

Patent Intelligence and Competitive Technical Intelligence Services



Terry Ludlow - CEO

About Chipworks

For over 20 years, Chipworks has been a trusted patent and technology partner to the world's largest and most successful companies. Business leaders rely on us to help them identify and fully leverage their most valuable patents and provide crucial analysis of high-revenue products in the most competitive, fastest changing technology markets.

By combining deep patent and market knowledge with an unmatched ability to analyze the broadest range of technology products we are able to provide the most insightful Patent Intelligence and Competitive Technical Intelligence services in the industry.

Headquartered in Ottawa, Canada, Chipworks delivers services from global offices.

Interview conducted by: Lynn Fosse, Senior Editor, CEOCFO Magazine

CEOCFO: Mr. Ludlow, what is Chipworks?

Mr. Ludlow: Chipworks is a company that essentially takes things apart. We do that because we like to understand how things are built, what they are made from and how they operate. We do this for two types of clients. We do it for people who are looking at their competitor's products and trying to learn from their competitor's products so they can build better products themselves. The other big group that we work for are the intellectual property professionals who want to know if other people are using their own patented inventions.

CEOCFO: Do you work with one area more than another and do you prefer one type of project to another, given a choice?

Mr. Ludlow: The company name is Chipworks, so our roots, my roots, are in the semiconductor business, so computer chips. That is where we came from. The business has kind of migrated upstream, so we have about one hundred and twenty people doing all kinds of technology related projects. Therefore, it is everything from software, software in the cloud, gaming systems, television systems, all the way down to integrated circuits, almost down to the atomic level and it is all fun!

CEOCFO: What are some of the steps required in doing that kind of an analysis? What might be an area that the average person would be surprised needs to be reviewed?

Mr. Ludlow: There is a ton of publicity these days about cell phones. The Apple/Samsung litigation has been in the news. The Apple/Samsung fight is all the way from Steve Jobs biography. It had a fair bit of verbiage on that. I cannot say who our customers are, but if we were involved in that, a big part of it is trying to figure out which bit it is that is important to look at. If you were to look at an entire cell phone and try to understand everything that goes on in there, it would take an incredible amount of time and money to do that, just because they are so complex. That is probably the biggest challenge—just getting together with the client, listening to them, understanding what the scope of the project really is and finding something that will match their budget. Sometimes their budget can be time driven and sometimes it is cost driven.

CEOCFO: Do many companies today realize the need to work with a company like Chipworks in doing the investigation or is it still not quite mainstream?

Mr. Ludlow: It is one of those make versus buy decisions that goes on over many cases. Our biggest competitors are people who are doing it themselves internally, somehow or other. In the make versus buy decision here, many times it is, "We have got good scientists, we have got good engineers." That is true, but their engineers and their scientists are focused on forward design, focused on developing the next generation and focused on doing what that company is good at, whereas our guys are less focused, because they are looking across the industry. Therefore, we are looking broadly and seeing the trends and seeing the developments that are going on in every competitor's labs, as opposed to an internal focus that our clients have to have. I think that is one of the biggest distinguishing factors.

CEOCFO: As a very non-technical person, it would seem natural to me that you would need an expert, someone who knows how to go about doing this research, rather than just hoping you get it right!

Mr. Ludlow: In fairness, our clients employ many experts. They are very, very talented people. If it was important enough, they have the resources, they have the money, they have the people and they could focus on it and do it themselves. The

thing is that this is not their regular job. This is not what is generating revenue for them. It is our regular job. Therefore, because we are focused on it we have developed processes and tools that are specialized for doing the analysis. I think we can do a more cost effective and we can get better results than most of our clients can, not because they are not capable of it, but because they are not really as motivated as we are.

CEOFCO: *What is your geographic reach today?*

Mr. Ludlow: We are global. We are based out here in Ottawa, Canada. Most of us are here. We do about somewhere between three to five percent of our business in Canada. Therefore, it is primarily where the technology centers are. We have a lot of business in the United States. We have offices across Asia. We have an office in Japan, an office in Taiwan and an office in Korea to handle the Asian technology companies and our Asian clients. We also have an office in London, England to handle our European clients.

