IEEE COMPUTER SOCIETY
History Committee

2007 Interview of Bob Stewart
By Steve Diamond

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2007 Interview of Bob Stewart

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MR. STEVE DIAMOND: Hello, this is Steve Diamond. I'm talking with Dr. Robert Stewart on behest of the IEEE Computer Society History Committee. It's October 25th, 2007, and the History Committee has asked us to talk about the early days of the IEEE Computer Society Standards Program.

Dr. Stewart, Bob, is one of the pioneers of standards within the IEEE Computer Society, and we're going to be discussing those early days for the purposes of creating a historical record. Bob, welcome, thank you for participating, and I appreciate your joining us to help preserve the history of standards in the IEEE. Let me begin with a general question, and that is, how did you first become involved with the IEEE Computer Society standards activity?

MR. BOB STEWART: Well it really started somewhat earlier. I went routinely to a local club here in Silicon Valley, which was held up at Stanford called the Homebrew Computer Club, and many of us at that time had started putting together kits to build personal computers. The one I had was MITS Altair, which was a very popular kit for $399, if I recall. And there were all kind of problems because the boards that fit into the bus on the Altair were never consistent from one manufacturer to another.

So one evening at the Homebrew Club, I raised my hand and asked a question, asking if there'd be anyone willing to participate in trying to develop an IEEE standard for the S-100 bus, and it was funny because everyone immediately broke out laughing. The assembly of about 250 people just burst out laughing. They thought trying to standardize that bus would be an act of futility.

But afterward, several people came up and did talk to me, including Dr. David Gustavson, who at that time was at SLAC, and from that really was the impetus that led me together with Wayne Fisher who worked with me at Kaiser Electronics at that time, to try and form what became known as the Microprocessor Standards Committee, which functioned under the aegis of the Computer Society Standards Committee, which at that time was headed by Professor Tse-Yun Feng. He at

that time was a professor at Wayne State University in Detroit. So that was really the very beginning.

I think it took place like in the summer or fall of 1966, the initial setup efforts, and it built up. There were other people at the Homebrew Club who participated, and some of the -- there was particularly a young chap named Tom Pittman who joined in the effort and was instrumental in a number of the software-related activities of the committee.

MR. DIAMOND: And Dr. Feng went on in the Computer Society as well, did he not?

MR. STEWART: Yes, he, a few years later, became the Society president. I think that was in 1978 or '79.

MR. DIAMOND: So what became of S-100? Of course, the Homebrew Computer Club is very famous as the group that catalyzed, in many ways, the development of the personal computer into PCs as we know them. What happened to S-100 after you had the initial announcement of your interest in creating that?

MR. STEWART: We did obtain a PAR from the IEEE Standards Board, and it was given the bus number, or the PAR number 696, and eventually became IEEE 696. That standard really was developed as a 16-bit extension of the original MITS bus. The original bus was built around the functionality of the Intel 8080 chip, and by the time the standards effort was underway, the 8086 chip had come out. So the effort was made immediately to extend the bus to a 16-bit bus, and that did happen. And for probably a period of a couple years, it was a significant bus from the industrial point of view, but then it got really quickly passed over as the processors moved up to 20 bits and later on to 32 bits architectures, which rendered the 696 bus old fashioned at that moment.

MR. DIAMOND: How did the IEEE standards operation react to the creation of MSC and 696 bus? That was really the beginning.

MR. STEWART: Yes, I found them always very helpful, very knowledgeable about standards processes, and they gave us a lot of good advice and helped in some of the early secretarial work in getting the standards put in the correct format. I forget the name of the staff director. Maybe it'll come to me, but he was very helpful, and the staff engineer also was very helpful.

MR. DIAMOND: Was that a predecessor of Andy Salem?

MR. STEWART: Yes, I don't believe I ever knew Andy Salem.

MR. DIAMOND: Were there companies implementing the S-100 bus in the days before that standard was approved or after the 16-bit extensions were approved?

MR. STEWART: Well a number of the places were aware of the progress on that bus. An initial draft was published in *Computer* Magazine. I think that was probably about 1979 or 1980. The editor-in-chief of *Computer* at that time worked at TI in Dallas, and she was very interested in microprocessors, and she was very helpful in obtaining access to the journals for our draft standards.

MR. DIAMOND: How interested was Intel in the S-100-based standard?

