

An Interview with

MICHEL GIEN

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## Michel Gien Interview

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### Abstract

Michel Gien describes his education with computing, his decision to join the Cyclades project under Louis Pouzin, and his subsequent career in networking and operating systems. Gien collaborated on a number of French, European, and international projects such as the European Informatics Network, the International Network Working Group, and Open Systems Interconnection. He reflects on his work in the private sector with Chorus Systems, and on the challenges of developing a culture of entrepreneurship in France.

This set of nine interviews conducted with Tilly Bayard-Richard, Najah Naffah, Louis Pouzin, Marc E. Levilion, Michel Gien, Jean-Louis Grangé, Gérard Le Lann, Rémi Després, and André Danthine was funded by the ACM History Committee with a fellowship on “European Contributions to Computer Networks: An Oral History Project.”

**Russell:** This is April 3, 2012, I'm Andy Russell with Michel Gien, and we're here to talk about Cyclades and some other things. I thought I'd start by asking you to tell me about your education and your first involvement with computers.

**Gien:** I graduated in 1971 from a French engineering school, a general purpose engineering school, and there was, in the third year, some specialty in chemistry or industrial stuff. It was the first time there was a computer section, and so I participated with the teacher. We were establishing what should be a computer science specialty. There was another option that was more applied mathematics and algorithmics and programming languages, but this one was really about systems. So I left in '71, and I went to do my military service as an engineer in a research group in Grenoble. It was like DARPA in the French military at the time. When you were doing your military service, they would put you as a contribution to their research projects that they were sponsoring. And one of them was on computer networks – the beginning of it – and so I worked with a small group in Grenoble that was more or less started to be related to the early Cyclades days. So the professor there had a relationship with Louis [Pouzin]. The research center was a combination of Bull (it was CII, Bull at the time, the French manufacturer research center) and the university. And there I worked on doing the system programming language to help them develop their software. And so I spent a year there and, after that, was looking for a job and had basically two options that interested me. One was at Bull, at CII as a continuation, and the other one was IRIA. And I decided to go to IRIA, out of maybe political reasons. I wanted to be in public research. It was hippie times, you know, I was in this mood, and so I went to IRIA, but the only position they had was in their computing center. And so I worked as a system engineer – sysadmin, if you like – of the computing center, who was experimenting with the first time-sharing systems. It was 100070, which was a derivative from one of U.S. manufacturers. I can't remember exactly. It was the first time-sharing system built by Bull, and we were the first site experimenting with it. And I had some relations with the Cyclades team...

**Russell:** In the same building?

**Gien:** No, we were in two separate buildings, but Louis's strategy was to have a strong team and have other groups contribute to his project. And so he managed to... There was supposed to be some position in the computing center to help the Cyclades project to implement their stuff on the computing center computers. And so he managed to have me working with him under the umbrella of the computing center. So that's how I got, I started to be involved. And so what happened is... It's an anecdote. It's okay if I give you anecdotal data more than other things?

**Russell:** Of course.

**Gien:** And so, one day he calls me and he said, he says, "Do you speak English?" And so I said, "Yes, I..." because I spent a summer internship with Control Data in U.S., in Minneapolis, for almost three months during my studies. And that's where I learned my English. And so he said, "You speak English. We need to participate in this new European project, COST 11," which became the European Informatics Network [EIN]. "And I need someone to represent us in this group." And I was really, you know, a young guy and knew nothing. <laughter> And so he told me, "I'll give a talk in a few days to a small audience. So you come to the talk. You listen to what I said. You take my slides, and then you go." <laughter> So I was really stressed like hell... I didn't know. And so two days later I go to a meeting in Brussels, I think. I was one day late because, you know, they didn't manage. So there were a few guys around the table, English guys and Germans and I knock at the door and they're all here, and I come and say, "Oh, here I am from Cyclades." <laughter> And the main guy who was English had a very strong cockney accent, and so I couldn't understand a word of what he was saying. That was my first acquaintance to this. And that then became very, very funny – very nice – because it was a small group of researchers. There was a guy from the National Physical Lab in U.K. There were actually two guys – Derek Barber who was working with Donald Davies, that you probably heard about. The main guy there was also a young guy – Roger Scantlebury. And we became very good friends. There was the guy from the ETH in Zurich, Peter Schicker. And Ann Duenki. She was an American working in the ETH. There was a group at Polytechnic in Milano. And Lemolli, was a professor at Politecnico

di Milano. He's been always doing networking in Milano. And us in Cyclades. And so the purpose was something that was pushed I believe mostly by Louis and the French government and the U.K. and the National Physical Labs. There was some big project in the beginning of building a European Community to make the research labs work together, and so they were funding it. The idea was to use the experience of Cyclades and the National Physical Labs to build something at the European level. It would be based on the technology and the experience base there, to design something that could be built at the European level and compatible with what was done in the other places. Oh, yes, there was another group I forgot. It's CERN, the ISPRA center in Italy. And I can't remember the name of the guy there. They were very involved in building a network for transferring big data.

