In the 1990s I sat in the office of a CFO of what was then a Fortune 100 company. He was not happy about the annual technology bill. Back then – and for decades before – technology was tactical. He said something about technology being his last unmanaged expense. I gave him a list of 10 things we should do to improve the cost-effectiveness of our technology investments. He told me to come back when there were only three things on the list. There was no appetite for long discussions about what was wrong – or right – with technology, and there was an expectation that technology expenses could be reduced by focusing on the top three problems.

The conversation was anything but strategic. It was about technology as real estate, or technology as furniture, something we had to have, a necessary evil, a cost incurred to support the transactions that made us money. The business itself was never discussed. It was almost as if technology existed independently of business models and processes.

Is this episode representative of the tension that still exists between “business” and “technology” in many companies, and the lack of synergism between business and technology initiatives? Unfortunately, yes. But in order to be as fair as possible, let’s place such episodes in the context of the evolution of business technology. The 1970s, 80s and early 90s all constitute the 1st digital revolution, when enterprise computing and communications technologies were deployed within countless small, medium and large corporations. But since the mid-1990s, the capabilities and purpose of technology have evolved from the back office to the front office, from keeping the books to touching customers. The transition from “tactics” or “operations” to “strategy” marks the beginning of the 2nd digital revolution.
The early e-business initiatives – the Web sites we all had to have in the mid-to late-1990s – were the result of creative thinking about how to reach customers through the connectivity enabled by the Internet. These initiatives – embodied in e-business models like those offered by Amazon.com and eBay as well as just about every company on the planet that had some form of Web presence – represented first generation business technology synergism - the very same synergism this book argues is the new strategic imperative for the 21st century.

Synergism? Reaching customers 24 hours a day, seven days a week is only cost-effective through the use of low-cost access technology like the Internet. And reaching customers 24/7 is good business since it’s likely to result in happier customers (who are also likely to buy more products). The 24/7 business goal cannot be cost-effectively achieved without Internet technology, just as Internet technology needs good business models to justify its (even cheap) existence. Synergism here results in a whole greater than the sum of the parts.

This book is about the macro trends that our research and practice indicate are gaining momentum. The business trend is collaboration, which means that companies are connecting with their employees, customers, suppliers and partners in new, continuous ways. The second trend is technology integration, which means that those systems we all use to keep the books, communicate with customers, and keep our employees informed are starting to share data and use each other’s analyses to trigger collaboration. The intersection of these trends results in a powerful business technology synergism.

The key point is that business collaboration and technology integration are intertwined. Collaboration is increasingly enabled by technology and technology is increasingly integrated, and therefore capable of supporting collaborative business models that assume both process and data integration. Business technology is still “tactical” and “operational” – computers and networks still have to work – but it’s also now very “strategic” – it can make or break a company, especially as business collaboration and technology integration trends accelerate and companies discover how to make existing business processes more efficient while they add new collaborative processes.

Business and technology are no longer disconnected, no longer part of a process that begins with questions about “business” and ends with decisions about “technology.” The perspective here is that discussions about business or technology cannot occur without the other.

At the simplest level, this book is about how companies can increase the return on their technology investments. But it’s not a book about how to
calculate ROI. Instead, the book challenges executives and managers to think differently about the relationship between business and computing and communications technology – you know, the stuff you spend tons of money on year after year in the midst of suspicions about its contribution to profitability and growth.¹

The book explains how the relationship works and how it should evolve, where it’s been and where it’s going. All of the arguments are based upon assumptions about how business is becoming more collaborative and how technology is integrating. Collaboration and integration are changing everything, but in the wake of the dot.com collapse and the decrease in capital technology spending that followed, we now find ourselves at a crossroads. We can continue to assume that technology spending swings with the larger capital market pendulum or we can look at it all differently.

The implications of the collaboration/integration perspective spill over into how we develop strategies and operate our companies. Two quick examples. “Customer relationship management” (CRM) is both a business model and a technology. The business objective of connecting and servicing customers, suppliers and partners is enabled by CRM systems sold by software vendors like Siebel Systems and SAP. Call center support is also enabled by technology, which provides 24/7 Internet access to frequently asked questions (FAQs) and, as customer satisfaction surveys indicate, produces happier customers. There’s an additional advantage to Internet-based call centers: they permit companies to reduce the number of call center operators they have to hire. Both of these examples highlight the thin line between business and technology. Without a business model and technology, neither CRM or call center initiatives could succeed.