CEOFCO: *Would you tell us about the recent agreement with Redtree?*

Mr. Ludlow: That is a way of expanding our reach in Europe, primarily. Europe is a very difficult region for us because it is widespread. In the past, as a small company, if I looked at the cost of setting up an office and the return on investment; if I set up an office in Taiwan, in the Hsinchu Science Park there, I could go there and see five or six good potential clients in a day. If I go to Europe, I could see one per country. It is fun! I really enjoy going to Europe. However, it is an expensive market to service. The Redtree people have some very, very good sales reps. They know many of the clients that we need to get to know. They have good relationships and relationships are very important in European sales. Therefore, I think working with them is going to enable us to build the relationships that we need to with the European clientele and expand our European business.

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CEOFCO: *How do you reach out to potential customers? How do they find you?*

Mr. Ludlow: It is a little of both: us reaching out and them finding us. Obviously, we spend a great deal of time on the website, and on social media and doing events, like whenever Apple releases a new product, we tear it down. We are amongst the first to do the tear down. We like to go deeper than most of the other people to get a little more understanding of what is inside and get the message out that we are about understanding what is going on inside a chip or inside a product and helping people build their innovation programs, their invention programs and their IP programs. That is kind of how we get people to stumble across now. However, beyond that, we are going out where our clients are. Therefore, we go to many intellectual property events. We speak at many of these to get the message out. We are also doing that at technology events, so we are reaching out to the R & D professionals and the engineers who are developing the next generation of technology. Still, an awful lot of it is just knocking on doors. It is the old basics of wearing out shoe leather, calling people up, trying to get some meetings, get them interested in seeing us and then going and talking to them about what their competitive analysis problems are or what their intellectual property problems are and talking about how we might be able to help them.

CEOFCO: *Do your people fight over who works on the iPhone?*

Mr. Ludlow: They cry a little bit sometimes when we take them apart! It is not so much the iPhone; it is things like the game boxes and some of the digital SLRs that we take apart. They do play with them first, before we take them apart.

CEOFCO: *When you are talking to prospective clients is there a typical aha moment when they understand the value?*

Mr. Ludlow: Yes, I think so. I mean you have to be able to engage clients in a way where you are talking the same language as they are. Part of it I suppose is because of the name, but I quite like the name since I made it up. They think of us as being chip focused. This might be reinforced by the iPhone teardowns perhaps, but they think of us as a tear down shop. They do not think of us as a partner in their innovation programs and in their intellectual property programs. Therefore, if we can sit down with them and show them that we understand, at least at a top level, the problems that they are having and the issues that they are having to deal with and that we have services that can help make them more successful in their IP programs and their innovation programs. That is when the aha comes about. It is “Oh, you are not just about trying to sell me a technical report.”

CEOCFO: *Chipworks has been around for twenty plus years, but what surprised you as the company has grown and developed? What are some of the areas in which you look back and say, “How could this be? How could it have happened?”*

Mr. Ludlow: I think I am constantly surprised! That is because, again, we are working at the leading edge of technology. Twenty two years ago, when I started this company, it was literally in the spare bedroom above the garage. That is where it started. The investment was not that large. We got by with a very nice optical microscope, but an optical microscope that got us into the game. The barriers to entry these days are huge because of the cost of all the capital equipment and the challenges of accessing the labor talents. The labor talent is really one of the more challenging things because it is very fluid. People can move and they do move around the globe a lot in this game. That is one of the surprises, how many people we have working here in Ottawa from all around the world.

CEOCFO: *Would you tell us a little bit about confidentiality? If you are working on someone’s new idea, how do you assure them that you are not going to steal what they do? How do you guarantee the security? What do you look for in your people to know that they are not going to somehow share what they have learned where it should not be?*