**Russell:** Was the COST 11 Project imagined as a counterweight to Arpanet, or a partner to Arpanet? Was it considered at all in relation to the Arpanet?

**Gien:** I don't remember any relationship with Arpanet. The relationship with Arpanet was mostly between Cyclades and Arpanet and the National Physical Labs, Donald Davies, and then the work discussions together within the IFIP/International Network Working Group. EIN, the COST 11 was later, and the idea was to implement something. But the group of researchers that were there were there to design specifications. And then there was a subcontractor that we were choosing, to actually implement the specifications. The specifications were derivative or slightly changed from Cyclades. And then there were new protocols that I was involved with to design file transfer and virtual terminal. There were some differences, also, because within the COST 11 there was some interference by the PTTs, the telecoms. And there were some fights – big fights – about datagrams versus virtual circuits. The telecom was also part of the French government. And they had their word to say. So there were guys – Rémi Després you probably heard about from the CCITT, who was the virtual circuits promoter. He was pushing this within the European Informatics Network. We had to compromise between the Cyclades religion, the PTT religion, the British religion – who is always different than anybody else. <laughter> I tried to accommodate everyone in there. So it was very interesting but

quite tough to defend your point of view and accommodate things. It was also more open than within Cyclades, where we could decide what we wanted to do with Louis and Hubert Zimmerman and taking decisions about what to do there. But within the COST 11 we had to compromise. So there was a lot of politics going on... a lot of politics.

**Russell:** Political compromise as well as technical compromise?

**Gien:** Well, it was technical compromise. You know, there was no direct politics involved. Never in this case. In standardization it's the same. It's always technical. But behind the technical arguments, there are some other agendas. You know, political or economic agendas of some companies. And so they tried to orientate the technical decisions in a way that make them feel comfortable. So our role as technical people were to defend the people behind us, their point of view, on technical grounds. It's quite tough because you have no proof of anything, because you haven't done it yet. Right? <laughter> So you have to argue about things that are virtual. And, and I think the arguments that seem obvious now, you know, by fact, by experience, at the time they were not obvious at all.

**Russell:** Was it as much work to convince yourself? Or for everyone around the table to convince themselves that what they were saying was good or correct?

**Gien:** It was a cultural discussion, arguments based on the background of the people and of the background of the organizations behind it. So, Cyclades is the same as the Arpanet guys and National Physical Labs guys, they were computer guys. And what we wanted is to make computers talk together. The communications guys came from the voice communications, and so they were obsessed by the network and how to control the behavior of the network, how to make sure that doesn't collapse, how to make sure that you have a quality of service when you communicate between people. And so the model was to say when we would place people by computers, it was the same thing. So we built circuits which allows us to ensure the quality of service, once it is established we drop them if there is not enough capacity. That allows us to control and bill because we can

bill on the communication. And they were very afraid to see, you know, datagrams as being like the post office; but you can't charge on every packet. And then if the packet gets lost, what happened, and you don't control anything. And our view was to say, "Yes, but it's computers. Computers, they exchange buffers." Data are fragmented in buffers and messages within the computer to compute, and so you need to exchange messages. And if you want to reconcile the end-to-end communication, then it's done at an application level, it's done at another level than the lower level. And so that was the basic philosophy of the fights: Where is the circuits? Is it at the high level, or is it at the low level?

**Russell:** If they were so concerned with billing – and they needed to create something that can somehow account for packets – could you do that within the application level? Or maybe you didn't care so much?

**Gien:** Well, we didn't care so much about that. We wanted to optimize the use of the resources within the network. We believed that it was more reliable to have packets exchange because they could change routes, they could go faster, and so on. So we said, "Well, if we need to build circuits, we'll build it at a higher level. Then how do we bill is, you know, another story." We're not really concerned by this, I guess. I mean, I don't remember us being too concerned by this. But it was in the motivation of the telecoms. Because also there was the question of who is going to operate this network. The idea of the telecom was obviously that they needed to operate it, but I'm not sure that the idea of the other guys was that the telecom should operate. It should be a computer network, not a communications network.

**Russell:** When you became involved with Cyclades, were you always with both Cyclades and COST 11?

**Gien:** Yes... There was a political guy within COST 11, who was one of the guys of the Ministry was discussing the budgets and stuff like that, the overall program. I was the technical representative, and we had meetings all the time in each of the centers. And we

were all about the same age, and so when we were going to ISPRA in Italy, everybody was camping there, you know, so it was a family, right? <laughter> And we were having technical discussions on the packet protocols and the transport protocols, file transfer. My role was also to see how to interconnect the Cyclades network with the EIN networks, so that they could talk together and make the protocol as standard as possible.

**Russell:** I would think this harmonious, family-type atmosphere would make some of these discussions easier – as opposed to sitting at a table in Geneva.

**Gien:** Oh, yes, it was very easy between us. But there were some high-level political constraints that said to influence this way and this way. But there was within the group of people from Politecnico Milano, ISPRA, NPL, ETH, we were all aligned on the culture, all the same.