Which comes first, business or technology? There are people in your company always thinking about how to improve or extend business processes like CRM, call center management, marketing, up-selling and cross-selling. And there are also people always thinking about technology, about how to manage data, access information and keep everyone connected. The big change is in the innovation process. Where most new business ideas used to come primarily from the business side of your organization, new business ideas can now just as often come from the technology side – as well as from both – which, I’ll argue here, will yield the most successful new ideas.

The business technology relationship today is the result of the evolution of technology, the result of technology’s journey from hardware and software pieces that barely worked and seldom fit together to acceptable reliability, and business’ consistent appetite for information that’s efficient and cheap.
Business requirements – which were relatively stable during the last quarter of the 20th century – nevertheless outstripped technology’s ability to deliver bullet proof performance. Technology vendors and business technology consultants exploited the lopsided evolution – not maliciously, but as business men and women who saw opportunities to sell a little, deploy a little, and then sell some more – even if what they were selling was half-baked. Many companies have struggled with technology, loving it and hating it along the way. By the late-1990s, things actually began to improve. Hardware and software became much more reliable, which freed managers from the daily “putting-out-the-brush-fires” drills that distracted them from strategic business technology planning. We were also appropriately distracted by the need to make sure our computers and networks kept working on January 1, 2000 and that we had “killer” e-business models to stake our claims to the new digital economy.

The disconnect between business questions and technology answers accelerated just when serious integration technologies began to appear, when technology vendors began to make their hardware and software more compatible, easier to inter-connect and even willing to accept data and analyses from competitors’ systems.

Business models began to get collaborative conceptually when managers began to understand the value of monetizing “customer life cycles” through up-selling, cross-selling, personal service and other business models that followed customers through the stages of their personal and professional lives. These models always made sense, but were difficult to implement because the necessary business connections among the parties didn’t exist and because our technology didn’t integrate. Technology integration is enabling real collaboration, like the CRM and call center examples discussed briefly above.

Over the years, a lot of business creativity was stifled by our inability to keep computer operating systems, applications and networks from crashing. Now we have the luxury to think about collaborative business models, like supply chain planning, personalization, customization, and automation, among other ways to connect employees, suppliers, customers and partners. We’ll talk a lot about these models in the book, models that have always been conceptually elegant, but are now enabled by digital technology that’s integrated and reliable.

It’s important to understand the period from 1995 to 2000 – in spite of our obsession with the Year 2000 problem and e-business – as the period that built the foundation upon which serious technology integration now rests, and the time that launched serious collaborative business models. In all of the
turmoil, many of us missed the new integration technologies that enabled new collaborative business models. We’ll focus here directly on these huge though relatively under-hyped trends.

If you’re sitting inside of a company that buys and deploys business technol-
yogy, you’ll love this book. This is a buyer’s book. It’s about the business technology relationship as engineered by those who run all kinds of businesses. If you’re a technology vendor, the book will explore the depths of the love/hate relationship that sometimes exists among you, the businesses that buy your products and the consultants who wrap them in lucrative services. The good news is that you’re finally starting to embrace some common standards that make business technology convergence possible. The objective here is to get everyone talking candidly about what needs to happen next, about how business and technology can profitably converge. The savvy consultants who participate in these conversations will like what they hear.

The book is about how business and technology are now – and forever – inseparable, life-long, inter-dependent partners. It’s about the maturity of the business technology relationship and how it can be exploited for competitive advantage, and it’s about how to optimize the relationship by tweaking how we manage the acquisition, integration and support of business technology. It’s ultimately about a little business, a little technology, and a whole lot of forward-thinking common sense.

Perspective

Age brings a few advantages. One of them is perspective. I could not have written this book five years ago. I just didn’t know enough about how all the pieces fit together. Like a lot of “technologists,” I rounded out my understanding of the relationship between business and technology relatively late in my professional life – or only after I’d seen business technology from several very different perspectives, some successful and some horrendous.