MR. STEWART: Well they had their own product line, and they instead asked us to sponsor a working group to develop another bus for their application. I believe it was 796, and the 796 working group, I believe developed what was known as the Intel multi-bus.

MR. DIAMOND: Right.

MR. STEWART: Which was used in their hardware, and that was successful, and Intel supported it.

MR. DIAMOND: Of the standards that the MSC did, a number of them have been hugely impactful in the computer industry. What would you say are the most important standards that you worked on in the early days? And when did they begin?

MR. STEWART: Well we really started a number of different types of standards -- one assembly language standard, the floating point arithmetic standard, an object code standard. Some of those really never went anywhere. Intel, for instance, was unwilling to alter their assembly language instruction to match the mnemonics that the MSC committee came up with, so eventually nothing came of it.

That has me appalled here in the year 2007. A college teacher teaching a course in assembly language encoding can't even write the instruction, move A comma B, on the board with any certainty that it means a specific thing. You don't know whether you're moving the contents of A to register B or vice versa. And that's an example, I think, of the lack of standards in certain areas where we were not successful in

having any meaningful result. Of all the standards I think the MSC worked on, the 754 floating point arithmetic, in my opinion, is far and away the most important one.

MR. DIAMOND: When did that floating point standard begin?

MR. STEWART: That started in the summer of 1977 with Dick Delp as the working group chair. Later, Dave Stevenson became working group chair. The first meetings took place, I believe, in the summer and the early fall of ’77. Intel participated almost immediately after they found the committee was started. The committee started because Dick Delp knew of this chip that was coming out of a San Jose company. I’m not sure I can remember the name of it. If it was not AMD, it was something like American Microcircuits or something like that, and it was a preliminary form of floating point processor, which Intel intended to really improve upon.

And John Palmer, who came from Intel, started telling us of his version of a floating point standard. In the course of the discussions, he mentioned that a Professor Kahan of UC Berkeley had participated and helped him in certain phases of the device, but it was clear that it was not going to be the committee standard. It was going to be John Palmer’s Intel standard, and he had a paper he was going to present at a conference describing it as such.

Well anyway, it also turned out that John liked to play handball on the evening of the committee meetings, and he would stay about a half hour at the committee meeting and leave to play handball. This went on for several months in a row, and I thought that he should be able to at least stay around for the whole meeting, so I called Gordon Moore, who was one of the founders of Intel, and he and I had dinner one night at a Chinese restaurant in Sunnyvale in the Town & Country Shopping Village, a place called Tao Tao, which still is open, by the way.

And I asked him, first of all, that Intel would support the committee result as compared to automatically rubber stamping what John Palmer, the Intel engineer, suggested. And Gordon Moore agreed to that, and he also thought that John Palmer ought to stick around for the entirety of the committee meeting rather than leave to play handball. So those decisions were made by Gordon Moore and myself one night at

dinner in 1977. That had a big impact on the significance of the 754 working group and the results that came out later on.

I also talked with Gordon Moore that night about having Intel make changes in their assembly language encoding to match that, that our working group on assembly language mnemonics had come up with, but he declined to do that. He decided the fact they had too many manuals already published and didn't want to incur the cost of reprinting them. I think it's a shame because at that time, 1977, the cost would have been relatively small compared to later on.

MR. DIAMOND: I remember attending a meeting of the 754 committee at Rickey's Hyatt House, which a representative from Digital Equipment got up.

MR. STEWART: Mary Payne, yes.

MR. DIAMOND: Yeah, right, got up and said that she was leaving if the committee didn't adopt her proposal. That was DEC. Were there other issues with other companies that the committee had to cope with in forging the standard?

MR. STEWART: Nothing like the problems with DEC. Digital Equipment company was very arrogant back in those years. Their hardware was clearly the initially significant hardware in the small computer game. What I kept seeing here in Silicon Valley was the effective chips, coming out of places like Intel, which could do things that formerly required boards, sometimes many, many boards of parts, to accomplish could be done very simply in one little chip. And that led me to think that the real influence should be on the part of the chip houses as compared to a system house of the form of DEC.

The other key thing that happened was John Palmer kept talking about his help he had gotten from Professor Kahan at Berkeley, so I gave Professor Kahan a phone call one night and invited him to come and participate in the work of the committee.

