It might be a good idea at the beginning of the year; I do not know what you do but we have like, a week in service time when we are not in the class-room. That you know it is the time when you can take to learn and you do not have to worry about students or anything. That would be a very good time.

I definitely think there has to be a review for next year.

new teachers come in and leaving the school in our district.

you are going to have to re-train them every year.

I have to tell you there will be a lot of gripping in high-school if the system does not continue next year the parents are used to that system. In fact, at one point, I suggested to [redacted] that they make it a 900 number and the charge when you call in. [redacted] would take care of children who are still responsible for writing down their own homework but it would also help those people whose children were absent or might have missed something and it would ... Now, in terms of .... I would guess, you could ask the parents, they would be willing to pay for this kind of program; not a lot, I am not talking add it to their phone bill or anything. I know, as a parent, I am going to be at loss if I do not have that.

I am wondering if by having it another year we are going to have people that are thinking, well, it was not so bad and so and so really uses it and now, I think I am going to use it next year if I feel more comfortable.

Like anything; I do not think you can get a true reading on something on one year. I think the second year of continuation and like this, the brain storming and discussing and the helping one an other and the sharing of ideas of way of which it has been used would be a motivator for those who may have not used it.

Just listening right here; I was making the comment. oh, I am going to go home and go back and play with the number. Seriously, I think that would be beneficial to all schools.

it is also beneficial from the parent's stand point because once the parents have moved in and they have to go everywhere and they move into this school area and the neighbor is talking about this great connection we have between the school and the homes and the new parent wants to you have the same connection. there is always a change and you need to develop it with the two year program. they can feel comfortable with the connection; they are a little hesitant to leave a message some times. they are not sure if they are getting through or they are going to get a response or not. so, it is a new beginning for everyone and you cannot judge everything in just a year's time.

I find an increase in usage as time goes by, from the teacher's stand point. if it continues.

do you have any other suggestions from groups and teachers.

I have one. when a parent leaves a message, at the end it says, if you are satisfied with your message press one, if you want to send it press .... then a parent would hang up and say, oh my gush, I never pressed one and they call back and leave the same message again. I do not know that it is not necessary. they do not know that it is necessary for me to mark a message private when I am sending it to a parent or urgent, which we have the capability of doing, and some times you cannot take your private --- I tried, I pressed buttons to fast and I get messages sent to 30 homes saying, private. Well, when I get a message that says private you think, well, this is the IRS or something like that. You cannot take that off once you put that one on. When you press number one after you record your message you cannot ... I have not figured out a way to take it off. So, you could make it easier. They do not have to press one, they do not have to send with any kind of urgency; let them just send it.

Not only that; if it is urgent and they do want you to hear it, there is still no way of us knowing it is urgent unless we have picked up our phone to listen. if you could have a way of letting us know we have messages out there. I do not know how you can do it.

There is not an option.

No, it does not help them other than once you get it you know they want to talk to them.

It is just confusing and then you get the same message from the same person twice because they forgot to press one.

What do you think of US WEST offering these services?

Impressive. I have US WEST voice messaging at home as a result of it because I could not give up my answering machine. then I thought, well, if we are going to have it at school. so, I have it at home now.

So you got it as a result. So what do you think of the service?

I am very pleased.

Would you keep voice messaging or you like your answering machine.

I have to wait.

So you think highly of US WEST.

Very.

Why.

It is a business. it is a nice thing the business sector inter-acting with school. I know that is kind of the trend for businesses to do that and I think it is very beneficial. it says a lot for the company which is interested in schools and education f the future.

You know, one of the things also, it is bringing, like you said, business into the environment of school. a lot of our parents now have voice messaging in their office or have dealt with it in their profession and you are always saying, well, put the number in there or they will give you a voice messaging and I have two sons who both have voice messaging. I think it just brings education into the business sector and I think for a lot of parents this may have been something that is more convenient for them and they feel more comfortable with it because of that.

so it is efficient for them as well as convenient.

It is good for US WEST. it is good business because they are getting people to sign up and they want to find out what is going on at school and they are more inclined to want to have it. it is good business. I think it is a partnership both ways.

I am sure that US WEST has not recover nearly what they have put into this program. they gave it to us for free; not only that, they gave us thank you for getting it on.

well, we have a lot of people sign up.. We did too; now we are only down to about a third of our school; I do not know what we were initially. That is good of that. I think really highly of them as an organization to say, you know what, the dollar is not all mighty. We are willing to put the dollar aside to see if we could get this to work and yes, we will maybe eventually make some bocks and that will be nice but we are not just out for the money. I know my husband's office signed up for business voice messaging as a result of me having this at school. When they said do you want distribution list he said yes and he knew all that was going because he sat there and went through that with me. I think that is going to be the dominal effect. Eventually if there is some way you could tack it, you could find that eventually US WEST would probably recover.

it is really admirable for them to be willing to do this to help. We are not saying we are doing this to make money.

APPENDIX 3

VIDEO NEWS REPORT PHOENIX T.V. NEWS

You wonder whether your child tells the truth when you ask him if there is homework tonight and he says, no.

Frustrated you can't reach a teacher to answer a simple question?

