**ILO Working Group Call\_ ILO Role History & Evolution-20240126\_100502-Meeting Recording**

January 26, 2024, 6:04PM

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 **Ransom, Scott** 0:15  
Thank you everyone for coming today, we are really fortunate to have Court Lewis here with us today. Court was kind enough to agree to come on to this ILO Working Group call and give us a history both for the SPI directors and the ILOs in really the same and expanding role, which is going to be very useful. So, I'm going to hand it over to you, Court, if you could start off just by introducing yourself and telling us, you know why you're the ILO emeritus expert here today, that would be great. Thank you so much for being here.

 **Court (Guest)** 0:34  
No, I wouldn't go that far.  
But anyway, thank you Scott for that.  
Sort of a mini introduction there, but I'm Court Lewis and I've been working directly for the ERC program since 1990.

 **Stone, Cele** joined the meeting

 **Court (Guest)** 0:43  
As the communications consultant slash contractor and so I do a wide variety of things related to communications to support the program and have been lo these 34 years now.  
So I guess Scott invited me on as the village elder, and I and I thought to myself well that's kind of first cousin to the village idiot I’m afraid. But anyway, that'll be up to you to you guys to determine.  
But the reality is that I know more about the AD function and secondarily the education function that I do the ILO function.  
But I know enough to talk to you about the beginning parts of it. I'm going to cover pretty much 1985 to about 2005 or so, which is pretty much the start of Gen-3.  
We as we get into the later periods, some of you guys, your own current careers and experience will begin to segue into it and you'll know more than I do about that.

 **Jackson, Deborah J.** 1:43  
E.

 **Court (Guest)** 1:43  
What you do, certainly the detailed level, but I’ll keep this kind of the 30,000 foot level.  
But so I'm gonna start really not even in 1985 with the start of the program, but earlier than that to kind of set the context for industrial collaboration in ERC's and I'm gonna go back almost to the beginning of time.  
So I mean, there was a time in this country where engineers were preeminent over scientists.  
Engineers put in roads and bridges and dams and forts and all the things that allowed us to subdue nature and unfortunately subdue the Native American population who were here long before us. and it made North America safe for European immigrants, right?  
So that's what we did and the engineers did all that and they were highly respected, and scientists at the time were people who were generally wealthy and few in number and could set up labs in their own house and tinker with things and, you know, so that went for a long time.  
And as we got into kind of the pre World War Two period in particular, you know, big companies like GE and Westinghouse and DuPont and Ford Motor Company.  
Those were the worldwide 2000 pound gorillas in the world for their fields, right?  
And they're really were unquestioned leaders.  
And then World War Two began to change things.  
You know the Manhattan Project.  
I'm sure we've all seen Oppenheimer and knew about that even before seeing the movie, right?  
Physicists and engineers were crucial to that effort.  
But physicists began to be the stars.  
Then then the post War Two period right at the end of the war, Vannevar Bush published his famous book about science, the endless frontier.  
Basically, it said that this country needed to really focus more on basic research and even though engineering was a great thing, we needed to kind of push science, basic science, to the forefront.  
So that view kind of took hold and began to be part of government policy with, you know, beginning with the National Science Foundation.  
It's not called the National Science and Engineering Foundation, right, although there have been attempts to make it the National Science and Technology Foundation, but anyway, it remains the NSF, and particularly a big thing that moved that forward was the Soviet Union's launch of Sputnik in 1958, which caused us to scramble in pushing science into schools at an earlier age and in a more intense and advanced way.  
So what began to happen then to engineering, in particular in the universities, was that with all that going on, engineers who had had a proud tradition of being the guys--and I say guys because there were very few women--who had dirt under their fingernails and worked with industry and made things and made America what it was, basically they began on university campuses to be looked down on.  
And there are a lot of sociological reasons for it.  
A lot of them, as you all know, were first generation college people in their families, and they tinkered with things and they made things.  
And so it began to be more uh, more elitist and more, sexier, kind of, in a way to be more intellectually superior, to be basic scientists.  
So engineers began to feel like a social opprobrium, in a way to be feeling socially inferior on their campuses to scientists.  
And so very quickly during the 50s, they began to emulate physicists, physicists in particular.  
And so they started in their work to focus more on modeling and simulation. And as computers came in, of course, that became more and more prevalent than they began to switch their focus of education from making engineers. who would go out into industry and make things, to making engineers who would become clones of themselves.  
Who become university professors doing the same things and teaching the same way that they were teaching, and they actually began to look down on teaching itself and just basic engineering science research became the thing to do for faculty, engineering faculty.  
And so that went on for quite a while into the mid 80s, when of course Europe and to some extent, a great extent, Japan, began to recover from World War Two and began to come on strong and challenge us competitively, and then the automotive industry in the early 80s began to really suffer.  
And so that began to be something that industry worried about and the government worried about but nobody knew what to do about it.   
So there's a weird thing, and this is where I came into play personally.   
Being the village elder, I guess that right about the time in 1983, the company I was working for began to go under.  
They got heavily involved in the nuclear power industry, thinking that was gonna expand greatly after three Mile Island.  
But instead, the balloon burst, and they were going under.  
And so I went out of my own working, to do what I do now.  
It's in 1983 and one of my first jobs was I got hired at the National Academy of Engineering through the National Research Council to work, when a series of lucky things happened. It happens probably to all of us where suddenly a series of doors will open up to you.  
You're like, OK, I'm going through that one and then go through that one and I'm going through that one and suddenly you're really moving fast, you know?  
So that kind of thing happened to me that summer of 83 and one was that a guy named Mike Wozny--he was big in the engineering faculty at RPI and he was a CAD Cam guy--he was brought in to work on a COSEPUP study.  
And I'm going to only take a few more minutes to talk about this, Scott, but it is kind of interesting as background to how we got into having ERCs. So COSEPUP was the Committee on Science and Engineering Public Policy of the National Research Council.