**Russell:** About how much of your time can you estimate that you spent on Cyclades versus on COST 11?

**Gien:** For me, it was all the same. I was 100%. I was the only one on the EIN. And then I was talking to Hubert [Zimmerman] and Jean-Louis [Grangé] and Louis about how it relates to Cyclades. They were designing the new version of the transport protocol, for example. And so I used that to inject that in EIN. And Hubert also participated in some of the EIN meetings when we worked out some of the transport protocols. With Jean-Louis it was the same. So it was all mixed. I was kind of the point of reference, I was calling on them when needed. I was in charge of implementing the interconnection – the node – between Cyclades and EIN. I had two other young engineers with me, and we were doing experiments with National Physical Labs. There was some other guys doing the implementation of the Cyclades host within the computing center. And so we were working together on this. It was funny, by the way. I have another anecdote that comes back. Because we were in front of our Mitra 15, a small computer, like PDP-11 kind of, but French. And I was with my colleague, and we were exchanging packets and looking in the TTY, you know <makes a “ch, ch, ch, ch” sound>. And everyday, at 5:00



everything stops. And so we see this and says, “What’s this problem?” And then it starts again like at 5:30. So after awhile we got on the phone – because we were not really talking, not like today, we were mostly discussing through the computer. And so I say, “What’s going on?” And he says, “Ah, it’s tea time!” So they were working, and then everyone goes to have a cup of tea and then come back. And I realized that when I was visiting them. And I discovered when I visited them, I said, 5:00, exact time, they all go... <laughter> I said, “Now I understand why,” why we stopped at 5:00. So we were learning cultural differences as well. So to come back... that was my main involvement. And then the other thing, but I can’t remember exactly the timing, but Louis started to send me to the INWG meetings.

**Russell:** About when, do you think?

**Gien:** I have a really bad memory about exact dates.

**Russell:** INWG began in late 1972.

**Gien:** No, no, it was after that. It was probably ’75 or ’77... Second half of the ‘70s. I was not involved in the first rounds when they were discussing datagrams and transport protocols. I became involved mostly when they started talking about file transfer and virtual terminals because that’s what I started to work on within EIN. And it started to contradict... I think it was the second round of this file transfer based on the transport protocol. And that’s where I started discussing within the INWG in the beginning, to define some kind of common ground with Gary Grossman and Carl Sunshine.

**Russell:** There was a first attempt to build a consensus transport protocol, a document INWG 96.

**Gien:** Yes.

**Russell:** The authors were [Vint] Cerf, Scantlebury, Zimmerman, and Alex McKenzie. And that was during the summer of 1975.

**Gien:** Right.

**Russell:** And then the group voted on it.

**Gien:** Right.

**Russell:** And then, my understanding is that the group voted in favor of the proposal, and to send it to CCITT. CCITT wanted nothing to do with it. And then, at that point, the ARPA guys seemed to get less interested in INWG. That was by early 1976 or so. The leadership of INWG changed, and an Englishman, Derek Barber, stepped in to be chair of INWG/IFIP Working Group 6.1.

**Gien:** Right.

**Russell:** And then, after a period of time, INWG 96 was revised and eventually published as 96.1.

**Gien:** Right.

**Russell:** Do you know much about that revision process? Maybe you can...

<simultaneous talking>

**Gien:** You need to talk to Hubert. He knows more, because he was involved day-to-day on these things. What happened was that the INWG work was a combination of... I think what happened was that the Cyclades input was very important in INWG. It's a matter of timing. In Cyclades, we had the first version of the transport protocol – version 1 – and at about the same time ... I'm not sure what it was called in TCP, but the equivalent in

Arpanet. And then there was a lot of work done in the second version. The transport protocol version two that Hubert designed based on the experience under version one.

**Russell:** Within Cyclades?

**Gien:** Within Cyclades. And that was input to INWG. And so, I think, the version of the Arpanet transport protocol at the time was kind of a little behind, if you like, in terms of... It was probably more advanced on some of the implementation levels. But they hadn't revised it based on their experience. And so that's why a lot of the argument for INWG 96.1 was brought by Cyclades and then, maybe, some of the Arpanet guys thought if we follow this, then we give more advance to the... I don't know, you know, what went on in their minds. And so that may be why they said, "Well, let's revise our own version and implement it, and then, instead of trying to discuss with the organization and CCITT and ISO and IFIP and this stuff, let's do it." And that was the big strength. And I think they were right to do that. But it could have been... It probably, technically – purely technically speaking – would have been a better solution for Arpanet to actually take the 96.1 and then implement that. And that could have been a more general standard and use that to fight CCITT rather than being separate between Europe and the U.S. But in the U.S. they were not as concerned as we were about the telecoms' power, the CCITT and all of this. They could, you know, go their own way. And also, the fight inside the U.S. was, you know... AT&T has no voice. DARPA was financing it. And so they could actually build, like BBN, networks and all of this, totally separate from the telecoms. Where in Europe it was not possible. So that's why. <laughter>

**Russell:** Politics worked out differently.

**Gien:** Yes.

**Russell:** In writing that document – INWG 96.1 – how did that work? The authors were Zimmerman...?<sup>1</sup>

**Gien:** It was mostly Zimmerman, Alex McKenzie, Sunshine... I think Sunshine was involved, yes?

**Russell:** Yes.

**Gien:** Grossman... Yes, Grossman and Sunshine, they were working together. But Cerf was not involved in that. And I'm not sure what was his status actually. Maybe Hubert would remember. Because Cerf was... DARPA... He had several hats he was carrying. I don't remember exactly which, which hat he was wearing at that time – if he was a sponsor of DARPA program or if, because...

