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{1}Let me say it's a pleasure to be here. It's both a privilege and a pleasure to have the opportunity to speak with you on topics certainly near and dear to my heart having to do with technology. It is a pleasure for me to welcome you to the 9th Annual Austin Owen Lecture, and to welcome you to my alma mater. It's a pleasure for me to be back here on this campus almost weekly, participating in a variety of different activities.

{2}The topics I think are particularly pertinent to all of us, because technology surrounds us. I'd be willing to bet that at least one time during the day today, we will hear one of these things [holds up a cellular phone] go off. At this time, if you will join me in switching these to "vibrate" so they won't chirp in the middle of things.

{3}There was a time when I would have considered that bumper sticker that said "Hang up and drive" funny, but I am now looking for one for my car. It's gotten to that point. It's a pleasure for me to participate in this session. I've earned my living in the world of technology for more years than I am going to own up to in public. I had the luxury of growing up in a technology company. I have lived in this stuff. It's opened up a tremendous number of opportunities for me, and has proved to be continually fascinating. One of the things that fascinated me early on is that I can actually make a machine do what I want it to do. To be more truthful, I can most of the time get it to do close to what I want it to do. But this has been a great career opportunity and a great career field for me as a technologist.

{4}Technology can do some things better than we can do as people. There are some things it does less well. Technology is not a universal solution. It brings along its own set of problems. In the technology business we have a statement that we make frequently, which is that "today's solution is tomorrow's problem. "

{5}Let me give you a little high level overview of what I will be covering this morning. Some opening

remarks, well, I will now just wind those up. I'll give you the nickel tour of Capital One and Capital One's technology. I do not have credit card applications outside, they are not in your packet. I am not here soliciting business and I'm not here trying to sell you anything. But in particular I want to tell you about our initiatives as they exist in cyberspace and the electronic world.

{6}I want to look ahead and share with you a technology scenario that while it's not really possible today, all of the technologies I will talk about are being worked on, and in pieces they are out there, but no one has yet pulled them together into a single offering. So people already have patent applications on this, for those of you that might take notes and scurry back and start that process going. Out of that scenario, that scenario will set a context for us, then I will talk about technology issues, human issues, business issues, then we'll have kind of a conclusion and wrap up.

{7}Our initiatives, Capital One's initiatives in cyberspace, have been pretty well documented lately in the Times-Dispatch if you saw the Metro Business a couple of weeks ago, and recently in Business Week, where we were selected as one of *the* fifty companies that get the web - kind of surprising for those of us that are off doing the work, but we were glad to see that.

{8}Let me talk about the things that we have underway and talk a little about the Capital One environment. Like most businesses, we believe that we have to have a presence in cyberspace, even if it's just a place holder. But we've been taking off and have worked steadily towards doing this. We've worked diligently to avoid this rapid rush that many other companies rushed into. Many of these early efforts were ill conceived, ill planned, and poorly executed. Companies went through millions and millions of dollars and really returned virtually nothing for it. There are lots of well known instances of this in the trade press. If you have one you want to look into, I suggest you research Wingspan Bank, one of our competitors. An awful lot of money rolled through the Wingspan initiative. Very slick website, tremendous amount of marketing, tremendous television and media campaign that resulted in virtually no business to speak of, so we've really worked diligently to avoid that from happening.

{9}At Capital One we view ourselves as having an information business that just happens to issue credit cards and that's how we gather a lot of the information. We do have lofty goals and aspirations that come directly from Rich Fairbanks and Nigel Morris, our two top managers. We aspire to be one of the world's greatest companies, and we aspire to be the dominant credit card company on the Internet. If you've been out on the Internet lately, places like Yahoo, you will find it hard to dodge a Capital One banner ad. We are the largest advertiser in that space today. We are a global business today, we are growing rapidly, and we follow a "test for success" business methodology. On the left side we have what we consider to be our commitments and our goals and on the right side we have the things we do to try to get there. We today service 27 million accounts and those numbers are growing steadily. We have over 16,000 employees globally and over 8,000 in the Richmond market. We are now the largest employer in the Richmond market. We are recognized regularly in the trade press and other journals as one of the best places to work on the planet.