He came to the next meeting of the committee, which I recall was up in Belmont, and I still remember when we met for the first time, he is a rather big and heavy guy, and he put his arms around me and, when we first met, he said, Bob, "I'd like to create a floating point standard that really contributed to being able to achieve excellent arithmetic in

a way that hasn't been done before." And that truly did happen in the subsequent years through the efforts of Kahan and his students and friends like Harold Stone and Jerry Coonen at Berkeley, a great standard was evolved by the working group, and that standard is now used universally in every laptop and personal computer and also, by now, the big mainframes.

IBM went to enormous trouble and expense to enable their hexadecimal mainframes to operate in a truly binary manner and have absolute agreement, bit for bit, with the results of a binary computation according to 754 rules. Some of the problems with DEC and with IBM's format's differences was ... we created it at the 854 working group under the leadership of a chap from Argonne National Laboratory who -- the purpose of that working group was to have a format flexible standard.

MR. DIAMOND: It's the radix-and-format-independent floating point standard.

MR. STEWART: Correct, which was something that DEC could accommodate their hardware to, and which still met the excellent requirements like the people at Argonne had. I remember the people at Argonne were very concerned. They used all these FORTRAN programs, and they wanted the very best arithmetic they could get for use on those systems, and they had a lot of CDC systems, which had 36-bit rather than 32-bit arithmetic.

MR. DIAMOND: How involved was IBM in the initial development of 754, and were they supportive, or were they problematic?

MR. STEWART: They were supportive. They didn't participate immediately, but after like, I'd say, six or nine months, when they found out about the effort, then they would have people from… At that time, there was a facility on Page Mill Road that IBM had, a research facility on Page Mill Road, and they had representatives from there, and later on from the Almaden facility. that attended most of the working group meetings.

So I would say they were helpful at times. Some other people within IBM were not helpful, but they were some of the IBM people located over in Europe who had earlier developed what they called infinite precision arithmetic concepts where you could keep extending the precision to get whatever you needed, but our group felt that the double precision and

later quad precision were adequate for most computation. As of now, the working group convened again in order to generate a decimal standard, and I think that's probably about ready to be published.

MR. DIAMOND: Was your involvement in the 754 in the early days a predecessor to the development of 854? Were you involved in that standard, or was that independent of you?

MR. STEWART: Well I was a member of the 754 working group from the beginning to the end of that group, and I've pretty much fully backed professor Kahan's approach, gradual underflow versus flush-to-zero advocated by Mary Payne of DEC, and the controversy that never ended for years between those two was one where I fully backed Kahan.

The 854 was an obvious attempt on both my part as MSC chair to try and, at the same time, recognize the problems of other companies who had formats that didn't match 754's 32-bit requirement. For instance, CDC at that time, had the 36-bit words, and so 854 was really an attempt to be a little more flexible on some of the formatting, and of course, it's like dadradix [phonetic?] for IBM.

MR. DIAMOND: Of course, 754 is phenomenally successful and very widespread standard in the world today. You were also involved, really catalyzed the creation of 802. Is that right? How did that happen?

MR. STEWART: Well 802…

MR. DIAMOND: The Ethernet standard.

MR. STEWART: Well I prefer to call it CSMA.[1]

MR. DIAMOND: All right.

MR. STEWART: But part of it is the Ethernet standard. The whole activity really developed because in the fall of 1977, I attended an East Coast COMPCON, which was (the governing board meeting was held in conjunction with the East Coast COMPCON back in those years) held at the Capital Hilton just up the street from the White House, and the theme for that year's COMPCON was intercommunication between computers.

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[1] Editor's note: Carrier Sense Multiple Access.

And as I typically do it at technical meetings, I went to all the technical sessions as compared to sitting in CS committee meetings. And in these technical sessions, paper after paper talked about different techniques for talking from one computer to another, and these were largely works of graduate students working underneath some university professor. Well I was appalled. I just felt that if something wasn't done quickly, we were going to be in a situation where there was no standard, and I started talking to people about the need to develop a standard and ran into all kinds of opposition within the leadership of the Computer Society.

Professor Tse-Yun Feng was at that time chair of the Computer Standards Board or committee of the Society, and he didn't feel we needed a standard yet, but I felt that if we didn't do something, we were going to be inundated with all kinds of standards, which really means no standard. So eventually, I guess I convinced the people within the Society; and I remember in 1978, I was presenting a paper at a small conference in San Jose, downtown San Jose, and I met a chap who worked in the standards group up at Tektronix in Beaverton named Maris Graube, and he shared my belief that it was important to try and do something quickly to solve this network standard situation.