**Russell:** I believe Cerf moved to DARPA in 1976.

**Gien:** Right, so that was at the same time. So he became kind of, you know, the money-giver as opposed to the guy doing the work. So that's why there might have been also some differences.

**Russell:** So then in late 1977, early 1978, the OSI project started within ISO. Did you get involved with that?

**Gien:** Right. Yes. So that was mostly Hubert who promoted that. And that was a way to get around CCITT. And there was also IBM. It was interesting because IBM had SNA. They were starting to push that with HDLC, within the ISO and AFNOR, the French version of it. There were big fights, technical but behind IBM and others. And some, some PTTs as well. So I was involved in AFNOR and ISO, mostly around file transfer protocols.

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<sup>1</sup> The authors of INWG 96 were Vint Cerf, Alex McKenzie, Roger Scantlebury, and Hubert Zimmerman. The authors of the revised document, INWG 96.1, were Andre Danthine, Michel Gien, Garry Grossman, and Carl Sunshine.

**Russell:** The bureaucratic process for getting involved through AFNOR, was that any different than your earlier experience with COST 11? There it sounded pretty informal.  
<simultaneous talking>

**Gien:** It was much more formal. AFNOR was just meetings. It's meetings. I mean, people bringing in contributions, fighting against the other contributions. And when you start to get some alignment, then IBM comes with totally new contributions and says, "This is the proposal," and then everyone has to come to work on it to kill it. And then it's because they were trying to slow down the process.

**Russell:** So they did this on purpose?

**Gien:** Oh, yes, yes. And the power of IBM was that they could push the same idea within the French AFNOR, within the BSI in Britain, in the U.S. And then some groups, they were able to manipulate more than others. So if they lose in one ground, then they come in the backdoor with the other guys. The Japanese were also very involved. There's a couple of good guys there. On our side, if you like – and I can talk to you about that, as well – was Japan. And in the U.S. there was this guy, DesJardins, who was the U.S. representative at the U.S. Bureau of Standards. So he managed to control his own IBM.  
<laughter> And so Hubert... What was his first name, DesJardins?

**Russell:** Richard.

**Gien:** Richard. Richard DesJardins. And the Japanese guys were kind of, you know, managing to drive the ISO process. And so we were more or less controlling AFNOR. DesJardins was trying to control the U.S. standards and the British, I think, they were not very pushy in the same way. I think the British... I can't remember, but maybe they were more telecoms-driven.

**Russell:** Charlie Bachman is one person I've talked to about OSI, once it got started...

**Gien:** Charlie Bachman. Yes, of course.

**Russell:** When I talked to him, he didn't really remember a lot of these fights behind the scenes. He just said, "Well, we got some good agreement, especially on the layered architecture" and...

**Gien:** Yes, right. Because of this telecom approach, the idea was to have a structured approach and be at each level. That was based on our experience of moving packets around, building computer-to-computer communications, depending on file transfer or terminal – that was more interactive versus data-driven – building sessions for the applications, and then having applications to have all the stuff underneath to be able to communicate on one basis. And that was very interesting. There were a lot of discussions about how many layers, mostly because big guys wanted to control it. And IBM was interested in making sure it was computer-driven. But within the computer, they wanted to have the flexibility to do how they wanted. The telecom wanted the maximum within the network to control it. And we were trying to do something, you know, sensible from the technical ground. Between those two <laughter>

**Russell:** That's tricky. <laughter>

**Gien:** And so, I think Hubert gets a lot of credit for this. He managed to get the support of the other guys but he really was working like hell to kind of bring the arguments and push the stuff, make it progress, and was very strong in his technical arguments than people. They couldn't argue, you know, after awhile... they can only say yes. So that's how we managed to get this consensus.

**Russell:** And then in the meantime – or maybe a little bit earlier – Cyclades had some problems domestically in France, and problems with the funding.

**Gien:** Yes. So then there was a political change and the funding started to drop. Louis tried to get user groups involved, like a big user company. There was an association it was called Inforep. It's informatics distributed *repartie*, in French, distributed computing, and he managed to bring big companies, like banks, that were potential users of computer networking. And he tried to have them push what the needs were, to create some movements to get some funding for this. And then the other part, also, there was a push to actually give all the baby to CII, to the French computer manufacturer, so that they actually built a network and make a business of it. There was also a lot of service companies – like Logica, SESA – that were equivalent to BBN in U.S. who actually built a service and made it commercially. And no one really took, took the ball... I think there was, I don't know, lack of vision, politics, you know. The best would have been probably to make a start-up, but it was not in people's minds at the time. It was too early.

