS with evaluation report outlining changes and improvements.

May 1	CHEDD-ANGIERS delivers final version of Network interactive to The Computer Museum.
May 1 - 15	The Computer Museum installs Network interactive into new exhibit.
June 11	Exhibit opens to the public.

Cash Sponsorship of the Exhibition

The Computer Museum invites 3COM to become a Sponsor of *Tools and Toys: The Amazing Personal Computer* at the \$50,000 level. These funds will help cover the cost of developing the Network Interactive software, configuring and installing the hardware system, and designing, building and installing the physical structure of the exhibit.

Hardware Requirements

The expected hardware needs for the Network Interactive are as follows:

- 5 486 33mh Computers
- 5 300 meg, fast hard disks
- 5 1024 x 768 16-bit monitors
- 5 MicroTouch touch screen devices
- 5 Fluency digital video board sets
- 5 Video cameras Required 3COM networking hardware and software (to be specified)

It is important to note that the development team will require technical advice and support from 3COM to specify, configure, and install the 3COM system appropriate for this application. The supporting network hardware needs—hubs, terminal severs, adapters, etc.—will be determined during the research period (January 1 - 15). The Computer Museum will seek the donation of the other hardware required to implement this system. Any assistance that 3COM can provide in this regard will also be most welcome.

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Tools and Toys The Amazing Personal Computer

Marketing and Promotion Plans

General Plan

The promotion of Tools and Toys: The Amazing Personal Computer will be a multi-tiered program. In conjunction with the pro bono efforts of one of New England's top advertising agencies, *Leonard Monahan Lubars & Kelly*, The Computer Museum will develop a professional print and broadcast campaign for newspapers and magazines, TV and radio, and billboards. *LML&K* will be involved in both the creation of promotional materials and the implementation of the campaign. Cooperative promotional and marketing efforts are currently being discussed with area hotels, tourists attractions, and convention facilities. Collateral materials and a retail merchandising program are also being developed. All efforts will be targeted to both trade and consumer market segments.

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Sponsor Recognition

In addition to credits appearing in press releases, exhibit panels, posters, opening invitations, and other printed and electronic materials, sponsors of S25,000 or more will be included in a special series of promotional advertisements to be placed in industry and business publications prior to and following *Tools and Toys's* opening in June 1992. As part of its 10th Anniversary Celebration, the Museum will request full-page, four-color advertisements in leading industry, business and news publications to promote the new exhibition. The Museum has successfully solicited over \$500,000 a year in free advertisements from over twenty publications, including:

- Forbes
- Fortune
- Business Week
- Byte Magazine
- Computerworld
- MacWeek
- PC World

The Museum's new galleries and exhibitions receive extensive international media coverage. For example, promotion of the Museum's landmark exhibition, *The Walk-Through Computer*TM, made over 300 million media impressions worldwide. Planned as the centerpiece of The Computer Museum's 10th Anniversary, the opening of *Tools and Toys* will mark the beginning of a year of celebratory activities and is expected to result in exceptional worldwide electronic and print coverage. This will provide unusual visibility for the exhibition's sponsors and, in turn, attract large numbers of visitors to the exhibition.

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The Computer Discovery Center

Network Interactive

Proposed by:

The CHEDD-ANGIER Production Company The Computer Museum

Multimedia Design:

Ben Dubrovsky, Chedd-Angier David Greschler, Computer Museum

Project Managment:

Richard Lewis, Chedd-Angier Greg Welch, Computer Museum The Computer Discovery Center

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Computer Networks:

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Utilizing the technology of computer networks, however, can alter the shape of human-computer interaction. The network allows access to data over large areas. Day to day functions such as bank card withdrawals from geographically diverse areas are made possible by computer network

connectivity. Networks are limitating geography as a factor in many common limits for a new type of computing - shared conjugative learning and shared experiences. Rather than dealing with an algorithmic response to a particular situation, individuals must deal with a human response. Critics might say of computers that they dehumanize the areas they are used in. The computer network can bring that element back into play. People communicate with other people - via electronic mail or applications that utilize the distributed nature of the network. Networks take sound reproduction technology and move it from the phonograph, or the public address system, and move it to the telephone. Networks can turn the computer into a mass means of communication as well.