By that time, the Ethernet had established a foothold and does indeed represent a viable technique for intercommunication. It was being widely applied at that time. And I looked at the problem and felt that if we could pick up a general format for the embodiment that was consistent with the, uhh, IEC, IOC, ...

MR. DIAMOND: You're talking about the ISO seven-layer model.

MR. STEWART: ... seven-layer model, that would be a step in the right direction because that model basically starts to look like how you skin an onion that comes out in layers. So that what that meant is that you could very easy implementation at the bottom layer and have a different physical connection mechanism without having to change all of the upper layers and protocols. And that seemed to be, seemed to me from what I looked at, as a major advantage; so Maris Graube agreed with me, and he was willing to take on the task of working group chair.

So I set about the process of getting a PAR from Piscataway, and in the spring, I believe it was 1979 -- I believe it was 1980 -- there was a meeting of the governing board, which I was a member of by that time, at the Jack Tar Hotel on Van Ness Avenue in San Francisco. And we had the very first meeting of the 802 committee. I called the people together and explained the purpose of the meeting. (There was probably 20 or 25 attendees at the first meeting from a number of different companies.) And then appointed Maris Graube to take over as the chair, which he did and handled very well. That was the very first 802 committee meeting, the initial startup, and things went fairly well for a couple years.

A very interesting thing happened, I think two or three years later, I was again back at the Jack Tar Hotel in the springtime for another CompCom meeting and CS governing board meeting, and I was called out of the committee meeting during the day one day to answer a phone call. I made it down through the lobby of the Jack Tar and went to a phone booth and picked up the phone. It was Maris Graube calling from New York City. He was holding an 802 committee meeting back in New York at that time, and an impasse had reached the group because most of the people in the committee wanted to follow the CSMA or Ethernet model, whereas IBM wanted a definitive timing characteristic, which was the attribute of what they called the token ring and the token bus, and they said if they didn't get their way, they were going to get their own PAR from New York and do their own thing regardless of 802.

And it was that confrontation right there in the phone booth of the Jack Tar that led me to think, well what can we do? This was unprecedented. So at that time, I suggested, well let's come up with a dot notation for the standard. Let's have 802.1 be the highest level superintendent group, which took care of all the higher levels basically of the standard, and then 802[.2] was another part of that aspect, and then 802.3 became the CSMA or Ethernet physical implementation, and 802.4 was the token ring, and 802.5 was the token bus, and Maris agreed with me.

And that phone call, that 15-minute phone call in a phone booth at the Jack Tar was basically the origin of the dot notation that's been widely adopted in the IEEE system ever since. And I'd say that the thing that it really caused to

happen was [to] add flexibility to the creation of a standard that allowed 802 to evolve through the years and decades, so that even today in the year 2007, which is 27 years since the incidence of the group, that people are working now on 802.11n, which is a wireless implementation, a very high data rate.

And like I say, it really did start [laughter] in that 15-minute phone call in the Jack Tar. And it strikes me as rather humorous because I think back of the efforts that I put forth and other people have put forth in working groups and standards committees to get some action taken where it takes months and months and months of meetings to get things decided upon, and here, Bob Stewart and Maris Graube made some rather critical and important decisions, which did help to make 802 one of the great standards on the face of the earth. I'll bet the dollar value of that standard is horrendous.

MR. DIAMOND: Bob, it sounds as if that insight on your part, beyond creating the ability to have dot numbers for standards that's used all over the IEEE standards process, also avoided bifurcation in standards which would have happened if IBM had pulled out and started their own PAR, project authorization request.

MR. STEWART: Clearly, yeah.

MR. DIAMOND: So what happened after that innovation the standard developed? Tell us a little bit more about the early days of 802.

MR. STEWART: Well as the years went on, I became First Vice President of the Society and vice president of the Technical Activities board.[2] So I really grew further and further away from the efforts of the 802 group. It's really been under the leadership of other people since the early 1980s.

MR. DIAMOND: Bob, when you were vice president of TAB, Technical Activities, was the standards operation in the Computer Society part [of] or aligned with Technical Activities? As you may know now, Technical Activities and standards are completely separate boards in the Computer Society.

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[2] Editor's note: Was the correct title "First Vice President for Technical Activities"?