**Russell:** So then it just died?

**Gien:** So gradually, it tried to survive through standardizations, but on the other side of the Atlantic, Cerf and ARPA, they implemented stuff so they made it work and so that's how... And so the other thing that was happening that was more or less a part of this was the rise of Unix and PDP-11, and what started to also come from the bottom up with Unix was the UUCP protocol. It was not really a protocol but very "hacking" stuff, but that was working. And so people were also using this within research. That was more easy to do because you just had to have your computers build this, and then you just talk to the next computer. And then the next computer talk to the other next computer. And so it was kind of fixed routing, but we could manage to make the computers communicate without needing any infrastructure, just using telephone lines. So, that was building big. And I was involved and decided to be involved with this because at the end of the '70s, Louis asked me to start another pilot project, which was called the Sol Project. And the idea was to say, "We have Unix, which is starting to become a really popular operating system for research. And we have nothing in France." And Unix was working in the DEC computer. And there was a kind of ban of DEC computers in France because of political reasons, because they didn't build the factory that the government was expecting in the

east of France or something <laughter> and someone in the government says, “No DEC computer in France!” And so as public research, we couldn’t buy any DEC computer. And so, Louis’ idea was to say “Let’s build an operating system project which will mimic Unix, but we will put it on French computer.” And what we decided, which was kind of crazy technically, but politically worked, was to say, “We’ll use modern languages, like Pascal. We’ll do it under the umbrella of software engineering projects to help software engineers build better computer programs.” So the government bought into this and started this project, which was basically to build the Pascal compilers for all the French computers. There were two at the time – mini computers coming in – the Mitra and the CII-Bull-Honeywell. Honeywell was French at the time, Honeywell level six. And we built the operating systems, which would be Unix version but in Pascal. Louis asked me to try that. So I started this project because I had my background in operating systems. And the first thing we did was to take the Unix code and put it in C on the French computers and then rewrote it in Pascal. So this didn’t go anywhere really, but what it did was to build a big culture of Unix programming and systems programming among all the people who worked around this project. So from an education and cultural point of view, it brought a lot. A lot of French companies and people are experts in networking because of Cyclades and in operating systems because of Sol.

**Russell:** It produced indirect and long-lasting benefits.

**Gien:** Yes, yes. So I started this in I think it was ’79 or 1980. And then, I left more or less the networking. I was still involved in the AFNOR and ISO stuff, but I was mostly focusing on Unix. And that’s where I started also using UUCP and then new computers came in, like the first Macro computers. One was a prototype, built at the France Telecom labs called SM90. And then I started to work on this and be involved in the Unix community. So the same guys that we networked, like Steve Bunch, you know, Grossman, Mike O’Dell, all those guys that were involved in building UUNET, I was involved in this. I built the French Unix user group, the European Unix user group with Dutch guys. And we were having a lot of fun with USENIX, and these groups...



**Russell:** Was this part of your job, or just for fun?

**Gien:** Yes, as part of my job of building a Unix culture and part of this project, we had some fun to build this Sol version of it, so I gave a lot of talks on it. People were laughing in U.S. like, “What the hell?” This is a French crazy idea – Unix in Pascal. <laughter> But we made it work actually. It was a way to work, to get our computers for macro computer working and exchange ideas and have a close relationship with all the labs guys. So after that, in parallel with this project, Hubert started another... It was not a pilot project but a research project on distributed systems called Chorus, within INRIA, and the idea was to use all the knowledge about networking to try to bring the communication within the operating system kernel. To build a distributed system. So they built kind of a message-based computing environments. Originally the operating systems was dealing with the processor, memory, and peripherals. And the idea was to bring communication as a building block. So the same way as we were using communication between computers, we could use communication within the task of an operating system within a machine. So that was the idea behind Chorus. They built the first prototype, and when I was working on the Sol project – we were in the next building – and when they were going to go to the second prototype up there, it was a micro kernel-based, message-based operating system. I said, “Why don’t we use Unix to build it?” Redo the Unix code, with this communication-based things but the same APIs to run the same applications and be able to build this on new multiprocessor computers that were just coming. So we built this as a combination of Sol and Chorus. And in 1996, Hubert and I and a couple of engineers within Chorus, we said, “Okay, why don’t we just leave research and do a startup?” Our main motivation was that we had spent 10 or 15 years within public research. We had done this computer networking. We had done operating systems. We had a lot of connections around the world, with the U.S. We saw our friends, Bob Metcalfe starting 3Com, you know, people starting to build these new startups. And I remember visiting, you know, going to visit them and saying, “How do you do this?” And so we said, “Well, let’s do like they do.” We didn’t have VCs [venture capitalists], but we had other means to get funding. And so we started the Chorus Systems company.