US WEST hopes they have the answer.

A cutting edge voice mail system is now in three schools and blaming the family dog for chewing up an assignment just became obsolete.

This is Nancy Gunty, seventh grade science class at Saint Thomas the Apostle Catholic school. She hopes her students are paying attention; but just in case, (telephone sound).

Hi, this is Mrs. Gunty from Saint Thomas, and this is the assignment for seventh grade science for the week of January 23rd.

(Parent listening). Today in science we studied stars, the different characteristics of stars and how they are formed. For homework tonight, the student need to do exhibition M19.

Before Cory Bellan even gets home from school, her mother hears her teacher's voice message: "Thanks Mrs. Gunty; we will talk to you soon about Cory's progress in science".

Tell me what you like about this voice mailing system. What I like about it is that it fosters so much communication between parent and teacher and the school. A lot of times I will dial in with a simple question that needs to be answer but that I would not dream of disturbing a teacher at night, after, her kids are in bed and she needS quiet time. I can do it at my convenience and then she message me back, which is great because she does not interrupt what I am doing. So, you can always plan a conference for something that is very important; but just for the everyday, it is great!

So, some day we are all going to be connected to each other through Voice Mail.

That is our hope; that is our hope and more customers would be using Voice Mail. it is really the way of the future and how we are going to communicate.

And we heard our own future through Saint Thomas' principal's Voice mail message: There will be a special presentation on the channel ten news, this evening at 10:00 O'clock. The presentation will be done by June Thomsen, one of the news casters for Channel ten who visited our school today.

there will be a test tomorrow. Who know! We may some day be voice messaging you about the news of the day.

The parent teacher exchange program, as it is called, is in three schools as part of a pilot program by US WEST. If it is successful it may, one day, be standard in all school.

Dave and I were talking, just a moment ago, about your story, before it aired, and we just said that both of us would be in severe trouble if they have had this at school.

I believe it, I believe it. Force them to tell the truth; that is how you go about it.

Jon Peketz

FOR IMMEDIATE RELEASE
January 10, 1995

FOR MORE INFORMATION:
Tony Seese-Bieda 235-3117
John Peketz 351-5364

Virtual Parent Teacher Conferences
New Voice Messaging Connects Parents with Schools Round the Clock

Phoenix, Arizona - Pen in hand, second grade teacher Connie Bellmore of Madison Simis School is writing a script at her school desk. Her students have left for home, and, soon, so does she. In the comfort of her own home, the classroom veteran finishes writing. She then picks up her phone, dials a seven-digit number, inputs her access code and, reading from the script, says, "Hello. This is what's going on in Mrs. Bellmore's class during the week of November 14-18..."

In 67 seconds, Bellmore thanks parents who attended last week's parent conferences and says she looks forward to meeting more parents this week. She explains the week's lesson plans, reminds parents of early class dismissal Wednesday, and discusses the theme of a story her class will read. "T-shirt orders are due this week, " she adds in closing. "They make a great holiday gift...Bye, now."

When she hangs up, her message is automatically sent, via U S WEST Voice Messaging, to all her students' parents who have voice mail. Parents not on the system can access the message by calling the school's voice messaging system and dialing Bellmore's seven-digit code.

Bellmore can use the voice messaging system from any phone. And she is not the only teacher using it.

All teachers and administrators at Madison Simis, Copper Canyon, and St. Thomas the Apostle Catholic elementary schools use the system, dubbed "The Parent /Teacher Exchange."

The Phoenix schools are the first in U S WEST territory to try the new product, which, unlike "Homework Hotline" systems, allows two-way communication between parents and teachers.

- more -

2-2-2 U S WEST Teacher Voice Mail

"I love it," Bellmore later said of the Parent /Teacher Exchange. Parents, she said, "like it because it's more personal than a piece of paper. It adjusts to their schedule. Parents can call at 10 p.m. if they want. They say they're comfortable talking on the system. It's more personal. Eventually, I hope to get away from all the paper communications we use."

After hearing the teacher's message, listeners can push "1" to replay the message, push "2" to leave a message, or they can push "3" to access the main menu of nine options, including enrollment information, calendar of events, cafeteria menus, and reporting absences to school.

"I'd been trying to get on a system like this before I came to this school, " said Rick Stephen, principal of St. Thomas.

"It helps us communicate better with parents, " he explained. "One thing you often hear parents say is 'You're not informing me.' Some of our teachers deal with up to 180 students a day. With that many students it's an overwhelming task to try to keep up with each parent. Voice Messaging allows teachers to put the information on the phone. Parents can just pick up the phone now to find out what's happening."

He's not just referring to class events, he said, but extracurricular activities, too. Stephen told of a recent carnival at St. Thomas School. The weather experts predicted rain on the day of the events.

"We got on the phone and said we're still having the carnival," he recalled. "The rain stopped just before the carnival began. While I was there, parents came up and said, 'Hey, I got your message.'"

The schools began using the Parent Teacher Exchange at the start of the 1994 fall semester. What's the cost of such a system? U S WEST has not yet determined a price to charge schools using parent-teacher voice messaging. It's in the testing and marketing phase until the end of the school year.