{10}At our online servicing, our move into the Internet, we have over a million accounts that are registered to be serviced online. That essentially means that someone has come, registered their account, got a user name and password, and now have Internet based access to their account. While that number itself is not so phenomenal, you have to remember that a year ago, that number was probably zero. So it's grown very dramatically, very quickly. We have business entities in the United States, United Kingdom, and France. We also have a business presence in China and India, so we are moving aggressively. In terms of our test for success approach, last year we did 36,000 product tests. That number always flabbergasts me. Do the math and figure out how many that is a day. That's pretty incredible. We have a lot of business analysts whose job it is to roll together product tests, and we float these tests out. These typically are product tests that are supported by some sort of direct marketing initiative. These aren't just computer simulations. And out of the ones that fare well and resonate in the consumer population, we'll pursue those and take them forward. That is

part of what we attribute to our phenomenal growth. We also attribute to that the lowest charge off rate in the industry. We've been pretty successful with those sorts of things.

{11}So much for Capital One. It's a good place to be. I've enjoyed being there. Let's take a look ahead. Let's take a look at a scenario out here in the future. And this is a scenario that is set in what I call the perpetual motion machine, where we have the always connected consumer. And we are very close to having the always connected consumer today, with these [holds up Palm Pilot]. With Palm VII's that have wireless connectivity, things like the Palm V for which you can get an add on clip-on wireless modem. We are really very close to the always connected consumer. We're also headed into an area of what we call extended "coopetition," which is a combination of cooperation and competition. There was once a time when business would compete heavily and intensely and strive for customer ownership. What you're finding today is that businesses that compete with one another are at times willing to cooperate if there are points of leverage, and the term that describes that is coopetition. Then we'll talk a little bit about playing catch up - ethics and laws of the brave new world. Technology moves very quickly, and our ethical support systems and our legal support systems move a little slower and routinely outpaces these and creates real challenges for folks who are running businesses and folks who are living their day to day lives. As a footnote to all of this, if you leave these sessions today and you have more questions when you leave than when you came in, I feel we will have been successful.

{12}So here's the technology scenario: a shopper, I'll use myself . . . I decide I need a new shirt, so I'm gonna go buy one. I'm gonna go shop for one. My wife will tell you that I do not shop, I go buy. I feel no obligation to go to every store in the city to find the shirt. So, the first thing I've done is I've gone on my PC and I've gone to the Regency Mall website and I look for shirts and I find that there are a couple of places that have the shirt. So I drive there. I get to Regency and I drive through the gate and find that they have an arch type thing that I drive through, and as I drive through there, my cell phone, which is equipped with a BlueTooth device, is queried by an antenna in this arch that says "Plunkett's here," pulls off the cell phone my cell phone number, an electronic serial number, TSN, and it says "Plunkett's here," the phone chirps and what has been downloaded to my phone is a set of electronic coupons. These coupons are based on shopping activities that I have done at this mall in the past.

{13}They know that I like Britches, they know that I like Banana Republic, and whatever else is out there. So I've got a set of coupons that are downloaded into here. This personalization service is run for the merchants by the mall owners. It's part of their rent and they can either opt in or opt out. If they opt in they have to agree to share purchasing data. They share that purchasing data complete with whatever identification information that may be associated with the transaction. If you've been to a retail outlet recently and they've asked you for your phone number, that is a pretty unique identifier that tells them who you are and where you are. So the merchants have agreed to a little bit of coopetition. It's provided as part of the rental fee. I like the service myself, and I am willing to subscribe to it as well, because it saves me money. So, as I go into the mall, I find the shirt that I want. I look at it, but I think it seems to be a little pricey to me. So I take my mobile device, it has an infrared reader, and I read the UPC code off this shirt, and I tell the phone to find it. This kicks off a background process and goes and shops for me and we call these things a "shopbot," and it comes back and says that's at the end of the mall and it's $10 less. Do I now go to the other store? No, I go to the Britches manager and I say this is the shirt I want and I tell him that it's in the mall 150 feet away for ten bucks less, and I say to him, "can you name that ticket?" I am now an empowered consumer, I have information and I have not had to go walk through every store in the mall or every mall in town to get it. Turns out that the Britches guy says he doesn't have that kind of flexibility, and he doesn't know how they can sell the shirt that cheap. So, I tell my digital device, "buy that one for me. " The phone kicks off that transaction, transmits it to the store, and in about 15 minutes I go down there, show them my claim number on my phone and they say "Mr. Plunkett, here's your package, we hope you enjoy it. " When I kicked off the purchase transaction, I also authorized payment. So it's all paid for, all ready to be picked up. That charge will show up on your [credit card bill].