**Russell:** Was there much of a startup culture in France at the time?

**Gien:** No, no, no. I think we were the first technology startup. And then at the same time, or within the same two years, there was Chorus, the guys who were building a research on the multiprocessor computer also started a company, ILOG, at about the same time, just after that. So we were really the first ones. And so we couldn't get, really, VC money funding. There were no VCs. But we could get money from government contracts and also European projects. So we did all our funding R&D, we were kind of five or six projects trying to get some money off the ground.

**Russell:** I want to hear more about Chorus, but I also don't want to miss some things in the earlier period. You were with Cyclades and INRIA, and there were some fights between the PTT and Cyclades; but then your next job title is with CNET, with the PTT! <simultaneous talking> Did you go to work for the "bad guys"? <laughter>

**Gien:** Okay, so you have to understand the French politics... INRIA was the public research, and with the governments for Cyclades, there was something called the *Plan Calcul*, the Computing Plan, very strong industrial policies under De Gaulle, who decided we needed to build a computer industry. So there was lots of money put there, and these pilot projects were there to bring the knowledge of the research – public research – to the industry, make them work together and, you know, build something with a vision. Then the government changed and Giscard d'Estaing... Pompidou was also in the same line, more or less, I remember. And Giscard d'Estaing changed it. It was more liberal. Let the industry do what they want, no strong political leadership. And so they decided, they said "This nature of research – public research – and private industry, well, this is not a proper way," so they decided to create what they call the Agency of/ for Informatics, which was a public organization there to distribute money to the French industry. And INRIA was doing only the public research. And so my project – the Sol project – and there was the other project... You'll talk with Jean-Louis [Grangé], we had the one on satellite communication called Nadir. There was one on databases by Jean Le Bihan, who passed away, and Najah's project. All those, they said, the money that is

given to this project is now managed by *Agence de l'informatique*, not by INRIA. So, there is a kind of a little bit, if you like, like a DARPA type. So there is the money organization, and then there is the research who provide the knowledge. Right? And then there are companies that may have contracts that are given by *Agence de l'informatique*. And so my situation as a director of this was that I was transferred to *Agence de l'informatique*. And so Louis, at the time, he didn't like this because, he said, "Well, this is pure political agencies to give money." And so he had a friend who was a new director of CNET of France Telecom research labs. And after all these fights, you know, this guy thought, "Well, maybe we need to have some computer knowledge within our communication organizations." That's how Louis sold it. And he said, "Look, there is Hubert. There is Louis. There is myself. We are driving this project. Why don't you make an offer to hire those guys so they will bring, you know, computer knowledge within your organization and avoid us to go to *Agence de l'informatique*?" Right. And so it was purely an investment, if you like, of the French Telecom research labs. So they hired me, but I was still working at INRIA driving a budget that was at *Agence de l'informatique*. <laughter> So I was doing exactly what I wanted. I had the freedom within INRIA to hire people. I was reporting to *Agence de l'informatique*, which was okay because the guys were okay and didn't want to get problems. And my salary was paid by France Telecom research labs. That lasted for about two years. And then at the end of the Sol project, then I was purely under the France Telecom labs, and that's where I started to work closely with... Hubert was in charge of the department to bring computer knowledge. That's where they started to build this computer – microcomputer – which was originally targeted at Telecoms, but we managed to make a computer out of it. That also was raised to another startup. And then I started a small team to work with the Chorus project on building Unix and Chorus together on this computer.

**Russell:** I see. So in a way you could say that France Telecom got what they wanted, which was more of the computer knowledge, more of the computer culture. And you were doing what you would do anyway...

**Gien:** Yes.

**Russell:** ...working with Unix user groups in Europe, which also was a benefit.

<simultaneous talking>

**Gien:** Yes. The computer network war was over. The Telecoms had won because they built the Transpac network. So there were no more fights. Then they hired Louis to be the fly who, you know, hitch the horses, you know. He had a really hard time because he didn't like this culture. But he was there to bring ideas and try to, you know, make these big labs shake. And Hubert was more efficient because he tried to change the things more slowly, where Louis was kind of, you know, a mess. <laughter>

**Russell:** I can imagine for Louis it would have been difficult at the end of Cyclades to move and take on a different role in a different culture.

**Gien:** Yes, yes, but he managed to really make some moves because he had a good vision and good ideas. But he had a lot of people that didn't like him for political reasons because he was nasty and, you know, always saying in public things that you don't say in public, and people were very embarrassed. So he was more contracted in building his way there. So, the three of us were hired by the France Telecom labs, and we were to do some changes there, but we didn't stay very long. We stayed five years, I think. So for me I stayed about two or three years doing Sol as before and two years doing more research, but I was working very closely with INRIA people. And so in '96, Hubert and I and the guys there, we said, "Okay, let's get out of this mess and start up our own thing." <laughter>

**Russell:** Can you tell me a little bit more about that process, about going out into the unknown for a startup?

**Gien:** It was not so much the unknown in the sense that it was very technology driven. We had breakthrough technology. There were some similar projects; the most similar one was the Mac project at CMU. There was another distributed system project in

Amsterdam. And there was one in Stanford, the V system by David Cheriton, who is a billionaire now, I guess, because he was involved with Google, and a couple of other things. He's still a teacher in Stanford. And so there were research groups moving around Unix and building distributed systems. And we were the only one that actually jumped into building a startup, the others were university projects. There was another big fight between Chorus and the Mac system. And it was also similar in some sense to the old Cyclades/ Arpanet stuff, except that we were a company.