"We're trying to gauge usage, then we'll cost it out based on that information," said John Peketz, U S WEST product manager. "We're going to try to keep the cost as low as possible."

U S WEST Voice Messaging for parents is priced at $6.95 per month. Parents who try the product get their first month's use free. U S WEST also waives the installation charge.

Voice messaging rings bell for schools

By PETER LOGE
The Business Journal

US West Communications may have found a new way to sell its voice messaging service and at the same time help parents and teachers stay in touch.

A service being tested by US West at Madison Simis, Copper Canyon and St. Thomas the Apostle elementary schools provides a voice messaging system for the schools and the teachers, and can broadcast messages to parents who also have voice mail.

US West officials hope that parents who have children at schools with the voice mail system will subscribe to the service themselves, says Tony Seese-Biede, a spokesman for US West.

So far the test is going very well, says John Peketz, product manager for voice messaging. "We've had an incredible response from parents."

The service works like this: Teachers and administrators at the school get a voice mailbox; those who want to use the service leave classroom announcements, cafeteria menus, athletic schedules and so forth on the system. The system then automatically calls the voice mail boxes of parents with US West voice messaging who have subscribed to the service.

The teacher's message is left in those parents mailboxes, without the phone ever ringing. Parents without voice mail can call into the school's system and hear the same announcements. After hearing the announcements, parents can then leave messages for their children's teacher.

"I love it," says Mitzi Tadin, a parent at St. Thomas the Apostle. Tadin, who says she got voice messaging because of the new service, says she uses it to leave messages for fellow Brownie troop parents. "It's tough to count on first graders to take a note to parents; this makes it possible to, in one step, leave a message for all the Brownie parents," she says.

Seese-Biede, who has a son at Copper Canyon Elementary School, says he is a frequent user of the service. He says that two or three times a week, the principal at Copper Canyon will leave a message on parents' voice mail about upcoming school events. This cuts down on the amount of paper that his son is asked to bring home, and makes it easier for Seese-Biede to keep track of school activities.

Seese-Biede says he hopes to be able to use a similar service for Little League.

Peketz says that such applications are on the horizon. "We are trying to use the school systems to show the power of this and and provide a needed service to the schools," Peketz says.

US West has plans to offer the capability to anyone who is interested — from block watches to Boy Scouts — by the end of this year, says Peketz.

US West has not determined the cost of the system and is providing it free to the test schools. Parents who sign up for the service get the first month free, and participating schools with at least 50 percent of student homes registering receive gifts of between $2,000 and $3,000 from US West, says Seese-Biede. All of the participating schools have met that goal.

The company expects to start charging for the service within the year and expects it to be a revenue generator, says Seese-Biede. The company still is doing cost studies and will not fix rates until the studies are complete, he says. US West may charge schools a small fee for the service to supplement what US West charges parents, he says.

This spring, US West is expanding its test to a second school in the Madison district, says Peketz. If the test is successful in the Phoenix market, US West will make it available in to any school district that shows interest, says Seese-Biede.

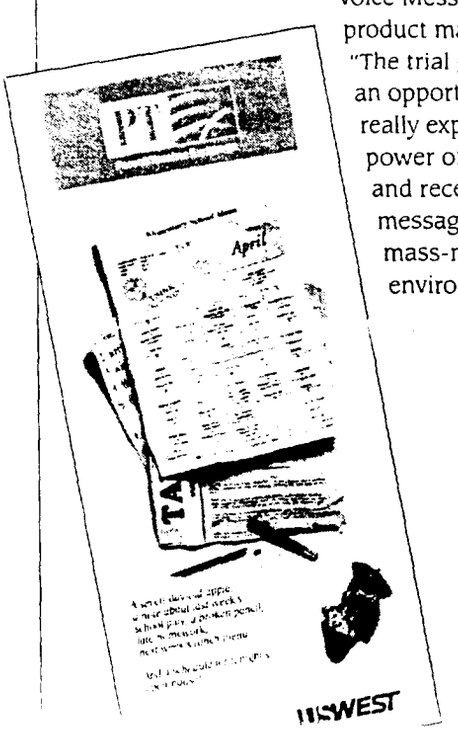
Phoenix schools use Voice Messaging to get the word out

U S WEST is teaming up with three Phoenix schools this fall to test a new concept in school/home communications.

Parent Teacher Exchange, or PTX, will allow teachers and administrators to distribute information such as school activities, lunch menus, homework assignments and study topics directly to parents using U S WEST Voice Messaging™.

Parents who have U S WEST Voice Messaging will be put on distribution lists so that all school information will be delivered automatically to their voice mailbox. They also can receive and reply to messages regarding homework assignments and specific information on their children's accomplishments and performance.

The PTX trial is a real-world application that will provide data on new ways to use Voice Messaging. It's a natural, since schools need to communicate a high volume of information and parent involvement in education is so important to so many of our customers, says John Peketz, Voice Messaging product manager. "The trial gives us an opportunity to really explore the power of sending and receiving messages in a mass-market environment."