Mr. Ludlow: Confidentiality is a huge issue, particularly on the intellectual property side with the IP people. The first I would say is that, “I am not working on your ideas, I am working on your competitors ideas,” which de-escalates it considerably. That is because what we are doing is learning from public sources. Therefore, if we go out and buy the latest cell phone, if we go out and buy the latest microprocessor chip, that is something that is released on the market. Anyone can buy it and anyone with a few million dollars-worth of equipment can do what we do; take it apart and do the analysis to understand what is going on inside that phone, inside the chip, inside that TV or game system or whatever it is that we are tasked with doing. Therefore, there is less of a confidentiality issue there. Where we get into some really exciting confidentiality issues is when we are working closely with the intellectual property people or the innovation people, that is the strategic marketing or the guys doing future road maps, and we have to ensure that the information that we are uncovering has one level of confidentiality. Anything that we might hear or receive from our clients has to be kept totally confidential. Therefore, we do not even talk about who our clients are. You will not see any mention of a company name on our website. We drill this into our people right away, that we are working with all of these very famous, very successful companies, but we are not allowed to admit it. You are not going to hear that from us. We have a very rigid confidentiality and conflict of interest policy that everyone knows and whenever a new job comes in, it is always checked for conflicts before we go forward. We make sure that we are not working for both sides in any given matter.

CEOCFO: *What might be different a year from now at Chipworks?*

Mr. Ludlow: It is hard to say. Things are changing so rapidly. We are moving very rapidly into trying to be a more complete solution provider, so being able to help our clients understand the broader aspects of technology, in particular their IP portfolio. However, also their product portfolios and to give them a better view of the competitive landscape so that they can make better decisions at the program level as to where they are going to be going. That is one direction that we are taking. Weirdly, we are also taking the opposite tack as well, in that we are moving into much more digital delivery and a “serve yourself” customization of reports and data. Over the last couple of years, we have put all of our standard reports up on the web. We now sell something we call an E-library subscription, where people can go in, for a fee of course, and they can cruise through twenty two years of our stuff and a few more years of one of the companies that we acquired a few years back, whose data goes back to 1964. Therefore, you can get a very good backwards looking view that way and also a good view of the leading edge by looking at the reports we are doing today, all from the comfort of your own office.

CEOCFO: *Why does Chipworks stand out?*

Mr. Ludlow: We are a unique little niche company. I like to think that we are well focused on the things that we do best. We do not try to do everything. We do not try to work in the intellectual property area for biology companies or pharmaceutical companies, even though there is a ton of demand for similar sorts of things. Therefore, we are focused on the one end and we are also surprisingly influential. This does surprise me. It is gratifying that the work that we do has a considerable impact and considerable leverage in these very successful companies that we are working for. Therefore, I like to think that we are, maybe a little bit, the power behind the throne in some cases. We are helping to make some of these household name companies even more successful than they would be without us. As I said, it is a unique little business that has grown up just because it is a ton of fun to be constantly learning from the leading edge of technology. That is the greatest thing about this business, we are constantly learning! There are many really intelligent guys coming up with really nifty new products and we get to learn from them all! We are learning from the best!

BIO: Terry Ludlow, Founder, Chairman and Chief Executive Officer (CEO), is a recognized pioneer in semiconductor reverse engineering, and was among the first to realize its value for Intellectual Property (IP) groups and technology teams. He founded Chipworks in 1992 to offer semiconductor and microelectronics system reverse engineering services to companies seeking to build a competitive advantage, and protect and grow the potential of their intellectual property. As CEO, Terry continues to provide the strategy, vision, and driving force that have earned Chipworks its position as the premier source of knowledge of what's inside technology.

Terry first developed his passion for reverse engineering while working at Mosaid Technologies as the Manager, Design Analysis Services, and heading the Reverse Engineering Group for three years. Responding to market demand, Mr. Ludlow seized the opportunity and launched the industry devoted to providing evidence of patent infringement and competitive intelligence through reverse engineering.

Today, Chipworks has more than 125 full time dedicated professionals worldwide. IP groups and their legal counsel in the world's semiconductor and electronics companies trust Chipworks for success in patent licensing and litigation – earning hundreds of millions of dollars in patent licenses and saving as much in royalty payments. Research & Development and Product Management rely on Chipworks for success in new product design and launch – saving hundreds of millions of dollars in design, and earning even more through superior product design and faster launches.

Mr. Ludlow frequently addresses industry conferences including the IPBC, Licensing Executives Society, and the Brussels IP Summit. He holds numerous patents for his reverse engineering innovations and regularly authors articles for publications around the world.



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