{14}As I am leaving, my phone beeps again and it's my son calling from Virginia Tech. He's in the bookstore and he has a Visa bucks card. Visa bucks card is a new charge instructing that is a stored value card that parents can acquire for children and then store value in it, then children can use it like a Visa card. Visa spins this as a way to teach your children about money early on. My son is in a Virginia Tech bookstore, he's trying to buy his books and he's $50 over the single transaction limit I set for his card and the thing says to me "do you want to authorize?" I look at it and it says "Virginia Tech Bookstore" and I say "authorize. " That transaction is authorized, it clears its way through the merchant and my son goes on his way. The system comes back to me and says, "do you want to make this a rule?" meaning that anytime there is a transaction, by the son, in the Virginia Tech Bookstore, that exceeds his cap by $50 I can say "yes" and it won't bother me again. So I can begin to build a rule base that controls this type of interaction.

{15}The phone beeps again, and this time it's an e-mail from my other son's high school, telling me that there is an interim report available for him at this secure URL. Do I want to read this on my cell phone right now, because there is a wireless access protocol gateway that will translate that to my phone right now. I'm not that interested in knowing how he is doing that badly to interrupt my Saturday with it. I figure I'll wait till I get home and fire up my PC and read it off my regular browser because it's a whole lot easier to read. So I close that down, off I go and I head on home.

{16}OK, Out there, 2001, Star Wars type of future scenario. However, all of these technologies that I touched on are being worked on today. If you're an Amazon user you've gotten electronic coupons, they just come to you on e-mail. If you've used MySimon, you've done Shopbotting types of things. If you've got a Next card, you've been able to go to you're my next card profile tell next card that any time my account gets withing $X of a certain limit, send me an e-mail. Anytime my payment is within 3 days of being due and I haven't paid, send me an e-mail. So a lot of these technologies are available today from traditional Internet type connections. They just aren't available to us through wireless devices, yet. Harris Bank in Chicago, however, has the bulk of these services running on wireless devices today on a protocol. They have a 125 pilot customers . . . they are using one of the Sprint digital pones that has a 6 line screen. So, this stuff is now out in pilot, so while it sounds far out, it probably isn't that far off.

{17}So much for that. That's our context. Let's look at some of the technology issues that have to be confronted to make this happen. Firstly e-business has to deal with what I call the need for speed - bandwidth, network capacity. There was a time when we could run an awful lot of business on very small amounts of network. I worked at Trigon here, and was responsible for their data services for their Roanoke business group. I ran the entire business, with probably 1,500 employees, on 3 megabits of bandwidth. I had two T1s that serviced all of our data and voice requirements. You'll never get away with that today. Bandwidth requirements, network requirements continue to increase steadily. This means our costs are there. Industry folks have said "not to worry," bandwidth is going to be so cheap, with all the fiber being laid down that it will be virtually free. Well, that hasn't happened. What has happened, you can buy much more network capacity for a given amount of money than you could before, but you now need so much more. And we are seeing a steady state in terms of your costs. Too much of a good thing. Content. There are millions and millions of websites available to any network attached device. There are many millions of words and images and there are more being added every day. Tens of thousands of new websites get tagged on here everyday. If I am a merchant, and I want to transact business this way, how am I going to be sure that my content can be found, in the first place. If I am a consumer how am I going to find the content that I want. If any of you have done a search on Yahoo, AltaVista, the search engines and got back 357,000 citations that meet your selection criteria. You could take the next 6 months wading through the material to find two that you need. So it's equally a problem for consumers, it's equally a problem for us on the business side. And, once you get your content, that content has to be compelling. The content must be something that will engage me as a consumer, will have that marketing spin, the USP (unique selling proposition), something that will motivate me to actually click on it. If it doesn't have that it's a waste of time.

{18}Emerging standards. We're talking about technology standards. All of us technology people agree that standards are good that we should have them. They're like toothbrushes, everyone should use them, but I don't want to use yours and you don't want to use mine. So this is a real challenge for business. How do you pick the real standard. We're talking about investments of tens of millions of dollars in some cases. You want to be sure that you pick something that is going to be a standard product, that's going to have legs that is going to be able to stand up for the long term. You don't want to invest in the next technological betamax. Betamax, for those of you that will remember, was a technically superior video format that lost out to VHS. It's still used today by some industrial applications, but you won't buy a consumer one. You don't want to make a 10 million dollar Betamax investment if you are trying to run a business. And there is no easy answer here. Market forces are what's going to cause it to win out.