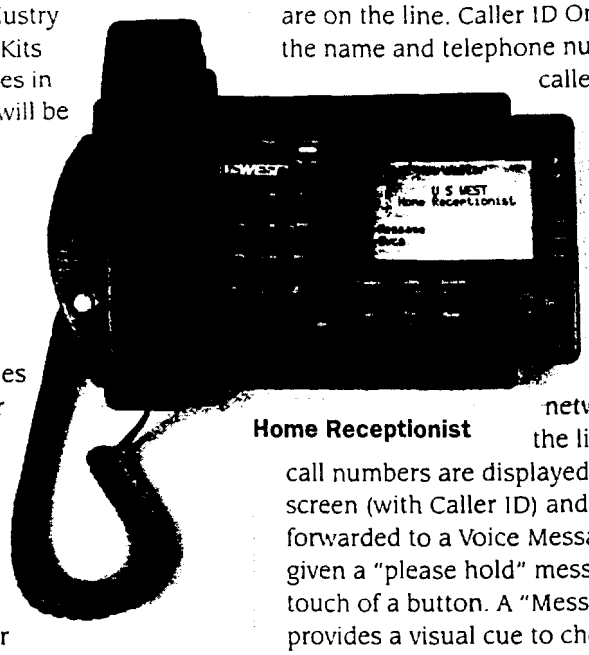
Services hit home

U S WEST's residential customers can choose from several new products and services this year that range from Voice Messaging Start-Up Kits to a "personal receptionist."

In a telecommunications industry first, Voice Messaging Start-Up Kits can be purchased in Target stores in Phoenix and Omaha and soon will be available at a major retailer in Denver. The kits offer network message service in a box as an alternative to answering machines.

A new spin on the old note pinned to the collar, Parent/Teacher Exchange creates a two-way message system for educators and parents using Voice Messaging. Automated distribution lists allow teachers to send "notes" home in a timely, non-intrusive and private way. Parents also can call into "listen only" boxes, or leave private messages for teachers. A trial in Phoenix indicates the service is a huge hit.

Now telephone users don't have to debate whether to answer any incoming calls when they are on the line. Caller ID On Call Waiting displays the name and telephone number of the incoming caller on a special Caller ID unit.



Home Receptionist

Busy households and home office users will appreciate the Home Receptionist℠. Customers can manage calls and take advantage of several U S WEST network services: When the line is in use, incoming call numbers are displayed on the text display screen (with Caller ID) and can be answered, forwarded to a Voice Messaging mailbox or be given a "please hold" message — all with the touch of a button. A "Message Waiting" light provides a visual cue to check for messages.

November 3, 1994 - The Catholic Sun

New system links parents with schools

By Joy E. Triche
Catholic Sun Staff

New technology offered by the phone company could end the days of parents digging through backpacks for important notes from teachers and principals.

St. Thomas the Apostle school is one of three schools in the valley testing the "parent-teacher exchange program," a new school phone system from US West Communications.

When parents or students want general school information or information left by a specific teacher, they can call 808-8655, a new phone line. Likewise, if families need to leave a message for the school office, a teacher or a member of the staff they can do so with this new program.

ALSO, families who have US West voice messaging, can receive messages from teachers. Teachers can record a message anytime and send it to the home phones of all of the students in their class by dialing one set of numbers.

Frederic Stephen, principal at St. Thomas the Apostle said, "When you call into this designated line you get a menu that says 'dial one for calendar and announcements; dial two for cafeteria menu; dial three for athletic schedules; four for special activities.'

"They dial nine to report student absences, or what the caller can do is dial into any of the teachers' or staff members' mail boxes. You can either call in and see what message the teacher has left or leave a message for the teacher."

US WEST chose three schools locally to act as guinea pigs for the "parent-teacher exchange." St. Thomas was the only private school chosen.

Stephen said the program provides an opportunity to enhance communication between teachers and parents.

"WHAT WE hear most often is that parents did not know about assignments, and the student does not get the assignment done, and then there is a problem. This helps with some of that communication, and it helps to make teachers more accessible," Stephen said.

Some teachers agreed that the new system provides more opportunities to communicate with parents.

"I HAVE MY assignments on the message for the week," said Cissy Frakes, junior high teacher at St. Thomas. "It is keeping me very organized, and the students and the parents have the information available."

During the day she said she often gets too busy with students to return parents' calls, but the new system helps.

US West will continue to help St. Thomas, if the school can get families to support the program.

Stephen said if 50 percent of families decide to try voice messaging, US West will donate $1,800 to purchase fitness equipment for students.

"If parents get voice mail it will make it even easier to send everybody important information and reminders," said Susan Todd, a fifth-grade teacher. "It will cut down on a lot of the papers and flyers sent home and digging papers out of backpacks."

THE VOICE message service is $6.95 a month.

John Peketz, product manager of Voice Messenging Service at US West said in testing the product US West wanted to look at private schools as well as public school and a variety of economic and demographic factors.

ALTHOUGH he said it is too early to gauge how successful the program is, Peketz said he expects it to be a "win-win situation."

He said his company is currently working to bring the cost of the program down.

"We are trying to find out how inexpensively we can put this in schools, knowing most school budgets are tight."