 **a4ffb8fc-c0c8-4d18-acbe-95eba4bbd074** joined the meeting

 **Court (Guest)** 8:00  
And he was doing a study of CAD Cam and what kind of money Congress should put into it, what kind of education and research programs and funding for that.  
And somebody who was going to do that with him, he was the study director.  
Somebody who was gonna be the writer, got sick at the last minute and so they called me because a few people remembered me and I had written a speech for Frank Press just before that. He was the NAE president.  
Because the guy who just preceded him was named Courtland Perkins, and I had the same first name and everybody said, oh Courtland, OK, you must be a nice guy or something.  
So that was one of those other lucky door-opening things.  
But anyway, so they called me and said what are you doing tomorrow?  
Because we are suddenly in a bind, we need somebody to work with this Michael Wozny guy to write a report that's going over to the White House.  
To the president’s science advisor--Ronald Reagan's science advisor was named  
Jay Keyworth--and it’s going to be in like, one week and you have to have this thing done like overnight practically.  
So he and I set up shop and literally slept on cots in the hall of the National Academy of Sciences building there on Constitution Ave and hammered this thing out.  
And then I went over a week later and was kind of the staff guy sitting in a chair along the wall in the White House Science Advisor’s office talking about CAD Cam. These guys who were the people in the room were George Lowe, who was the president of RPI.  
And let's see, Chuck vest, who was the president of MIT, and whoever was the administrator of NASA at the time, I can't think of his name. People of that echelon were there, you know, in the room.  
So there was a lot of electricity in the room, right?  
So they got, they sort of went halfway into talking about cad Cam.  
But everybody really began to talk about how engineers aren't made to solve these problems any more.  
They're made to sit in front of a computer and do modeling, but not make anything.  
We're talking about machinery on factory floors in industry and engineers weren't even made to even know what those things were or to touch them, you know?  
So everybody began to realize and gel around the idea that this is a massive problem that we all recognize and nobody knows what to do about it.  
And so Keyworth said look, come back next week and we're going to talk about what to do about it.

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 **Court (Guest)** 10:19  
So that's what they did.  
And I came back the next week to take notes again in my junior role.  
By far, as I was, obviously, like a First Lieutenant in a room full of generals, right?  
And so that's what they did and that that became the genesis of the ERCs.  
So it came very quickly after that.  
I mean that was like September 83 and by March 84, there was already a solicitation out and by early 85 the first centers were awarded and they went into operation.  
So that's kind of the origin of it, but then what happened was we had to write a document, which was guidelines for engineering research centers, which kind of laid out the blueprint for ERCs.  
And that was almost like the Declaration of Independence is today.  
Or the Constitution, as such a thing that when you look back 40 years ago, it was written so well and so well thought out that it's still a valid blueprint today for ERCs.  
So it's one of those things that’s just kind of done so well it lasts forever.  
I had a minor role in editing it and they had a higher powered guy who wrote it.  
That document really focused on forcing university faculty, if they are going to get this big carrot, which over the years has been dangled in front of them, the ERC program dangled in front of them.  
You know, this multi-million dollar program, which was almost unheard of.  
If they were to get multi millions of dollars into their universities, they had to set up a program that involved industry in a new way, in a heavy way that had never been done for 40 years in universities, which is to have them, as you know, get involved in strategic planning and be there hands-on doing joint projects with the university faculty and having students come in as interns and so on and go back and forth with industry and all the things the close partnership connection to industry now has with the ERCs. All of that was forced to be started, and it really ran against the culture hard.  
In the first couple rounds of ERC's in 1985 and 86, the directors tended to be industry people, tended to be, and they had trouble getting credibility on the university campuses.  
The only thing that was attracting them was the gravitational force of this money.   
This amount of money and the faculty, where really a lot of them were kind of giving lip service to the idea that we would work with industry, but they didn't like it.  
So there was basically a big a culture shift that had to happen at that time.  
The ERCs were the forcing function for that.

 **Ransom, Scott** 13:02  
You know, court, can I?  
But can I just ask a quick question so that that's really fascinating to me about the initial Gen 1 directors were often industry people.  
Was that a conscious choice by NSF to select those as direct, cuz usually the director is the one who writes the grant, right?  
The ERC solicitation and that's usually an academic today.

 **Court (Guest)** 13:23  
Yeah.

 **Ransom, Scott** 13:24  
So it's really exciting to hear that.  
How did that come to be?  
Do you know?

 **Court (Guest)** 13:27  
I think the reality looking back at it, they were I think with maybe 1 exception.  
They were all university faculty, but they were people who had come into the university from industry at some point, and so they had heavy industry experience and there was not a requirement of any sort like that.  
I mean, they're basically looking at the proposals.  
I think there 146 proposals. I mean NSF was flooded proposals for six centers.

 **Ransom, Scott** 13:49  
Hmm.  
Ah, wow.

 **Court (Guest)** 13:52  
Six awards, so six out of 142, whatever that is, not a good…

 **Ransom, Scott** 13:58  
Yeah, a good ratio.

 **Court (Guest)** 13:59  
Not a real good risk to win ratio, right.

So I think really they just judged them on the basis of the strength of their proposals.  
But the people who did have industry background had a couple things.  
They had the connections to industry so they could start bringing in the industry partners.  
They could get on the phone and say, Joe, I need you.  
You know, that kind of thing.  
And then they also knew how industry works.  
So they could put together a proposal that showed some cognizance of how such an interaction and partnership might actually work.  
So those are the ones that tended to win because they had that kind of background.  
And so that's how it started off.  
Deborah, do you know. I mean, you’ve been here a long time too.  
Is there anything you want to add to that background about how things started off?  
I was trying to talk fast, to keep from taking up the whole thing with that.