So here we are. The interplay between business and technology has evolved to the point where the conversations in this book can actually occur – and might actually make sense. Chances are you’ve spent a lot of time and money figuring out how to optimize the relationship between your business and computing and communications technology. When you add it all up, we’re spending well over a trillion dollars a year on hardware, software and services.
Maybe you’re spending millions or tens of millions. A few of you are spending billions each and every year on these bells and whistles. Well into the trenches, according to the Gartner Group, lots of us are spending around $4,500 per year, per user to support wireless personal digital assistants (PDAs). Yeah, that’s right. Those cute little devices that your senior – and not so senior – managers play with all day are costing your company $4,500 per year … each. Can you find the business case for these little darlings?

We’re at a unique point in time when three things are absolutely true:

- Computing and communications technology is actually starting to work. The stuff is coming together in ways we couldn’t imagine 10 years ago and had trouble describing even five years ago.
- Business models are morphing (partially because of technology and partially for other reasons) and they’re morphing toward collaboration, supply chain integration, personalization and customization, among other connectivity-based models and processes.
- The inertia of old business technology management practices is still, however, driving most of our technology investment decisions, still driving us toward piecemeal applications, ill-conceived sourcing and staffing strategies, crazy organizational strategies, and metrics that measure the wrong things.

Since 2000, there have been a series of high profile challenges about the value of information technology, and whether or not IT is still really important. For example, Paul Strassmann (www.strassmann.com) has argued for years that investments in technology do not predict profitability or growth. More recently, longitudinal research reported by Joyce, Nohria and Roberson in What (Really) Works (Harper Business, 2003) reports “no correlation between a company’s investment in technology and its total return to shareholders.” All of these – and other – arguments are made in Nickolas Carr’s now famous piece in the Harvard Business Review with the provocative title: “IT Doesn’t Matter.” Carr is convinced that technology’s strategic impact has run its course, that the technology playing field is now level.
Has Everyone Lost Their Minds?

Should we believe that computing and communications technology are frauds, that they bring very little to the competitive table, that the $1+ trillion a year that U.S. companies spend on hardware, software and technology services is somehow misspent?

Arguments that IT no longer matters are horribly flawed. In fact, we’re confusing several healthy trends with what some see as declining influence. For example, there’s no question that PCs, laptops and routers are commodities. Even some services – like legacy systems maintenance and data center management – have become commoditized. Are PCs, PDAs and servers “strategic”? Of course not. But if we botch the acquisition of these devices, or fail to adhere to sound management practices like standardization, they become tactical liabilities. Far from being irrelevant, they’re actually tactically necessary and potentially dangerous.

Another misinterpreted trend is the increase in discipline used to acquire, deploy and manage technology. We’re much more sophisticated about the use of business cases, total cost of ownership models, return on investment calculations, and project management best practices than we were a decade ago. Put another way, the acquisition and management of technology has become routine, no longer the high profile, ad hoc process it once was. Does this mean that it’s no longer important? I’d argue that our ability to more skillfully acquire and manage IT is an indicator of maturity, not unimportance.

Another trend that seems to confuse the technology-doesn’t-matter crowd is our willingness to outsource technology. Companies are re-evaluating their sourcing strategies and have lengthened the list of potential candidates for partial and full outsourcing. Some of these include help desk support, programming and application maintenance. If we extend this trend, it’s likely that we’ll see a lot more hosting of even large applications – like enterprise resource planning (ERP) applications – that companies will increasingly rent (to avoid implementation and support problems). But does this trend spell the end of IT? Hardly. Outsourcing trends dovetail perfectly with commoditization trends. Companies have correctly discovered that they don’t need to develop core competencies in maintaining PCs or supporting Microsoft Office – and why should they? This kind of support should be left to specialists who can offer economies of scale, reliability and cost-effectiveness.

The real story here is not commoditization, discipline or outsourcing, but the separation of technology into operational and strategic layers. Operational
technology is what’s becoming commoditized. Strategic technology is alive and well – and still very much a competitive differentiator. It’s even possible to argue that since operational technology has been commoditized, we’re finally ready to strategically leverage technology.