ATTACHMENT 2

BENEFITS AND COSTS OF VERTICAL INTEGRATION OF BASIC AND ENHANCED TELECOMMUNICATIONS SERVICES

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April 6, 1995

BENEFITS AND COSTS OF VERTICAL INTEGRATION OF BASIC AND ENHANCED TELECOMMUNICATIONS SERVICES

I. Introduction

The FCC is in the process of reviewing its policies to determine the form in which the Bell Operating Companies (BOCs) may participate in the enhanced services market.[1] FCC regulation of enhanced services has previously addressed two potential problems, cross subsidization and access discrimination. The FCC has established two regulatory measures that significantly reduce the risk of cross subsidization. Price cap regulation, which breaks the link between direct costs and rate changes, does not allow the BOCs to raise prices above the rate caps approved by the FCC. The BOCs, therefore, do not have the incentive to set lower rates for regulated services used in the provision of enhanced services in the hope that they can increase prices for other regulated services. In addition, the FCC has implemented cost accounting rules, including detailed joint cost rules, cost allocation manuals, reporting requirements and accounting audits, that increase the ability to identify cross subsidization.

Access discrimination can arise when preferential network access is given to an BOC's affiliated enhanced services provider over a non-affiliated enhanced service provider. The FCC decided that network unbundling, in the form of discrete cost-based services and features, for services required to provide enhanced services would insure that BOCs could not discriminate against their competitors. The FCC's Open Network Architecture (ONA) framework and its unbundling policy were designed to accomplish network unbundling for features used by non-affiliated enhanced services providers to compete with the BOCs. In its recent remand decision, the Ninth Circuit required the FCC to explain and justify its decision to allow BOCs to offer all enhanced services on an integrated basis, given the current state of unbundling.[2] The FCC's investigation is, however, broader in scope than the minimum requirements set out by the Ninth

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[1] Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services, CC Docket No. 95-20, Notice of Proposed Rulemaking (released February 21, 1995).

[2] California v. FCC, 39 F.3d 919 (9th Cir. 1994) ("California III")

Circuit. An important factor in the FCC's reconsideration will be determining whether the economic benefits to be gained by permitting vertical integration of BOC basic and enhanced services exceed the possible costs imposed on consumers of not requiring structural separation.

This paper identifies and quantifies the potential benefits and costs of vertical integration of basic and enhanced telecommunications services. In particular, we find that joint production facilitates the offering of new products and services, which provide large benefits to consumers. Focusing on voice messaging -- to date the most prominent Regional Bell Operating Company enhanced service -- we calculate that the delay in making this service available has cost consumers well over $1 billion annually. The cost to consumers of delay has exceed well over $10 billion since 1981. In addition, the extra production costs that would be incurred by foregoing the economies of scope from joint production would amount to over $100 million annually. In contrast, (1) the enhanced service markets in which the BOCs operate are robustly competitive, (2) the existing Open Network Architecture rules followed by the BOCs are designed to offer nondiscriminatory access at prices that avoid cross-subsidies, and (3) all available evidence shows that these rules are working as intended and that the enhanced service market is thriving. It is clear that any benefits to competition that may arise from structural separation are far outweighed by the loss of benefits and extra costs we have identified which arise from structural separation.

The remainder of this paper has five sections. We first describe the economic principles that should guide telecommunications competition. In Section III, we examine the state of competition in information and enhanced services markets. Next, in Section IV, we measure the benefits from offering new telecommunications services. Section V quantifies the costs of structural separation. The final section summarizes our findings.

II. Economic Principles for Economically Efficient Competition

Telecommunications markets are generally very dynamic, compared to most other markets. Products are proliferating, new firms are joining the fray, and existing firms are adjusting through alliances, mergers, and the like. The market for enhanced telecommunications services is no exception. For voice messaging, which accounts for the bulk of the BOCs' enhanced service revenues, Frost & Sullivan estimated that 1993 revenues from voice messaging services were $1.4

billion and that the market is expected to grow at a rate of 12.7 percent annually through the year 2000.[3] In addition, revenues from competing voice messaging CPE are an equivalent amount and are growing at double digit rates.[4] In total, voice messaging revenues are approaching $3 billion annually. Further, there are literally thousands of firms providing voice messaging services, and the BOCs are far from enjoying a dominant position. For dynamic markets like these, it is especially important that firms be able to compete on their own merits, absent regulatory rules that help or hinder particular firms. In this section, we discuss the economic principles for efficient competition in dynamic markets.

A. Telecommunications competition (including enhanced services markets) is characterized by firms competing on the basis of unique scope economies

Telecommunications has always been characterized by economies of joint production, or scope economies. With the convergence of industries -- telephony, information, etc. -- the importance of scope economies is even greater. For example, AT&T has recently acquired McCaw, which provides cellular services, including voice messaging; Sprint has formed a venture with major cable television firms, and was the high bidder at the recently concluded broadband PCS spectrum auction. Clearly, although the BOCs have long possessed economies of scope, other competing firms have their own unique economies. To provide the greatest benefits to consumers, it is essential that all firms be able to employ these economies. The results of this type of competition are lower prices for consumers and greater availability of new services in a timely fashion. Measures that unduly restrict the employment of scope economies, such as onerous structural separation requirements, will reduce the benefits from competition and harm consumers.