 **Jackson, Deborah J.** 14:48  
Well, I wasn't really.  
I wasn't really on board when when all of this started.  
Remember I came around 2005, so for me it was just trying to figure out what it was y'all had done, but I think this is a very interesting history.

 **Court (Guest)** 14:57  
Yes, I’m a lot older than you! I just thought you might possibly have heard some other things about that time when you got there worth noting.

 **Jackson, Deborah J.** 15:08  
Thanks for sharing.

 **Ransom, Scott** 15:10  
It's really interesting that you mentioned the culture, the credibility issues.  
So these first directors are primarily from industry and they didn't have a lot of credibility in the faculty ranks at their institutions because I find as an ILO, I spend a fair amount of my time bridging that culture gap between our center personnel, the faculty, including the Director, and the industry culture, which is completely different, right?  
I mean, academics are used to writing grants and getting money and spending the money on what they want.  
And then when they get something cool, they publish, and industries are like no, we want the money to go to a specific thing and we want milestones and deliverables and Oh my gosh, don't publish it.

 **Jackson, Deborah J.** 15:50  
Umm you have.

 **Ransom, Scott** 15:51  
When you got something cool, let's talk about it. Right?  
So and that culture shift is, yeah, I think that ILO and the SPI directors, they bridge that culture.  
And I'm like, wow.  
And a director that was from industry, that would be amazing in some ways, and in some ways, maybe not.  
So anyway, that's it's just really interesting history, yeah.

 **Jackson, Deborah J.** 16:09  
Also that the ILO position really didn't evolve until right around the late 90s or something like that, right?  
Cause it wasn't there all along.

 **Court (Guest)** 16:19  
It was actually required in 94/95, so mid 90s.

 **Jackson, Deborah J.** 16:25  
OK.  
So then it must have been injected in the late 80s.

 **Court (Guest)** 16:28  
It was, it was. I’ll get into that in just a minute.  
That was all actually just a segue into the actual topic of my talk, you know?

 **Jackson, Deborah J.** 16:32  
Umm.  
OK.

 **Ransom, Scott** 16:35  
And just you know, of course, if you're sharing slides, we can't actually see your slides.  
Just wanna make sure that you're aware of that.

 **Court (Guest)** 16:40  
I don't have any, I'm just talking about this to you.

 **Ransom, Scott** 16:42  
OK.  
All right, good.  
Alright, just wanna make sure.

 **Court (Guest)** 16:43  
I didn't make any.  
I'm just doing this for fun and you know, being the village elder because it's, I mean, I love the ERC program.  
It's basically made my career for the last 30 years really, so I love to give back when I can, but to put together a 45 minute slide presentation is a lot, so I’ll just rattle on like I'm doing.

 **Ransom, Scott** 17:01  
No, that that's totally fine.  
I just wanna make sure that's fine.

 **Court (Guest)** 17:04  
OK.   
But Scott, you mentioned that culture clash.  
Yeah.  
And in 2024 that's still something that you perceive?  
You still feel that now.  
Imagine what it was like 40 years ago.  
I mean, there was a guy named Don Kash.  
There was a series, there were a series of things.  
I was still heavily involved with the NRC, the National Research Council. At the time I was writing lots of reports for different committees over there.  
So I got involved with all of those that led up to evaluating the ERC program that came along, as it was just kind of a fledgling thing and people were trying to make it really strengthened and take flight in a way that would be sustainable, like it has been.

 **Jafar Razmi** joined the meeting

 **Court (Guest)** 17:53  
And so this guy named Don Kash was a very interesting guy, and he said that having industry--that the ERC themselves on university campuses were like an implanted organ in a patient and the entire immune system of the patient was trying to reject the organ and NSF had to keep pumping, you know, immunosuppressive drugs into it in the form of money and encouragement to keep it from being rejected, you know, in toto.  
Right.  
So from the university side, because none of this stuff--I mean basically they function like a kind of a hybrid between a university lab and a company on campus.  
And there had been no such thing really ever, really.  
And so there was just, even at the dean of engineering level, and the Provost level there was still, they wanted the money, that was the attractor, right?  
But there was still a lot of built-in intellectual and emotional resistance to this thing going on, you know?  
But as time went on and they became clearly successful, that resistance wore away around the edges.  
But it was a continuing process and you can imagine at the very, very beginning, I mean, Lynn Preston, whom some of you know and sort of everyone knows of her.  
She died a few years back.  
Was such a warrior.  
I mean, she just fought even within NSF itself, because within NSF, the other divisions here, I'm getting really far afield here, but the other divisions within engineering and even to some extent, some of the other directorates, but especially within engineering, the other divisions viewed that amount of money that was coming into the ERC program, this big pot of money that was going into this new upstart thing that they didn't even believe in, was gonna steal it all from the directory, from their divisions within the directory.  
So there was a lot of effort to convince them that no, this was new money.  
You wouldn't have gotten this money.  
This new money that's gonna benefit us all and raise all the boats, right?  
But that was a hard sell and they didn't really buy it.  
So they were fighting internally against Lynn and there was a lot of politics that was really wicked at the time.  
Tough stuff.  
And she was an absolute smart fighter.  
I mean, Lynn Preston had a degree in economics and one point she was named Engineer of the Year in NSF.  
You know you don't get that very much if you're not an engineer.  
And so it's just an example of the way things were then.  
So at first there were no ILOs, right?  
In the first couple of classes the Center directors are trying to do that themselves, but trying to run a center and do the industrial interaction part was quickly becoming overwhelming to them and a lot of these guys were, uh, were trying to hide their difficulties from NSF because they didn't want to be seen as failing or as weak.  
And to some extent, they began to talk to me because they didn't want too talk to NSF about it.  
I wasn't NSF. I was a contractor and after a while they realized they could trust me to keep my mouth shut.  
You know you can ask me questions and I wouldn't talk about it, unless it was really   
something I really had to tell NSF about. But they were telling me that it was getting to be really hard to do.  
And what should they do?  
And I said, you know, go talk to Lynn Preston and tell her you need to hire more people.  
You need to hire the right kind of people to do this kind of job.

