

RESEARCH MONEY

**“Are Canada’s Business R&D Incentives Working?”
The Sixth Annual RESEARCH MONEY Conference
8 March 2007, National Arts Centre, Ottawa, Ontario**

Conference Proceedings

Prepared by Tim Lougheed

Opening Remarks

Jeffrey Crelinsten, co-publisher, RESEARCH MONEY

Mark Henderson, managing editor, RESEARCH MONEY

Crelinsten dubbed the global economic background to the conference as “interesting times”, with its ironic implications. “We’re watching over our shoulders as the BRIC countries — Brazil, Russia, India, and China — are growing at a torrid pace. Our resource-based economy is keeping us propped up, especially in the west, but I for one worry whether our high-tech industries are going to grow fast enough to compete in the future.”

By way of introducing the conference theme, he noted that Canada’s business expenditures on R&D as a proportion of GDP (BERD) is low compared with other OECD countries. Governments at all levels have felt obliged to compensate for this lack by introducing programs to encourage private sector to participate more actively in R&D undertakings, i.e. hire more dedicated research staff, take risks in the search for new, disruptive technologies, and to work more closely with universities engaged on research projects. “Despite all these programs and interventions, Canada’s BERD remains low.”

“As Einstein once remarked, not everything that counts can be counted, and not everything that can be counted, counts.”— Jeffrey Crelinsten, Impact Group

Crelinsten suggested that we may get a more accurate picture by looking beyond the simple measure of BERD, such as the number of R&D-intensive firms in Canada, their R&D revenue, their expenditures and employee counts. We find that the number of successful examples is small. “Interviews with CEOs show that industry awareness of government support programs is low,” he said, adding that even when they are aware of these options, the need to meet a regular payroll predominates, and government programs are often regarded as being unhelpful or onerous. For just this reason, then, the conference brought together experienced business executives, policy analysts, and policy makers to discuss these points and assess Canada’s

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business incentives for R&D. Participants also were asked to compare these incentives with the approach taken by other countries around the world, as well as to discuss efforts within Canada to keep R&D-intensive firms here.

Henderson noted that each year's RESEARCH MONEY conference travels a bit further "up the food chain" in an examination of what it takes to build a knowledge-based economy. He noted that this reflects some progress in our understanding of the different facets of this issue, but also a growing appreciation of need to look beyond Canadian borders, to countries that have social and economic agendas very similar to our own. Some of these countries are developing novel approaches to this process, which can serve as instructive examples to us.

He pointed out that in the near future we can look forward to formal science and technology strategies at the federal level as well as in Ontario. More immediately, he argued that the upcoming federal budget could contain some indication of such strategy, although just how much of an indication is not clear. Of specific interest, he said, is the Scientific Research and Experimental Development Tax Incentive Program (known as SR&ED or "shred"), the largest single R&D incentive initiative in the country, with a budget of \$2.6 billion. The government has indicated that it will be examining this program, with the potential for enhancing it.

"It makes sense that the program works in concert with the business needs, rather than at cross-purposes."— Mark Henderson, RESEARCH MONEY

Opening Keynote: Market Insight, Key to Business Success

Kirk Mandy, President and CEO, Zarlink Semiconductor

Mandy subtitled his talk "Where's the money?" and "How do I get it into my bank account?", and he premised his remarks on the experience he has had in a wide range of activities over the last 30 years. The list includes hands-on engineering work such as factory labour, building and testing products, and designing a wide range of processes and system, for manufacturing, product development, project and program management, quality control, and field service. The list also includes administrative functions such as running marketing or sales and R&D functions, designing compensation schemes, negotiating IP licensing deals, and buying or selling whole firms. Above all, he carried out this work as the CEO of a public firm, in companies big and small, dealing with shareholders, boards of directors, bankers, and the many crises that cropped up on a regular basis.

He recalled that he initially turned down the invitation to address this conference, not because he lacked the time, energy, or interest, but because he was not sure that it was worth trying to influence policy setters in this country.

"After all, this is Canada, land of the supreme academic lobby, where research is king!"— Kirk Mandy, Zarlink Semiconductor

He explained in detail what he meant by this reference to the dominance of an academic perspective. “Canada has a basic policy model that suggests that research leads to development, leads to commercialization, and ultimately wealth creation. As a result, we are the envy of a great deal of nations in terms of the research and development incentives and capabilities that are available in Canada. We do research in government labs, we support research in our universities, we subsidize research in our companies, and as a result, we have a lot of researchers and a lot of technology.