Economists are close to unanimous in believing that, whenever feasible, effective competition produces results superior to those of comprehensive economic regulation. The potential benefits of introducing competition into regulated markets generally are of two major

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[3]Frost & Sullivan, U.S. Voice Messaging Service Markets, Report 5172-63 (Dec. 1994).

[4]NATA, 1993-94 Telecommunications Market Review and Forecast 171 (1994).

kinds: moving prices into closer correspondence with economic costs, and dynamic improvements in productive efficiency and in product or service offerings. Competition will concentrate on the services whose prices are held above marginal or incremental costs and tend to drive those prices down to the economically proper and efficient levels. Competition also tends -- unless it is distorted by regulation -- to improve the efficiency with which services are provided, by weeding high-cost firms out of the market and by exerting pressure on the survivors to improve the quality of their offerings and to be innovative in developing and offering new services and service combinations. Thus, telecommunications regulation should allow firms to employ their economies of scope so that services can be produced at minimum cost, and should allow these firms to be free to introduce innovative services which creates large gains in consumer welfare.

III. BOC Participation in the Enhanced Services Market Has Led to Lower Prices and Greater Output

BOC participation in the enhanced services market has been good for consumers. Consumer welfare increases when prices decrease. In the voice messaging services segment, which is the primary segment of current BOC participation, prices have decreased significantly since BOC entry. The range of the price decrease has been from about $30 per month in 1990 to $5-15 per month currently. An additional increase in consumer welfare arises when a new product is offered to a segment of consumers for the first time. BOC success in offering voice messaging to the "mass market" of residential and small business customers has been phenomenal. Over the past 5 years BOC subscriptions have increased from essentially zero to over 6 million subscriptions.[5] Growth for the rest of the decade is forecast at around 12 percent per year. No anticompetitive effect has occurred in voice messaging or other segments of the enhanced services market. Thus, BOC participation has been pro-competitive and has increased consumer welfare.[6]

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[5]"Voice Messaging," Telephony, Feb. 20, 1995, at 23.

[6]For BOC entry to have an anticompetitive effect, output would need to be lower than it would have been if the BOCs had been prohibited from participation. No party can seriously claim that output would have been higher without BOC participation. Effects on individual

The regulatory road for the BOCs to provide enhanced services has been long and tortuous. In 1981 AT&T applied to the FCC for permission to provide "Custom Calling II" services, which included voice messaging services, on an unseparated basis.[7] However, the FCC rejected AT&T's request. Subsequent to the FCC's negative decision, the Modification of Final Judgment (MFJ) went into effect. The BOCs were prohibited from providing "information services" (which had a very similar definition to the FCC "enhanced service" definition) under Section II.D.1 of the MFJ. The combined effect of the FCC decision and the MFJ caused voice messaging not to be offered to residential and small business customers by the BOCs.

The following events then transpired which permitted the BOCs to offer enhanced (information) services:

1985: The FCC begins Computer III proceedings with an emphasis on allowing BOCs to provide enhanced services subject to non-structural safeguards.

1988: (i) Judge Greene authorizes BOCs to provide "gateway" information services (which includes voice messaging under the MFJ).
(ii) BOCs file ONA plans designed to ensure competitors have Comparably Efficient Interconnection (CEI).
(iii) FCC begins approving CEI plans to allow BOCs to provide individual enhanced services on a structurally integrated basis.

1990: (i) Ninth Circuit remands Computer III to FCC.
(ii) FCC authorizes BOCs to continue to provide enhanced services on an interim basis according to CEI plans.

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competitors are subsumed into the overall measure of output when a consumer welfare calculation is done.

[7]AT&T had already designed and begun to install the services on an unseparated basis prior to the FCC's Computer II decision, which required structural separation.

1991: (i) Judge Greene removes information services restriction totally.
(ii) FCC issues remand order to allow structural integration of BOC enhanced services and approves final BOC ONA plans.

1992: BOCs begin offering integrated enhanced services under ONA plans.

1994: Ninth Circuit again remands Computer III to FCC.

1995: FCC authorizes BOCs to continue to provide enhanced services under the CEI plan regime.

From an economist's viewpoint, this regulatory imbroglio has created significant social costs. As we will discuss in the next section, consumer welfare would have been significantly higher if BOC voice messaging services had been offered sooner. Furthermore, government, management, and lawyers' time has been spent debating the issue of structural separation for nearly 20 years. A rational cost-benefit analysis demonstrates that the benefit to consumers of having BOC enhanced services available far exceeds any possible cost that hypothetically might arise. Indeed, we quantify these potential benefits and costs in the next sections of this paper.

As the above regulatory history demonstrates, the key dates were 1988 and 1991, when the MFJ restrictions were removed and the FCC decided to allow BOCs to offer enhanced services on a structurally integrated basis. Beginning in 1988, pending approval of final ONA plans, BOCs were permitted to offer specific enhanced services on a structurally integrated basis, subject to FCC approval of CEI plans for those services. The FCC ultimately approved blanket authorization for BOCs to offer enhanced services without a structural separation requirement in 1991. Thus, we consider data from 1988, 1991, and the most current data available to analyze the evolution of the enhanced services market.