So then the first one was at the ATLSS Center at Lehigh, which is the advanced technology for large structural systems center, which is a 1986 center, I believe in the second round.  
And so that center director came to Lynn and said, look, you know, I’m trying to my best to do a good job, but I just can't handle this.

 **Jafar Razmi** left the meeting

 **Court (Guest)** 21:41  
I need somebody to help me work with industry here.  
Somebody who's qualified and capable and a heavy hitter who can do that.  
So they hired a guy named Bill Michalerya who was, I think his title was originally manager of industrial liaison--the first time that term had never been heard in the ERC program--and technology transfer, so that was kind of prescient to call him that.  
And that's exactly what he did.  
And he was a very strong personality and very charismatic guy.

 **Jafar Razmi** joined the meeting

 **Court (Guest)** 22:07  
And so he was brought in specifically to deal with that whole side of things and took it off of John Fisher’s table to do that.  
I think he was hired in 1988 to do that, and he became so successful at doing it and in giving talks to the ERC annual meetings--at the time they were annual. In general the annual meetings became a really good gelling point for all these things that would go on that would be new and different that the ERCs were very quickly trying to evolve and experiment with at the time.  
And everything was experiment.  
At the time, I mean everything was new.  
Nobody knew what thing was going to work or flop.  
So you just try it, throw it on the wall and see if it stuck.  
Right.  
Some things are sticking and then they would grow.  
So the ILO function that he was doing was one of those things, and it was quickly replicated at other ERCs.  
I think, well let’s see.  
I think the second one was actually, the second one was a woman.  
The first female ILO, named Beth Starbuck at the University of Minnesota.  
The Center for Interfacial Engineering, and that was also highly unusual.

Other people are already starting to do some of this kind of thing around that time.  
Jim Williams was another one, at Carnegie Mellon, and he wasn't hired as an ILO.  
He was hired as operations manager and didn't really function just as an ILO but also managed building projects, and so he basically brought in industry and he would do his operations thing. He was building labs and doing the building part, the construction part and that sort of thing.  
But he also managed the whole industrial side of it as well.  
And he was very successful at it and kind of functioned like a deputy director before there was such a thing as a deputy director.  
Back then it really was more and more becoming a boys club, but the first female ILO was Beth Starbuck and she was called associate Director for technology transfer.  
That was 1988.  
So she was in that first group there who did that.  
Really, the next woman wasn't until Theresa Shaw at Virginia Tech at the center called CPES, which was the Center for Power Electronics Systems.  
But now we're talking about like you know--that was, let's see.  
That was actually about 1995.  
By then, there were a number of ILOs. You asked when it was first done.  
It was first required in 1994-95, so the 1st Gen-2 ERCs that was. Part of the generation two solicitation was that they had to have someone on board called Industrial Liaison.  
So Teresa in 1994 or 1995, which is like 10 years later.

First let me back up just one quick second.  
Up until that time, all ERCs were either a single university or two.  
The second one would be an affiliate university, so it's pretty easy to manage in that way.  
And a lot of that was before the Internet, right?  
So it was done by phone calls and typically they were physically not that far apart from each other. Boston area or whatever it might be.

And the CPES center at Virginia Tech was the first one that was truly multi-institutional and it was five partners, one of which was UPRM in Puerto Rico.  
And so by then you could, you know, you had some vestigial World Wide Web and certainly had teleconferences and all.  
But between among the five partners, they had 80 industrial members.  
So Teresa did an amazing job, really, of coordinating 80 Members in this five partner institution, the first of its kind really, and set up I think they had, like, once a week lunches teleconferences that the center director would lead, but all the Partner institution campus directors would be on and it would include some of the research people and also the industrial people from those various partners.  
And it was a, you know, was a big thing to operate and it really was like a corporation, almost, to do that kind of thing at that time.  
There were few other early ILOs who played a strong role in it and had a lot to do with setting the standards and the outline of what the role of the ILO would be.  
One is Erik Sander, who was the University of Florida at the Particle Engineering Research Center there, and Scott knows him and worked with him.  
He's still there at the University of Florida.  
Another one is Carl Rust at Georgia Tech at the Packaging Research Center there, and the two of them were kind of like 2 peas in a pod.  
They got along really well and were kind of close enough that they could get together sometimes, you know, physically, being in Gainesville and Atlanta.  
And so they became leaders, along with a third guy named Andy Branca.   
Andy was way out west at the University of Washington.  
It was funny at that time that the West Coast was almost like a separate country as far as the East, the ERCs and the way…