MR. STEWART: They were together. I had been chair of the Computer Standards committee for several years, so I came to know a lot of the people in the standards field, and later, when I became TAB VP, I became very familiar with the technical people in the TCs who were very bright, capable individuals.

It was then and it is today my belief that this coupling of good, technical knowledge from the leaders of the Technical Committees with the efforts of the standards people was very, very beneficial. I think there was no necessity to separate the two, and it was a real harm done particularly to the people in the standards committees who would benefit from the insights and input from the bright people that I came to know and expect among the leadership of the TCs.

MR. DIAMOND: Bob, one of the areas that we haven't gotten into—we've been talking about busses, parallel busses, but the Computer Society has been an innovator in another high-volume standard, which was originally known as FireWire or still is known as FireWire 1394. Can you tell us about the early days of 1394?

MR. STEWART: I wasn't really heavily involved with FireWire. I was a member of their review group for a while, but I believe Dr. David James, who at that time was at Apple, was the driving guru behind the development of 1394. The thing I find interesting today in the year 2007, is still the fact that 1394 or FireWire is faster than the Intel competition bus, which is called the Universal Serial Bus.

I saw an article in *EE Times*, just a couple weeks ago, describing the work that Intel is now causing to happen in the field of what [they are] going to call USB 3.0. I picked up a little clipping from EE Times. This is dated September 24th of 2007, and they really are trying to catch up with FireWire. The original Universal Serial Bus Version 1 was running at 12 Mpbs, and the USB 2.0 is operating at speeds approaching 480 Mbps, and that's still slower than FireWire, which is, I believe, around 800 Mpbs. So what they're attempting to do with USB 3.0 is to catch up with and perhaps go beyond FireWire.

MR. DIAMOND: This shows how forward-thinking the Computer Society standards people were in the original definition of FireWire, that USB is still trying to compete with them today. You

mention a number of personalities from the early days of standards in conjunction with 754, 802, or S-100. I wonder if you could give us some more anecdotes about some of those folks. Tell us how they were involved and your interaction with them. You mentioned Tom Pittman, for example, earlier.

MR. STEWART: Yeah. Well Tom was a rather curious individual. He was very erudite, and this became particularly evident when it was time to write up a draft standard. He had a sense of English grammar which was very demanding. He insisted that the language in the standard be extremely precise and accurate, and because of that, it led to much more careful editorial treatment of the draft standard than you ever would have dreamed necessary. That was, I'd say, an aspect of Tom Pittman's character that impressed all of us.

It's hard to say. The thing I felt was useful, that I came to learn, was if you want to get things accomplished in a group of guys, you could really achieve consensus much better if you could get them together over a pitcher of beer and some pizza as compared to a situation where you had writing draft documents and exchanging them, at that time, over the Arpanet.

Sometimes guys would think that a particular approach that they came up with was far and away the best way to do something, and someone else with a different set of insights would take a look at the same problem and see that they had completely forgotten a certain thing. And so that's why I say it was very good to try and bring people together and talk about problems face to face over a beer and pizza than trying to develop standards by written documents being exchanged. That, I felt, was one of the characteristics of human nature that you should take advantage of in trying to develop standards.

MR. DIAMOND: Tom is also famous for creating Tiny Basic, if you remember that.

MR. STEWART: Oh, yeah, correct.

MR. DIAMOND: His company, I think, was called Itty Bitty Computers.

MR. STEWART: Yeah [laughter].

MR. DIAMOND: And I think in the mid-70s, he wrote a Basic program, a Basic interpretive for the 6000, 6502, and other

8-bit microprocessors that provided a lot of power for these very small processors.

MR. STEWART: Yeah, he was fond of the 4004, which was the predecessor to the 8080. And I believe he wrote a Basic compiler for the initial 8080, didn't he?

MR. DIAMOND: Well I think he had ported Basic to other processors, but those initial micros were so under-resourced that it was a Herculean effort to put basic up on there, and of course, he did it in the mid-70s.

Are there others in the early days of the standards group that we should talk about? You mentioned Dave James for 1394 FireWire. I know Mike Teener was involved in that as well. Dave Gustavson, you mentioned earlier. He was also involved in the scalable coherent interface, which was, I think, being developed about the same time as future bus.

MR. STEWART: Dave Gustavson has been active in a number of standards activities through the decades, and he's still active.

MR. DIAMOND: Well let me ask you about the—you mentioned the MITS Altair led to your interest in S-100, and the standards effort came out of that. Do you still have your Altair?