“But have we created wealth, for anybody other than the researchers and the institutions that support them? Where are the growing companies, the growing industrial sectors of our economy which we can point to and say ‘thank God we spent all that money on research or we wouldn’t have all these wonderful companies and industries providing quality jobs for all these Canadians!’”

“I can honestly say that I have never had a customer say to me, ‘jeez, I got to have that research, where can I buy it?’ I contend that this basic philosophical model under which we develop policy to support R&D, under the assumption it will lead to wealth creation, is not only wrong but backwards.”— Kirk Mandy, Zarlink Semiconductor

Mandy argued that wealth creation follows from an understanding of where wealth originates. This is not a question of drafting an easy map showing where to dig for treasure, but instead a matter of creating value for customers. “You must start with a very clear idea of where the money that you want to put in your company’s bank account is going to come from, and why your customer would allow you to have it.”

This is what he referred to as market insight, an understanding of what drives financial transactions between you and your clientele. The result is an algorithm that can help you decide what do to next, setting the stage for plans that include such measures as research, product development, building manufacturing or distribution capability, or marketing. By acting on this insight, successful execution of such plans will result in wealth creation. “Said a different way: market insight leads to execution leads to wealth creation.”

He therefore described it as peculiar that government programs support R&D, but not the creation of market insight. “In my experience, these are skills that do not exist, nor are taught in Canada as a general rule. I can’t tell you why this is the case, but I can tell you that the best business development people I have met — and in many cases, hired — did not learn the trade in Canada.”

He pointed out how rare it was to find people who could see the money and develop the plans that make the financial process move forward. In fact, he offered a gallery of expat Brits — including Dick Foss, Terry Matthews, Michael Cowpland, Des Cunningham, and Colin Patterson

— who demonstrated just such abilities on the Canadian scene, building companies from scratch. Mandy concluded that the people he has known who possess these skills have come from elsewhere, such as Brazil, India, China, the UK, and especially the US. Meanwhile, the best technology people he has known have been home-grown Canadian talent.

“We encourage the development of technology, we get technology and technocrats. I wonder what would happen if we were to encourage the development of business with the same vigour that we support R&D?”— Kirk Mandy, Zarlink
Semiconductor

He contrasted this situation to the US, where a significant number of “benchmark” companies — including giants like Procter and Gamble, Intel, Coca-Cola, Microsoft, General Electric, and Cisco — serve as comprehensive training grounds in commerce and business development. Many Canadians have learned the secrets of successful market insight generation by living and working in the United States, people who often move back to this country for social or personal, rather than economic, reasons.

Mandy outlined a couple of revealing examples of market insight generation. The first was the origin of the accessible modem, a device pioneered by Gandalf Data Communications in the late 1970s when people in the company (founders Cunningham and Patterson, two of the expat Brits mentioned earlier) realized the need for a new product that could enable individuals to exchange large amounts of electronic data without having to lease expensive systems monopolized by Bell Canada. The financial outcome was clear, he explains, as Gandalf’s sales grew from \$6 million to \$80 million between 1978 and 1983. Thus did market insight lead to product and technology development, the growth of manufacturing and distribution capability, and a great deal of wealth for everyone involved.

A second example he offered was Mitel’s realization that it could substantially lower a small business’s telecommunications cost by reducing the number of lines it had to lease from the phone company. The technology and regulatory changes that made this possible enabled Mitel to gain a 20 per cent share of the small business telephone market less than decade after the firm was created, yielding some \$350 million in sales.

“Again the insight into the market, or how can I save this customer money and have him share the savings with me, preceded the technology development — not the other way around.”— Kirk Mandy

Mandy insisted that market insight is about identifying areas in the market where costs can be reduced or profits increased for a target customer segment, while earning a reasonable profit for your company. The notion of a “reasonable profit” is the driver behind the execution, as all the other elements in the plan — such as technology, distribution, credibility, or working capital —

must be synchronized with this goal. For this reason, many of these processes must occur in parallel.

“Spending a ton of money developing a technology or product without having a clearly defined market insight is a recipe for financial ruin, and this town is littered with examples.”— Kirk Mandy, Zarlink Semiconductor

He conceded the need to focus on R&D incentives because that is where taxpayer money is being spent. These incentives do generate R&D, along with the occasional successful company. He then set this in the context of his own firm, Zarlink, which works on developing market insight for itself. “This of course is to ensure that we do not commit to R&D without a clear understanding as to how it will generate a return for our shareholders.”