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Goals:

As in any interactive experience, learning goals should be concise and achievable in a short period of time. For this piece, we are hoping to convey the following ideas to exhibit visitors:

- Communication
- Data Sharing

These are two of the major functions of computer networks. We will convey these points in a meaningful, interactive, and engaging experience for viewers. If the visitors leave with the knowledge that computer networks provide communication and data sharing among users, we will consider it successful. A third, more subtle goal of the experience will be to convey the idea of

Shared Processing

This idea will be inferred from the very nature of the exhibit - people working together over a computer network to solve a particular problem.

Physical Layout:

The physical layout of the exhibit will be four workstations at the four corners of the exhibit space. These workstations will be connected via obvious wires such as yellow thicknet cable, to a central server computer. This layout will form an "X" - a topography that will be reinforced in the software design.



Additionally, there will be a tote board where game results will be posted for spectators along with pictures of the participating team members.

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Each workstation will contain a full color monitor, touch screen, video dia: camera, video digitizing hardware, digital video playback hardware, microphone, sound reproduction hardware, and computer and network support.

Interactivity:

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Visitors will be introduced to the game via a short video (spored as digital video on the network server) which will explain the rules. Players need to travel from their spot on a map to the center. They will be faced with several barriers along the way. Each barrier can be unlocked by a specific key. Players will be given several keys at the outset of the game. However, the keys they are given will not be able to unlock the barriers they will *be* faced with. To succeed in their compution Rather, other players will have their keys.



Figure 2: Screen Layout.

During the play of the game, visitors will be able to speak with other players. Pressing on an icon for a particular player will activate a communication link with that player. The 2 players will be able to communicate via full motion video and sound - similar to a video conference. The players will be able to ask each other which keys they have. Players will be able to give keys to each other over the network. They will accomplish this by dragging a key to a data "funnel" for a particular person. The key will travel over the network, and

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When the player has gotten a needed key, he drags it to the barrier, opens it, and proceeds on to the next barrier. Each player's position is monitored on the game field diagram. Each player can see how many barriers there are, and where everyone stands in relation to the center. When everyone gets to the center, the game will progress to a more difficult level.

Levels may get more difficult by several means. There may be more barriers; time available may be reduced; several keys may look the same, but not open the same doors; keys may randomly shuffle from player to player during the game; keys may not be available until players get through barriers; etc.

The game ends when all players do not make it to the center in the time allotted. A team's score (all players participating) depends on how many levels they have completed, and how many barriers they have completed on their last level. Winning teams will be asked to enter their initials, and to choose a pose. Their picture and initials will be posted on the game board for all to see.

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Metaphors:

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Hopeful Outcomes:

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The Computer Discovery Center

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Additionally, computer networks allow for a new type of computing - shared learning and shared experiences. Rather than dealing with an algorithmic response to a particular situation, individuals must deal with a human response. Critics might say of computers that they dehumanize the areas they are used in. The computer network can bring that element back into play. People communicate with other people - via electronic mail or applications that utilize the distributed nature of the network. Networks take sound reproduction technology and move it from the phonograph, or the public address system, and move it to the telephone. Networks can turn the computer into a mass means of communication as well.

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Personal Computers

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Figure 1: Network topography.

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THE HOL DILOCOULTS

Color coded lights will travel along the network wire from where keys were sent to the recipient. When the light arrives, the key will pop out of the recipient's funnel, and appear on his screen. This will reenforce the notion that data can be passed from point to point.

Network Protocol: All traffic on a computer network must follow a particular protocol - members of a network must share a protocol to communicate. Players will need to develop their own protocol for transferring data - keys. Their protocol will be developed on the fly - but one will be developed never the less. Winning teams will figure out a strategy for conveying the keys in an efficient manner - to beat the clock.

Distributed / Shared Computing: The process of surmounting barriers can be solved in parallel. Visitors will learn that they can communicate with one person, while another is sending them a key, or while another conversation is taking place. Additionally, visitors may utilize their communication link for other purposes, such as to ask other players for rules, or for strategy.

Networks Convey Different Types of Data: The players will see both data (keys) and video travel over the network. Networks support many types of communication simultaneously.

Simulation / Observation: Players will see that simulations - or games can be run over a network, and that network data can be pulled off for other functions such as observation - as they will see on the tote board.

Special Cases:

This exhibit will need to function in an unattended manner, and will need to run both when there are long lines, and when there are fewer than 4 people playing. If there are 2 or 3 players, the game will play normally, just with fewer players. That is, players will still need to communicate, and trade keys with each other, except fewer people will be in the fray. During this period, the unused screen or screens will display a message indicating that a game is in progress, and to please wait until it is finished.