{19}Paying the tolls. Funding the infrastructure. When you decide you want to build it, it's time to pony up your capital bucks. There's capital bucks and there's expense bucks. These things can be expensive. Ten million dollars is not a bad figure if you want to build an ebay or an Amazon type of environment. If you want to maintain it, you will have to add some zeros to there. Once you have it, you have to keep it current, which is funding the infrastructure again. Once you've got it built, you have to pay for network support, hardware support, software support, and you've got to pay for those perpetual upgrades as the standards change. So its an ongoing expenditure that you have and you have to be able to allow for it. And there's the wolves at the door, the security side. When you hook your business up to the Internet, you allow the world, everyone that's online, somewhere in the neighborhood of 200 million people to see all the way to your back wall. They have a window into your online systems. This means that you have to protect yourself from the three 15-year-olds with two PCs in a closet and a modem who thought it would be really fun to hijack your e-commerce website and make it dedicated to Metallica, or whoever the hot new group is. You have to protect yourself from that. If you are doing e-commerce and you have credit card information on there, you must protect that. That's a valuable commodity. All you have to do is look at the situation they had with CD Universe where they had roughly a quarter of a million transaction records stolen, along with credit card information and all of the address verification service 2 data that is usually used to validate that transaction. Somebody scarfs your credit card information, you are in big, big trouble. You have to protect yourself from denial of service, you have to protect yourself from hackers, you have to protect yourself from criminal activities and you have to be sure to do some things to ensure consumer confidence. This gets in to seeing to the back wall.

{20}The Disney company, recognized as one of the best companies in the world, they fired up an e-commerce site. My wife wanted to buy a Disney product as a birthday present for one of our kids. She calls the catalog, the catalog is out of stock. OK. So we go look on the web. The web, the e-commerce site says they have the watch. So now, who do you believe? We put in a credit card, we put in shipping information, we pay the extra to have Fed Ex delivery to us overnight. Life's good, we figure, piece of cake. The watch will arrive in two days. Well, four days later we get an e-mail, "we don't have the watch. " Now, the put a web window up, they allow me to see clear to their back wall. But obviously they have two separate inventory systems and they don't keep them synchronized. I know we're dealing with Disney, electronically and on the phone, I'll still go to the store because we have grandchildren and they are into that sort of thing. But they have lost a lot of credibility for me. And I'm not too different from the average consumer. So we have to make sure that those types of things are addressed. And there are technical issues there. With regard to security, there are also legal issues and liability issues with regard to protecting credit information.

{21}Human issues, we have to face. Alright, we decide we are going to do this. Where are we going to get the people to do this? This is the talent hunt. Where are we going to get the architects and builders? Where are we going to get systems engineers? Where are going to get programmers, system admin folks? Where are we going to get the legal folks, to help us be sure our terms and conditions are properly structured to protect us. Finding these people is difficult. It's an ongoing process. Particularly today, when technology folks are so much in demand. Capital One we work for [sentence lost due to technical problem].

{22}Human issues, the digital divide. The haves and the have nots. With technology penetrating further and further into daily life, how do we figure out a way that some folks are not left behind.

{23}Privacy, who are you really? In the technical scenario I presented, there are many issues where I consciously gave up my privacy. The mall now knows I have arrived, the stores now know my phone is in the area because they sent me coupons. How many of you commute in from Chesterfield county? Do you have Smart Tag? So you don't mind that the government knows where your car was at the time? You have given up a small bit of privacy with that smart tag. They know now that your car went through there. Now how do we protect privacy on the Internet? If we go to interact with e commerce systems, we have to give privacy up. Typically our method of payment today is a credit card and that's an identifier. You have to give up your name, you have to give up your address, and if we're buying something, I'm happy to do that. I don't have a problem with it, I'm comfortable with it because I know I made the decision, I know what information I have given up. But what if you look at other people that may also compromise your privacy that perhaps you don't think of. Like United Parcel Service. United Parcel Service has a package ship database that is 74 terabytes in size. We at Capital One think we have large databases, and that's more than twice what we have. 74 terabytes of data. They know where you are shopping, because they deliver it to you. The UPS man shows up at your door and he has in his hand a nifty point of sale terminal. And when you sign for this, that could certainly be a token that releases your payment. What will our friends at UPS do with that information? I don't know, but we know that information can certainly be exploited for a variety of commercial reasons and they definitely have a lot of it. I do know that the UPS information systems organization consists of 4,000 people today. And I do know that they have an annual budget of $1 billion. We look at them as a credit card business because they have also fired up an e-commerce division and UPS is issuing a MasterCard. This is what I call non-traditional competitors. It is now a business to business credit instrument and is only used with one particular e-commerce site. But that could spread out and go. So there are all kinds of issues to be resolved here and it's not clear where the legal guidelines are for this.