MR. STEWART: Sure do. I've got it in the next room.

MR. DIAMOND: Is it running?

MR. STEWART: The computer runs, but the terminal part of it doesn't run anymore.

MR. DIAMOND: I see.

MR. STEWART: The computer fires up. I have a big board up on the wall, which shows the panel lights, I made for a tutorial up at Stanford in probably 1977. It still works.

MR. DIAMOND: Well I don't want to get into too much detail, but I definitely would like to ask you about the terminal not working. Maybe we could find a ways to get that working.

MR. STEWART: It was an electric typewriter basically made by one of the companies down near Cisco in San Jose. I offered it to the Computer Museum, and they a MITS Altair, and they weren't interested in it.

MR. DIAMOND: They do. I've seen it. And that was an 8-bit bus, right?

MR. STEWART: Originally, yes. 8-bit data bus, yes.

MR. DIAMOND: You mentioned earlier the assembly language standard and talking to Gordon Moore about changing Intel's assembly language mnemonics to the standard. Were there other companies in the microprocessor or computer business that were interested in the assembly language standard?

MR. STEWART: I can't honestly say yes to that. Pittman was interested. I was interested. I believe Wayne Fisher was interested, and there was a chap from the University of West Virginia who was very active in it, and he later became active in the object code standard and helped develop the object code standard.

One other standard we probably should discuss is what became known as the future bus. It really started under the guidance of Andrew Allison who took the Motorola 32-bit bus standard and was ready to essentially ratify that as the output from the microprocessor standards committee. And looking back at what eventually took place, I think that might have been the best thing that could have happened, but that's with the wisdom of hindsight.

At that time, I felt, as others did, that something a little nicer would be good, and that led to Paul Borrell taking over the leadership of the committee from Andrew Allison, and Paul managed to stretch out the development of the future bus for many years to the point where it was no longer an effective competitive standard. And I do know that some companies did implement and try and market that set of boards, and it really went nowhere. So again, it shows that it's very important that standards committees develop standards fairly quickly.

I guess 802, in retrospect, having adopted the CSMA standard based on the Ethernet was a good thing simply to get something happening quickly, so that it didn't get bypassed in the market.

MR. DIAMOND: Bob, we have about four minutes left. As one of the pioneers in IEEE Computer Society standards, someone who was there at the beginning, what thoughts do you have about the development of IEEE standards over the years, and what advice

would you give the History Committee in preserving the historical record of these fundamental developments?

MR. STEWART: Well, people always have gripes and complaints, and I'd say the gripe I have is people doing standards development don't get any recognition, and when I've talked to people on staff up at Stanford University and asked them if they would participate in some of our standards activities, they'd say, "hell no." They want to publish papers, get their name on a paper, become known as the individual who created a concept. They don't want to work in groups. They want their day in the sun, and other profs up at Stanford and also some at Berkeley go out and start companies and become rich billionaires like the guys at Google and VM Ware who really are now billionaires because of the concepts that they developed at Stanford.

But in terms of the History Committee, I'd say making some semblance of stuff like this known to the membership as a whole would be nice, and I suppose eventually, you'll have to have a historian-type take documents of this type and create a book form, which would be suitable for readership by the whole membership.

MR. DIAMOND: Well I think that's a wonderful suggestion, and I think your insight and recollection of the Computer Society's standards activities would serve as a great beginning for that historical book. I want to thank you on behalf of the IEEE Computer Society and the History Committee for participating in this first interview that we've conducted.

And I want to also appreciate the work that you've done in creating, really creating, the IEEE Computer Society standards activities and these fundamentally important standards like 754 and 802 and the other standards. Thank you very much, Bob. I very much appreciate your insight and your time and, of course, the efforts that you put in over the years to create this vibrant set of standards in the industry that follows them.

MR. STEWART: Okay.

MR. DIAMOND: Thank you very much.

MR. STEWART: I hope something comes of it.

MR. DIAMOND: All right.

MR. STEWART: And hope you have a nice trip.

MR. DIAMOND: Thank you very much, Bob.

MR. STEWART: Okay, Steve.

MR. DIAMOND: Appreciate your help.

MR. STEWART: Bye-bye.

MR. DIAMOND: Goodbye now.

[END 2007-10-25-BOB-STEWART-INTERVIEWED-BY-STEVE-DIAMOND.MP3]