 **Ransom, Scott** 27:20  
It still is court.  
It still is.

 **Court (Guest)** 27:22  
I know, but I mean the way they interacted with NSF was so different.  
And again, these people would talk to me a lot, so I could tell there was just a difference there in the whole communication, in the whole interaction and the whole view of the center itself, from the West Coast versus East Coast.  
But those three, Eric and Andy and Carl Rust did a lot to set the tone and the shape of what the ILO role would become.  
For one thing, they were really key, at least in particular Eric and Carl were, in working on the ERC best practices chapter for industrial collaboration and tech transfer.  
That was in the mid-90s and into the late 90s.  
And they also were key in setting up a kind of structure in membership agreements, because every center from the time that they started and had industrial interaction with partners, they had to have a membership agreement, but they were all over the map in terms of what they had and what they required.  
And so there needed to be some sort of standardization because there was there were issues with the universities getting into play with IP.  
You know, what companies could have royalty free licenses versus ones they had to pay for?  
And what the structure and the cost structure was for memberships, and all of that needed to be standardized to some extent just to take the chaos out of it, right?  
So they were really very key to getting membership agreements set up in a way that made sense, where you had some flexibility given your different ERC and the different field you might be in and the different kinds of industries you'd be partnering with.  
But to have the elements that you have today in membership agreements, to set up membership structure and fees and what you got for each level of membership and how many meetings there would be and how many Members, you know, what kind of input into the strategic plan of the center you would have, all those kinds of things that you guys know about.  
So then dealing with all the IP issues and licensing and setting up the IAB and the IAB meetings and research project support.  
So all of that began to really gel in the late 90s, a lot with those key people leading it for the most part.  
By that time, every center had an ILO and sometimes more.  
More than one, so there were lots of things that came along.  
By the mid 2000s--I said I would end this around the 2005 area, but you know by the time the Gen 3s were about to start up in 2005-2006 there began to be more of an emphasis on getting mid size and smaller companies in and startups in.  
Originally, the centers hadn't been that interested in those because they didn't have that much to bring to the table to offer to the center.  
They were more in the mode of wanting things than giving things, right, and they also couldn't afford the 50,000 and 75 thousand, $100,000 membership fees.  
They didn't have that kind of money, but NSF realized that a lot of the innovation that was needed to get across--you're familiar with the valley of death, of course.  
Deborah did a lot of work with changing the valley of death, which sounds so forbidding, but was a true thing into the what?  
Was that the Opportunity Gulch or road over the Gulch of something or other?  
OK, no, it was the innovation bridge that became the bridge that the bridged over the valley of death.

 **Jackson, Deborah J.** 31:02  
I can't remember.  
It's been so long ago. Ohh.

 **Court (Guest)** 31:11  
I mean, you had a great graphic that you became kind of the inventor of that whole thing and so it turned it that NSF realized that small businesses were the ones that were the key to…

 **Jackson, Deborah J.** 31:13  
No.

 **Court (Guest)** 31:24  
Really filling the gap between corporations that had pretty much killed their big research labs because they couldn't afford them any more and they weren't getting as much out of them as they needed to justify their cost, right?  
So they would instead buy up startups.  
And NSF saw that and said, why don't we have centers buy up startups in the sense of having them come in as members?  
And then the Members that come into the ERCs can benefit from having these startups at the table and it can go that way without having to actually buy the company, right?  
So that became a big kind of seeding thing that led to ERC bringing in startups and small companies that have much lower level fees, even 5 or $10,000, whatever it took, you know, to get them in.  
And then also starting to generate startups out of the centers, which is a big deal because it really made it a more two way Street where it wasn't just partners over here and the university over here, it began to be really a true merging, more and more.

That was in the mid 2000s, I guess.  
So some of the key people were there in that effort to start the initiatives to generate startups.

One thing was the Foundry which was at QoLT, which was the quality of Life Technologies Center at Carnegie Mellon, which dealt with, as the term implies, medical devices that were really advanced that help people with disabilities live better lives.  
And so Curt Stone, who was there at the time, set up the QoLT Foundry, which was really students and to some extent young faculty, but many of the students in the center who had a really close relationship with certain industry people and could really tie into working with them closely.  
And go back and forth to industry and then jump out of the center into the industry.  
When they got their PhD or whatever they're working toward, there is a sure…

 **Jackson, Deborah J.** 33:17  
So court can I just and I think this is an important point here that you're making.

 **Court (Guest)** 33:24  
OK.

 **Jackson, Deborah J.** 33:24  
In particular, we started looking at it from the perspective of trying to nurture the innovation ecosystem in the environment where the university where the ERC exists, and because what you're doing when you are helping to nurture some of these smaller companies is also feeding the economic system in the region.  
And so, you know, if you're talking about optics, right.  
So let’s say the ERC is in optics.  
If it's nurturing optics companies and there's a lot of optics companies in the area, then a supply chain infrastructure builds for that and it just makes the whole thing more stable in the long run.  
So forming those relationships from the university context, we finally realized is an important way of forming also a more stable economic foundation within the community around the center.  
And so as companies grow and fail, and this and that and the other, there is a, there are many places in that community where the students or the employees can go to roost while they're trying to find a new footing.  
And that's really important, especially if you're playing this startup game, startups fail, and if there's some place to go when it fails, then you're more likely to get people who are really good to take the chance of trying.

 **Court (Guest)** 34:46  
That’s right.

 **Jackson, Deborah J.** 34:59  
And that's something we didn't know at first.

 **Court (Guest)** 35:02  
And what began to be more and more noticeable as time went on, by like the mid 2000s, was that around ERC universities would become clusters of companies that are startups and some would fail, you know, typically would be like a faculty member with a couple of grad students or something.  
Some would fail, but some would go on to succeed, really great guns.  
They would either become bigger or the companies themselves would be brought up and you're seeing more and more of those.