In the case where one person wishes to play, a phantom will be created to allow the single visitor to play. Networks work best with multiple people, so this situation will be less than ideal, but it will be workable. An interface will be created to simulate a person on the other end of the network - perhaps a canned video image of a robot - who will phrase questions to the player asking for different keys. The computer will also ask the player questions like, "Would you like a red square key? Would you like a round blue key?" The player can answer yes or no, and will be given the appropriate key.

People in line will need to be entertained while they are waiting for the current game to be played out. The central tote board will take care of that problem. The status of each player in the current game will be displayed centrally. The time remaining in the game will also be shown. Visitors in line will be able to see how people are doing, and will be able to cheer them on (or wish them ill if they are in a rush to play.)

Finally, we hope to give the people in line something to shoot for. If they are successful and are the top scorers of the day, then they will get their pictures and names displayed on the tote board.

Hopeful Outcomes:

There are several things that we hope to have happen from this game. First, we want visitors to have fun. They will get excited - they are playing a timed event, and must get into playing their roles if they expect to win. As they pass through the layers of the game, there will be more and more pressure on them to finish in time.

We also hope to foster a sense of cooperation among players. They all must be successful in order to win. We hope to get the audience involved by bringing them in on the process - by letting them see what is currently happening in the network.

Finally, and most importantly, we expect players to leave this game having experienced first hand the issues involved in computer networking.

- Hardware needs

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Kieth Sorenson President and Chief Executive RasterOps 408-562-42007 Main# 2500 Walsh Avenue Santa Clara, CA (408-446-4090??) 95051 Video digitizer Card for MacII. MUBWER FAAAM Model 364. W/Developer's toolkit/library for Hypercard and Director. Would ## Rasterops consider donating? Are any left? (tax, etc.) Heard from local dealer that a limited number were still available. Lo. Linda Deplania Inventory Manager

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Notes:

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Printed Name:

Donee: BOSTON COMPUTER MUSEUM By: Antifent Name: DAVID GRESCHLER Title: ERMibit Denoloper Date: 4/9/92

The Property will consist of the following:

Quantity	Part #	Description	Market Value
1	36567	Etherlink 16 adapter	\$ 445.00
5	30543	Ether Link /NB adapter	\$ 2975,00



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3Com Corporation 5400 Bayfront Plaza P.O. Box 58145

3420.00

Santa Clara, CA 95052-8145

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April 6, 1992

Mr. David Greschler Boston Computer Museum 300 Congress St. Boston, MA 02210

Dear Mr. Greschler:

3Com is pleased to donate the following equipment to your organization:

Item	P/N	Qty	Mkt Value	Total
EtherLink 16 adapter	3C507	1-55	445.00	445.00
EtherLink/NB adapter	3C543		595.00	2975.00

Total

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If there are any questions or problems, you can reach me at (408) 764-5537.



Please acknowledge your understanding and agreement with the terms of this letter by signing a copy of this letter and returning it to me.

Sincerely,

With William S. Swift

Product Marketing Manager Network Adapter Division

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Accepted and Agreed

Date: 4/8/92

By: DAVID GRES CHIER

Title: Exhibit Developer

Organization: The Computer Museum

3Com

3Com Corporation 5400 Bayfront Plaza P.O. Box 58145 Sama Clarz, CA 95052-8145 USA (408) 764-5000

Facsimile Transmission Cover Sheet DATE: 4/7/92 MR. JAVID GRESCHLER -FAX No .: (617) 426-2943 TO: BOSTON COMPUTER MUSEUM Company Name Department FROM: BILL SWIFT Phone No .: 3 Com Corp. Department PAGES TO FOLLOW: MESSAGE: 3Com Fax Numbers * Dear Mr. Guschler, Bldg 100, Lobby 408/764-5001 David A branson has amonged Bidg 200, Lobby 408/764-5002 for 3 am to donate some adaption Bidg 300, Lobby 408/764-5003 艺Bldg 400, Lobby 408/764-5004 products to BCM. We ask that Bidg 7, Condensa 408/764-7021 you sign and FAX beek the Sales Admin 408/764-7070 San Jose Sales 408/764-6740 following 2 forms. For purpose of Convenience Ctr this donotion, your organization is Location FAX No. classified as "care for infants" since you provide services for children * Put check mark by SENDING location. Bu frift (408) 764-5337 Fax to: 408 - 769 5004

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