**Russell:** Who were the people at CMU?

**Gien:** CMU. Rick Rashid was driving that. Rick Rashid went to Microsoft, I think he's still head of the research lab in Microsoft. If you manage to talk to him, give him my regards. The other big guy there was Avadis Tevanien who was a PhD student with the Mac project. I tried to hire him within Chorus, and he actually went to NeXT. And he's the guy who rebuilt the OS for the Mac and is with them right now. I think he's still in there, or maybe... It was NeXT, yes, and then it was Apple when it was acquired by Apple. He's probably still there doing the OS work for Apple. This is a very small world.

**Russell:** So then, you were with Chorus for how long?

**Gien:** Chorus for 10 years. So I was the CTO, and I did mostly the outside stuff, interacting with research, interacting with my friends in U.S., with the Unix community, doing some marketing there. We started a U.S. company, and I had to do marketing over there. Doing, you know, evangelizations, these things. I am a very social guy. <laughter> So that was the follow-up, you know, I really liked this, so I have lots of friends. So I managed to hire an outstanding team within Chorus because of all the connections we had with the research. There were U.S. PhD students who said, "Oh, we want to work for you guys because we can work in Paris." There were these two guys from NYU – a man and a woman – who came to work for us. There were these guys from many places in the world – from Argentina, from... So we had a very international team, top-notch guys, very committed. It was really lots of fun. We stayed 10 years, then we were bought by

Sun, mostly because Bill Joy – I actually met him first time, he was PhD student in Berkeley, he started Sun, we stayed in touch, and when they needed to get an operating systems for the Java terminal, for Java OS [operating system], for building network computers, then he thought about me and Chorus and so... We were ready to get acquired anyway, so we got acquired by Sun. We stayed within Sun doing a combination of Chorus and Solaris for high-availability telecom-based systems. Hubert actually moved to U.S. within Sun, actually, he moved to U.S. before the end of Chorus. I was mostly in the French group, the original engineering group. In 2002, Sun decided to get rid... It was the recession, and they chose to concentrate on IT and enterprise. So they said “this stuff with telecom systems, we’ll get rid of it.” And so with this group of engineers – we were very close together, having spent, you know, 10 years with Chorus ups and downs, five years within Sun, with the politics – we said, “Let’s start again.” And so we left Sun, the 35 of us...

**Russell:** All together?

**Gien:** All together as part of the layoff plans, you know. So Sun contributed individually some money to people who were creating the company. So some people left, but we started with the 35 the company called Jaluna and then changed it to the company called VirtualLogix. Hubert didn’t want to be held to this, so he stayed in U.S. and I took over. So I drove Jaluna. We were building virtualization systems. Still, you know, same ground as microkernel operating systems, but virtualization is another way to say we virtualized the hardware to build different operating systems, so it’s a similar background but slightly different approach. And then I managed to raise VC money. I raised \$12 million in 2004, and that happened because I was looking for money and discussing with big VCs and nothing happened, and in Christmas 2003, I think, I was in Japan, and I got a call from a guy that said, “Did you see that VMWare just got acquired by EMC for \$350 million? Aren’t you doing virtualization also?” <laughter> I said, “Yes.” “When you come back, let’s talk.” And basically that’s how I got this money because people saw virtualization may be an interesting thing. So we did this, and then VC came in, and I was not really the kind of guy to grow the company as the CEO, so we agreed that they would

hire a U.S. guy, and I would continue to drive the strategy in the French office. Then they hired a U.S. CEO who spent all the money in less than 18 months, two years. <laughter> So then there was another round – another 20 million or so – by the same guys plus a couple of others that lasted two more years and then the money was gone. So they changed the CEO, the usual story, and brought in a new CEO, who was a woman, who was charged to get these things clean and basically sell the company. So we got acquired by Red Bend Software in 2010. Red Bend Software was doing software management for mobile phones, and they had virtualization mobile phones with Android, and so we had big, good success in there, not really making a lot of money, but designed by big guys. I stayed with Red Bend for a year, handing over various stuff, and last December, basically, and the beginning of this year, Christian Jacquemot and I – Christian was CTO since 1990 for Chorus. We left. And so I'm officially retired. But in fact I started a company with him called TWINLIFE, and we're just in the beginning of trying to build up something. Because we did a lot of work around the Android and Smartphones with virtualization and all our knowledge there, we think that we could help the old people and their family mostly to use this technology in a way that is more sensible than what you have now. The problems with Facebook and Twitter and the Internet and tablets and all of this is that it's good for kids, but it's very complex for old people, and it also lacks a lot of security and privacy. Our idea is to start with communications but also to bring all these new cameras and mobiles and all this stuff like that to make a company for old persons, within their home, and make their kids more assured about their behavior as they start to become more fragile or degrading, since people get older and older. And so the idea is to build a kind of private social network between the family and their parents, to collect all the data that all these things can do, analyze it as they do with the data that tried to understand, make your recommendation for buying your next stuff. Here the idea is to use the same open source software, but to collect and analyze data, to analyze "Have you done what you are supposed to do? Did you eat?" Or, "did you fall?" And react on this through the equipment for older people. So it's to make all this enterprise technology to the private life. That is our vision.