At the time, for a long period from like 1996 to 2012, I was the one who put together the ERC annual meeting program and so I got to know all these people because I was filling up, you know, breakout sessions with a lot of warm bodies, right?  
A cast of 100 or so for each meeting pretty much, and so I was digging into the startups around the ERCs to find industry people to give talks about how they how they got where they were going and that kind of thing. So it was cross-fertilizing across the whole program.  
It also began to be noticed at the state legislature, well, certainly at the university president level that there was a lot of economic development going around that was stimulated by the ERCs and these locales where the ERCs were became unmistakable.  
It wouldn't just marketing. It was obvious.  
In some cases, huge companies would open up, like Nissan opened up something in Starkville, Mississippi. Mississippi State, which is like, you know, in the middle of nowhere.  
And Nissan opened up a big facility, not just for manufacturing, but for research, too, because they were drawing people from the university there, it was really a phenomenon.  
It really was just breathtaking once it really got bubbling.  
You know, once that stew really got cooking, it was amazing, the things that are coming out of it.  
Another one was that MIRTHE, which is the mid infrared technologies for something or other at Princeton--high energy?--anyway they worked in quantum laser devices in the.

 **Jackson, Deborah J.** 36:56  
It was health and the environment.  
The HE is health and the environment, yeah.

 **Court (Guest)** 36:58  
Right.  
Health and the environment. Couldn't remember what the HE part was. So Joe Montemarano was the ILO there and Bernadetta Wysocki took over...

 **Jackson, Deborah J.** 37:03  
Alright.

 **Court (Guest)** 37:09  
Took over after he went on, but they started the Investment Focus group which is, you know, very similar to the QoLT foundry and, you know another example of how ILOs began to be more visible and do more things.  
I mean, earlier on, even in the years when the ILOs were kind of viewed as the odd man or the odd woman out because they were from industry for the most part and they weren't really accepted that well.  
But they finally began to be part of the team fully, you know, when everybody saw that they were bringing in money and people and they were doing the things that the ERC was supposed to be doing.  
The ILO is one of the key people in the middle of having that happen, you know?  
So they really gelled as part of the team.  
And so also at NSF they began to have greater visibility, like Sylvia Mioc, who was at the smart lighting ERC, then called, at RPI, another female ILO who was very strong.  
She started the perfect pitch contest there as ILO at RPI, which then Deborah saw as being such a great thing with students.  
Where they made a 30-second elevator pitch to the industry.  
In this case, they would do it to their peers and to faculty and to the industry people who've been invited to sit in on it, but it was great training for students to practice selling themselves to industry, getting jobs, and so.  
So Deborah saw that and basically mandated that it become ERC program wide, where all the ERCs have their perfect pitch contest winners compete.  
Other things, like other ILOs, stand out.  
Initiatives like Peter Keeling’s--I don't guess you're on here, Peter?  
But you all know him.  
He was at CBiRC at the time and he developed the value chain analysis as a tool for strategic development of industrial membership in a systematic way, which I think is a very useful tool that a lot of people adopted and used. And Peter Seoane at the RMB at North Carolina State, who organized an Industry Wide Conference and it really led to him having the idea that industry ought to do a SWOT of the ERCs.  
And then he basically on his own initiative, conducted a program wide SWOT of all of the ERCs where their industry partners all did a strength, weaknesses, opportunities and threats evaluation of the center in a very objective way, even anonymously.  
And then the results of that would all coalesce and feed into a program wide report that was given to NSF.  
It was one of the early programs from the perspective of the industry members that was a very useful thing that then went on to be used program-wide, something that was done at every site visit, right?  
So all those are things that that ILOs put together and did, often at their own initiative and that strengthened ERCs.  
Uh, let's see.  
It began to be, as was the case, the ADs, the administrative directors first began to really cooperate as a group across the centers early on.  
And there was a PD at NSF who kind of coordinated that, but it really took an individual AD, in this case, a guy named Kevin Costa at the Center for Synthetic Biology at Berkeley to put together a monthly meeting.  
Kind of like you guys have now, right?  
Monthly meeting with the ADs that became something that was very useful and they would meet once a year in the summer somewhere at one of their centers and have like a week-long meeting and they got together.  
They had a great time, you know? And they really gelled as a collegiate group of friends. They became friends.  
And they would call each other and say listen, I’m dealing with something that really gives me a headache. How do you handle it?  
Whether it was something in the politics of the center or something in the reporting, the NSF or whatever it might be, they shared their experience and their knowledge and wisdom and their tools and ideas with each other in a very open and free flowing way.  
The same kind of thing started with the education directors.  
Carol Reed, a PD at the NSF, led that for a while, but there they had trouble finding an individual education director who had played the role that that Kevin Costa had played in kind of running the thing from the doer standpoint.  
And so it kind of didn't go anywhere much.  
But then Deborah began to do the meetings that were the predecessor of your meetings here.  
As you all know of monthly meetings, I guess they are monthly or however often they’re needed.

 **Jackson, Deborah J.** 42:25  
Well, basically we started the monthly meetings with the ILOs and they really, you know, they're talking to their admin directors and they're like, they're doing, you know, they're sharing a lot more than we are.  
And so what we decided to do was to have regular monthly meetings and then I got beat up because the admin directors actually got together physically and that's how the ILO summit got born.

 **Court (Guest)** 42:46  
Yeah.

 **Jackson, Deborah J.** 42:57  
So if we can manage twice a year, that would be great.  
I think NSF is willing to pay for one, you know, write a proposal and then accept will pay to bring people together at least once a year.  
And we can take advantage of the biennial meetings to do a second one. But.

 **Court (Guest)** 43:16  
It does really take one person doing the job to do that coordinating, and of course Scott is the person here who does that, for your group.

 **Jackson, Deborah J.** 43:22  
Yeah.

 **Court (Guest)** 43:23  
And so it really does take that person to take on that role, you know, to have on top of all the other hats they wear.  
 **Jackson, Deborah J.** 43:31  
So I will make one more comment, which is I think that the ILO role is so unique in a university environment that it's not likely that an ILO will have a lot of other colleagues within their university who are going through the same thing.