Operational technology enables current and emerging business models and processes in well-defined, predictable ways. Hardware price/performance ratios are perhaps the most obvious example of this trend, but there are others as well, including what we’re willing to pay for programming services (here and abroad). We now expect companies to excel in the acquisition, deployment and management of operational technology. We expect them to know what they’re doing here – recognizing that mistakes can be extremely costly and even threaten a company’s position in the marketplace. Far from being irrelevant, given the size of our technology budgets and our growing dependency on technology, it’s essential that we get the operational layer right. Many companies are very good at it. Some companies are horrible. There’s huge opportunity – and risk – here. Try telling a CEO that a botched $100M ERP project doesn’t matter.

Strategic technology on the other hand is the result of creative business technology thinking where, for example, a Wal-Mart streamlines its supply chain, a Starbucks offers wireless access to the Web to its retail customers (to keep them inside their stores spending money), and a Vanguard leverages its Web site to dramatically improve customer service. There’s no limit to how strategic the business technology relationship can be. Again, the exploitation of strategic technology – like customer relationship management (CRM) and its personalization and customization cousins – is dependent upon solid operational technology. The same is true of wireless communications, automation and dynamic pricing. You mean to tell me that the ability to change wholesale and retail prices in real-time is not strategic?

Strategic technology is liberated by operational technology. How much time did we spend putting out operational brush fires in the 1980s and 90s? Was there any time left to think strategically? A lot of basic hardware and software just didn’t work that well back then, but now technology’s reliable and cheap – and now there’s finally time to strategically leverage technology – so long as the distinction between operational and strategic technology is well understood. Marching orders? Solid operational technology that enables creative strategic technology. If we get this relationship right, technology can contribute directly to efficiency, profitability and growth. Thinking about business and technology holistically will help.
Organization of the Conversations

Chapter I talks about the stakeholders in the business technology sweepstakes. While we might sometimes think that finance, marketing, sales and product development professionals are disconnected from technology investment decisions, Chapter I will introduce them all as part of a management team that has vested interests in business technology decisions, since none of them can really do their jobs without business and technology.

Chapter II sets the stage for the business collaboration and technology integration discussions that will follow. Chapter II explains where the business technology relationship has been and the factors that are influencing it today.

Chapter III describes the collaborative business models that are appearing as fast as we can leverage technology to support them. All of these models assume connectivity among customers, employees, suppliers and partners. They include models that link suppliers, distributors and sellers (supply chain planning and management), models that use prior information about customers to personalize and customize connectivity, and models that even assume the value of completely automating transactions. Chapter III also talks about the trust that must exist for collaborative business models to work.

Chapter IV talks about the different kinds of technologies out there that enable and extend collaborative business models. Some of these include infrastructure technologies like database management, transaction applications like enterprise resource planning (ERP) and customer relationship management (CRM) systems, and communications technologies like wireless cell phones, personal digital assistants (PDAs) and virtual private networks (VPNs). The trick is to understand what these technologies do – not how they’re made. We’ll focus on how these and other technologies enable and extend emerging collaborative business models at a level that makes sense for managers.

Chapter V describes some alternative organizational structures you might consider as you try to make the business technology relationship productive. The chapter challenges some of the more traditional reporting relationships and even questions the need for an official Chief Information Officer (CIO).

Chapter VI focuses on business technology discipline – the processes by which we develop collaborative business strategies and buy and deploy computer hardware and software. Chapter VI focuses on business scenario development, the development of business cases, project management and return-on-investment (ROI) calculations to measure business technology investments’ impact.
Chapter VII talks about the kind of people necessary to make the relationship between business and technology productive. It offers some suggestions for assessing people and measuring the skills gap between what you need and what you have. It also offers some rules of thumb for considering how much activity to outsource.

Chapter VIII wraps it all up with a picture – exactly like the one that appears below – that illustrates the synergism between emerging collaborative business models, technology that’s integrating, and business technology management best practices.

A Little About the Tone of the Book

This book is written a little differently than most books about business technology. I’ve tried to write a book that was relatively easy to read. In fact, I tried to write a book that was almost fun to explore. The tone is deliberately
conversational. There’s also a story embedded in the book, a drama that takes place in just about every corporation out there. See if you can predict the ending.

The Take-Aways from the Conversations

When you finish the book hopefully you’ll spend less on – and get a whole lot more from – the business technology investments you make. I guess if the book were soap, I’d offer a guarantee that if you didn’t come out cleaner I’d refund your money (but since this is the publishing business, logistics prevent any such promises). I will, however, be really disappointed if after these conversations you still think the same way you did about business technology – and the management best practices around acquisition and deployment – before you read the book. Your guarantee is my fear of embarrassment.