“Spend the money on defining insight; translate to an execution plan, clearly highlighting everything that must be done in order to realize the insight, before you go on a spending spree. And if you want to see what happens if you don’t do that right, just drive through Kanata. Two billion dollars in venture capital and what do we get? A bunch of new buildings.”— Kirk Mandy, Zarlink Semiconductor

Mandy then put this concept of market insight into the context of globalization and the prospects for Canadian prosperity. He described how 30 years ago, the relatively new field of electronics was vertically integrated, with individual companies taking on all aspects of the business. Today, small numbers of highly skilled people can generate the market insight and essentially outsource all other business functions. As various parts of the world have made significant advances in the relevant technologies, and those technologies have become highly standardized, it is feasible to use the best resources from the most cost effective parts of the world, regardless of where they may be.

“In a world where all of the execution capabilities can effectively be outsourced, I would argue that the only thing left that is core to a company is its ability to identify opportunities in the marketplace and to successfully execute whatever programs are necessary to cause a financial transaction to occur between the company and its customers.” He maintained that this outsourcing, to places like China, India, and the former Eastern Bloc, will continue unabated. For just that reason, Canada must cultivate a much more commerce-oriented culture to complement our established, outstanding R&D capability, a combination that would be very powerful. And indeed, our future prosperity and standard of living will be a function of how well we adapt to this emerging world where everyone, everywhere can compete for everything at any time.

“The genie is out of the bottle, and there’s no stuffing her back in. We must become commercially savvy on a global basis, or we truly will be relegated to haulers of water and hewers of wood. Be afraid, be very, very afraid. The world as we know it is forever changed as a

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result of the deployment of low-cost computing, communications, and collaboration technology on a global scale. This isn't something that is going to happen; this is something that has happened. Don't think Canada, think the world."

A questioner subsequently asked if it were possible to teach a commerce oriented culture, or if it is only possible to learn these skills by working in a company built on such skills. If those companies do not exist in Canada, the query concluded, how do we prime the pump in this country? Mandy acknowledged that the problem is a complex one, but argued that a culture of commerce could be taught. "It's not something that we teach in universities," he said. "It's something that we teach as parents raising children." He suggested looking around at much of the world, which consists of people filled with rising expectations, whose lives have nowhere to go but up. And with the Internet revolution over the past decade, some three billion of those people are now aware of markets that are available to them. Recalling how his personal needs were met by his parents until he was a teenager and was told to work to buy things for himself, he observed that people have to be taught to be hungry. "People have to be taught that they can achieve way beyond what they may reasonably expect to achieve, way beyond what they may have observed in their families, in their neighbourhoods, but it's hard work." Finally, Mandy referred to what Ontario Premier Dalton McGuinty has dubbed as an "ambition deficit". He suggested that Canada, in contrast to other places he goes as part of his working life, is a country full of "fat and happy people".

A second questioner asked for a comparison of the "creative destruction" that has buoyed the fortunes of Silicon Valley with the prospects of the Ottawa region's further high tech possibilities. Mandy did express optimism, but qualified that optimism by insisting that Canadians have to get past the notion that entrepreneurs here are only competing against other Canadians.

"This issue isn't how do I develop a company that can effectively compete with my peers in Quebec or British Columbia. The issue isn't how do I develop policies at the federal level that are going to outsmart my counterparts at the provincial level.

The issue is how are we going to employ people over the next 30, 40, 50 years when every transactional job on the planet is up for grabs?"— Kirk Mandy, Zarlink Semiconductor

The days of simply setting up a plant and hiring people to staff it are gone, said Mandy explaining how he is using highly skilled people on the other side of the world for his work, beaming them all the requisite information electronically. "Files get beamed over to Asia, chips get sent to customers. I don't even see the stuff. All I see is the money going into the bank."

A final questioner broached the question of marketing, which needs to be supported but may not be by either the public or private sector. Mandy considered this to be a moot point, offering an example that demonstrated how companies could find eminently suitable market niches without

the need for marketing at all. UPS, he noted, takes in laptop computers for repair. However, the company does not send these to any third party, but in fact set up its own factory to do nothing but computer repairs. Rather than seeing people wait for someone else to market such a service, he concludes, UPS demonstrated an ability to think way beyond its traditional core business into something new and promising. He would like to promote that kind of thinking in Canada, which should define what it can do well and then do that.