 **Court (Guest)** 43:49  
Sure.

 **Jackson, Deborah J.** 43:52  
And the NSF program directors, we don't, I mean the point is you guys live and sleep and eat and drink this role 24/7.  
So I very quickly figured out there's not much I'm going to be able to teach y'all.  
And So what I did was to focus on providing resources, you know, that would allow you to do what you need to make it a really stable community and pretty much have handed it off to the ILOs to drive the truck or the van or the bus, whatever you want to call it.  
And I think it's been very effective because of that cause it's pretty much driven by the needs and the winds and the dialogue among the ILOs.

 **Court (Guest)** 44:47  
But as you very briefly said, the the ILO are pretty much unique on their campus.  
I mean, maybe there's somebody in the technology tech transfer office as a counterpart or whatever, but that's across campus.  
It's not in the building you're in, and that kind of thing.  
And so ILOs had to find kind of innovative ways to cooperate which the ADs more naturally found.  
And so one was when we had annual meetings, there would always be a breakout session that was by staff function, so one thing was the ILOs.

 **Jackson, Deborah J.** 45:16  
Yeah.

 **Court (Guest)** 45:18  
ILO breakouts were always where the ILOs themselves could get together and refresh their personal, you know, familiarity and friendship with each other and, you know, could talk in ways that were productive and share war stories and what they were doing and lessons learned and that kind of thing.  
And then there was the ILO consultancy.  
That started, I think, in 2000. Erik Sander again has been such an innovator and leader of the ILO kind of function all through much of its history.  
And so still is today, oddly enough, although his center graduated many years ago.  
So that was started in 2000.  
Erik and I think Carl Rust was one of the original people, but Eric typically was the one person and he would bring in one or two other people to go around, as you know, where the consultancy ILOs go around to the new centers and kind of spend two or three days doing just a total fire hose download to the ILO with what they need to know or as new ILOs would come into an existing center and a new person would come into that job, they would do the same thing.  
And so they would really give them a quick-start boost, you know, to get going in the job.  
And so the consultancy was a way that that ILOs always kind of cooperated and.. I’ll tell you a funny story.  
So I mentioned that I ran the ERC meetings from the program standpoint. There was another company that ran the logistics of it dealing with the hotel and all the other crucial functions. But at one point, I don't know, probably about 1999 or so, a  
Center director named Rao Tummala, who was at Georgia Tech, the PRC, said to me because we had get together at the at the end of the first day, there would be a reception.  
You know, there would be some finger food and you have an open bar or whatever, but then everybody else was on their own to go out to dinner.  
And so, Rao said, you know, most people don't know each other.  
We should go to a restaurant and pull together a bunch of people and have a nice dinner, you know, just friendly, and we'll get to know each other better.  
And I said good idea.  
So we went to an Indian restaurant.  
He was, you know, a graduate of Madras, and knew this great Indian place in DC.

 **Jackson, Deborah J.** 47:36  
Yeah.

 **Court (Guest)** 47:38  
We got together a dozen or so people and we just had a ball.  
We had a good time and it was wonderful that Rao picked up the tab for the whole thing.

 **Jackson, Deborah J.** 47:45  
Yeah.  
Ohh no wonder you had a ball.

 **Court (Guest)** 47:47  
Loved it.  
But so we began doing that every year.  
And so then we called it, you know, kind of conspired to put the thing together and we called it the Spicy Indian dinner.  
So what I would do is I would reserve a room in a restaurant, an Indian restaurant near where we were in downtown DC or wherever and I’d invite people from a number of different centers, not necessarily all the centers but get like 20-ish people, you know, and I would have maybe 2 ADs, two ILOs, two education people, 2 center directors, 2 research thrust leaders, that kind of thing and then we would invite the keynote speakers, the people who are from out of town who didn't know anybody, as our guests, we would invite them to have some place to go so they weren't eating in their hotel room by themselves.  
And so we would go to places and just have a great time. Everybody would pay their own dinner tab but I would pay for the wine, which I guess I wasn’t really supposed to do but it just came out of my overall meeting budget. I can tell that all these years later, but anyway it was a good thing to do.

I'll show you something funny here.  
So this is one of those.  
It's, uh.  
Let's see, you know.  
This is Erik Sander and Bhavya Lal, who at the time was with SRI, Stanford Research Institute, and had done a couple of studies that were key studies in evaluating the progress of the ERC program.

 **Jackson, Deborah J.** 49:15  
Ohh.

 **Court (Guest)** 49:26  
Now she's the CTO, the chief technology officer at NASA headquarters.  
She's an engineer.  
So here they are after one glass of wine.  
Here they are after three glasses of wine.  
I think Eric's a good sport and he wouldn't mind me showing that, but anyway.  
But that was kind of fun.  
We would have those things and it would just be really 20 people having a great time together.   
But you know, it was one of those ways that we tried to make this—and for Lynn Preston it was a big thing for her, to make the ERCs, this whole big group of people, hundreds of people—to really be a family.

And to me, at first I was kind of, eh, I mean, Lynn was my boss, in effect, you know, so I would kind of go along with it. The word Family was kind of nice, you know. But it really did over time become--it had a whole lot of elements of that kind of thing where people really were friendly.

I mean, they would come to these meetings--which, you know, a three day meeting in DC basically takes pretty much a week out of your schedule, right?  
And at the time they were like that.  
And so it was a pain in the rear to do, in a way.  
But because they hired an individual person to spend almost half their time for a few months putting this meeting together, someone who knew all the people, you could put together a really good meeting that worked like a well oiled machine, one that would be very useful to people.  
I would get keynote speakers who were like, bang-up people that everybody knew their name, and so people would say to me, you know, I’ve been to a lot of government meetings, but I've never been to one like this. This is fun. This is actually cool, you know? And we were trying to make them that way.  
And part of it was giving people just so much opportunity to get to know each other and spend time with each other and get to be friends.  
And they became that, you know, so people had dozens and dozens of close friendships all across the ERC program, even people who lived on the East Coast to the West Coast.  
And once you got to where you could talk on zoom and so on, everything became very much a family.  
And so Lynn calling it that, which to me was like, OK, that's a little bit over the top, but over time it became real.  
But ILOs also competed and I'll give you an example of that.  
This is kind of interesting and I’ll ask your opinion of how you might react to this today.  
So at one point I had what I thought was a great idea of setting up, once we got the ERC Association website going, it seemed like the students were in a kind of silo with their own ERC.   
And so, Scott, by the way, tell me if I'm about out of time.  
I’ve got 4 minutes?