{24}Leveraging for education. This is similar to the digital divide. How do we use technology effectively in the instructive process? It was very interesting for me to hear the opening comments about how T. C. Williams became the first really technologically leveraged law school and I think that's really great. The question I would have to faculty here is that how do you use that in your class? Or is it really just a matter of students taking their notes on their computers? And if they're in class, can they type e-mail to one another and does that open issues with regard to cheating? And if they are not doing that, are they sending messages through their palm pilots through the infrared link? The real challenge is how do we actually use this? How do we train and retain the e-teachers who have got to be able to do this? It's difficult to make the transition from the traditional instructional environment into an electronic environment. In my estimation in the world of education, you can never go back to anything. The world changes, life changes, technology changes, you can never go back. There are basic core skills that you can structure differently, but you can never go back. It is not fair to our students, it is not fair to our young people to prepare them for the world of work as we have it today.

{25}Keeping pace. Perpetual learning. Jobs come and go, they evolve and they change. It just requires that people be in the mode of perpetual learning. How do we support this need effectively, and do it in a way that takes into account the differences that learners have? Not everyone learns the same. Some people learn by doing, others learn by seeing. Each learning modality is valid and we must be able to accommodate each one in business and in life.

{26}Business issues. We have all these great things, how are we going to apply them in the world of business issues? The business environment has been changed forever by emerging technologies and by online access. Online access continues to increase, global opportunity and threats appear on the planning horizon. With globalization, now things are moving into world electronics, you can now find yourself challenged by a competitor who was on the other side of the country or on the other side of the planet. This is easier to do in

some industries and others. For example, in retail it would be very difficult for you go buy something from an online store in Bangkok. You could do that but then you'd have to deal with the shipping and customs and all kinds of other things. But there are many things you could acquire online if you're buying from a site. If you're buying services or contract programming, or consulting, any of these things that are not tangible, they can be acquired anywhere they exist on the planet. When businesses go to make these decisions between bricks or clicks - the traditional businesses called brick and mortar, then you have the hybrid type called clicks and mortar. From all we can see that really is the most effective type that exists today. The reason for that is consumer behavior. But how does it make these kinds decisions? How does the business make the decision that it's going to be in cyberspace? What level of investment does it need to be in cyberspace? How does it make the decision? Is this really necessary? Sometimes that's the question that doesn't get asked.

{27}Business method patents are a big deal for us in business. How can an entrepreneurial business protect itself from predatory patent practices? Or is there such a thing? There's a very good article a couple months ago in the MIT Technology Review, where the author really takes to task the US PTO. It's a balanced article but he really takes them to task and asks, is it right to patent something just because it's being done with software on the Internet even though it's well known in the art? One of the analogies he makes is that rather than the development of a new toaster they are patenting the process of toasting bread. That is a little bit of a stretch. At Capital One we are very concerned about this. We do have a business method patents committee I sit on that as the technology representative. But this is a big deal especially for smaller businesses.

[The remainder of this speech was lost due to technical difficulties]

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[*] John M. Plunkett is currently the IT Manager leading the Capital One e-Commerce New Product Development team. Prior to joining Capital One in 1999, John was Vice President, Operations and Engineering, and CIO for Kesmai Corporation, a News Corporation Internet company based in Charlottesville, VA. Kesmai is the industry leader in the development, publishing, and distribution of online games. Prior to coming to Kesmai, John held middle and senior technology management positions in Fortune 50 companies and academia. In these positions, he worked with business leadership teams to create leading edge technology environments to advance business initiatives. His contributions in academia have been recognized with the conferring of the Distinguished Faculty and Distinguished Alumnus Awards by the University of Richmond. A graduate of the University of Richmond's School of Continuing Studies, John holds undergraduate and graduate degrees in British and American literature, information systems, and holds a doctorate in information systems.