Overall, information services are a large part of the U.S. economy, with estimated revenues of $135.9 billion. According to the Commerce Department, information services is

"among the fastest growing sectors of the economy."[8] Some of the largest and most sophisticated companies in the U.S. participate in this sector, including GE, AT&T, MCI, IBM, Sears, Microsoft, TCI, Time Warner, and American Airlines.

The individual segments of the information service industry, all of which use telephone lines as well as other distribution media in varying ways, are also thriving. Enhanced (information) services have grown 15 percent a year since 1991 to reach an estimated $15 billion in 1994. Some 65 percent of these services are delivered on-line, with the remainder delivered on CD-ROM or using wireless or other distribution technologies. Data processing and network services are another segment which has grown by over 14 percent a year since 1991 to over $50 billion by 1994. This segment includes services such as credit card authorizations, data entry, payroll processing, electronic mail, and electronic data interchange. Lastly, computer professional services have grown by about 9 percent a year to reach $65 billion in 1994. This segment includes systems integration and consulting services. Thus, no anticompetitive effect of BOC entry into information services has occurred. Overall, the market continues to be very competitive.

The market segment for enhanced (information) services is particularly relevant here since this segment includes many of the business which the BOCs have entered. This segment, including on-line databases, value added network services, voice messaging, and electronic mail, grew from $7.5 billion in 1988 to $10.2 billion in 1991 and to $13.6 billion in 1993, which is the last available data.[9] Market growth in 1993 was 16 percent, which was higher than the year before. The market is expected to maintain that rate of growth for the next few years.[10]

Value added network (VAN) services have grown from $0.5 billion in 1989 to $3.4 billion in 1993. Subscribership to all videotex gateways increased from 715,000 in 1988 to 6.3 million

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[8]U.S. Dep't. of Commerce, 1994 U.S. Industrial Outlook 25-21 (1994).

[9]U.S. Industrial Outlook: 1990 at 29-2, 1992 at 26-1, 1994 at 25-2. The Commerce Department discontinued this publication in 1995.

[10]1994 U.S. Industrial Outlook 25-2 and 29-7.

in 1994.[11] Electronic mail has become widely available since 1988. E-mail subscribership has grown from 6 million in 1989 to over 13 million in 1993.[12] E-mail revenues increased from $574 million in 1989 to $740 million in 1991 and an estimated $1.2 billion in 1994. BOCs have not attained anything remotely close to a dominant position in any of these enhanced market segments.

Similarly, BOC entry into the voice messaging market segment has led to lower prices and higher demand. Between 1989 and 1991, users of voice messaging CPE more than doubled, from 5.3 million to 11.6 million, and now accounts for $1.3 billion annually.[13] The overall voice messaging market segment grew from $665 million in 1989 to $1.1 billion in 1991 and $1.54 billion 1994. Forecasts of future growth have the market doubling to over $3 billion by 2000.[14] Forecasted annual growth over this period is 12 percent. Thus, output has expanded rapidly in the voice messaging market segment which demonstrates the pro-competitive effects of changes in FCC and MFJ regulation.

Since 1991, prices have decreased by 50 percent for most voice messaging equipment. Equipment improvements such as voice messaging boards for PCs have become widely available at relatively low cost. Thus, voice messaging equipment continues to place a significant price constraint on network-based voice messaging services.

Prices for voice messaging services have decreased greatly since BOC entry into the market segment. Frost and Sullivan states that in 1990 the average monthly fee for voice messaging was just under $30. By 1993 the average monthly fee decreased by about 50%, or a decrease in price of over 20 percent per year. Frost and Sullivan attributes this "dramatic drop" in prices to the growth of a more competitive market, driven by the lower-priced voice messaging offered by the BOCs and the independent LECs. By 2000, Frost and Sullivan predicts a further

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[11] Boston Globe, Jan. 14, 1995, at 61.

[12] 1990 U.S. Industrial Outlook 31-4; 1994 U.S. Industrial Outlook 29-7.

[13] NATA, 1991 Telecommunications Market Review and Forecast 135 (1991); NATA, 1993-94 Telecommunications Market Review and Forecast 171.

[14] NATA, 1993-94 Telecommunications Market Review and Forecast 171; Frost & Sullivan, U.S. Voice Messaging Services Markets, Report 5172-63 (Dec. 1994).

decrease in the average fee for voice messaging by about another 50 percent (pp. 3-10 to 3-11). Regarding current market conditions, Frost and Sullivan reports that:

> "Today, there are numerous providers of voice messaging services in a highly competitive market. The entrance of the BOCs and independent LECs in the late 1980s create fierce competition for the local/regional service bureaus....The RHCs and independent LECs have developed the residential end-user market, which previously had little interest in or knowledge of voice messaging." (p. 1-4)

Lower prices, increased competition, and development of a new market segment have been the result of BOC entry into the voice messaging segment of the enhanced services market. All of these outcomes lead to increased consumer welfare. This pro-competitive outcome stands in stark contrast to FCC and MFJ regulatory policy in the early and mid-1980s which led to an absence of BOC participation in enhanced service markets. Consumer welfare was lower and the economic efficiency of the U.S. economy was lowered by these misguided regulatory policies. Thus, as we discuss below, the FCC policy of structural integration and removal of the MFJ restrictions on information services provision by BOCs has led to a significant increase in consumer welfare which easily exceeds over $1 billion per year.