 **Ransom, Scott** 52:19  
No, no, I I I will give you a time check.  
They'll get about 2 1/2 minutes left and we we all actually have another call after this and then totally different topic.

 **Court (Guest)** 52:26  
Ohh Gee, I'll leave.

 **Ransom, Scott** 52:27  
So just to give you that time check.

 **Court (Guest)** 52:28  
Well, OK.  
And so anyway I started this thing for students because they only dealt with the members of their own center.  
For most part, they only knew the people of their own center, so I thought there were centers across the country, other ERCs whose members would like to have access to these students, depending on what they’re doing, right?  
So I set up a thing and actually on the website it was like a bulletin board.  
Students could come into it and post their resume, and then basically they would be categorized according to what they're majoring in, what their degree expectation is gonna be, what their ideal job would be, whether they're looking for an internship or a summer job or a part time job or a full time job, where they wanted to live geographically in the country, or the world for that matter.  
And so the industry then could go into that database and look at that and put in what they wanted and up would pop 5 people.  
And so those would be the five targeted people out across all of the ERCs who would be their best hires, right?  
So I thought that was a great idea and I pitched that to first the education directors, they thought it was wonderful.  
I did, too, but suddenly the whole thing bogged down in a way that was kind of weird and surprising to me, and it bogged down because the ILOs all viewed it as, these are our students and it's part of what we market to our partners, our students, and you're going to be giving them away to other ERCs and other industry people aren't even partners of ours, and they didn't like it.  
So they kinda stopped it, so it's not there. but well look, I guess I was gonna say a few more things but we're out of time here.  
I mean, there have been some, I would just say that the only real problems that ever occurred as a result of industrial collaboration were two problems, really.  
And they both dealt with centers misrepresenting their numbers of industry members and the dollars they were getting from it.  
And one result one was so blatant and so bad that the center director actually went to jail for three months.  
If you can imagine something lie that. And I mean that was like a real bomb going off.

In another one, the center itself was in danger of being killed, but they were kind of misinterpreting something, and it wasn't such a blatant, obvious fraud anyway, it was just kind of a misinterpretation.  
So they got out of it.  
But, those were two stories that were kind of horror stories.  
But really, I would just say go here.  
Look, go read the.

 **Jackson, Deborah J.** 54:55  
Yes, OK.

 **Court (Guest)** 54:55  
If you haven't read the best practices chapter and we really need to update it, it was last done number of years back.

 **Ransom, Scott** 55:04  
Yeah, it's still a good one on the ILO.

 **Court (Guest)** 55:05  
Just trying to share a page....

 **Ransom, Scott** 55:08  
Still read it.

 **Court (Guest)** 55:08  
Go to the website and get to the ERC history book.  
If you haven't read that, I mean the thing is like 600 pages long and it's really chock full of information, so read chapter six, which is the industrial collaboration chapter.

 **Ransom, Scott** 55:21  
Ohh.  
Yep.  
How ohh we lost your recording court.

 **Jackson, Deborah J.** 55:35  
Uh, we lost your audio?  
Yeah, your audio.

 **Ransom, Scott** 55:41  
Yeah, we can't.

 **Court (Guest)** 55:41  
Yeah, your audience.

 **Ransom, Scott** 55:42  
We can't, we.

 **Court (Guest)** 55:43  
To 30 seconds.

 **Jackson, Deborah J.** 55:45  
OK, back.

 **Doyle, Owen** left the meeting

 **Ransom, Scott** 55:46  
And actually we're over time now and I know we have to a lot of us have to go to another call, but yeah you guys on the call will be getting a link to the resources page.

 **Court (Guest)** 55:52  
OK.

 **Ransom, Scott** 55:57  
After this you guys get it every time and that's the page that court is referring to now.

 **Court (Guest)** 55:58  
OK.

 **Ransom, Scott** 56:02  
So you will get that soon court.  
Thank you so much.  
Hey, if ILOs have questions about what you're talking about, the history and that, can they reach out to you on email?  
Is that alright if I share your email address?  
I'm putting you on the spot.  
His audio is gone again, but I'm gonna assume court is saying yes.  
He's happy for me to share his email.  
Shake your head no if you don't want that.

 **Court (Guest)** 56:23  
At.

 **Ransom, Scott** 56:25  
Otherwise I will send it out.

 **Court (Guest)** 56:28  
Yeah.  
No, that's fine, of course.

 **Ransom, Scott** 56:29  
Oh, there we go.  
There we go.

 **Jackson, Deborah J.** 56:30  
Erika. OK.

 **Ransom, Scott** 56:30  
Great court.  
Thank you so much, Court.

 **Court (Guest)** 56:31  
OK.  
Well, thank you.

 **Ransom, Scott** 56:32  
I'm sorry we have to bolt.

 **Court (Guest)** 56:33  
See you, right.

 **Ransom, Scott** 56:34  
See you guys.

 **Court (Guest)** 56:34  
Have a good weekend.

 **Ransom, Scott** 56:35  
Thanks again.

 **Stone, Cele** left the meeting

 **Ransom, Scott** stopped transcription