**Russell:** It doesn't sound like retirement to me. <laughter>

**Gien:** No, but it's also... we try to bring young people to this. When you get older like me, one natural thing people do is consulting. But I don't feel like, you know, going to companies and giving advice that people don't follow. I'd rather build something. Actually, we are installed in an incubator, which is the incubator of the engineering school where I did my studies in the '70s. So I'm back now in the same campus with the young people. Things have evolved since the '70s, so they are now pushing young engineers to make startups. They have an incubator where people come with their idea, and so they accepted my project as a new project, and so we are surrounded by young guys. And we want to try to get some involved in this project and kind of take over and make it. And so that's my way of transmitting my experience to younger people.

**Russell:** What's remarkable is that in all of these different settings that you've moved through, there seems to be a real consistency of purpose – passion in what you were doing.

**Gien:** Oh, yes, yes.

**Russell:** Is this by design?

**Gien:** You know, I really love technology. I love technology, and I love to try to make technology useful, so my purpose is to try to see how this stuff can be used. So it's always technology-driven, to try to find or pick up some usage and say how this technology can be applicable to this usage model. And try to convince people about this, which is very difficult. <laughter> But that's my thing in life. So with this new stuff, the big difference is that now I can explain to my wife and the people around me what I am trying to do, <laughter> where before it was impossible. So you can touch it, but inside, you know, it's the same idea... I'm not afraid of anything. I think we can do everything, just do it. So nothing is impossible.

**Russell:** Do you have any final thoughts? I see we are running out of time.



**Gien:** Yes. I know. I talk too much, so... I don't know about your main things that...

**Russell:** Your description of the 1970s and 1980s helped a lot. It looks strange from a distance to see the fight between Cyclades and the PTT, and then the fight ends and you, Louis, and Hubert joined the PTT. But the way you described it makes a lot more sense now.

**Gien:** Maybe Gérard may have a different view because he is usually more opinionated. But a lot of this was... For me, it doesn't really make sense, these kinds of fights. I've always been driven by the fact that it was fun, and our ideas were technically justified. I could understand what the other guys' ideas were, and I did understand why they were pushing it this way and we were pushing it that way and that for good reasons. So there's no, to me, any value judgment in this. And then sometimes, some ideas prevail over others and they're not the best one. My worst example is Microsoft. At the time, I was so involved with Unix, and I remember this guy was working for me – a young guy – when I was working with France Telecom labs and the Unix project, and we were building this stuff. He said, “Well, I am leaving. I am going to work for Microsoft.” I said, “What? You are going to go back 20 years behind?” And he said, “That's the future, that's the future.” And in some sense he was right, not from technical grounds. I could never work for Microsoft just because, to me, technically they were going backwards. I mean, they were successful. They were lucky to be successful, but they were. It's a little bit like what happened to Apple right now with the iPads and the Smartphones. They're very good at building up the layer of stuff that people find attractive, and Bill Gates made the PC for people who never thought about using a computer, and same with Jobs and with these devices. It's a little different with Apple... But inside, they could have used the technology available to build the same stuff, and make a lot the progress much faster. But that's not the way things work. <laughter> So that's life. I always fight against this... I think also my personal... I'm a little bit of a dreamer, so I see these things coming, because I can understand what's behind it, I can say, “Why don't we use it?” And then now I start to realize more that things take 10 years to a generation to move from one

technology wave to another technology wave. It's incredible that we were doing this stuff on computer networks in the '70s to '80s, these 10 years. The Web was the big invention, same as Microsoft and Apple, by building the small layer that makes the computer network usable by everyone. That came in what 1990 or so, right? So it took 20 years – you know, 10 years plus 10 – and then 1990, and it's only now, another 20 years, to make this pervasive. So it's forty years; two generations. It was the same with VirtualLogix, virtualization. I thought, "okay, we can bring Android to cheap phones using virtualization very quickly." We did it, but it didn't catch on because people said, "Oh, maybe, maybe not," this or that. You know. And then Apple comes in with their stuff, and then all of a sudden, everybody wants to do this stuff. So it's weird. When you are not lucky to be one of these, you just push your stuff and have fun.

**Russell:** The incubator must be interesting for you.

**Gien:** Yeah. What I like is the process. Once you reach a goal, you just... I'm a climber, a rock climber, and when you reach the summit – Hubert also, we did a lot of climbing together, by the way – and when you reach the summit, then you go down, and then you start another one. So what's fun is the climbing, it's not to reach the goal.

**Russell:** Okay, that's a great way to end. Thank you very much.