We finally observe that the voice messaging market is very unconcentrated. The BOCs and GTE combined account for about one-sixth of voice messaging revenues combined. However, individual LEC market shares are much lower. BOC market shares for voice messaging services range from around 6 percent for Bell Atlantic, BellSouth, and Pacific Telesis, to about 1 percent for NYNEX. Competition continues to be very strong for voice messaging customers, with both service prices and equipment prices decreasing at a rapid rate.

IV. Consumer Welfare from New Telecommunications Services

A. The Economic Importance of New Telecommunications Services

Regulatory restrictions which are designed to facilitate competition may often have a potentially much larger negative effect on consumer welfare which cannot be ignored: restrictions

on the introduction of new goods and services.[15] Consider the introduction of a new telecommunications service which is not presently available -- call it home distance learning over personal computers. The demand for such a service will exist, as will a demand curve, which is a schedule of quantities which would be bought at each monthly service price. See Figure 1. At lower prices more service is demanded, but even at quite high prices some demand remains from people who value the service quite highly. If the service were offered at price p_1 in Figure 1, all those individuals who would have paid more than p_1 receive the difference between what they would have paid and what they actually pay in increased consumer welfare. This added value is called the consumer's surplus and is the area labelled A in Figure 1. Consumer's surplus is a dollar measure of increased consumer welfare, and is almost universally accepted by economists and policy makers in valuing the effects of economic policy.

Now suppose because of regulation that home distance learning is not offered. For instance, if structural separation is required, the cost of the BOCs providing home distance learning might well be sufficiently high that, at prices which would be charged, insufficient consumer demand would exist to make the economic return on the investment high enough to justify the investment.[16] The home distance learning application would then not be offered. No matter how much an individual is willing to pay, he cannot buy the home distance learning service. Indeed, the price might as well be infinity because no one can buy the service. If regulation is changed and the service is introduced, the price decreases from infinity to p_1. To measure the gain in economic welfare, we use the change in price from the "virtual or reservation price" which causes zero demand, price p_2 in Figure 1, to the price that will be charged, which

[15]The welfare effect of delayed introduction of new goods or services has not been considered in most analyses of the economic effects of regulation. See, e.g., P. Joskow and N. Rose, "The Effects of Economic Regulation," in R. Schmalensee and R. Willig, Handbook of Industrial Organization, vol. II (1989) for a review of the effects of regulation.

[16]While the demand curve in Figure 1 demonstrates that some consumer demand would exist unless prices became quite high, at high prices caused by high costs demand may not be enough to cover the fixed costs of providing the service. Fixed costs of providing enhanced services are almost always a large component of the overall costs of providing the service.

is p_1 in Figure 1.[17] The large change in price will lead to a large increase in economic welfare so long as significant demand exists for the new product or service.

The economic theory of the valuation of new goods was developed by the Nobel Prize winning British economist Sir John Hicks in 1940. In recent papers, Hausman further developed the theory and has applied it to measuring the consumer welfare cost of the delay in the introduction of cellular telephone.[18] We will first apply the theory to the case of voice messaging, which had a delayed introduction of approximately 5-7 years, to demonstrate the large potential losses in consumer welfare from regulatory-caused delays or even permanent postponement in the introduction of new telecommunications services.

B. Consumer Welfare Losses from the Delay in Voice Messaging

Voice messaging using central office-based telephone technology was sufficiently developed to begin operation in the early 1980's in the U.S.[19] As noted, AT&T applied for permission with the FCC in 1981 to provide "Custom Calling II" services, which included voice messaging services, on an unseparated basis. However, the FCC rejected AT&T's request, mainly because of fears of cross subsidy.[20] AT&T had claimed that it would need to redesign its network equipment to provide messaging on a structurally separated basis, but the FCC rejected the claim. AT&T stated that a redesigned system for structural separation would take three years to introduce, and the additional cost would be substantial. The FCC decided that, since it was "technically possible" to provide structurally separated voice messaging, AT&T would not be

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[17]For an application of the theory of the valuation of new goods and extension of the theory in a non-regulated context, see J. Hausman, "Valuation of New Goods Under Perfect and Imperfect Competition," MIT Working Paper (June 1994a).

[18]The papers are J.R. Hicks, "The Valuation of the Social Income," Economic Journal (1940); Hausman, 1994a, op. cit.

[19]See R.F. Rey, ed., Engineering and Operations in the Bell System (1983) for an early description of the development of AT&T's custom calling services.

[20]AT&T Petition for Waiver of Section 64.702 of the Commission's Rules and Regulations ¶18, 88 F.C.C. 2d 1 (1981). The FCC recognized the presence of economies of scope in voice messaging (¶17) but feared a "slippery slope" that would create regulatory uncertainty.