But when all’s said and done, The 2nd Digital Revolution is about redefining the relationship between business and technology in your companies. While debates rage on about the virtues of outsourcing, whether or not Linux will really threaten UNIX and Windows, and if IBM can really deliver “on demand,” the real challenge is to get business and technology to integrate into a whole much greater than the sum of their parts. The late Bob DiStefano – the highly respected CIO of the Vanguard Group – used to say, “There are no technology decisions – only business decisions.” Bob was ahead of his time.

But now Bob’s time has caught up to us all. The conversations in this book should help you think about technology as business and the business of technology much more holistically.

Acknowledgments

Lots of people contributed to this book. Most of them have no idea they’ve done so. Andy Sage, Dean Emeritus and quintessential professor in the School of Information Technology & Engineering at George Mason University in Fairfax, Virginia really helped with the conceptual coat rack on which I’m still hanging ideas. His superb ability to describe and apply the discipline of sys-
tems engineering is still the compass I use to organize all this stuff. Bob Zito, now retired from CIGNA and United Health, helped me parse the realities of business technology management into realistic approaches. Bob is a pragmatic technologist who operates within the parameters of the environment in which we work. Much more recently, the graduate and undergraduate Capstone students at Villanova University helped me communicate the ideas in the book. I’ve already held the conversations in this book with them, conversations to which they’ve contributed significantly even as they worked me for grades. The Villanova Executive MBA students – I, II and III – in particular contributed to the book. I used the materials in class over a long period of time. These students were a tough audience. Their questions and challenges were excellent – and helped focus the discussions on the right things.

Others who have flavored my thinking over the years include Craig Fields, Bob Kahn, Nick Negroponte, Roger Schank, Bob Fossum, George Heilmeier, Bob Young, Dexter Fletcher, Jon Wilkenfeld, Jerry Hopple, Demetri Papademetriou, Len Adelman, Lee Ehrhart, Al Davis, Peter Freeman, Dick Fairley, Dick Lytle, Paul Weinberg, Mark Broome, John Pacy, Sam Palermo, Andrea Anania, Chris Pacitti, Larry Meador, Mike Burns, Anne Wilms, Jim Ounsworth, Rob Adams, Brian Dooner, Dick Guttendorf, Bob McParland, Bob Nydick, Tim Monahan, Steve Fugale, John Carrow, Matt Liberatore, Steve Zarrilli, Lee Yohannan, Jon Brasington, Jon Carrow, Joel Adler, Ralph Menzano, Jeff Worthington, Jeff Miller, Lucinda Duncalfe Holt, Vince Schiavone, Scott Overmyer, Charlton Monsanto, Frank Mayadas, Jerry Wind, Scott Snyder and Paul Schoemaker. They all contributed – whether they realize it or not - to aspects of this book. Max Hughes deserves – and demands – special mention. He read some early chapters and while he “liked” them, he also complained about their lack of “actionable” content. So I reworked the content to satisfy his – and I’m sure your – desire for insight you can actually use.

My lifelong partner, Denise, supported the entire journey. Without her support projects like this would simply never happen. I’ve been at this for a long time now and she’s always been there. My daughters, Katherine and Emily, provided some serious grounding along the way. In their own unique ways, they influenced the form and content of this book. I wonder what they thought about dad sitting in front of a machine at all hours of the day and night spewing out word after word. I should ask them.

I’d also like to thank the Labrecque family. It is an honor for me to hold the Thomas G. Labrecque chair of business at Villanova University. Mr. Labrecque was a complete business professional and a man who’s personal values and
professional business decisions worked side by side for decades. Unlike many who have gained infamy over the past few years, it is comforting to know that some incredibly successful people were also some of the very best people. Mr. Labrecque was one of the incredibly successful good guys. The chair that he endowed enabled me to pursue much of the research that led to this book. Thank you, sir.

Thanks to everyone, we have a book here. Hopefully, it will help us get from one place to another. At the very least, if you read this book you’ll save a ton of cash. At best, you’ll position your business to succeed in the 21st century.

Steve Andriole
Bryn Mawr, Pennsylvania

Endnotes
